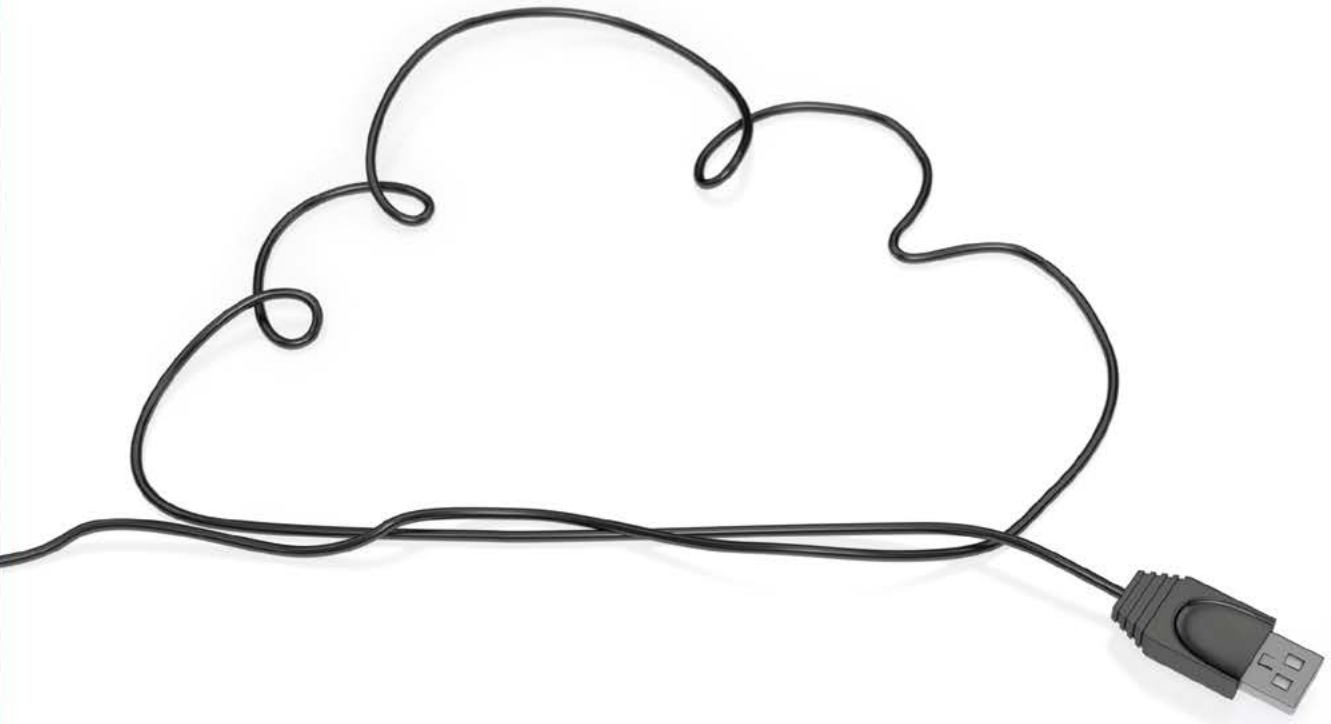

AC/E DIGITAL CULTURE
2015
ANNUAL REPORT

Cultural Business Models on the Internet

Focus: Museums and New Technologies

AC/E
ACCIÓN CULTURAL
ESPAÑOLA

"Knowledge now lives not just in libraries and museums and academic journals. It lives not just in the skulls of individuals. Our skulls and our institutions are simply not big enough to contain knowledge. Knowledge is now property of the network, and the network embraces businesses, governments, media, museums, curated collections, and minds in communication."

(David Weinberger, *Too Big to Know*)

This is the second edition of the AC/E Digital Culture Annual Report published by Acción Cultural Española in accordance with an editorial policy of providing both professionals and citizens with a tool for gauging the impact of new technologies on culture. It is the result of an internal reflection undertaken two years ago on how to incorporate the digital dimension into AC/E's goals and our work in supporting the culture sector. This study sets out to analyse the main technological trends that cultural managers should take into account in the coming years.

This year's edition, like its predecessor, is divided into two parts. In the first part, twelve opinion pieces by experts in this field analyse the new business models that have arisen from digital disruption and propose ways of applying them to the culture sector. The second part shows the impact the Internet is having on museums, in order to examine in depth the changes the sector is undergoing and help cultural organisations provide experiences that are in line with the expectations of twenty-first-century users.

Teresa Lizaranzu
President, Acción Cultural Española (AC/E)

Following the excellent reception of the first edition of the *AC/E Digital Culture Annual Report* – nearly 2,500 copies of the study were downloaded – we are pleased to share with professionals from the culture sector the second edition, which sets out to analyse key aspects that need to be taken into account in the transition from analogue to digital in the culture sector.

AC/E, a public entity whose mission is to facilitate the promotion, development and internationalisation of Spain's creative and cultural sector, and Dosdoce.com, a private entity specialised in studies on the sector's adaptation to the digital environment, have joined forces to analyse the main technological trends that cultural managers will need to be aware of in the coming years in order to gain a greater insight into how, where and when to incorporate new technologies into their cultural organisations.

With this aim in mind, the broad-ranging content of the second edition of the *Annual Report* has been divided into two main sections to make it easier to read for the various target audiences. The *Annual Report* features twelve articles that analyse the emergence of new business models in the culture sector and are written by specialists in different aspects of the Internet: Joana Sánchez, Marta Rodríguez, Rodolfo Carpintier, Hugh Forrest, Matthew Caines, Juan Mateos García, Grace Quintanilla, Jesús Alcoba, Pepe Cerezo, Rich Cherry, José Manuel Jarque Muñoz, Juan Gasca and Marco Ferrario. All these articles have a cross-cutting approach and are relevant to culture professionals from any field, as their content can be applied to any kind of cultural organisation.

Just as the first *Annual Report* was centred on the world of the performing arts (theatre, opera, dance, ballet, etc.), this second edition carries out a thorough analysis of the use of new technology in the museum sector. Throughout the process of compiling this section of the *AC/E Annual Report,* we detected that a broad range of museums are already using all kinds of mobile applications such as QR codes, touchscreens, sensory technology, geolocation and augmented reality, among other technologies, to enhance the discovery process in their exhibitions and activities and foster interconnection between visitors.

Since we found a very high number of cases of good practice in the use of the latest digital trends in museums, we decided to put together a diagram as a guide to readers of the *Annual Report* for approaching this new world.

The vertical axis of the following diagram on "Degree of technology usage in museums" describes the different types of technology analysed throughout the study, from touchscreens to beacons and the new range of third-generation

technologies such as augmented reality and QR codes, among others. The horizontal axis displays the different usages currently being given to these technologies in museums and analysed in detail in the study, from the traditional practice of supplying further information about works and interaction with them to new models of co-creation and co-funding. In order to help professionals from the museum world assess the different possible scenarios, we have established three degrees of usage (low, medium and high).

We hope that the publication of this new edition of the *AC/E Digital Culture Annual Report* will succeed in providing cultural managers with a calmer and fuller view of the development of the new digital world and the challenges we face, as well as the long road still ahead of us.

The *AC/E Annual Report* is intended as a reference manual that can be consulted by cultural managers wishing to discover the advantages new technology has to offer the world of culture. To facilitate access and viewing, all the annual reports are published free of charge under a Creative Commons Attribution-NonCommercial-NoDerivs license, which allows users to copy and share them by any means provided that the authors are credited and the work is not used commercially or changed in any way.

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director general
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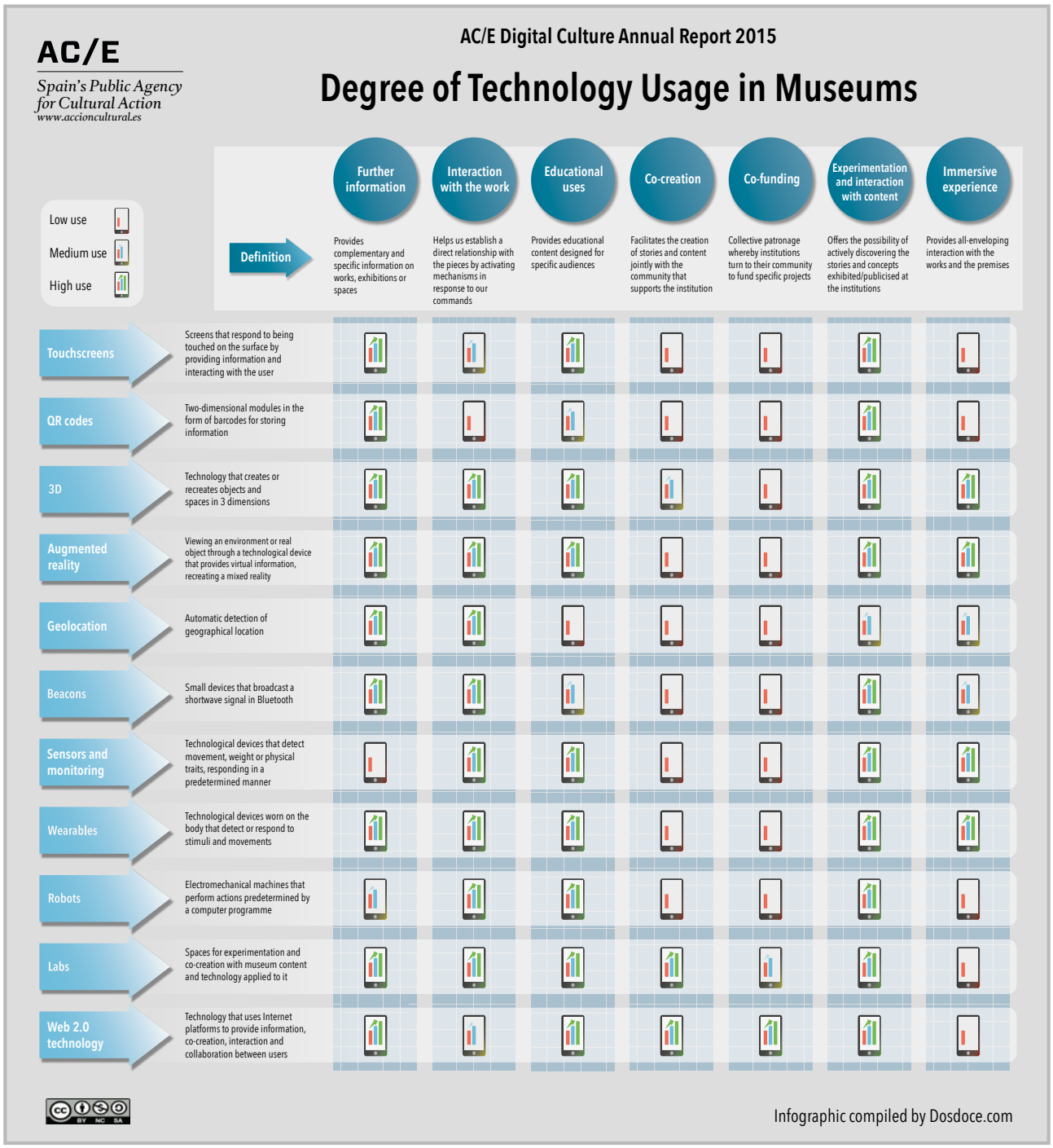
founding partner
of Dosdoce.com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AC/E Digital Culture Annual Report 2015
Degree of Technology Usage in Museums
Low use
Medium use
High use
Definition
Further information
Provides complementary and specific information on works, exhibitions or spaces
Interaction with the work
Helps us establish a direct relationship with the pieces by activating mechanisms in response to our commands
Educational uses
Provides educational content designed for specific audiences
Co-creation
Facilitates the creation of stories and content jointly with the community that supports the institution
Co-funding
Collective patronage whereby institutions turn to their community to fund specific projects
Experimentation and interaction with content
Offers the possibility of actively discovering the stories and concepts exhibited/publicised at the institutions
Immersive experience
Provides all-enveloping interaction with the works and the premises
Touchscreens
Screens that respond to being touched on the surface by providing information and interacting with the user
QR codes
Two-dimensional modules in the form of barcodes for storing information
3D
Technology that creates or recreates objects and spaces in 3 dimensions
Augmented reality
Viewing an environment or real object through a technological device that provides virtual information, recreating a mixed reality
Geolocation
Automatic detection of geographical location
Beacons
Small devices that broadcast a shortwave signal in Bluetooth
Sensors and monitoring
Technological devices that detect movement, weight or physical traits, responding in a predetermined manner
Wearables
Technological devices worn on the body that detect or respond to stimuli and movements
Robots
Electromechanical machines that perform actions predetermined by a computer programme
Labs
Spaces for experimentation and co-creation with museum content and technology applied to it
Web 2.0 technology
Technology that uses Internet platforms to provide information, co-creation, interaction and collaboration between users
Infographic compiled by Dosdoce.com

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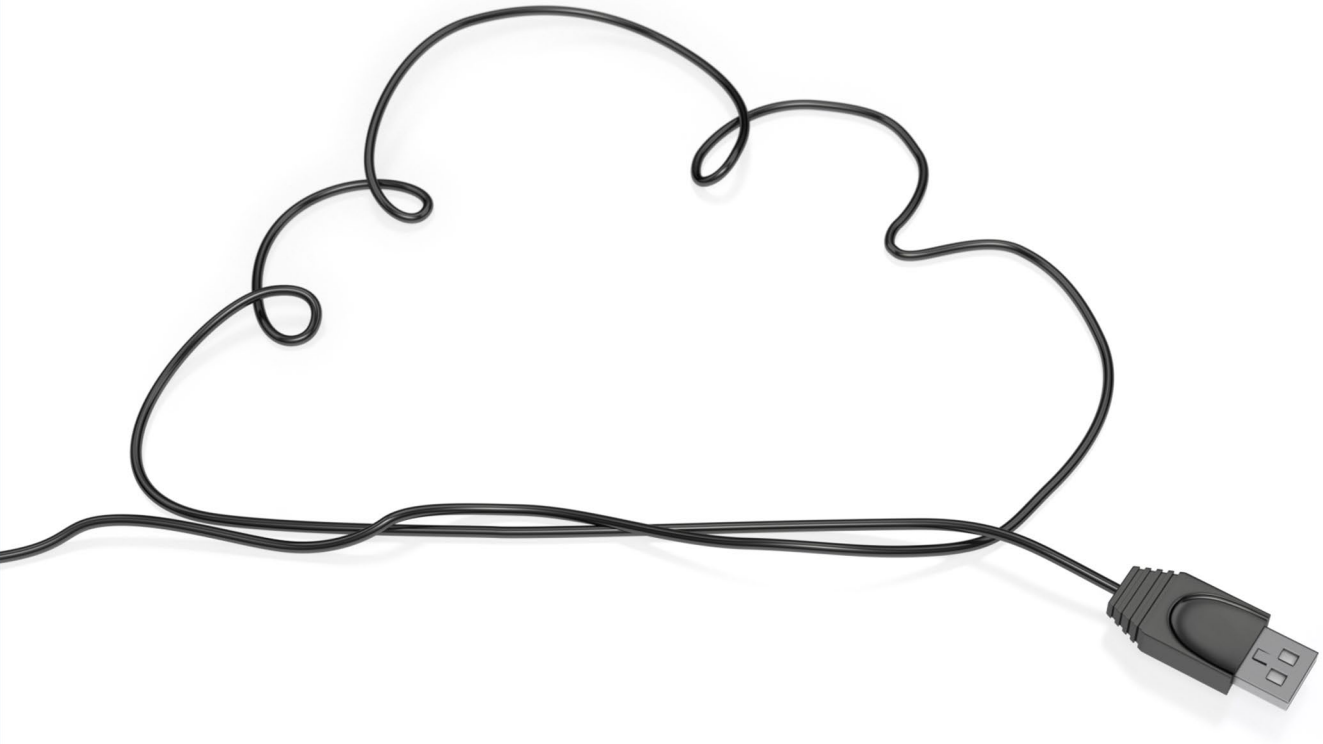

Cultural business models on the Internet

AC/E Digital Culture Annual Report 2015

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Challenges of the twenty-first century. How to adapt a company to the twenty-first century

Rodolfo Carpintier, @RCarpintier

What is it that makes the twenty-first century so different from the previous one? First of all, the Internet has created an environment where communication has gone from one-to-many to many-to-many in which everyone communicates with everyone else and any customer can initiate a movement against our brand. The power is shifting to the end user.

Furthermore, the Internet has given rise to a cross-pollination in which computer experts, statisticians, biologists, engineers, doctors and any other specialists or professionals can, almost effortlessly, advance in their research with the usually selfless help of thousands of experts in any field of science who are willing to collaborate in a mutually beneficial way. Within a matter of hours, a major project can bring together an outstanding multidisciplinary team from all over the world, achieving in days what used to take years.

What is occurring – initially in industries such as music or video which are basically digital but gradually spreading to all areas of production or services – is that business models are changing at lightning speed. Many twentieth-century companies still believe they can get away with not changing their business models in the twenty-first century. This is a serious mistake that will render many of them incapable of adapting and understanding what is going on around them.

Many make the mistake of Thomas John Watson, boss of IBM in the 1940s and 1950s, who stated at a public presentation that there was a world market for only half a dozen computers. What seems a ridiculous statement coming from a prominent person who was furthermore one of the best CEOs in IBM's history is nonetheless justified if we analyse what a computer consisted of back then: a huge piece of equipment that occupied an entire building and had the

electricity consumption of a medium-sized town. Watson made the mistake of not analysing what would happen when, owing to progress in technology, computers cost less and could run on just a battery.

In the field of music, the power of a few major companies has been undermined by the profusion of digital businesses that are cornering them on all sides of their business models and have caused them to lose much of their importance and business.

We are witnessing this, industry by industry, in all of them. Little by little, new entrepreneurs who approach the problem armed with this century's knowledge and technology are designing business models which, almost imperceptibly at first and then massively, attack the – by now unsatisfactory – solutions of companies intent on not giving way to the new century by digitising all their purchases, sales, customer relations, research and development, post-sales processes, etc…

The new entrepreneurs are designing business models based on knowledge and technology, digitising all their processes.

Let us examine the case of 3D printers, which appeared nearly ten years ago. The first we saw were barely capable of producing anything and cost $150,000 apiece. Industry smiled and ceased to regard them as possible future competition. Today there are already 3D printers available for less than $2,000 and they can be installed in any home. What is more, a host of new formats and materials have emerged that even make it possible to "print a steak".

How can this affect the pharmaceutical industry or pharmacies? Do you know how many residents' associations there are in Spain? Millions, though they are currently hard to reach and fall outside the business scope of most companies of this kind. However, if a software manufacturer were to suddenly decide to provide them with a management solution, within a few years it would have hundreds of thousands of associations of this kind as customers and, by extension, the millions of residents who belong to them.

How long will they take to realise that by having access to the customer at home they can do much more business that what their software represents? What would happen if this software company suddenly realised it could sell 500,000 vending machines in the properties it manages? For example, in order to cover the need for non-prescription paramedical products.

What would happen if they also put a 3D printer in each residents' association and used it to print medicines from ingredients supplied by a pharmaceuticals company? Why throw away thousands of medicines that are never used? We would print them "on demand", near home, and this would change whole distribution sectors forever with street-level business models, and even the modern design of new residents' associations devised for the twenty-first century and its amenities.

We have a "use and throw away" habit that is destroying the planet and gradually raising our awareness that we are on the verge of a disaster

of epic proportions that must be averted. In the coming years, much more demanding environmental regulations will force us to cut down on rubbish, avoid "throwing things away" and give priority to recycling and to more environmentally friendly business models. This will create thousands of new business opportunities and new environments in which any resource is optimised and we use all the recycled material we can.

A habitual aspect of the products we use today – in accordance with twentieth-century customs – is that "it is better to throw it away and buy a new one" because it is impossible to purchase a small part the equipment needs to carry on operating. It is no longer manufactured, there are no more spare parts and we have no choice but to go for a "new washing machine".

We will soon see small workshops capable of 3D printing in all kinds of materials and equipped with the designs of hundreds of thousands of pieces that can be purchased over the Internet and subsequently manufactured, from the "elbow joint" of a refrigeration system to a refrigerator motor.

Twenty-first century models are furthermore tending towards cost-free. Many products and services will be free in exchange for the information we supply to those who "give" them to us. The sharing economy is appearing, and it has suddenly become fashionable not to own but to "enjoy", from shared rooms to luxury sailing boats.

We will soon see free offers of smart refrigerators – capable of "reading" everything they contain – from companies that want to exploit our consumption habits and learn how to optimise their products so that they reach us "on demand" at the right time.

21st-century models are tending towards cost-free in exchange for sharing information with suppliers.

We will have chips implanted under our skin or sewn to our everyday clothes that will "read" our vital signs and pass the information on to modern health services in which, instead of paying per visit, we will pay a monthly fee for "preventing" illnesses and improving our overall health.

There are already mobile applications for monitoring what we do, the calories we consume and the exercise we take. Today it is still necessary to access information manually but, with the abovementioned sensors implanted under our skin, chips will automatically transmit this information to those of us who have hired the service – at a cost or free of charge in exchange for our personal information. We have seen nothing yet.

The American futurologist Ray Kurzweil, author of the Singularity Theory, talks of people living to an average age of 150 years by the end of the twenty-first century. If this happens, how will we regulate work? What sort of Social Security system could support taxpayers who live to more than 150? How will we have to plan our lives to reach those ages with enough money to enjoy the standard of living we had when we worked? What will retirement age be, 125? We might say

that this is science fiction and it will never occur, but if we read his book *The Singularity is Near*, we will see how the scientist gradually explains page by page what stage we are at in all the areas of what he calls the singularity – first described by the mathematician John von Neuman in 1958 – which Kurzweil expects to happen in about 2045.

In barely 31 years – much sooner in several of the business areas that will be affected dramatically – new models will emerge, totally digital in many cases. They will be created by startup companies which, without taking into account existing businesses, will invent ways of doing so better, faster and more cheaply.

Are existing companies doomed to fail? Unfortunately, most are. They will not be capable of reacting and are bound to become obsolete if they fail to act in time.

Everyone is familiar with the case of Kodak, the major American company that invented digital photography. It attempted to defend its "photo film" business and has been driven to bankruptcy by its own invention which, in the hands of much more flexible companies, has stolen the market and invented new areas of use that bear no relation to those of the twentieth century.

Whereas scarcity prevailed in the 1900s, the 2000s are the century of abundance. Whereas families used to take hundreds of photographs throughout their lifetime, they now take thousands of digital photographs during a single trip to Indonesia. It is common for the average person to have 200 or 300 new photos stored in their mobile at any time.

Abundance generates new business models that are related to the compilation, classification and exploitation of information of all kinds. The so-called "Internet of Things" is generating millions of data that reach hundreds of thousands of servers all over the world in real time. It is early days yet to see what business models this mass information will establish.

Business models will increasingly build on big data in order to offer services based on information generated by users.

It is also too soon to know how legislation will allow the use of this type of data, which is often public, and the type of remuneration that will be possible in each case. What is clear is that many business models will emerge in connection with what is now called "big data" and that we will soon have companies on a global scale that will offer very advanced services based on gathering this information and selling or renting it to companies and individuals.

Until now it has been almost possible, for example, to have access to a major city's entire infrastructure plans in real time. The digitisation of the past years, still very slow and inaccessible to councils with a small budget, is being speeded up by the falling cost of this type of work and the supposed reuse and monetisation of these sources of data and plans.

Private companies will increasingly offer to fund public projects in exchange for being able to use the data obtained as a basis for new business

models yet to be designed. National institutes of statistics will improve their econometric models and socioeconomic data even further and will make them available to newly created companies that will generate modern distribution models and will boost the productivity of companies and whole geographical areas.

Spain needs to take a leap into the twenty-first century and, above all, its SMEs need to realise that they must be better managed, have a broad variety of employees, improve women's careers and, in general, think globally in order to be able to remain competitive and capable in an environment where, far from knowing our usual rivals, we are witnessing the emergence of others on the other side of the world about which we do not have any information but which suddenly access our own customer through the Internet and by the time we realise it is too late.

This growing need goes hand-in-hand with new professionals who in most cases do not yet exist and whom we will have to train as fast as possible so that they can contribute with their knowledge to this type of structural and business model changes that are drawing near.

Spain dislikes risks and this makes us slower than average to invest in innovation – the key to our future and more so now – with the concepts of so-called "open innovation" which, according to Wikipedia:

> **Open Innovation**, a term coined by Professor Henry Chesbrough, is a new innovation strategy whereby companies go beyond the internal boundaries of their organisation and in which cooperation with external professionals plays a fundamental role. Open Innovation means combining internal knowledge with external knowledge in order to carry forward strategy and R&D[1] projects. It also means that companies use both internal channels and external channels to place their products and innovative technologies on the market. In this context, universities and research centres offer new perspectives and solutions to the companies that use this model. This type of innovation relates to the possible occurrence of what is known as collective intelligence.[2]
>
> Companies have traditionally handled innovation[3] in a closed manner (closed innovation), employing a system whereby research projects are managed exclusively with the organisation's own knowledge and resources. According to this classic model, projects can only begin inside the company and end on its own market. However, under the Open Innovation model, projects can originate both within and outside the company, can be incorporated both at the beginning and at intermediate stages of the innovation process, and can reach the market through that company or through other enterprises (patents[4] licence, technology transfer[5], etc).
> *[translated from the Spanish Wikipedia entry]*

One of the most important parts of this concept is acceptance of the fact that we must innovate with customers and get them to collaborate with us, from outside, as if they were part of our own development team. However good we are at innovating within our company, there will always be more researchers outside than inside and this should allow us to increase our innovation exponentially.

There are very few SMEs that innovate in Spain; they are small, lacking in resources and poorly managed with obsolete computer systems and a staff that is not flexible to change. This needs to be changed, because Spain's business fabric is based on these SMEs which often have only a handful of employees – fewer than five – and merely "respond" to what their customers ask them for. They do one thing today and tomorrow, when a customer asks for something new, they switch to doing that, instead of specifically focusing on a few things at which they are truly good and cost effective. Modern models must be highly efficient owing to the need to compete globally, and this calls for SMEs of a certain size that are very modern and global and capable of selling their products or services anywhere in the world.

Modern models must be flexible and highly efficient in order to compete and sell products and services anywhere in the world.

We must be prepared for an explosion in the field of new materials that will make new manufacturing models possible: from more flexible and durable materials ranging from components that imitate the qualities of spiders' webs to new metals that will be harder than steel but weigh only half as much.

This type of new material will create business models based one-person manufacturing and the offer of new services made possible by their qualities and features. It is very important to monitor the development of new materials of this kind because much of the work currently performed by SMEs will be significantly affected by their emergence and global spread.

The main challenge we face in the twenty-first century is to educate a professional class that needs to carry on learning constantly. We can no longer finish our degree and believe we've got it made. Today continued learning is necessary. Therefore, the best professionals are those with a good educational grounding and who bear the germ of what they have "learned to learn" and, like a doctor who wishes to keep abreast of his profession, keep up to date by learning, reading and taking part in circles of knowledge and closely monitoring the evolution of purely twenty-first companies that do not cease to invent new work formats and new products and services.

While they still can, twentieth-century companies would be well advised to "purchase" novel startups that give them the fresh outlook and speed of twenty-first century companies. Their models need to evolve fast and to prevent small newcomers from gradually destroy their best businesses without their realising by changing them radically.

As we have seen in the music sector, the world of cultural content and culture is being particularly affected by new models whose main feature is their digital delivery format.

The world of the media, which has completely changed, is leaving behind a trail of corpses – publishers incapable of reacting to plummeting advertising and the lack of interest of new readers who seek on the Internet another kind of

information that is more direct and less burdened by the tiresome opinion of chief editors who set the tone and listen to themselves instead of establishing a new dialogue with their readers.

Is there a future for the press? I am convinced that there is, but unfortunately for those who write it today, not in the format with which they are comfortable. Paradigms change on the Internet, a cover ceases to have the importance it has on paper and becomes merely one of the many sides we must allow our readers to see.

Technology should allow new models of pay-as-you-consume, micropayments and subscriptions adapted to each reader individually. Cultural events today can be funded through crowdfunding and/or micropatronage in which, instead of two or three major patrons, there are thousands of small ones, who are also the best means of disseminating the project or event.

Paradigms change on the Internet, technology makes it possible to adapt new interactive and consumption models to the field of culture.

In the fields of education and culture we should be able to rely on the effect of gamification as an element of interest to the user/customer. New generations are less fond of continuous reading than of the sort provided by interactive Internet environments in which we can go from a paragraph to a video, view it and return to the same place. This does not mean to say that people are no longer fond of culture. It is just that when you have enjoyed the advantages of the new media, you find the old media to be obsolete, slow and lacking in interest.

Those of us who read books on a tablet and experience its features, despite reading a good traditional book from time to time, find ourselves increasingly captivated by the new immediate digital formats in which everything, from making annotations to finding out the meaning of a word, is just one click away.

What is more, those who understand the medium offer us incredibly attractive book deals that take advantage of the new delivery format – for example, we can buy a whole collection of mystery books on Amazon for under $5. Bundles of this kind can give a new boost to authors who are no longer fashionable or little known.

Films and videos can include immediate access to electronic commerce based on offering products that can be seen in them and may or may not be used by the main characters. Revenues are diversified and formats are modified by their development.

When we speak of the "everything free" that people search for on the Internet, we forget that many pay for what they perceive to be high value-added services. What is becoming increasingly less possible is to carry on paying for content which is being provided free of charge on another site or provides no perceived value.

Perceived value is something personal. I might see value in something in which my neighbour does not. Therefore, one of the most important characteristics of this century will be to allow every product, through technology, to come in

thousands of formats tailored to the needs of each customer/reader/consumer. We should not forget that among other things the Internet, a world of many-but-small, is doing away with the previous world of few-but-large.

Every product can come in thousands of formats tailored to the needs of each reader/customer/consumer.

A book that has 100,000 readers has different economic needs to one that is read by 100 million. Perhaps the future of publishers lies in being so good on the Internet that they can secure millions of readers to whom they can provide a lot for very little money.

Let us imagine a publishing company specialised in the world of the family. Perhaps they reach an agreement with WhatsApp whereby its 400 million users can use the company's texts in reduced format for any family event, from a Christmas tale to a birthday invitation. What about the business model? Shared subscription with WhatsApp? Instead of searching the Internet for a text I cannot find, I use the library the publisher makes available to me, which, in addition to the complete book, features dozens of WhatsApp adaptations of its best phrases.

What should be clear to us all is that a book costing between 20 and 40 euros makes no sense in the long term, at least not in digital format, and that we will have to find new models which, by increasing readership or inventing new formats such as that which is described above, allow us to earn money with many customers/readers/consumers who pay very little but are satisfied with our service.

This requires an important change in the profile of the personnel we need in order to evolve digitally. Professionals will have to be well-versed in handling the Internet and its social networks but, above all, capable of listening to the unceasing murmur of change that occurs around them daily and of acting. It is necessary to try out new models, most of which will fail, but it is sufficient for a few to be fruitful for the publishing industry to return to growth in as yet unknown formats.

The same impetus of change, only with even greater interactivity, will be reflected in education. We cannot continue to educate our young people in the same way as our grandparents did more than a century ago. The modern world, digital and global, requires more participatory systems and more personalised responses to prevent us losing the best people because we were incapable of understanding them.

In this connection my attention has been drawn by a new publishing company that has invented customised stickers. Are you a Tintin fan? You can buy stickers of your favourite series and stick them anywhere, from your mobile to your desktop Mac. The same is possible for any hobby; let us not forget, this is the world of many but small things. Each sticker costs between 1 and 3 euros, but they have already sold several million of thousands of different series. Authors and their publishers have suddenly spotted a new merchandising system that earns them revenues where before

there was nothing. This type of offer changes the distribution formats, the partners we need at each time and the characteristics of the required employees, and we must therefore realise that doing the same as always is simply no longer an option.

If we do not have people capable of innovating, if we carry on doing the same as ever and treat our employees in the same way as before, we will soon cease to be a growing business and will function at the slowing pace of the old businesses which are dying out, some faster than others.

Whereas traditional sponsors are becoming much more selective and miserly, dozens of new formats for raising funds for culture are emerging and most of them involve the Internet and the solutions it provides, among them new forms of payment that are gradually catering to person-to-person businesses, micropayments and crowdfunding.

I am convinced that crowdfunding will be increasingly important in the novel approaches of new cultural actions of all kinds. Its problem lies in the first part of its definition, "crowd", which is very difficult to achieve unless in global environments with users from anywhere in the world and in several languages. Limiting ourselves to Spain will not get us far, as the communities generated will be too small to fund ambitious projects.

We are starting to witness the use of intelligent agents. Although they are too basic today, we will very soon have digital and personal intelligent agents that will "get to know" us in depth, will be familiar with our cultural and leisure tastes of all kinds and will surf the Internet independently, gathering information and offering us suggestions of what to do with our leisure and learning time.

Very soon we will have digital intelligent agents that will give us suggestions on what to do with our leisure time.

These agents will be a key factor in second-generation crowdfunding environments because they will allow us, without having to do anything directly, to interact with people with the same tastes as us and even negotiate what we wish to invest in a great idea that has few possibilities of success. These agents will be capable of "negotiating" on our behalf discounts, special conditions, payments of services and practically anything else that today can only be done with a physical agent.

Contrary to what occurs with current agents – who, after all, are people with their own personal agenda – these digital agents will be aimed solely at improving our personal lives in any of their areas of business, leisure and culture and they will be offered at different levels. An agent that only searches for articles that interest me will be much cheaper than another that is capable of negotiating discounts for me or even a contract as a university lecturer.

We must prepare for a future that will very soon draw on artificial intelligence and advances in the understanding of biological processes of all kinds in order to migrate much of the work

currently performed personally to intelligent agents, which will act as genuine helpers from networks – not just the Internet.

Does this mean that we are heading towards a world in which humans will merely be "owners of digital agents and robots" and will not have to do anything? Probably not in the twenty-first century, but we will see the dawn of a civilisation very different to the one we have today in which, I wish to hope, we will all find our work – whatever it may be – more gratifying and motivating than ever.

What is of no use is to believe that after the crisis everything is going to go back to the same as it was before. Nothing will ever be the same again – from the fact that powerful people end up in prison when they commit crimes, because nobody can escape the pressure of voters united by the social networks, to the fact that companies that nobody knows can be among the best known and most profitable in the world in five years' time.

Today more than ever, humans are social beings, but the current transparency of the Internet calls for rethinking concepts we believed to be immovable. On the Internet prestige is provided by the users/readers/customers who follow or read us and any error soon becomes known to everyone. We must recover the humility of he who "knows he knows nothing" and learns daily from new impulses that generally come from new scientific fields and researchers who really believe that they are discovering, step by step, many of the secrets that nature has jealously guarded for millenniums.

In the field of culture we are witnessing how musicians and authors need to rethink their "modus vivendi" beyond selling the direct product, be it a song, a piece of music, a novel or a play. Closeness to their followers provides them with many opportunities but denies them others. As with all aspects of the Internet, it is increasingly necessary to achieve volume in order for it to be a business. What we could formerly achieve with 20,000 fans is now an environment of 200,000 or a million. Our perspective has changed and we must be increasingly close to our customer, follower or fan and realise what they want us to offer them.

Innovation in today's world is achieved with the involvement and help of customers, followers or fans.

New ideas arise every day. Technology allows us to do more for less, with a greater distribution capacity, and "more of the same" is of no use. We must be innovative and that, in today's world, is only achieved with the involvement and help of customers.

Nobody has the perfect answer; it is necessary to constantly try out new things. Most do not turn out well, but from time to time a WhatsApp emerges that within less than five years is used by 500 million people all over the world and has revolutionised how we communicate. Who nowadays does not have two or three contact groups in their family with whom they communicate regularly?

If we reach millions of users within a short time, they will end up establishing the business model for us. It will not do to carry on believing that the thousands of customers whom we burden with high prices are going to keep our business going for us. Those times are over. We must be highly flexible, listen to the customer and constantly try out new things that are perceived to be fairly priced. Twenty-first-century businesses must be accompanied by the value perceived by whatever customers we have.

In short, my practical recommendations are:

1. We must adjust the prices of our cultural offering to the digital environment and base the business model on having "a lot of customers who pay a little".

2. Facilitate access to cultural content in formats accessible from any terminal.

3. Realise that people increasingly wish to enjoy culture from their mobiles.

4. Incorporate amusing interactions that facilitate readers' understanding of cultural content.

5. Design pay-as-you-use systems that adapt to each customer's needs.

6. Ensure that content can be enjoyed in a group and create new formats for environments such as WhatsApp.

7. Create easy channels for allowing the customer to communicate with you and listen to their demands.

8. Use technology to generate more content and adapt it to the needs of each individual customer.

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Notes

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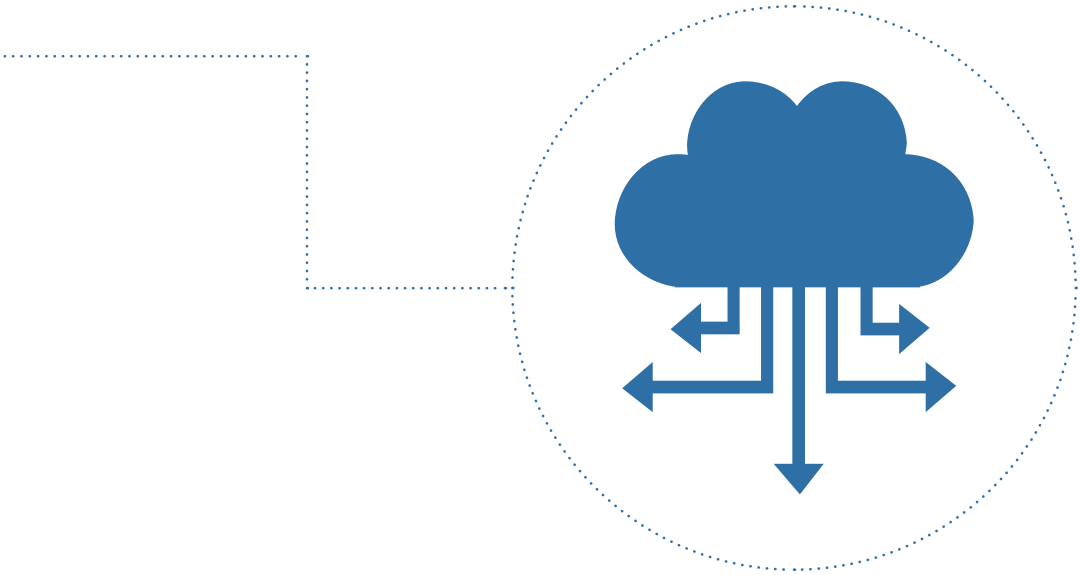

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How to encourage entrepreneurship in the culture sector

Joana Sánchez, @ejoana

Entrepreneurship is an ATTITUDE; it entails creating opportunities where others see problems; it also means MANAGING with a high degree of uncertainty.

The Internet and new technology are changing everything in their path and redefining both society and the business models of most economic sectors: they have an impact on citizens, consumers and customers. This is therefore a natural environment for entrepreneurship. Everything is being reinvented and if we are aware that a business model is what describes the logic of how an organisation CREATES, DELIVERS and CAPTURES VALUE, technological entrepreneurs provide a major opportunity for identifying new business models in the culture sector.

This article sets out to debate and reflect on how to improve relationships between technological startups and culture sector organisations in order to jointly establish areas of strategic collaboration.

In the current situation of budgetary restrictions, the collaboration that can be established between cultural entities and startups goes much further than possible financial investments: the joint definition of new business models.

A closer relationship with future entrepreneurs of the twenty-first century will not only enable companies of the culture sector to gain access to new and innovative products and services, but will provide them with greater knowledge of the adversities of business models in the digital economy.

1. Entrepreneurial ecosystem and entrepreneurship

Michael Gerber stated that "the entrepreneur in us sees opportunities everywhere we look, but many people see only problems everywhere they look". In my view, this is one of the best definitions I have read on what it means to be an entrepreneur.

An entrepreneur is someone who has vision and passion, who is driven by intuition and confidence in himself/herself and in the people who surround him/her and knows how to identify the best talent.

Someone who, instead of pursuing happiness, creates it.

And who learns from each failure and tries again. And although the luck factor evidently exists, the entrepreneur knows very well how to make his/her own dreams a reality.

The entrepreneur is an innovator and often a good leader; as Steve Jobs said, "innovation distinguishes between a leader and a follower".

Identifying new logics for creating, delivering and capturing value is the opportunity entrepreneurs of any sector have.

An innovative attitude is the first step in entrepreneurship, an attitude that spurs a person to "build windmills and not walls when the winds of change blow" (inspired by Kevin Roberts).

And of course I believe that creativity is learned, just as one learns to read.

Entrepreneurs do not stand out for their IQ but for their own intelligences – normally for their social and emotional skills, which are what sets them apart from the rest.

In order to be successful at developing and leading new businesses, it is essential to motivate, inspire passion, transform… basically, we must develop our emotional side to the full in order to make investors, employees, collaborators and customers fall in love with us. Developing empathy is the best way of helping an entrepreneurial project succeed.

The Internet, disruptive technologies and the new digital economy are causing an impact on our whole society, transforming institutions, cities, education, medicine, transport, the financial system, work, democracy, security… – what we call the era of connected intelligence.

And, of course, they are transforming the business models of most business sectors. Identifying new logics for CREATING, DELIVERING and CAPTURING VALUE is the opportunity entrepreneurs of any sector have.

Technology is experiencing exponential growth, whereas today's organisations and society in general move in pace with linear change and the impact of these technologies on organisations is therefore significant. The business processes in value chains are being transformed by providing greater efficiency and effectiveness; communication and coordination between employees and different areas of business are being eclipsed by

new platforms based on entrepreneurial social networks and virtual platforms; new opportunities are arising for delivering more value and better experience to customers and how we communicate with them; and at the strategic level we are witnessing how business models are changing, leading to a collapse in organisations' structures and traditional supply chains.

Faced with this major reality of the new digital age, once again entrepreneurs have the opportunity to reinvent not only business models but organisations and new ways of exercising leadership. The new enterprises of the digital economy are:

1. Enterprises with a **more humanised approach,** which are capable of creating "brands with a soul" that can be cherished by their customers.

2. Enterprises providing new **customer experiences** aimed at getting consumers to take part, co-create and engage.

3. Enterprises with new **competitive advantages**, new products, services or business models that are truly unique and exceptional.

4. Enterprises with a deep-seated **innovation culture** that pervades the whole organisation.

5. Enterprises with a culture of **internal collaboration** and with empowered employees.

6. Enterprises that are **highly efficient** in all internal process: R&D, production, sales, marketing, HR, customer services, quality, finance… as well as in their structure and organisational management systems.
   This is what is understood by a **liquid organisation.** They are based on the concept of Bauman,[1] who coined the theory of the liquid society, that which is capable of adapting to constant change.

7. Enterprises directed with **data analysis** in all areas of the company and which encourage the use of big data in order to convert data into knowledge and decisions.

8. Enterprises with **new channels, and with better customer knowledge** and participation.

In the digital age, entrepreneurs have the opportunity to reinvent business models, organisations and new ways of exercising leadership.

An **ecosystem of entrepreneurs** requires a group of coordinated factors for fostering new disruptive models:

- **Mentors**, people who help entrepreneurs structure their ideas and prepare a project.

- **Business incubators**. Incubators[2] are collaborative environments that incorporate entrepreneurs with entrepreneurial projects at an initial stage of creation in order to help them develop into a business model and an enterprise, such as **IAC,**[3] **Grupo Intercom**,[4] **DaD**[5] or **Grupo ITnet.**[6]

- **Seed accelerators**, collaborative environments that invest in business projects which have already been created by an entrepreneur and have initially validated their business model at an early results stage but need impetus to grow, such as Wayra,[7] Lanzadera[8] …

  According to Carlos Blanco,[9] a "seed accelerator" is based on mentorship and ends with a demo day where entrepreneurs deliver their sales pitch. Their main differences with respect to business incubators are that:

  – The application process is open and competitive.

  – Small sums of money are invested.

  – The focus is on small teams, not sole entrepreneurs.

  – There is a set duration (3, 6 or 12 months).

  – Training sessions take place during acceleration.

- **Seed Capital.** During these initial stages of entrepreneurship, in addition to a collaborative environment, the entrepreneur requires funding. The initial capital is known as seed money and includes funds provided by the entrepreneur's friends and family as well as by the business angel,[10] who can be an individual or a group of them, normally with expertise in the entrepreneur's own sector, or the investors of a business incubator or seed accelerator. Entrepreneurs can also opt for equity crowdfunding.[11]

- **Crowdfunding.** As part of the entrepreneurial ecosystem, this can raise funds through collaborative funding platforms such as Kickstarter,[12] Verkami[13] or Lánzanos.[14] There are 344 million homes willing to make minor investments in crowdfunding businesses. And 1.2 million projects were funded all over the world in 2013.

- **Venture capital.** The second and successive phases of funding for successful startups are necessary to the development of talent, marketing, channels, markets, product, etc. During these phases funding can be obtained through venture capital funds,[15] which own equity in innovative companies, though of a certain size (depending on the type of venture capital). There are private and public, national and international, bank-owned venture capital funds, such as cabiedes & partners SCR,[16] Caixa Capital Risc,[17] and Seed Capital de Bizkaia.[18]

  According to the report *El Venture Capital en España 2013*[19] (Venture capital in Spain 2013), total venture capital investment in Spain in 2013, including national and international venture capital entities operating in this country, public funds owned by CDTI[20] and Enisa,[21] as well as groups of business angels, business accelerators and seed incubators, amounted to 291.3 million euros in a total of 1,275 operations:

Cuadro 1
Volumen de inversión suscrito por tipo de inversor

	Importe (€ millones)			%		
Tipo de inversor	2011	2012	2013	2011	2012	2013
ECR Nacionales e Internacionales	300,9	220,8	208,5	79,8%	74,6%	71,6%
CDTI y Enisa	70,5	63,3	61,6	18,7%	21,4%	21,1%
Grupos BA, Aceleradoras, Otros	5,5	11,9	21,2	1,5%	4,0%	7,3%
Total	376,9	296,0	291,3	100,0%	100,0%	100,0%

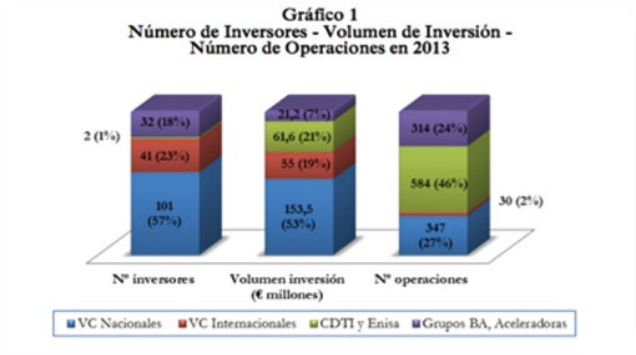
Fuente: ASCRI/www.webcapitalriesgo.com.

Cuadro 2
Número de operaciones de inversión por tipo de inversor

	Número de operaciones			%		
Tipo de inversor	2011	2012	2013	2011	2012	2013
ECR Nacionales e Internacionales	376	408	377	32,1%	35,4%	29,6%
CDTI y Enisa	710	540	584	60,6%	46,8%	45,8%	
Grupos BA, Aceleradoras, Otros	86	205	314	7,3%	17,8%	24,6%
Total	1.172	1.153	1.275	100,0%	100,0%	100,0%

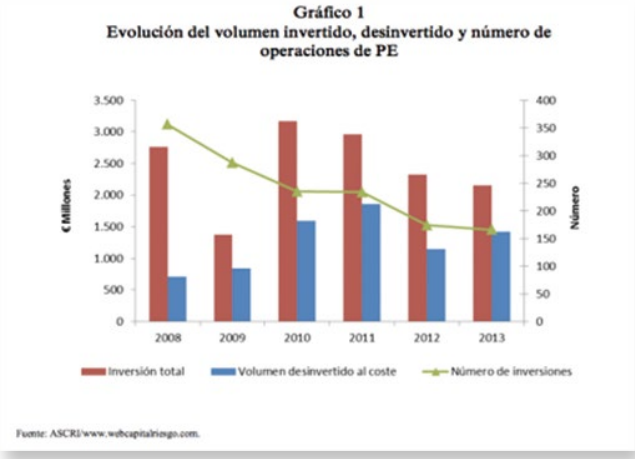
Fuente: ASCRI/www.webcapitalriesgo.com.

Volume of investment / Number of investment operations by type of investor
Type of investor
National and international venture capital firms
CDTI and Enisa
Business angel groups, business accelerators, others



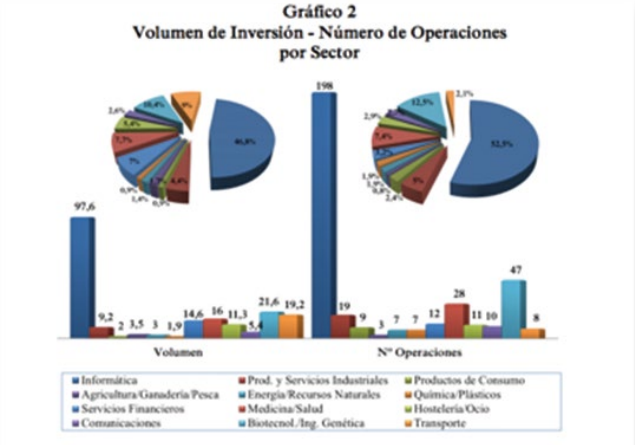
Number of investors – Investment volume – Number of operations in 2013
No. investors - Investment volume (millions €) - No. operations
National VC firms - International VC firms - CDTI and Enisa - BA groups, accelerators

The **entrepreneurial ecosystem of Spanish cities** is currently at a standstill, but it could get off the ground at any moment if proper impetus were given to key aspects as has been done in other international ecosystems. According to *El Private Equity en España 2014*[22] (Private equity in Spain 2014), the volume recorded during the first nine months of 2014 was 38% higher than in the same period for 2013, with an emphasis on international funds, which account for 76% of the investment volume.



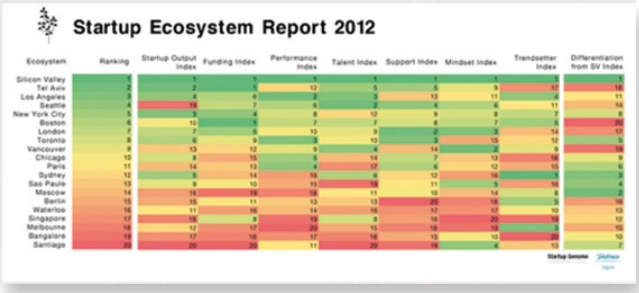
Evolution of invested and divested volume and number of private equity operations
Total investment - Volume divested at cost - Number of investments

The most important sectors in terms of investment volume are computing (47%), biotechnology/genetic engineering (10%) and medicine/health (8%).



Volume of investment – Number of operations by sector
Volume - No. operations
Computing - Industrial products/services - Consumer products
Agr./livestock/fisheries - Energy/natural resources - Chemicals/plastics
Financial services - Medicine/health - Hospitality/leisure
Communications - Biotech./genetic eng. - Transport

According to the international *Startup Ecosystem Report 2012*,[23] the best entrepreneurial economy is that which has the highest number of technology and software organisations.



Some of the key revelations of this report are:

- Even well-developed ecosystems such as those of New York and London suffer from a funding gap.
- To date, the success of Silicon Valley can be attributed partly to the attitude of its entrepreneurs. Silicon Valley's founders work longer hours than the rest, with working days of 9.94 hours. From the point of view of motivation, they are generally driven more by impact than by product.
- New York has established itself as the capital of women tech entrepreneurs. Nearly one-fifth of entrepreneurs in New York are women and it has double the amount of startups directed by women than Silicon Valley.
- Santiago de Chile is an excellent example of an ecosystem kick-started by policy makers, with an average of 4.81 mentors (nearly 25% more than in Silicon Valley).
- Silicon Valley has left a mark on global ecosystems for startups. Berlin (4%) and São Paulo (7%) have the lowest percentages of founders who come from Silicon Valley, and Singapore (33%) and Waterloo (35%) have the highest number of entrepreneurs who come from Silicon Valley.
- Although Singapore has a relatively sound funding environment, the risk tolerance of founders is the lowest of the twenty ecosystems.

Whatever the case, an entrepreneur must always learn from other entrepreneurs in order to

- Properly define the business idea.
- Identify the market to provide a differential value (what we call positioning).
- Define the economics and obtain the resources needed to start.
- And get started. With a flexible organisation, few overheads, a motivated team and global vision.
- And never forgetting inspiration.

2. New business models in the publishing sector

Being in permanent contact with technological disruption is the only means of identifying the opportunities that the new digital age offers us. In this new age, leaders must be constantly aware of innovation, the main trends and technological disruptions.

And according to Íncipy's e-book *Transformación e innovación digital,*[24] the most consolidated innovations are redefining the ways companies create, capture and deliver value to their customers, by incorporating digital products that complement traditional products or by changing business models through new opportunities from the digital environment.

Being in permanent contact with technological disruption is the only means of identifying the opportunities that the new digital age offers.

Íncipy's circle of innovation 2014 (clockwise, from outermost ring)
1.Wearable - Internet of Things - Crowd - Maker - Augmented Reality - Artificial Intelligence - Virtual currency and payment
2.Big data - Multiscreen - Relationship - Content - Apps - Geolocation - Gamification
3.Cloud - Real time - Social - Mobile

Nowadays, apart from the fact that communications are becoming increasingly more mobile, social and real time, and that cloud, apps, gamification and big data are four of the strategies with the highest growth in organisations, we need to be thoroughly aware of the twenty digital trends that will mark the next decade.

According to an article by Elena Gómez del Pozuelo, the 20 main trends of the digital age"[25] **are**:

- **Leadership with uncertainty**
- **"Chinanisation"**
- **"Dis-anonymity" and "omni-transparency"**
- **Collaborative economy**
- **Mobile everything**
- **Enjoyers**
- **Disintermediation**
- **Self-employment**
- **Wearable technologies**
- **Internet of Things**
- **Automakers**
- **More crowdsourcing and crowdfunding**
- **Digital "revolueducation"**
- **Disruption of the health system**
- **Disruption of transport**
- **Multicultural and smart cities**

- **Startup**
- **Micro-niches**
- **Digitalent**
- **"Anxitime" (time anxiety)**

Specifically, the digital revolution has had a particular impact on the publishing and content sector. The report by dosdoce.com[26] has enabled me to identify the new business models that the content sector is experiencing. These models can be applied to most of the economic sectors in the new **digital economy** and are *available to professionals of the publishing world.*

The new business models the content sector is experiencing can be applied to the rest of the economic sectors.

Some good examples of business models in the publishing sector which I share with dosdoce.com are:

1.- Micropayments
Payment for a product or service transaction. For example, payment for sliced content such as Slicebooks that allows eChapters to be downloaded, with a self-publishing platform for publishers or authors that makes it possible to re-edit, transform, slice up or combine.

2.- Pay-as-you-consume / pay-per-view
Pay as you view, consume or use. Examples include Wuaki[27] or Netflix,[28] a film platform that boasted more than 32 million subscribers in 2013 and has captured 2.25 million in 2014; Medici.tv,[29] a platform for viewing operas and concerts; Next Issue Media,[30] a platform for digital magazines; and Oyster,[31] with more than 100,000 books.

3.- Subscription
Recurring payment for the use or purchase of the product or service. Some examples are GameFly,[32] the Netflix of videogames, where you can rent one game for 15 euros/month or two games for 22 euros; Spotify,[33] which has 40 million users and 10 million subscribers who pay 10 euros per month; or the Freemium/Premium model of 10 hours per month free. The *Financial Times* has 665,000 subscribers, two-thirds of whom are digital, and the *New York Times* has 800,000 subscribers to its paper version. At 24Symbols,[34] Nubico[35] and Kindle Unlimited[36] subscribers pay a monthly or yearly fee of about 9 euros per month to purchase digital books.

4.- Membership
A business model based on sense of belonging, such as a club or community. The subscription payment includes not only the product, but additional services or privileges such as those offered by the digital publications Pando[37] on technological news or SLate[38] on current political affairs.

5.- Freemium-Premium
The business model par excellence in the social networks, where there is a free content and services part and another that is paid for as in **LinkedIn**,[39] **Womenalia**,[40] **Flickr**,[41] **Dropbox**,[42] **iCloud**.[43] Videogames such as **Angry Birds or Star Wars** have also used this business model.

6.- Inserted advertising
This is a variant on the Freemium model, in which the free part contains advertising.

In the case of **Ebookplus**,[44] the author is paid 35% of the advertising inserted in the books provided free of charge.

7.- Open Access
Open Access (OA) accounted for 50% of the articles in academic magazines published between 2008 and 2011 in most countries.

8.- P2P– MOOC
This model is part of the collaborative economy, exchange between peers. In the case of education, MOOCs (Massive Open Online Courses) have witnessed major development, such as **Khan Academy**,[45] with 70 million lessons and more than 2,500 tutorials on YouTube and a million students per month. Other examples in other sectors are **Uber**, **Cabify**,[46] **zypcar**,[47] **Blablacar**[48] and **Airbnb**.[49]

9.- Pay what you want or donation, such as **leedona.com**,[50] where you pay what you want for reading.

10.- Bundles of products or services, such as the **Humble Bundle** game packs.[51]

11.- Gamification as a business model that encourages customer conversion and loyalty. According to Gartner, by 2015 more than 50% of the organisations that administer innovation processes will use gamification.

12.- ecommerce. According to Paid Content, 39% of readers purchase from publishers' websites and 25% from authors' websites. In 2013, Internet penetration stood at 70% in Spain, 35% of Internet users purchased online and there were 85,000 online stores with 20% of visits through mobiles; more than 50% growth.

13.-Self-publishing. Self-publishing grew by 79% in one year in the United Kingdom. Book Country[52] is one of the first cases of a major publisher that created its own self-publishing platform, along with Amazon Kindle Direct Publishing[53] and Bubok,[54] an online self-publishing platform that makes it possible to edit, publish and sell books on demand, in both paper and digital format.

14.-Big Data. The big data model can be a good source of income for publications as a complement to advertising.

15.-Prosumer. Inviting your readers to recommend reading material. Such as First to Read,[55] which invites readers to read the digital "proofs" of forthcoming publishing novelties, or Red Lemonade,[56] where readers themselves can steer the course of a book through their recommendations and comments.

Just as Darwin stated that "it is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change", companies unable to adapt to this constantly changing world will not survive.

3. Startup-enterprise relations and relationship models in the publishing sector

Entrepreneurs and enterprises are the embodiment of innovation. Consumers' rapid adoption of digital innovation and the social networks and the evolution of technology are having a significant impact on all the business sectors and forcing all companies to devise digital transformation[57] projects aimed at successfully implementing an effective digital strategy,[58] but in most cases there are internal impediments to innovation.

(green) CUSTOMER EXPERIENCE Understanding the customer New digital channels Customer centricity
(blue) VISION AND LEADERSHIP Digital skills Governance and digital culture Big data
(pink) PEOPLE AND PROCESSES Employee centricity Digital talent recruitment Digitisation of processes
(turquoise) BUSINESS MODEL Digital globalisation New digital business models Digital innovation

Major corporations are struggling daily with their income statements and markets and it is very difficult for them to have the capacity to innovate and identify new business models. But they are pursuing an interesting line of action consisting in collaborating closely with new "digital native" companies in order to make the most of the business opportunities offered by the Internet.

Entrepreneurs address business challenges from a different approach; they are used to having organisations with few overheads and flexible teams, to making rapid decisions, to using shared knowledge, to creating innovative environments, to networking extensively, to speaking several languages and to being very independent – all in all to forging ahead with few resources and plenty of good ideas, as they always try and find a new way of solving business challenges.

Collaborating with startups allows traditional companies to understand the new digital economy and the opportunities to be had in this new environment.

Some companies and sectors have realised that collaborating with startups provides a competitive edge:

1. The **financial sector** has been one of the first to include and promote entrepreneurs. A good example is the Centro de Innovación BBVA,[59] which encourages innovation and entrepreneurship with the chief aim of bringing emerging technologies to the banking industry, society and people.

2. The **Telecoms sector** has also been highly active in supporting entrepreneurs and startups. **Telefónica** has focused part of its strategy on boosting entrepreneurship.

Within a short time, the seed incubator Wayra[60] has become one of the leading business accelerators of the ICT sector in the world. And Telefónica's Think Big[61] fosters innovation, entrepreneurs, the Internet and science.

3. The **energy sector** is also firmly realising that projects with entrepreneurs can be a lever for innovation in this sector: **Endesa** has launched endesa2244.com[62] with the aim of fostering initiatives and projects in response to the challenges of the energy sector such as energy efficiency, renewable energies on a small scale, intelligent networks, energy storage, automation solutions, low carbon emission technologies, ICT communication and digitisation systems, electric mobility and customer relations. **Fundación Repsol** has promoted a strong project aimed at entrepreneurs who have set up or intend to set up an enterprise in the field of energy efficiency: the Fondo de Emprendedores Fundación Repsol,[63] with the aim of promoting innovation and entrepreneurial development in the field of energy efficiency, supporting the creation of new enterprises, catalysing the involvement of private investors in creating and promoting new enterprises and in the search for and recruitment of talent, adapting research and innovation processes to market demands and vice-versa, stepping up public-private collaboration in R&D&I in Spain and encouraging the adoption of innovative energy efficiency measures with a particular social impact.

4. And, naturally, the **publishing sector** has already begun to identify entrepreneurs as good allies for changing the publishing industry.

The company dosdoce.com conducted a study entitled Cómo colaborar con *startups*[64] (How to collaborate with startups) which concludes that "publishers and startups are doomed to get on in order to take advantage of the business opportunities provided by the Internet. However large, small or specialised they may be, all publishers, bookshops or libraries need to forge alliances with one or several technological partners in order to survive in the twenty-first century".

Publishers and startups are doomed to get on in order to take advantage of the business opportunities provided by the Internet.

According to the abovementioned study, 88% of the startups polled claimed that their technologies provide publishers with value added services related to book sales (ecommerce of books on paper and e-books), and 84% offer technologies related to the visibility and discovery of books on the Internet. In other words, the statistics indicate that there is an oversupply of startups providing solutions related to ecommerce and online marketing, whereas barely 4% of startups provide technological solutions to other essential processes in the publishing world such as copyright management, in-house manuscript editing and the development of innovative business models such as those described.

A good example in this sector is the publishing laboratory Labo de l´édition[65] project run by

Paris council, which has created 20 startups in two years in three basic areas of the creative industries: new software, new platforms and new digital content in collaboration with major publishers.

Alliances between organisations and entrepreneurs are a competitive advantage, but it is important to define and identify entrepreneurs and their projects.

Another is the British publishing firm Pearson,[66] which has invested nearly 90 million dollars in acquiring 5% of Nook,[67] the technological spin-off of the Barnes & Noble chain of bookshops. Through its active policy of venture capital investments, this publishing group has invested in many education-related startups in the past years: OneSchool,[68] 750,000 dollars; MasteryConnect,[69] 1.1 million dollars; Verbling,[70] a million dollars; Desmos,[71] 800,000 dollars; Showme,[72] 800,000 dollars; and LearnZillion,[73] 2.4 million dollars. According to the study *Cómo colaborar con startups,* Pearson is a good example of how companies in the education sector should be aware of macrotrends in education, not to mention the **10 macrotrends** identified in the study El futuro de la educación[74] (The future of education); and collaborate in startups with projects in areas such as:

1. **Power Pupils**, empowerment of pupils.
2. **Happy & Healthy**, seeking personal wellbeing and skills.
3. **Lifelong Learning**, individualised cycles of learning throughout a whole lifetime.
4. **Lean Entrepreneurship**, without major investments.
5. **Techno-craft,** returning to individual creative work in the learning process.
6. **B-tech,** incorporating technology into models of learning.
7. **Gamification**, use of gaming in the learning process.
8. **We Care,** including human values in learning.
9. **Crowd Power,** incorporating the crowd or collaborative concept into the learning process.
10. **Agora,** learning not from teachers but from educational ecosystems.

These are a few examples of how alliances between major companies and entrepreneurs are going to become a competitive advantage for many publishers. But it is very important to define and identify those entrepreneurs and their projects very well.

4. New leadership for innovation and entrepreneurship

To compete is this new highly competitive and globalised environment where new customers choose to define themselves as active members, digitally proficient and connected in the commercial relationship: we must constantly pursue:

1. Excellent knowledge of customers.
2. An innovative customer service.
3. An extraordinary customer experience, co-designed with them.
4. Greater flexibility, connection and transparency of companies.
5. Employees with more training in the new digital professions and more empowered.

And, naturally, **exercising new leadership** with:

- Vision.
- Greater proximity.
- Transparency.
- Enhancers and boosters of relations, conversation and collaboration to encourage everyone in the organisation to contribute.

Irrespective of the different positions in a startup, there are a number of competencies common to all professionals in the digital economy, which characterise above all what **leaders of twenty-first-century companies** should be like:

- Ability to **learn continuously**, in order to process knowledge constantly, fit together data and information from very different environments and address new challenges. With a knowledge of new technologies.
- **Humility and a sense of belonging**, being capable of backing down and accepting others' ideas if they are better; without humility it is not possible to learn.
- **Passionate attitude**, discussing everything but also capable of changing with new data.
- **Teamwork and collaborative** capability, which is much more effective than futile individual efforts.
- **Communicative capabilities**, in addition to languages; especially English.
- **Open to innovation and questioning what is established.**
- **Leading a group of people to solve a problem**, and being capable of handing over power if they lag behind.

The five keys to open leadership are: humility, connexion, flexibility, innovation and a continuous learning capability.

5. Key aspects of a successful digital entrepreneurship strategy

Web 2.0 has empowered consumers and transformed the way companies need to relate to their customers, consumers, employees and stakeholders. People have more influence than ever, the possibility of being individual **media**. Only organisations – private or public, new or otherwise – that understand and engage in conversation with new users and their employees will be capable of retaining them and creating value.

> Only organisations that understand and engage in conversation with new users on the Internet will be capable of retaining them and creating value.

The key aspects for creating a successful **digital entrepreneurial strategy** are:

1.- Define your business model in detail. It is important to specify in detail each of the key aspects of the *business model* and ensure you are positioned in the areas of greatest growth and investment:

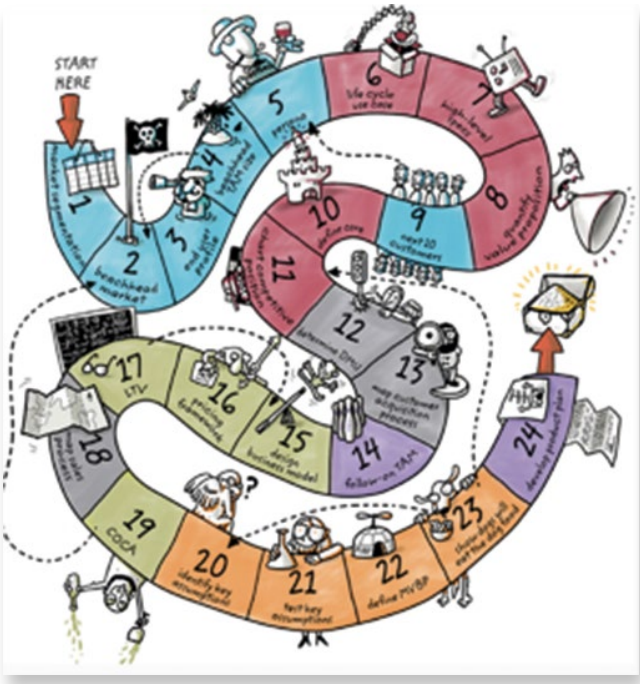
- Value proposition.
- Market segments.
- Customer relations.
- Channels.
- Sources of income.
- Key alliances.
- Key activities.
- Key resources.
- Cost structure.

(Clockwise from top:)
Value proposition Customer relations Market segments Income sources Channels Key resources Cost structure Key alliances Key activities
Businessmodelgeneration.com

2. Generate a differentiated and unique value proposition and try it out on a test market. It is important to be aware of our capabilities, identity the value we contribute to the market and focus our business model on areas in which we are truly unique. Create a product or service that provides evident value to people, solves an unresolved problem or provides greater efficiency, and do not leave out any important steps from beginning to end. I recommend the methodology set out by Bill Aulet[75] in his book *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*.[76]

Bill Aulet structures validation into 24 phases, which are listed below:

1. Segment the market.
2. Select an initial targeted test market that is accessible and representative (beachhead market).
3. Build the profile of your end user (who is not necessarily your customer).
4. Calculate the total size of your first test market.
5. Define the customer profile of your first test market.
6. Define your product's complete useful lifecycle.
7. Describe your product specifications in depth.
8. Quantify the value proposition.
9. Identify your next ten customers.
10. Define your core.
11. Outline your competitive position.
12. Establish unity of decision for purchases.
13. Outline the sales process up to customer acquisition.
14. Calculate the total size of the next markets.
15. Design the business model.
16. Establish your price structure.
17. Calculate the lifetime value of an acquired customer.
18. Outline the sales process for customer acquisition.
19. Calculate the cost of customer acquisition.
20. Identify the key hypotheses.
21. Test the key hypotheses.
22. Define the MVP, minimum viable product.
23. And show that "the dogs will eat the dog food".
24. Develop a product plan.



3. Make the customer or consumer the centrepiece of your strategy. Know in depth who your customer will be or is, what they are passionate about, and provide them with valuable content and information presented in an attractive way. You must be transparent in your communications, always listen and respond in real time.

4. Attract the best talent, involve your employees and incorporate an innovative and collaborative culture into your organisation. Surround yourself with the best. And never forget to apply one of the best pieces of advice I have received from my partners: "Hire slow, and fire fast". Train your partners/executives in digital innovation, in acquiring sufficient digital skills to allow them to experiment in this new economy. Also train all your employees, as all areas of companies are witnessing how their environment is undergoing transformation. It is recommendable you establish corporate social networks to share knowledge and deepen the sense of belonging. And share progress with them and with the whole team.

5. Define and implement a social media strategy geared to creating emotional links with your customers. Identify where your target audience is, which channels are relevant to the strategy and what the role of the social networks should be within your digital strategy.

5. Create the website or app from the user's point of view and extend its content to a network of media. Always think about your user's experience of use. Extend your own content and content that appeals to your users in a blog, social network profiles, a LinkedIn group, microsites, other apps, etc.

6. Define and control key performance indicators (KPIs). We should not begin any digital business without defining the objectives and measurement indicators as a cost of customer acquisition, conversion, indicators of influence… It is important to create a dashboard with the key indicators of the strategy as well as the digital business processes. And it should be possible to obtain information in real time.

7. Define and establish active listening and online corporate reputation management. Whether or not you have an active Internet presence, people talk about your brands, products, services and even your team. You should monitor who talks about you and where, and what they say, and devise a reputation and crisis management protocol. Don't let others act on your behalf.

8. Define and establish a customer relations management (social CRM) and customer experience management (CEM) strategy. Define multichannel and customised digital content in order to establish relations with your potential users and start up a relationship with them, and purchasing will happen spontaneously. Define a plan for contacting your customers, through which media and at what time and why you wish to communicate with them. Don't forget that the main objective of your management must be to create customer-promoters who are not just your customers but are willing to recommend you. You must discover which and how many customs recommend you (promoters) and orient yourself to them. A customer who makes recommendations is worth 81% more to the company than a passive customer.

9. Make your business grow with a digital strategy of recruitment, conversion, loyalty and bonding; integrating "the physical" with "the digital". Implement a digital and multichannel marketing plan based on a natural positioning, giving priority to being found. Develop a plan for digital and mobile media in line with your objectives, which can be branding, capturing traffic, leads or sales. And don't forget to integrate non-digital actions into the new opportunities the digital world provides.

10. Never stop innovating. Create open innovation processes with your employees and customers. Co-create proactively and also incorporate your customers into your R&D&I process.

And never forget that you must start off gradually, that the best way of learning is by trial and error. And as **B. J. Fogg** aptly pointed out, you learn more about "winning" when you lose. Winners don't always win, but they always learn.

I would like end by sharing a thought that never fails to move me when I listen to the address given by Steve Jobs[77] at Stanford University during the opening of the 2005 academic year, and which I share with **my entrepreneurial students** year after year.

Your time is limited, so don't waste it living someone else's life. Don't be trapped by dogma – which is living with the results of other people's thinking. Don't let the noise of others' opinions drown out your own inner voice. And most important, have the courage to follow your heart and intuition. They somehow already know what you truly want to become. Everything else is secondary.

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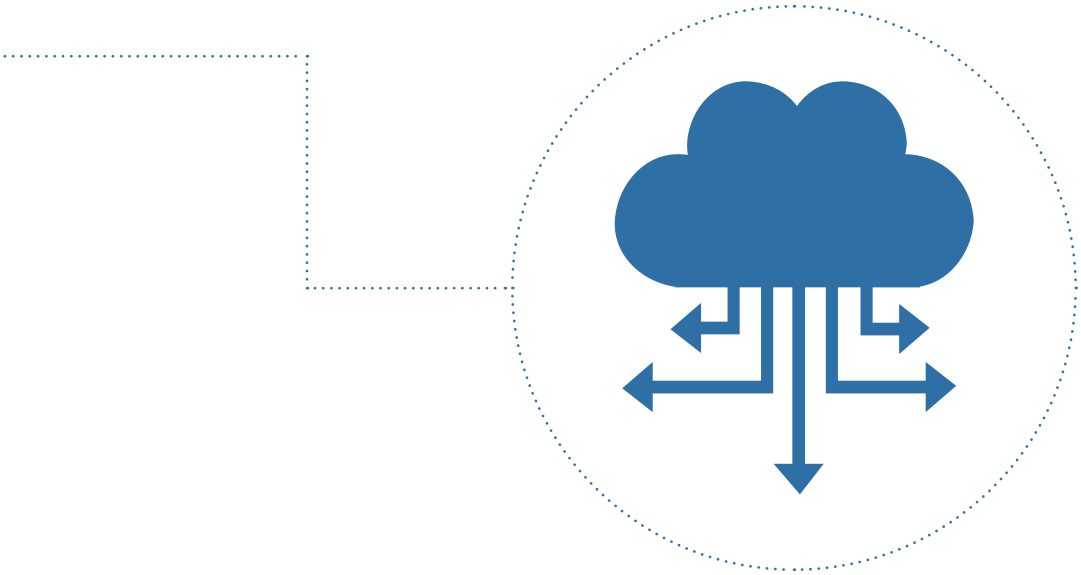


Marta Rodríguez is an intrapreneur at heart. She has worked at Increnta since 2013, directing the Madrid office and becoming an inbound believer day by day, but above all she absolutely loves creating lasting relationships.

For fourteen years she was general manager of the Spanish subsidiary of Mediaprism (a French communications group specialised in digital and relational marketing, oriented towards ecommerce, digital presence and databases and present in five European countries), which became part of the La Poste holding company in 2011.

She was a member of the executive committee and managing board of the Asociación Española de la Economía Digital (ADigital) until mid-2014.

She is a tireless fighter who adores digital strategy and the potential that lies in creating relationships with people.

Inbound for the cultural world

Marta Rodríguez, @MartaRodriguezA

Old marketing in the cultural world

I have read that back in 1967 Philip Kotler began examining in depth the importance of cultural organisations (be they museums, concert halls, libraries or universities) managing to attract audiences and resources, and how this could be done with a fully articulate marketing plan.

Around the same time, Colbert also spoke of the importance of realising that cultural objectives lie in inviting the greatest number of people to engage with the artist's work and that the initial aim should not be economic, but to steer them towards learning about and appreciating the work – a task related to the dissemination and mediation of culture. Following this latter thought, several objectives can be identified with respect to what I will discuss further on when referring to "conversion" in the cultural world:

- The artist's creativity: objective based on satisfaction from executing his/her work.
- Recognition of colleagues and critics.
- Making sales.

Evidently the dissemination and mediation of a cultural product such as a work of art should not be the same as selling the product with the aim of optimising profits. This is precisely the differentiating factor: if a product falls short of expectations, it is withdrawn from the market – something that does not happen in the case of cultural entities, especially museums (as Colbert explains).

These marketing plans and objectives are wholly centred on the work and on the artist's recognition. Therefore, when I speak of old marketing, I am referring to how, in the cultural world, the market approach has not taken into account the people who come into contact with the work or with the artist.

Centring digital activity on promoting cultural products or services means not thinking about the receptor of your messages or – what amounts to the same thing – interrupting, as sales messages or action are the chief concern. This has led to budgets being directly invested in buying traffic… in buying customers.

Without a doubt, this way of working in the digital world has reaped very good results for the cultural world in the past. The results were immediately apparent, and you knew that if you invested one euro you could easily earn five euros. However, these results have been shrinking year after year and nowadays it is not hard to find that an investment of one euro earns you only 0.8 euros.

What is happening?

The development of the Internet has radically changed our way of buying… and of consuming cultural products and services.

Only a few years ago, purchasing depended almost totally on the commercial activity of one person: the company's salesman. Today such a situation seems almost inconceivable, but up until not long ago, companies' commercial activity depended solely on the talent and skills of their sales team. Not only were this team important for their ease and skill in completing business deals: they were of paramount importance to companies, as they were the only ones to gauge people's opinions; it was they who had direct contact with them.

Today 70% of the purchase process is performed without any direct contact whatsoever with the company.

Today, however, nearly 70% of the purchase process is performed without any direct contact whatsoever with the company. This buyer's journey – the process from the moment we identify a need, problem or opportunity until we make the decision to purchase – has been transformed by the proximity of the digital world, by the possibility it grants us of making our own decisions, seeking, comparing and sharing experiences with other people.

It might be said that we are in control as consumers. We often know even more than companies' sales team.

As consumers of culture, we want to take the initiative. We seek, compare cultural leisure plans and are capable of making a comparative decision. Today we can no longer say that digital plans should be based on buying attention; rather, we must focus our strategy on how to make ourselves significant.

A study published by dosdoce.com[1] lists a number of points on how companies belonging to the cultural world are analysing ways of embarking on the new forms of communication and how important good Internet use is:

- For promoting art in general (81%)
- For boosting the engagement of the public (78%)

Like other sectors, the world of culture needs to think further ahead, as marketing aimed at selling more and disseminating work is not enough: what about the possibility of forging lasting relationships? What about the unique experiences people are seeking?… Basically, how do we factor in what people want?

In other words, the cultural world urgently needs to make people not the product the centrepiece of its digital activity in order to attract attention, speak of relationships and dialogue and achieve two-way communication so that we can constantly adapt how we present products and services to the market… as consumers need them.

Companies in the cultural world are naturally generators of content and for a long time, owing to the development of content marketing, the cultural world has been capable (thanks to the content it naturally generates) of enticing audiences interested in keeping abreast of news related in some way to the cultural industry. But, as we shall see in due course, they have limited themselves to constantly stressing the awareness phase, venturing no further.

PRODUCT/SERVICE CENTRIC	CUSTOMER CENTRIC
Interrupt	Attract
Fight for attention	Relations
It doesn't matter what you need,	Solutions
I'll show you what I've got	Dialogue
One-way	Help
Versus	Two-way

Digital challenges in the cultural world

But the world of culture cannot remain on the side-lines of this digital revolution that is directly affecting how these cultural products are consumed and, accordingly, access to art and culture from any point of view.

> Companies in the cultural world generate content, but have limited themselves to stressing the awareness phase, venturing no further.

Continuing with the reflection on the cultural world's need to make people the centrepiece of their digital activities, this entails coming to

terms with the fact that the cultural product or service is no longer the main focus of the conversation.

We are aware that every day millions of people switch on some device or another to consume information. Cultural companies (music, film, theatres, museums, books…) cannot afford to limit their presence in the digital world to catalogues of what they have to offer. These companies are experiencing how capturing (an increasingly difficult task) the attention of people in order to "launch" their offering is failing to achieve the twofold goal of Internet growth:

- Launch the right offer at the right time, to the right person.
- Create your own conversion cochannel.

It might be said that, unlike in other sectors, the desired conversion in the cultural world should achieve this threefold aim:

- *Information*: the user must be aware of the existence of the cultural product or event (and, if appropriate, basic information on the address, characteristics of the work, times, current exhibitions, collection, entrances, added services, etc.).
- *Persuasion*: the person must be convinced of the need for the cultural product or event (e.g. attending the exhibition) using arguments consisting of emotional aspects (we are talking about art) and also rational aspects. All this in order to underline the prestige, recognition and intangible values derived from acquiring the literary work or attending the cultural event.
- *Education*: provide consumers with the intellectual tools and interpretation codes they need to be able to evaluate the artwork in a thorough and, above all, emotionally satisfying manner.

Over and over again we hear that concepts once so widely used such as B2B or B2C have disappeared, replaced by new concepts such as H2H. I have always thought that there is nothing that makes more sense in the digital world than to be thinking about an ongoing dialogue that can only achieve its height of development with H2H. A person with sensitivity and emotions speaks to another with sensitivity and emotions.

In the culture sector the emotional component is one of the most important aspects at each stage of the purchase process.

We should not lose sight of this point in the cultural world, where the emotional component is one of the most important aspects at each stage of people's purchase process: dialogue is the basis for detecting these emotions, which will allow faster progress along the path to conversion.

The world of culture must adapt to this new form of consuming information. The change that should undoubtedly be established as a basis is the purchasing experience: what culture is capable of making people feel. This experience

should be the epicentre of each and every action in the world of culture.

Some of the challenges faced by several of the digital culture sectors, all focused on creating this user experience, are listed below.

Digital reading

It is a fact that digital editions of a book provide completely different experiences from reading a print book. If we further consider the growing penetration of mobile technology (tablets and smartphones), the publishers of books, magazines and periodicals should, at least, be capable of providing content on several mobile platforms in order to offer a broad variety of digital channels.

Why do readers prefer digital editions? According to a study by The Mobile Magazine Reader,[2] the reasons are:

- Easy access to additional content and articles related to the work (70%)
- Portability and possibility of storage on the same device (53%)
- Interactive features such as videos, photo galleries and 3D views (40%)

And additional reasons given by a study conducted by Axel Springer[3] are:

- It is more fun (62%)
- Multimedia experience (78%)

And what if digital technology were to engender a new and different distribution model at a fraction of the cost of the current industry and were to offer content in both physical and digital format directly to the reader at any time and place? Actually, the main aspect of the fundamental challenge posed by this digital revolution in books of offering unique experiences is alien to the paper medium, as how we relate to print books has also changed radically.

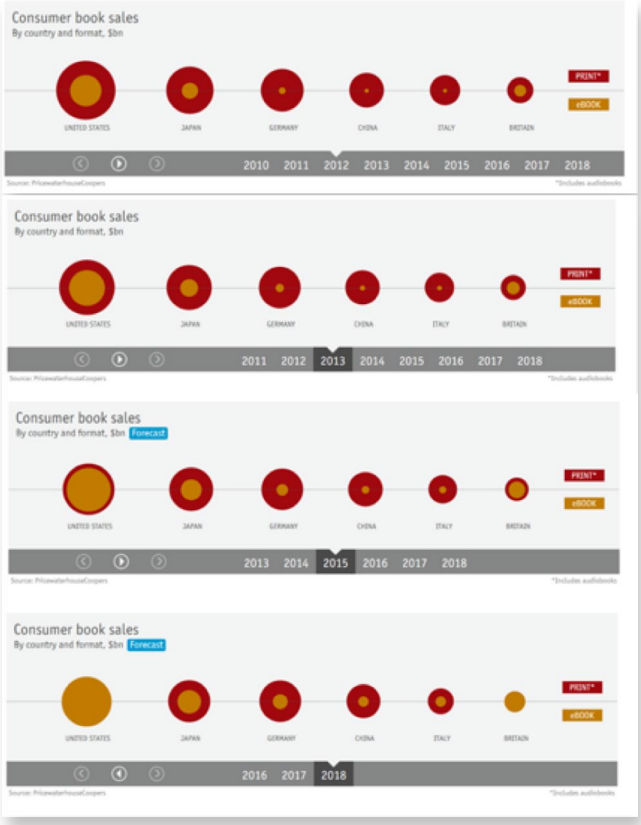
Today building a permanent relationship with readers is a basic challenge that is fully achievable in a digital strategy.

Therefore, the challenges faced by the book world are related not only to changes in reading habits or the emergence of a new type of social reader, but also to the appearance of major operators such as Google Books and Amazon, which are doing away with some of the intermediate links in the chain.

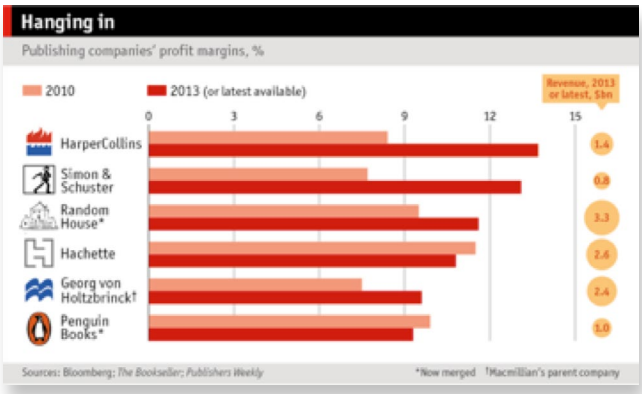
My question here is: the technological disruption during reading and in how it is accessed is fully clear, but what about before reading? In my view, one of the most important challenges in the book world lies here too: how can I reach readers or possible readers of my work in a completely digital world, where relationships and the desire to compete prevail?

The following graphs taken from a study by the *The Economist*[4] clearly show how experts in the

book sector regard the development of book sales:



I find the development in major publishers' profit margins, published in the same study, to be equally explicit:



I therefore regard the main challenge of the book world as being able to adapt quickly to these immediate changes that are occurring in the approach to reading and authors.

Nowadays building a permanent relationship with readers is a basic challenge that is fully achievable in a digital strategy.

Museums

The main challenge museums must address today is being capable of creating new audiences, while managing to maintain their existing audiences and encouraging the latter to adopt a more active attitude.

Demand for interactive experiences in museums and art galleries is also a fact. Technology is therefore essential to achieving this interactive experience that audiences seek during and after the visit.

Another of the principal challenges thus lies in being able to harness the power of the Internet to work on user experience, for example by:

- Encouraging live streaming of events (such as exhibition openings) and the creation of video channels.
- Providing recordings.
- Facilitating file downloads.
- Offering spaces personalised according to interests.

- Holding educational sessions (all ages).
- Downloading gadgets.
- Allowing access to collections.
- Facial recognition.
- Smart sensors.
- Recommendation systems based on real satisfaction.
- Interactive applications for mobiles.
- Fostering social networks as a mouthpiece for created content and as a means of interaction.
- etc…

My thoughts on this are along the same lines as for the major challenge of books: what about beforehand? How can I orient digital strategy and technology towards capturing new audiences and getting them to visit museums and art galleries, working with the three aims of culture in general (information, persuasion and education)?

Music

In the culture sector, music has always been at the forefront of the digital revolution, as among other things it has led people all over the world to adopt streaming and subscription models quickly.

It is a fact that the Internet is a world full of options for music lovers, offering a flexibility and access that were hitherto unimaginable.

Music companies have also realised the huge potential of the Internet as a now essential means of promoting their music (by watching and also rating videos, for example) and of learning about people's preferences.

The main challenge museums must address is being capable of creating new audiences and encouraging them to adopt a more active attitude.

Once again, the fundamental challenges in the music world revolve around the ability to create interactive experiences:

- Hyper-segmentation and adaptation of language to people.
- Attracting new audiences.
- How to make music sales more attractive.
- How to play with music prices in exchange for promotion in networks, etc…

It is expected that by 2016, within just a year's time, more than 30% of the population will have a smartphone in an environment in which operators compete to establish a new model of mobile music consumption (some two billion people will have become potential users of digital music), according to the *IFPI's Digital Music Report 2014*.[5]

The digital music experience has shifted quickly from listening on computers with landline connections to listening on mobiles, tablets or other devices while carrying out some everyday activity. The growth of the music industry in the digital world is so fast that in only three years digital revenues from advertising-funded subscription and streaming services have gone from a low 14% to 27%.

I personally believe that, despite the major challenge of adapting to the change of model brought about by modifications in consumption habits and how music is accessed, music is enjoying one of its best moments: as it is more accessible, people listen to more music, and it is more present in other media, in ringing tones, etc…

In only three years digital revenues from advertising-funded subscription and streaming services have gone from a low 14% to 27%.

Therefore, the fundamental challenges lie both in the companies that provide these services and in artists, whose work is reaching more people.

Music, more than any other component of the culture sector, has gone from being a product to a service, where the Internet plays the leading role as a platform for "mouth to ear".

As previously, I am reflecting on this while aware of the challenges of promoting and capturing new audiences: is being able to work throughout the cycle of people's access to music not one of the main challenges? Is it not quite a challenge to be able to work on creating unique experiences even before the person learns about my music product? How can I find out the extension of the network of the person who comes into contact with my music, so that they spread it, in turn, to their friends and circles?

Once again, all these challenges revolve around the ability to get to know the person and to establish a lasting relationship with them.

Scalable models for digital strategy in the culture sector

The culture sector is assimilating the impact of the Internet and new technologies and trying to understand this new environment, as well as attempting to identify, together with the content industry, new business models.

How "transmedia" publishing content will be consumed, who will create new cultural content and how, what the effect of new digital relations between writers, readers and publishers is… who will be the new Spotify for books and how, what new economic models will emerge, how creators' rights will be protected… As stated earlier, these are just some of the main challenges that must be addressed.

But, as is often the case, what for some is a gloomy outlook for others is a major business opportunity waiting to be discovered. Over the past ten years, although many companies in the culture sector have undergone drastic changes in their business model, the rise of the Internet has marked the beginning of the decline of a model for some, and the beginning of a comeback for

others. Before going into further detail, a few aspects should be clarified:

a) A scalable model allows the cultural entity to grow exponentially, adapting effortlessly to the changes that progressively arise from this digital revolution. This, as I shall explain in the next section, is achieved by devising a digital strategy based on establishing relations, on creating an ongoing dialogue. The raw material from which to build this ongoing dialogue is content (I will also explain how this raw material should be built later on).

b) The value chain of the publishing process has been broken: or rather, we might say that it has expanded. A few years ago, writing quality content significant to a particular readership was the private preserve of writers, and creating a video was for professionals only… but nowadays anyone is just as capable as culture industry professionals of generating contact with a direct impact on other people (and on the buyer persona, a key factor in the culture sector, as I will explain in due course).

c) The automation of processes provides new cultural opportunities based on deepening personal relations between brand, product, event, service and person. In other words, current technology makes this digital dialogue possible.

d) There are many opportunities for creating social networks or vertical communities in the field of digital culture: TalkHouse, BookCountry and Seed&Spark.

e) The cultural and creative industry must begin making an effort to learn much more about its audiences, about people. I will again stress that although people's buying habits have changed radically and online customers have become very demanding, they are also much more loyal to the brands that truly inspire their confidence.

A cultural entity grows by creating a digital strategy based on relationships and ongoing dialogue with the user based on content

Having examined all these aspects, which we will take as a point of departure, I will now describe the essential aspects for building a digital strategy that can be scaled to the culture sector:

1.- Creation of the base working model.
The first step in shaping a scalable model is to create a backbone with which we can progressively implement, apply, grow and dialogue through an initial starting document that should establish tactical aspects such as the customer's competitive situation and that of the sector, and a calendar of action (content, social, automation, workflows, etc.).
The next step is to set the objectives by aligning the objectives of this new digital channel with those of the cultural business, and by having a clear comparative evaluation of sales and marketing metrics and being capable of designing the sales and conversion funnel.

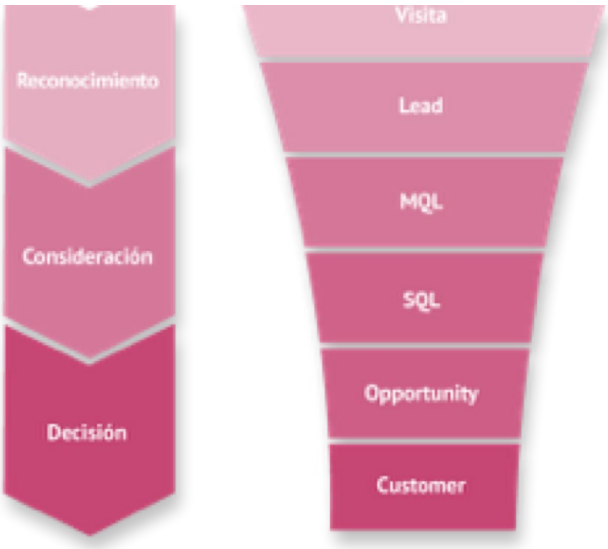
In this construction phase, it is essential to be capable of defining:

- The company's conversion funnel, clearly defining the phases.

- The buyer personas.
- The workflows, or relationship paths that will exist in each buyer persona.
- The buyers' journeys.
- Objectives for each phase.

2.- Continuous optimisation of digital assets
Once these features have been fully created and defined, we must set about optimising and creating content in order to give meaning to each phase, and contributing to the progressive completion of the workflows.

We must therefore be capable of generating and optimising content (placing it in context, as I shall explain in due course) and aligning the conversion funnel with the buyer's journey.



Awareness
Consideration
Decision

This scalable model that should be applied to companies in the cultural world, based on establishing relationships with the people who are or should be drawn into our digital ecosystem, is called inbound. It provides a different approach to the market, as we have seen: working to attract them, get to know them, talk to them and accordingly identify moments and opportunities constantly over time. In the culture sector inbound means creating a digital strategy capable of attracting the people who wish to come into contact with your cultural products or services.

Why an inbound-based digital strategy for the cultural world?

The answers to the above thoughts lie in the ability to implement a digital strategy for each of these cultural activities based on creating unique relationships and experiences at each stage of the cultural sales process.

How can these challenges be successfully addressed in the cultural world?

> Creating people-centred relationships or dialogues (inbound) makes it possible to enrich conversations, detect changes and adapt to them.

Statistics show that more than 90% of purchases stem from Internet searches and that search results beyond the third page are rarely viewed; in other words, if you really want to be found,

you need to be among the top 20 Internet search results.

The first point of this article spoke of how ineffective it is today to employ old marketing tactics centred on the product or service.

If I had to sum up the reasons why establishing people-centred relationships or dialogues (inbound) is much more effective than old marketing (or interruption marketing), they would be as follows:

- More than 80% of people skip TV advertisements.
- The number of companies that claim that Facebook is important to digital business has increased by more than 80% over the past two years.
- Two-thirds of companies claim that their blog is vital to their digital business.
- 67% of B2B companies and 41% in B2C have gained customers through Facebook.
- 57% of companies have gained customers through their blog.
- 42% of companies have gained customers through Twitter.
- 57% of companies have gained customers through LinkedIn.
- Three out of every four inbound channels cost less than any old (interruption) marketing channel.
- Inbound marketing actions cost 62% less than any other old interruption marketing channel.

(Blog HubSpot)[6]

But without a doubt, the main reason for embracing inbound marketing as a digital strategy in all sectors in general, and in the cultural world in particular (owing, as examined previously, to the huge need to create relationships), is the considerable growth in ROI.

Inbound marketing tactics not only generate many more leads; they also generate income. And as the Internet continues to revolutionise how we buy, find information, sell and engage with brands, marketing accordingly continues to change and, as mentioned earlier, develop the digital scalable model. Inbound marketing in the cultural world makes it possible to create an ongoing dialogue that allows us to adapt ourselves to conversations and detect and adapt to changes. The days of annoying and interrupting people with intrusive advertising are coming to an end.

The best way of building a scalable inbound model is to market the effect the product or service has on people.

The new age of inbound marketing is based on offering added value and attempting to earn people's trust.

The inbound marketing process uses a broad variety of techniques to create opportunities and generate conversations.

The best way of beginning to build this scalable inbound model is to stop "marketing products" and start marketing the effect the product or service has on people, creating a dialogue with them in order to ascertain how to make decisions on the cultural product, investing in creating content that educates and accompanies people: the goal is to become their best advisor in order to help them see the best solution clearly.

Implementing an inbound strategy thus entails:

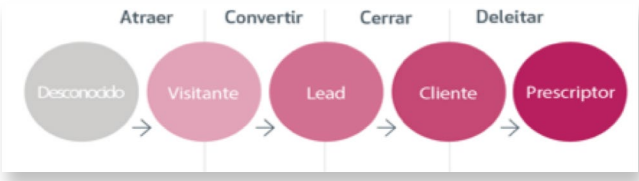
- Building stronger relationships.
- Achieving differentiation.
- Investing less money and achieving much better results.
- Fast scaling through marketing automation (which I shall explain in due course), as it allows you to work on the different stages of the buyer's journey simultaneously.

In the world of culture, it is essential to realise that the time has come to stop deciding what people must consume and stop talking about products or services: working with inbound strategy in the culture sector means ceasing to decide for others and helping them decide instead.

So what do we have to do? We have to become what people want to consume, become part of the conversation to detect what they want and how they want it and, more importantly, be capable of detecting the "momentums" at which people are willing to receive the sales message – which means supplying people with information and accompanying them on their personal journey.

In other words: making people the centre of all activity (this means thinking about their dreams, opportunities, challenges, problems, fears…), detecting how we are capable of creating dialogues or relationships, giving them decision-making power and unique experiences. We thus create an inbound-based digital strategy, which is none other than a market approach based on the natural attraction of people who want a relationship with me, continually over time, as stated previously.

This is what an inbound model is: a unified and coordinated strategy based on marketing content, oriented to users' natural attraction in a continuous manner and to customer loyalty, making use of automation, gauging and constant optimisation of actions.



Attract - Convert - Complete - Delight
Stranger - Visitor - Lead - Customer - Influencer

I must approach people in a completely different manner depending on what stage of maturity they are at with respect to my product or service, accompanying them during the discovery, the options they find, and what this means in their

life. In order for this to be possible, there must necessarily be a dialogue.

Awareness - Consideration - Decision

This dialogue must also be adapted to each buyer's digital journey.

We will now take a look at the most important elements of an inbound-based strategy, which must be built on firm foundations as I commented in the previous section on building a scalable model.

These basic elements that must be built into the inbound digital strategy for the culture sector are:

Conversion funnel

A predictive analytical model used as a pipeline forecast and a mechanism for tracking the times and phases each person goes through when they interact with us.

I have already pointed out that companies in the culture sector are naturally generators of content and for some time now this content has been capable of attracting audiences interested in keeping abreast of news that is related in some way to the culture industry; however, these cultural companies have focused their marketing effort on launching sales messages to people who may not have identified the opportunity or the name of this opportunity and were beginning to have contact with the company or cultural product… without yet knowing their motivations or the challenges or opportunities we might discover in these people. That is, we still see how messages on finalising cultural plans or on the sale of cultural projects that should only be sent to people at the bottom of the funnel (BOTF) are being sent to people at the top of the funnel (TOFU).

> The inbound model is a unified and coordinated strategy based on marketing content, oriented to users' natural attraction in a continuous manner.

One of the secrets thus lies in supplying quality content to the funnel (the company therefore requires in-house professionals capable of producing it or must work with an agency that can create it for them): being able to create significant, independent and contextual content that can help potential customers make complete information decisions. In other words, the winning formula is to be capable of gradually adapting to the funnel (context) with increasingly interesting content that helps each person make decisions.

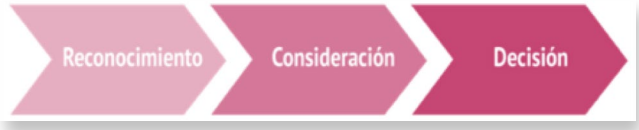
Certainly, being able to set aside a budget for pre-awareness campaigns (i.e. display advertising) and orient it towards lead-generating campaigns, identifying the name of the opportunity, in order to make decisions so that consumers advance along the funnel and their buyer's journey poses quite a challenge to companies in the culture sector.

An inbound-based digital strategy thus consists in being able to build each company's conversion funnel at this prior stage so that we can outline the workflows in order to succeed in attracting people to our digital circuit, converting them into leads and managing to complete the sale, and maintaining a relationship with them over time.

At the same time, this funnel full of workflows (relationship pathways with the different buyer personas) should be aligned with the buyer's journey of each of them: the information pathway that each person progressively needs in order to progress in decision making.

Buyer's journey

Irrespective of the themes with which we have managed to attract different people's attention to our digital ecosystem, we must be capable of understanding the process of the buyer's journey:



Awareness - Consideration - Decision

- At the awareness stage, the consumer begins to experience symptoms of a fear, problem, hope or opportunity. It therefore falls to us to understand this fact and give it a name. We must know how to speak to people who don't know they need us. This is only possible if, as commented at the start of this article, we are capable of changing our approach to the market by solving problems or locating opportunities. As people do not yet know they have a particular problem or opportunity, we must help them discover it. To achieve this awareness in the cultural world, the message must be closely linked to the emotional aspect, but the focus must always be on the person and not on the cultural product.

- At the consideration stage, people have put a name to their problem or opportunity. Therefore the aim here is to be able to understand all the methods and pathways for solving the problem or addressing the opportunity. As at this stage the person is not yet sure of what the best solution is, we must help them through this type of content to detect possible solutions or names for these opportunities. A sales message at this stage can badly damage our chances of success in winning people's confidence in us as reliable dialogue partners for helping them locate these solutions.

- Lastly, the decision stage is when the person is willing to make up their mind, and we must help them make this final decision. Here they know what solutions there are, and have identified those that best suit them, and the task here consists in succeeding

in proving to them that we are their best option. At this stage it is "permitted" to speak of the cultural product or service, but it is very important to have tailored it to the person and their problem or opportunity.

To achieve recognition in the cultural world, the message must be linked to the emotional aspect and focused on the person, not the cultural product.

Most cultural companies do not bear in mind these stages in their market approach and they carry out "push" campaigns at stages where no type of dialogue had been initiated (another characteristic of the old marketing commented on in the first section).

When people do not know that your product or service exists, it is no longer any good simply telling them to buy your product, because your brand or service does not yet matter to them.

The importance of building this buyer's journey in order to approach people through it thus lies in being capable of creating this meaning and emotional feeling about your brand/cultural product, guiding people along these three stages.

In an inbound strategy for the cultural world, each of these three stages requires different messages for different people, which means that the three stages should not be addressed for people of all kinds with a one-size-fits-all message. The challenge thus lies in building different messages for different people on the web, networks, etc.…

The idea is to get them to experience and feel the need before addressing your product, that we care and are concerned about the decision you make.

Content in context

In the inbound methodology it has always been stated that content is king. If content is king, in the culture industry music is its soundtrack, and stories the source of inspiration.
I have already explained how good content makes it possible to help each person progress through the conversion funnel and along their own buyer's journey. This means being capable of constantly generating opportunities in the form of qualified leads. From the point of view of content strategy, it is necessary to think strategically, not tactically.

Therefore, when we speak of creating content, we mean creating content on the themes that interest each person, aligning it with:

- The **buyer personas**.
- The stage they are currently at on their **buyer's journey**.
- The stage of the **conversion funnel**.

"Offers with specific content are more relevant to buyers at specific times within the buyer's journey." (source: DemandGen)

Evidently the channel in which you put this content into context also plays an important role.

It is also vital to be able to build this plan into the inbound strategy in companies in the cultural world, as being capable of choosing the right channel for each person will ensure it is read and adapted to the definition of the model we have designed at the all-important construction phase.

Buyer persona and workflows

I pointed out at the beginning of this article the importance of shifting from the old product- or service-centred marketing approach that was used by companies in the culture sector to an approach based on people and their fears, hopes, opportunities, challenges or needs… in order to create lasting relationships that make it possible to establish dialogues.

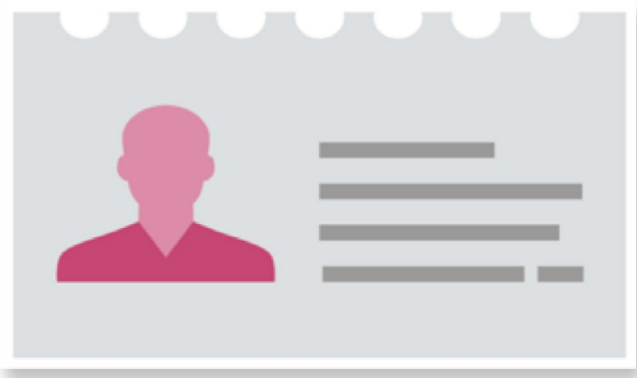
One of the most important points in the construction phase of the inbound model for these cultural companies is to be capable of creating buyer personas: semi-fictitious representations of our ideal customer based on personal and demographic data, behaviour patterns, motivations and targets.

It is important to be capable of defining and creating buyer personas: semi-fictitious representations of our ideal customer based on personal and demographic data.

This involves trying to look through the eyes of the buyer persona we have created in order to match the content to the dialogue so that we are capable of differentiating the cultural offering, while seeking to give a name to opportunities and moments, as an inbound-based digital strategy is a constant pursuit of opportunities.

We must clearly define and, accordingly, build on:

- Who these buyer personas are at an initial stage and.
- Create the buyer's journey for each buyer persona.
- Establish the workflows we are going to create throughout the buyer's journey of each buyer persona.
- Be alert to the appearance of new buyer personas for new cultural products.
- Identify the content we must progressively offer, adapted to these workflows of each buyer persona.



It is important we have a clear idea that developing an inbound strategy means accepting that the buyer personas we have defined and built at

certain moments in digital life will disappear, change or evolve. In the cultural world more than in any other, the dialogue created should help us remain attentive to any change in consumer habits: methods of payment, forms of leisure, free time, etc., that have a direct effect on how culture is consumed, whether it is books, films, shows, etc…

Therefore, I again stress, although being able to create these buyer personas at the initial moment of establishing and building the inbound model is all-important, we must be willing and prepared to allow it to evolve towards constantly modifying how we present solutions or opportunities for our products and services with respect to developments in buyer personas' habits.

Automation tool

Nowadays it is possible to ensure that technology goes hand-in-hand with marketing. Thanks to this technology, it is possible to create a digital dialogue on the basis of which companies in the cultural world can constantly adapt how they present their products or services.

> Thanks to technology, the culture sector can create digital dialogue and adapt how it presents its products or services.

In a digital strategy based on creating constant and lasting relationships by working on people's natural attraction (inbound), the automation tool is another key aspect, on a par with creating content in context.

There are several automation tools on the market:

It is very important to realise that this tool should not be adopted from a technological viewpoint: it should be regarded as a means of meeting all the challenges dealt with in the previous sections – i.e. always focusing on establishing dialogue with the person who joins your ecosystem in some way or another – and should therefore make it possible to:

- Obtain full information on the behaviour of each person (anonymous or otherwise) with respect to the digital assets we have progressively created.
- Cross check information constantly with what each person tells us they prefer or like (the answers they progressively give us as a result of the workflows we have established).
- Cultivate a relationship with each of these people.
- Automate marketing processes.
- Boost communication efficiency and effectiveness.

- Integrate with social networks.
- Measure the engagement and outreach of the content created.
- etc.

According to HubSpot[7]:

- Companies that use the Hubspot automation tool receive, on average, more than three times as many monthly visits during the first year compared to the results of not having this automation tool.
- They get 6.12 times as many leads.
- 69% of HubSpot clients find that their sales revenues increase the first year it is introduced.

Technology as a lever

In the culture sector it is essential to be able to handle user contact bases and information of very high value (owing to the importance of emotional information). And as the culture industry should embrace a "consumer-centric" and "relationship-marketing" philosophy by making the consumer the centrepiece of the communication message, it is vital to be able to adopt CRM and marketing automation tools that help foster a relationship of trust between brand and consumer.

Marketing automation and CRM differ in strategy and functions. I will examine briefly the main differences:

1. Objective
The main objective of CRM is to exhaustively monitor opportunities, the pipeline, and to manage contacts and account information.

The aim of marketing automation is to develop relationships with customers, automate processes derived from digital strategies and measure the ROI of your campaigns.

2. Focus
CRM is designed to be used by the business department, whereas marketing automation is aimed more at the marketing department (though both departments can benefit from both tools).

3. Communication
CRM boosts two-way communication (vendor-buyer). Marketing automation focuses on group and segmented communication (though it can also be personalised, depending on your potential customer's needs).

4. Philosophy
The philosophy of CRM is based on optimising databases and transaction searches related to sales processes, whereas the philosophy of marketing automation is oriented to creating workflows and to gleaning highly detailed information on the behaviour of your different buyer personas.

It is essential to adopt CRM and marketing automation tools that help foster a relationship of trust between brand and consumer.

As for the value proposition of Marketing Automation, as a fundamental feature of inbound strategy in the culture world, I wish to stress the following:

- User behaviour
  Just as answers to emails may indicate willingness to progress along the conversion funnel, so can the user's behaviour on the site. Marketing automation makes it possible to identify certain patterns of conduct or behaviour habits that will help you optimise the segmentation of your buyer personas.

- Lead scoring
  Lead scoring assigns values to the attributes and activities of potential customers in order to assess their willingness and possibilities of becoming an actual customer. As the lead begins to interact with your brand, their behaviour should be observed and analysed.

- Cultivating business opportunities
  When a potential customer is not yet willing to complete the commercial transaction, it is necessary to continue contact with them through personalised and well-studied messages in order to meet their needs so that they eventually become a customer.

- Decision making in real time
  The digital age is triggering the emergence of new flows and groups of data on consumers that are highly valuable but at the same time very difficult to come by. These new flows and groups of data must be used to improve decision making in real time.

- Ability of the customer to interact with the brand once they have registered
  A marking automation tool provides the connections needed for your customers to manage their preferences once they have supplied you with their email address.

- Personalisation
  Marketing automation solutions include the possibility of examining the content, in order to ensure a more efficient impact (avoid duplication…). What is more, any activity and interaction derived from any action related to your digital strategy must be duly segmented in your data base in order to optimise ROI and provide the user with better and customised offers.

- Reports on ROI
  As it is linked to other tools more oriented to a commercial vision (such as, for example, CRM), the marketing automation system can relate income to project expenses, providing highly valuable information that will enable you to ascertain, using objective data, whether or not an investment in digital marketing is profitable.
  A report on ROI will help you identify campaigns that are not cost effective and enable you to steer a new course if something is not working properly.

However, it is not only these aspects that must be underlined on the technological side.

I would like to end with a section on the importance of technology in achieving this dialogue-based market approach: big data, or

how to use all information on people to create a dialogue.

Source: article "Deliver an Excellent Customer Experience Using Big Data"

I firmly believe that getting digital strategies to develop and get off the ground involves working with all the information that is generated, making it work for the company in order to achieve a twofold aim:

- Keep up the dialogue.
- Ensure each person has a unique experience in their contact with the company.

According to the article "Deliver an Excellent Customer Experience Using Big Data",[8] being able to obtain information directly from people and working with this information to offer them what they need is crucial in any digital strategy.

We read how 78% of companies with digital strategies use big data to boost their number of customers, but also to be able to understand changes in the sector. This article reveals how more than 50% of the responses to studies on trends in digital strategies name big data as a priority for the next three years.

Image credit: blogs.cisco.com[9]

There is no doubt that big data helps improve the experience of everyone who comes into contact with us, provided that the approach is based on understanding their motivations, fears, opportunities and challenges, as I have explained previously, instead of thinking about our products and services.

In companies in the culture sector, the challenge of knowing how to exploit the potential of big data and turn it into information that can be employed usefully in creating a dialogue and in creating a lasting relationship makes full sense.

In the culture sector there is a very important emotional component that is visible in practically all the phases of the funnel and in practically all the phases of the buyer's journey; being capable of using the information that is progressively obtained in order to offer what people

want, hope and need from your cultural product or service can easily secure you digital success.

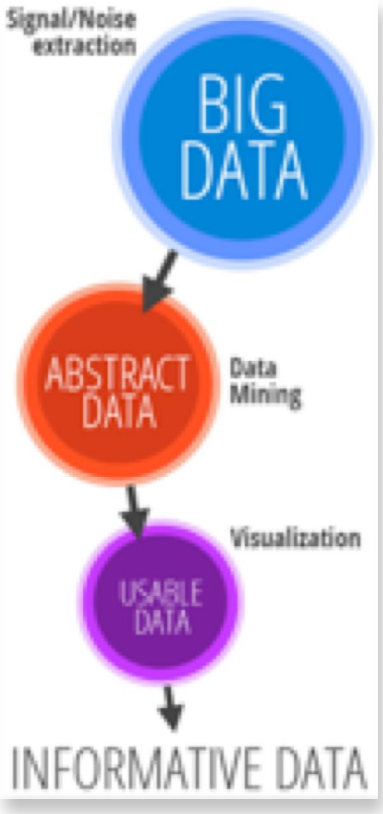


Image credit: cdn.bitbang.com[10]

Technology today undoubtedly provides the comfort of achieving this information in a simple manner. The challenge, I will again stress, lies in developing a digital strategy that allows and channels this information into creating a unique experience for each person.

Information gleaned from people's activity on social networks must undoubtedly also be borne in mind:

Especially in the more advanced stages where gauging satisfaction plays a major role, thereby enhancing the sensation of contact and care after the sale.

Image credit: cdn-static.zdnet.com[11]

It is therefore necessary to build the relevant information into big data related to:

- People's types of interaction.
- What their buying preferences are.
- What their buying preferences have been and if they are different to those they indicate as future buying preferences.
- How they have experienced the buying process.

We increasingly find that people share the key points in the purchase process; this raw material is of primary importance in allowing us to carry on adapting to what people need.

I will stress once again that the importance and validity of a digital model, in which big data plays such an important role, is realised when a digital strategy oriented to making people the centrepiece of all digital activity is developed. It is here that integrating big data into the strategy of generating leads and consequently nurturing them over the various stages makes full sense.

Recommended reading

Sotheby's Exploring the extraordinary: http://www.adobe.com/content/dam/Adobe/en/customer-success/pdfs/sothebys-case-study.pdf

Nasty creatures: http://nasty-creatures.com/

The customer is in charge: **The future of the digital experience**[12] (Interbrand)

Inbound Marketing in 2015

http://increnta.com/blog/inbound-marketing-en-2015

http://info.elementthree.com/tactical-thursday-can-i-just-do-inbound-marketing

http://info.elementthree.com/blending-the-art-and-the-science-of-inbound-marketing

Tweeters

@jpgimenezr: Juan Pablo Giménez. Founder of Sherwood The Tribe. Tech entrepreneur and investor.

@amanyez: Adrián Máñez. General manager of Increnta.

@dharmesh: Dharmesh Shah. Entrepreneur. Founder / CTO @HubSpot inbound marketing and startup blogger at http://onstartups.com

@bhalligan: Brian Halligan. CEO @HubSpot, author of the book *Inbound Marketing*, MIT Sr. Lecturer

@increnta

@tiffanysauder: Tiffany Sauder. President of @ElementThree

Notes

1. Dosdoce.com at http://www.comunicacion-cultural.com/2013/01/14/el-uso-de-internet-en-las-entidades-culturales/. A study by Pew Research Internet Project: http://www.pewinternet.org/

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3. http://www.axelspringer.de/dl/516594/120307_Geschaeftsbericht_ENG.pdf

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5. http://www.ifpi.org/downloads/Digital-Music-Report-2014.pdf

6. http://blog.hubspot.com/blog/tabid/6307/bid/2989/Inbound-Marketing-vs-Outbound-Marketing.aspx

7. http://www.hubspot.com

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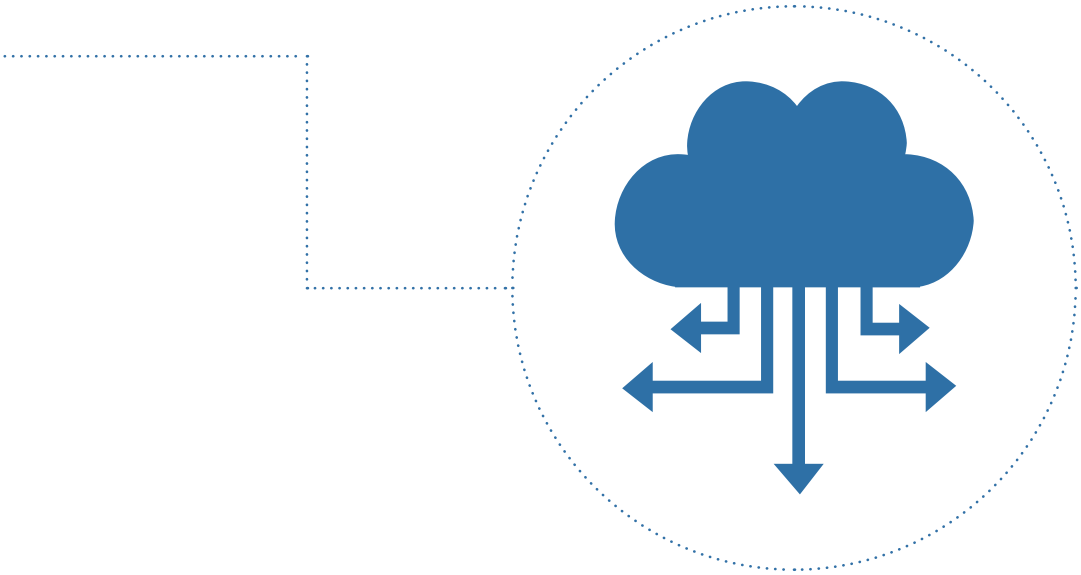

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The digital competencies of organisations: the challenge of digitally transforming talent

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Digitisation is a phenomenon as global as it is unstoppable that has led to the appearance of completely new business models and the reconceptualisation of existing models on the basis of digital technology. This phenomenon is characterised by the major demand from consumers for both devices and digital content. An e-marketer report quoted in the study *Cliente@2.033* (PWC, 2014) reckons that the number of people who use mobile terminals worldwide could amount to 5.8 billion by 2015, Africa being the continent that will experience the greatest growth. Users of these technologies currently spend 34 hours and 17 minutes per month browsing or using applications on their smartphones, and 84% use devices of this sort while watching television (Gosline, R., 2014). Another study carried out by Accenture and Ametic (2014) calculates that the average number of electronic devices per user in Spain is six. This latter study points out that in Spain 56% of consumers intend to acquire a smartphone in the next 12 months, 45% a computer and 41% a HD television set. What is more, 28% reckon that their spending on mobile services will increase over the next twelve months.

As a cause and consequence of this intensive use of technology, the business fabric is experiencing significant development in how value creation is viewed, and new business models characteristic of this digital era have now appeared (Dosdoce.com, 2014). According to a report by the Massachusetts Institute of Technology, 78% of executives think that the digital transformation is going to be critical for their companies in the next two years (MIT, 2013). In the case of Spain, the aforementioned study conducted by PWC (2014) reveals that 76% of the executives polled in Spain believe that new technologies are going to bring about deep changes in the basic foundations of their business model, and they rate the envisaged extent to which business models will change as a result of technological

disruption over the next few years at 8.51 on a scale of 0 to 10. The benefits of this development are clear: companies that succeed in creating a digital competitive advantage outperform their competitors by 9% in sales, 26% in profits and 12% in market valuation (Westerman, G., Tannou, M., Bonnet, D., Ferraris, P. & McAfee, A., 2012).

Consumption is driven by the experience economy that is based on pursuing memorable experiences.

Furthermore, the past two decades have witnessed a major change in how users of products and services consume them. Indeed, at a certain point in the market's evolution, goods became commodities, leading to the emergence of products which, in turn, underwent the same process, giving rise to the design and sale of services. Today, however, consumption is driven chiefly by the so-called experience economy (Pine & Gilmore, 2011), in which the key factor is customers' search for personal and memorable experiences that are part of their lives, and in which sensations and emotions are essential.

In this respect the business world must urgently and unavoidably consider how to approach the present and immediate future and on which capabilities organisations should rely to generate digital products and services with a high experiential impact. These capabilities will be the dynamic sum of the digital competencies possessed by the professionals who create value within them, and therefore "the challenge of the digital transformation of businesses becomes the challenge of the digital transformation of talent" (Magro, C. et al., 2014, p. 8). It therefore makes full sense to give thought to which digital competencies professionals must equip themselves with to weather this essential transformation.

Any enumeration is evidently a simplification of reality, and it is very possible that not all the competencies enumerated below will be found in the same professional, just as the list may well not be exhaustive or may contain a certain amount of overlapping. On the other hand, it is also true that the competencies listed here are linked to different levels of responsibility and to different points in the value chain. In any event, what does seem undeniable is that it will be difficult for an organisation to address digital transformation successfully without extensively developing the skills that are listed here.

Technical digital competence

As obvious as it may seem, organisations cannot cope in a digital world if their professionals do not have proper technical knowledge – a requirement that will grow as processes become increasingly based on technological resources. There are several types of knowledge, depending on what tier of the organisational pyramid and point in the value chain we are dealing with. Managerial staff must possess this knowledge to the extent that they need to understand the technological information they receive from outside the organisation, and also in order to be able to make appropriate decisions about the technology they require to perform their mission and materialise their vision. The rest of the organisation's personnel

will also need to equip themselves with these skills, either because they will use technology or because they will produce it. Lastly, in procedures that support the organisation's core business, there can also be an external digital technical competence that is managed through outsourcing processes.

The study *Cliente@2.033* (PWC, 2014) mentions seven technologies (sensors, wearables, big data, cloud computing, 3D printing, augmented reality and robotics) and eight technological applications (the Internet of Things, smart cities/things, re-marketing, automation of knowledge, pretail/crowdfunding, neuromarketing, industrial robotics and assisted point of sale purchases) that companies should master in order to know how to generate value from them.

While it is true that many new companies' way of generating value is chiefly digital, it is no less certain that many existing companies operate in the physical world, either because their services or products are physical or simply because they require material resources to provide or manufacture them. In the latter case, in order to guide the necessary transformation and make use of the technologies and technological applications that progressively emerge on the market, the figure of Chief Digital Officer (CDO) has recently appeared – a new role which, according to Gartner, will exist in 25% of companies (Rosselet, V., 2014).

Based on the idea that "everything that can be digital will be digital" (Kim, P., 2014, p. 2), it is the CDO's task to formulate the digital business strategy that involves incorporating digital technology into its business model, setting in motion the related operational initiatives, and managing the transformation of the organisation that all this entails (ibid.). As producing a digital reformulation of the business model necessarily requires the existence a series of skills derived from these three actions, it is logical to assume that the CDO will be involved in detecting and developing them.

Professionals will have to replace some skills with others and adapt their knowledge to the fast-paced evolution of digital technology.

Perhaps the most critical aspect of this reflection is that it is highly likely that the technology available today will soon be surpassed by the discoveries and advances that are increasingly taking place. While this holds true for any area of knowledge, in the case of digital technological competence it is even more evident that professionals will have to replace some skills with others and adapt their knowledge to the fast-paced evolution of digital technology. In many cases this learning will no longer depend on the training schemes run by the organisations for which they work but on their ability to learn autonomously.

Self-directed learning

One of the variables that evolve over time is how people learn: different generations learn differently (Reeves, T. C., 2014). Today two factors are bringing about a significant change in this area. On the one hand, the digital

transformation of society and culture is causing information to exist almost ubiquitously in a considerable variety of different media. On the other, interacting dynamically with this first factor, the ideas that underlie processes such as the building of the European Higher Education Area are increasingly calling for a type of student-centred learning. The consequence of both factors is that it is becoming more and more important for people to be responsible for their own learning, as knowledge is no longer centralised solely in educational institutions, and for these institutions to promote autonomous learning to a greater extent. Therefore, the new generations of professionals will increasingly have to direct their own processes of acquiring skills – especially in the digital field, which is evolving more significantly than in other sectors. Technology does not progress at a linear pace but exponentially and, therefore, however much an organisation invests in training its professionals, it is very unlikely to succeed in keeping up with this dizzy pace, especially because the training processes in organisations are sometimes slow, and because they are generally based on well-established knowledge – i.e. content that is already more part of the past than of the present or future.

In the new learning model, companies must facilitate their professionals' self-learning.

Self-directed learning refers to the ability to take responsibility for the learning process by setting goals, planning them in time and space, locating the right materials, self-assessment, the ability to seek help from the right people on a particular matter, the capacity for critical thought and the ability to find internal self-motivation resources (Damian, A. C. & Georgescu, M., 2014).

A study by Karakas and Manisaligil (2012) identifies five transformations which are changing the landscape of learning in the digital age: virtual collaboration, technological convergence, global connectivity, online communities and digital creativity. These five changes are becoming recommendations for enabling human resources departments to facilitate self-directed learning in their organisations. It may be deduced from this study that we are witnessing a shift in the centre of gravity of in-company training, in which designing and organising courses is no longer the sole concern, towards a model in which it is essential to facilitate professionals' self-learning.

Searching for and managing information

The amount of information generated in the world is overwhelming. Gathering data from various sources, Domo.com (2013) provides a comprehensive set of computer graphics on this phenomenon. To cite a few examples, every minute WordPress users publish 347 posts, 571 new websites are created and 48 hours of video recordings are uploaded on YouTube. During that same minute, Google receives more than 2,000,000 search commands and Apple nearly 50,000 application download requests. Far from growing or becoming more systemised, this huge repository of knowledge called the Internet is calling for professionals to be increasingly skilled

at finding what they are looking for quickly and organising it to serve their ends.

The effects of this information overload, which has already been christened with terms such as infoxication, infobesity and infopollution, are beginning to be felt in the professional world. It is reckoned that professionals can spend two hours a day dealing with their emails, even though one out of every three messages is considered unnecessary; and that an employee might explore forty website per day on average and, if they work in the world of knowledge, check their emails between fifty and a hundred times a day (Hemp, P., 2009). Such is the extent of the phenomenon that there have been organised initiatives against it and in favour of the right of communications instead (Aguaded-Gómez, 2014).

Whatever the case, the effects of information overload are being felt in the professional ambit. A report by Human Capital Interaction (2014) on distractions in the workplace revealed that the productivity of half of all professionals is affected by email, unproductive Internet use or by having many browser windows open. An earlier study had already shown the effect of managing tasks by paying attention to several media at once (Ophir, E., Nass, C. & Wagner, A. D., 2009). Compared to professionals who do not make such intensive use of technology, individuals who develop what is called chronic multitasking (using several media, constantly switching from one to another) are more likely to be distracted by irrelevant stimuli. It might be thought, in contrast, that their skill at switching from one task to another is greater, but what the study precisely showed is that these people are less efficient in this respect owing to their lesser ability to weed out interferences.

In the world of knowledge, professionals must have the capacity to select and manage information with critical judgement.

Furthermore, the ability to select and manage information is not just a question of succeeding in focusing attention on what is really important, but also involves a skill that has always been required – critical ability. Technology makes it possible for everyone in the world with an Internet connection to create and share content. This means that it is possible to find high-quality information, sometimes free of charge, but also that much of what is found is superficial, incomplete, unconnected or simply false. Therefore professionals should equip themselves with the capacity to analyse any content fast to decide on its veracity and appropriateness to the task they are performing.

More than ten years ago a study warned of the importance of critical judgement in handling information gleaned from the Internet (Graham, L. & Metaxas, P. T., 2003). Although the study was carried out on students, it showed their tendency to use the Internet as a sole source of information and not to corroborate the results obtained; they were particularly vulnerable to disinformation from advertising or from the government. Perhaps the most salient feature of the study is that differences were not found in students belonging to different years – a fact

which seems to indicate that lack of critical judgement does not decrease over time. Furthermore, without efficient and explicit training, it is highly likely that many people who trusted the confusing, inaccurate or uncertain information they gleaned from the Internet as students will continue to do so to some extent later on in their professional lives. Above all this is because it is becoming simpler and simpler to access digital information compared to other sources and because this information, far from being systemised or reduced, is growing and is not classified according to veracity as the main criterion.

It is important for organisations to give thought to these matters because the trend will continue over the coming generations. Indeed, a study by Pew Research Center (Purcell, K. et al., 2012) revealed that 87% of teachers claim that technology is creating a generation with a short attention span who are easily distracted. The report also reveals that students do not have the ability to reflect critically on or synthesise the information they find.

In short, owing to the unstoppable advance in the generation of information, much of which is not strictly reliable or of sufficient quality, it is becoming increasingly necessary to be able to select and organise relevant information.

Collaborative work in different environments

In a global and multicultural world where professionals are hyperconnected, organisations must encourage the ability to work more collaboratively, especially through distributed networks. This entails not only mastering the technology required for cooperative work online, but also, among other skills, the ability to locate important networks or communities, acceptance and appreciation of diversity, flexibility and adaptation to different digital communication cultures, willingness to share and collaborate, and the ability to negotiate and manage tasks through digital communications (Ala-Mutka, K., 2011).

Organisations must encourage collaborative work through online networks and with digital communities.

A significant consequence of collaborative work is the manner in which digital technology is altering physical places where professionals interact. In view of the need to promote innovation and speed up decision making, spaces where casual interaction and project teamwork are valued are highly considered, and therefore spaces that promote a type of work that is focused on the creative aspect but also on the process are favoured (Knoll, 2013). Digital progress has likewise blurred the boundary between work technology and personal technology and has spurred the emergence of a trend for workers to use their personal devices as part of their workflow (O'Neill, M., 2013). Whereas the challenge companies face is to adapt their spaces and technology to these trends, these changes require professionals to develop the ability to be part of these new collaborative spaces where breaking away from the traditional office model and technological diversity are the norm.

Furthermore, it is highly likely that companies' diversity will increase over time and that these skills will therefore be more and more necessary, for several reasons. Firstly, because the globalisation process will carry on advancing and companies will adopt increasingly more refined procedures for locating their processes in different geographical areas. Secondly, because breakthroughs in automated translation systems will make it possible for more and more people from different cultures to communicate with each other, especially as this process will also go hand-in-hand with greater Internet access of workers from all over the world. And lastly, because it is highly likely that companies will end up realising the intrinsic value of diversity in creating value. In this regard, a report states that 83% of executives think that a diverse workforce will help them generate value for a greater variety of customers and markets, 82% think that it can enrich the organisation's talent, and 80% believe that diversity can provide a competitive advantage (The Economist Intelligence Unit, 2014). In this connection, the mission of the publication *DiversityInc* is to promote information on how companies benefit from diversity. It has compiled an index that shows that a company's economic results are greater when diversity is properly managed (DiversityInc, 2013, 2014).

All in all, workforces will be increasingly diverse. This will make it necessary to work collaboratively, breaking down the classic structure of watertight departments, and this way of working will be increasingly dependent on distributed networks where the physical location of the professionals will be less important.

Identifying trends

The number of new applications and systems that arise every day as the cause and effect of a similar number of market trends is countless. Some of them stabilise and become set patterns, whereas others simply die out. As this is an upward and outward trend, it is increasingly necessary for professionals to be capable of interpreting the market properly in order to identify future trends, at least in the medium term, so as not to invest time or money in acquiring knowledge that later proves useless. Identifying these trends and the accompanying technologies is becoming a real challenge for companies, because their survival is linked to their ability to create parallel business models.

Professionals must be capable of identifying the trends and technologies that are here to stay, creating parallel business models.

There are at least two lines of work through which companies can anticipate or at least keep up with market changes and it is essential for professionals to acquire the skills that will allow their companies to benefit from them.

The first of these lines has been called big data and refers to a new generation of technologies and architectures that allow value to be created through the rapid capturing, discovery and analysis of large volumes of a great variety of data (Olofson, C. W. & Vesset, D., 2012). As for identifying trends, the most significant feature of this group of technologies and architectures is its

ability to provide predictive models (Haguen, C. et al., 2013). These models can help companies both detect the consolidation of certain trends and to characterise and typify other new ones.

Although big data technology is revolutionising how companies – especially major corporations with market experience – create value, at the other end of the scale there is another line of work that chiefly affects startups. Just as well-established companies need to predict new trends, startups that attempt to propose them need a means of corroborating whether their intuitions on future demand for a new business model are correct. And this is where the business world has turned to science, embracing the concept of experimentation. In a complex world with a saturated market, it is important that a new idea be launched with as many guarantees as possible, because if this debut does not prove successful there might not be a second chance. Therefore, once the idea has been hatched, the next step is not to develop a business model but to attempt to test the business idea in order to validate or reject it (Matricano, 2013). Although this idea mainly affects newly created companies owing to the high risk their launch entails, it is also useful to major established corporations that wish to innovate, and therefore skills such as the ability to design, make prototypes, iterate or experiment are increasingly necessary in the business world.

Designing memorable experiences

Customers no longer acquire products or services for their functional value – not even solely on the basis of price – but incorporate them into their life as part of their life story and, therefore, of their identity through the creation of meaning (Alcoba, J., 2014). In this respect, professionals and organisations must make an effort to generate high quality experiences that provide a response to what their customers want, which are memorable experiences based on immersion and participation. These experiences must be generated in many formats that range from purely digital to solely physical, but most will involve the right combination of both worlds. What is more, they must maintain coherence through the different touch points with the customer where they are generated.

Organisations must create memorable experiences for their customers based on immersion and participation.

An idea of how digital technology has changed the customer's experience can be found in a sector that is basically physical, automobiles. According to Nissan, a customer's journey with a brand used to begin the moment they entered the dealership. Today, however, it begins between six and twelve months before the intention to purchase. What is more, whereas a customer used to make about seven visits to different dealerships, the number has now been reduced to 1.5 (Palmer, A., 2014). Changes are taking place in different sectors in the interaction between users and brands as a result of the change in the experience of digital technology assisted purchasing. According to Lithium Technologies, when users request online help, most of them, 66%, expect to receive an answer

the same day and nearly half, 43%, expect it in the next hour (Tarkoff, R., 2014).

As in the case of digital technological competence, the need to generate memorable experiences has entailed the need to define and bring in a new professional in companies, known as the Chief Experience Officer, who is responsible for the customer experience of the brand. One of the main responsibilities of this post is to coordinate and give meaning to the action of various departments, such as R&D&I, Marketing, Operations and Customer or Sales Services. In addition, as customer experience is multichannel, this experience must also be unified across a series of different media. Owing to the novelty and complexity of this new work, movements have already emerged in the market aimed at exploring and disseminating these new concepts, such as the Customer Experience Professionals Association (CXPA) in the United States, or the Asociación para el Desarrollo de la Experiencia de Cliente (DEC, Association for the development of customer experience) in Spain. The first of them already has a certification of its own, which involves mastering a number of competencies that are considered essential for professionals of this kind (CXPA, 2014).

Communication and dialogue skills

Customers seek products or services to incorporate into their life stories and, accordingly, their identity, to the extent that they give meaning to their lives (Alcoba, J., 2014). This meaning is created above all by integrating the value proposition into the customer story, and therefore the ability to communicate is absolutely essential. The ability to generate clear, suggestive, motiving messages that are, above all, aligned and identified with the activity and the brand upheld by the organisation is therefore essential – especially bearing in mind that communication is no longer one-way, but that organisations and customers live in a constant dialogue in which organisations must not only speak but also know how to answer, ask and, above all, listen.

Multidirectional communication means that the organisation must not only speak but answer, ask and, above all, listen.

A computer graphic by OneSpot (2014) shows that American citizens consume more than 100,000 words every day and that 92% want brands to produce their advertising in the form of stories. Storytelling, branded content, content marketing and snackable content are new concepts that define the trends that are emerging in the world of communication (Azanza, M. et al., 2013). Classic advertisements have evolved towards a complex and multichannel narrative universe in which it is not a product but a story that reaches customers and with which they are encouraged to identify and be part of. This communication is primarily one-way, because it goes from the brand to its customers, but the latter then return messages through the social media, at which point it becomes evident that communication is a genuine act of dialogue that involves two collective partners, an organisation and its customers.

In other cases the conversation takes place solely between two people, such as when it occurs at a touch point. Here too dialogue skill is proving increasingly more fundamental, as more complex products are being developed and users are better informed. An example – probably extreme but real – of the importance of dialogue skill is Zappos, a company that holds the record for the longest phone call kept up by the customer services: ten hours (Shamo, D., 2014). The main point here is not the duration of the call itself, but two considerations: first, that the customer service person who remained in their post for such a long time was capable of doing so; and second, that they knew what they had to do. The first is a question of skill, no doubt stemming from the training this company provides to its employees. And the second is a question of attitude, which also stems from the strategy of the company, whose customer-centred vision is evident from this extraordinary record.

At the organisational level, the effect of the importance of communication is being chiefly felt by communications directors. A report by Top Comunicación & RRPP and Burson-Marsteller (2013) shows that this position will increase its strategic importance in the near future. According to this report, these professionals are expected to control the new media, to be capable of globalising brands, to administer large volumes of content, to manage online crises, and to demand greater transparency and dialogue with various interest groups. They are also expected to address different challenges and problems in their work, such as microcommunication as opposed to mass communication, the handling of huge quantities of information, the degeneration in journalistic values, working with unreliable sources and the challenge of internal communication in organisations increasingly formed by temporary joint ventures of goal-oriented professionals.

Dialogue skill and how companies communicate with the public is transversal and affects all their employees.

All these changes can be seen in corporate communications, but they are in fact new competencies that go beyond this field and are necessary to several tiers of the organisational pyramid. The reason is that they express the new way companies must communicate with the public at which their value proposition is targeted. And this work, communication, is no longer in the hands of a single department owing to the intensity and variety of channels the digital medium provides.

A final thought

Digital technological skills, self-directed learning, collaborative work in various environments, the search for and management of information, the identification of trends, the design of memorable experiences and communication and dialogue skills are competencies that are now essential in the digital age. And, perhaps more importantly, they are skills that are transversal in practically any work. In a complex market that operates in a hyperconnected digital world, it is no longer possible for professionals to work in

specialised silos with no concept of what goes on in the rest of the organisation.

Some time ago what could bring together the professionals of different departments was their knowledge of other functional areas within the organisation. Today, in order to achieve this interrelation, it is furthermore necessary for them to possess skills that will allow them to accompany the digital transformation of their organisations, given that all the areas are already in contact with that world to some extent or will be in the immediate future.

The future will be digital or there will be no future, and the sooner organisations encourage their professionals to develop the skills needed to address it, the sooner they will take advantage of its benefits and will spare themselves the disadvantages of coping with what is now an essentially digital world with an analogue mindset.

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CapGemini, authors of reports on digital transformation:
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https://twitter.com/diversityinc

Human Capital Institute, authors of reports on talent management:
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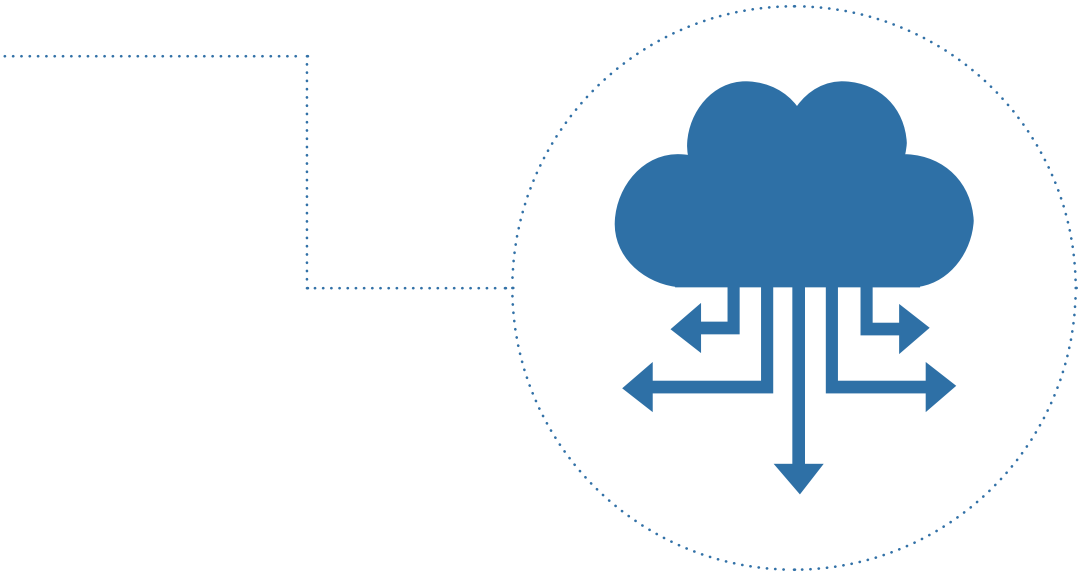

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How to apply Design Thinking (DT) and Lean Startup (LS) to finding new business opportunities for the culture industries of the twenty-first century

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Technology is culture too… When we realise what this means, we will do a much better job of promoting culture through the Internet.

A cultural agent (Corredor, 2013:36).

If we knew what the future held in store for us, it would cease to be interesting. But however stimulating some of us might find the mainstreaming of digitisation or the "digital" in our society, it is proving to be a period of change with a great deal of uncertainty for a good many sectors. In the short term, we will see how areas whose models had remained practically unchanged since the industrial revolution are undergoing in-depth reconsideration.[2]

Nevertheless, it is tricky to venture to postulate how deeply or to what extent (for example, whether or not it is structural, and to what degree) this phenomenon is affecting our daily life and sectors such as finance, health and education, among others. It will be a few years before we are able to look back and analyse it with the necessary calm and reflection. However, "the digital" is opening up new possibilities that compel us to explore them with respect – and not just imagination – and pose the challenge of making sense of usual needs and how they fit into a world in which technology has an increasingly important role.

For example, the widespread penetration of smartphones in our daily life has made them a primary channel for managing and handling a considerable part of our daily communications. Phenomena such as WhatsApp, to cite an example, combine a basic need – to communicate – with the requirement of being able to

do so anywhere and at any time (ubiquity), in a technological context that makes this easier.

The audiences that have emerged on this new scene are not only increasingly active but also more dispersed/segmented and with more channels for gleaning information or capturing content – individuals who are fully aware of what they consume and of the quality of those products. We have become "expert consumers" and are evolving towards a new paradigm, that of prosumers.[3]

In this scenario, "nobody today has a roadmap with a clear outline of which business models will last, which are pure marketing, which are the most sustainable, and so on". (Dosdoce.com, 2014).

We have become expert consumers and are evolving towards a new paradigm, that of prosumers.

This frantic pace is currently overwhelming most agents of the Spanish culture industries. However, there is good news. It is an illusion, as there are options and opportunities for finding new business models that cater to users' new consumption habits and needs.[4] Nevertheless, building on these new possibilities entails embracing a new context and developing skills based on methodologies, processes and tools that are sometimes unknown or misunderstood.

Insanity is doing the same thing over and over again and expecting different results.

Albert Einstein

1. Keys to understanding the new context/paradigm

There are two general starting premises. The first is that today it is a mistake to carry on insisting on segmenting into "on/off" dimensions when speaking of how digitisation is becoming embedded in sectors such as the economy, culture and education, for example. It is a failed metaphor, as the digital is part of our whole social ecosystem and is already an actor with a determining role. Indeed, major companies are shunning, and regard as a thing of the past, the concept of multi-channelling taken to mean the sum of non-integrated channels and instead are tending towards omni-channelling in order to eliminate relationship differences in channels to the point of making them imperceptible. This fits it better with the need and use that users express in their relationship with new services and products.[5]

The second is that the *glocalisation* of markets means that companies must devise global strategies irrespective of their size or local nature, with a view to embracing and reaching more distributed user segments.

Roughly speaking, some of the main challenges we face in market terms are:

- **Information overload.** Infoxication[6] as a negative counterpoint to the ability to establish ourselves as experts. Overexposure to hundreds of inputs that mostly create the opposite effect, confusion.

- **Lack of differentiation.** We are dealing with homogeneous markets in dispersed geographical areas.

- **Development of a different understanding of private property** as a result of new habits, a decline in the status of certain products, etc.

- **Collapse of supply in relation to demand:** not everything that is manufactured is sold.

Culture products are not unaffected by these changes in market and consumers. And the perception in general terms and for certain areas of the world of culture is pessimistic: "It is complex to address the impact of digitisation and its impact on culture. For the time being it is proving disastrous, but if there were intelligent measures it could be beneficial. It is also evident that we are currently at one of the lowest points in institutional assistance for culture and SMEs" (a cultural agent in Corredor, 2013:36).

Therefore, before speaking of possible tools or solutions, the following section will outline, without intending to be exhaustive, the state of culture with respect to consumption, audiences and creation.

1.1 The cultural consumption and expenditure perspective

In 2013 household spending on cultural goods and services amounted to 12.26 billion euros, 2.5% of the total estimated expenditure on goods and services. Average spending per household on culture amounted to 673.30 euros (MECD [Ministry of Education, Culture and Sport], 2014).

Average spending per person was 265.70 euros, considerably lower than the average of nearly 400 euros recorded in 2007 and 2008 (MECD, 2014). A priori, this is a poor result that confirms the downward trend in cultural consumption compared to previous years. The SGAE (Spanish Society of Authors, Composers and Publishers), for example, clearly identifies the possible causes of this continuing downturn: "Factors such as the economic crisis, piracy, the rise in VAT, changes in consumption habits, etc., have affected the different disciplines to some extent. The performing and musical arts began their downturn between 2008 and 2009, reducing their offering, attendance and revenues and having to adapt to the changes progressively brought about by the crisis" (SGAE, 2014:8).

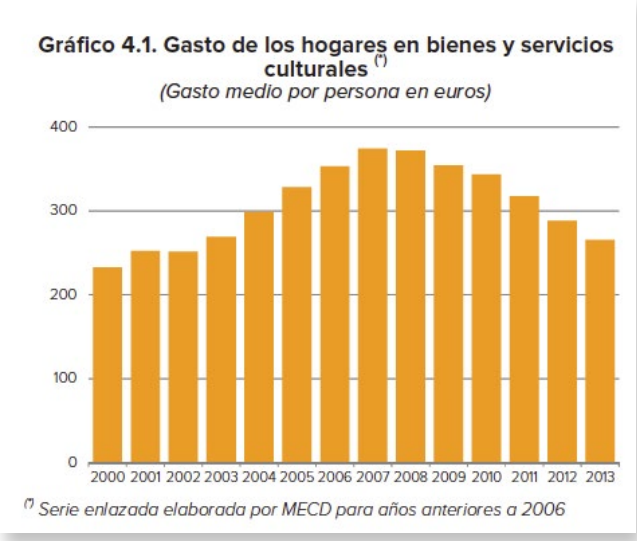
In 2013 household spending on cultural goods and services in Spain amounted to 2.5% of total estimated expenditure on goods and services.

Sixty percent of those polled by the Observatorio de la Cultura (Culture Observatory, 2013a)[7] also seem to agree, with reservations, that the crisis has had a very negative impact on audiences, reducing them or hampering their growth. Nevertheless, the remaining 40% hold that it has had hardly any impact for different reasons, including the existence of numerous free activities.

A similar opinion is expressed by the SGAE's executive summary, which states that a few industries have weathered the crisis staunchly: "Television and radio have experienced the opposite effect, becoming a leisure alternative at a time of crisis, although the statistics for 2013

show slight decreases. In any case, the decreases are much more marked in advertising revenues generated by radio and television" (SGAE, 2014:8).

Therefore, although average spending per person is steadily falling, there is room for optimism as despite all the institutional setbacks – in some cases an increase in VAT or cuts in grants awarded to creators – and market trends (CPI, new business models, etc.), consumption levels are still slightly higher than in 2000.[8] The bad news, however, is that unless this trend is corrected, it will only be a matter of time before we drop below these levels.



Graph 4.1. Household spending on cultural goods and services (*)
(Average spending per person in euros)
(*) Linked series compiled by MECD for years before 2006

1.2 The audiences and their habits perspective

But apart from expenditure, it is interesting to note which cultural activities are most common among users. In annual terms, in 2010-11 these were listening to music (84.4%), reading (58.7%), and going to the cinema (49.1%) (MECD, 2014). "These activities are followed in intensity by visiting monuments, which 39.5 of the population engage in every year, visiting museums or exhibitions (30.6% and 25.7% respectively) or visiting libraries or accessing them via the Internet (20.5%). Every year 40% of the population attend live shows. Prominent among those are modern music concerts (25.9%) and the theatre (19%)" (MECD, 2014).

The most common cultural activities among users from 2010 to 2011 were listening to music (84.4%), reading (58.7%) and going to the cinema (49.1%).

Another perspective is provided by the report of the Observatorio de la Cultura (2013b), which poses, among others, the open question of which was the most important institution or cultural event of the year. It is surprising to find that the Museo Reina Sofía (up from 48 to 62 mentions) shares top places in the ranking with the Museo del Prado; the third is Matadero Madrid (up one place), followed by the San Sebastián International Film Festival (up 6 places), the Museo Thyssen-Bornemisza (down 2), the Teatro Real, Fundación Mapfre, CaixaForum and ARCO (up 6 places); others with more than ten mentions are the MACBA, La Casa Encendida (down 6

places), the Fundación March and the Museo Guggenheim.

The most interesting part of the observatory's report-survey, however, is that which asks about audiences from several angles. For example, it states with respect to audience trends that "almost as many [sectors] have increased their audiences, some considerably, as those which have remained the same or recorded decreases, some large" (Observatorio de la Cultura, 2013a). However, there is an overall average growth of 4.9%.

In this respect, a further two questions refer to industry-wide measures being adopted to improve or boost attendance levels for their events. More than half (67.8%) state they are already working actively on developing customers. It is surprising to see that the public sector is leading this effort (73.8% compared to 60.5% in the private sector; and that museums (83.3%) have been the first to develop this practice, owing perhaps to their offline dependence on contact with users (Observatorio de la Cultura, 2013a).

Furthermore, only 34.8% carry out market analyses regularly as a means of learning about their users' needs and profiles. This figure is as low as 20% in the public sector, compared to 50% in the private sector. As we shall see later on, this is one of the key factors when speaking of new or potential business models: discovering people's needs as engagement with our product or service.

Lastly, with respect to the use of technology, the question is centred on communication with users. This use chiefly relates to the sending of newsletters (78.3%), social media (86.4%) and blogs, and participatory websites (76.7%). And although this data sheds light on the sector's concern with attempting to reach its audience and incorporate digital into its environment, once again the negative aspect is how little priority is given to capturing customer feedback or how underdeveloped this is. Only 16% make use of digital channels as a tool for conducting surveys or monitoring users' interest.[9]

Only 16% of cultural organisations make use of digital channels as a tool for conducting surveys or monitoring their users' interest.

This, in our opinion, is one of the weaknesses of the way some culture industries are handling their inevitable incorporation into the new technological context. We agree with E. Trigos (2014:56) that "we can put to one side the classical typology of users – digital natives (under 35 years of age), those who have adapted (between 35 and 55 years of age) and the reticent (over 55 years of age). What we find are consumers who want to form part of a cultural experience who, without doubt, know that it is in the digital space where they will find the whole value chain (information, e-commerce, criticism, recommendations, new things, opinion and so forth). People may be more or less agile in having access to these resources, but there can no doubt that it is here that all the potential for creating this bond, this connection between the content and the consumer, resides and that is the case for any of their cultural expressions".

1.3 The creation perspective

This high-flying mapping will end with a brief note about how creators view the current context. Most sectors believe that it is a good time for creation, with higher than pass rates similar to those of previous years in all sectors (Observatorio de la Cultura, 2013b:7). Therefore, the crisis does not appear to be a determining factor in this field.

MOMENTO ACTUAL DE LA CREACIÓN	2013	2012	2011	2010	2009
1. Gastronomía	7.8	7.8	7.9	7.9	8.1
2. Literatura	6.8	6.6	7.0	6.7	6.8
3. Fotografía	6.6	6.3	6.7	6.6	6.6
4. Diseño	6.3	6.5	6.8	6.8	6.8
5. Moda	6.2	6.3	6.4	6.1	6.2
6. Teatro	6.1	6.3	6.2	6.0	6.0
7. Artes plásticas	6.1	6.1	6.3	6.2	6.4
8. Vídeo arte	6.0	5.4	5.4	5.2	5.8
9. Arquitectura	5.9	6.5	7.0	7.2	7.3
10. Danza	5.4	5.8	5.8	5.7	5.8
11. Música clásica y Contemporánea	5.4	5.7	5.9	5.7	5.5
12. Cine	5.4	5.6	5.5	6.0	5.5
13. Música popular	5.3	5.4	5.4	5.5	5.4
VALORACIÓN GLOBAL	6.1	6.2	5.9	6.1	6.1

Source: Observatorio de la Cultura, 2013
CURRENT MOMENT OF CREATION
Cuisine
Literature
Photography
Design
Fashion
Theatre
Visual arts
Art video
Architecture
Dance
Classical and contemporary music
Cinema
Popular music
OVERALL ASSESSMENT

Anyone might think from what we have seen so far that with the abovementioned cultural landscape many sectors have little reason to be hopeful: falling sales of certain products, smaller audiences for certain shows, and so forth, and the emergence of forms of entertainment that are posing a risk to traditional consumption. Nevertheless, we believe that, despite what has been described, the current context offers the culture industries a host of options. It is nonetheless necessary to begin with a change of approach in order to be willing to embrace new tools and methodologies that provide these opportunities. Before that, a few general lessons that we wish to share with readers.

The culture industries must be willing to embrace new tools and methodologies to take advantage of the opportunities offered by the current context.

1.4. Why do certain products fail? A few lessons learned

We do not intend to postulate or establish dogmas on the right way of doing business. We merely wish to offer readers a few lessons that we have learned from our experience as entrepreneurs, innovation consultants for various companies (large, medium-sized, small) and our own personal adventures in building products or services at Thinkers Co., a design and innovation agency.

Lesson one, it is necessary to change traditional conceptions of how to develop products or services. It is generally thought that a failed idea is the result of poor development or execution; however, in a high percentage of cases the

reasons should be sought in the initial stage. An incorrect approach to the problem hampers the end result of our product or service in the long term. The main cause is an insufficient initial exploration of the context and work that is more focused on final delivery and startup than on building and developing the idea. Innovation in any sector, to paraphrase Thomas A. Edison, is 99% perspiration.

Lesson two, we find that most companies/ entrepreneurs fail owing more to lack of customers than to faulty development of their product/service. It is generally forgotten who lies at the centre of our idea – PEOPLE, who are closer to us. We live in a world in which we believe we know our users simply because we are capable of gathering more metrics and data (quantitative studies). However, face-to-face knowledge, which is revealing and unique, is what can provide a certain differentiation and guide our work. In this connection it is best to allow ourselves to be carried away by the tools and techniques provided by both ethnography and other qualitative social methodologies at initial stages, and carry out early validation with users at initial stages of the projects. The idea is to work always on the basis of need/real opportunity and not just opportunity. In most projects, we customers or entrepreneurs take for granted the innate ability to develop the product in mind without yet knowing its professional experience or real technical capability: the question is not if we can build it but what it should be like, and even, going further back, if the solution should be this product or another. This should be the starting point of any project so as not to waste time building something nobody wants.

Lesson three, new Voice of the Customer models are needed. Or, to put it in a more down-to-earth way, models for getting to know people in order to innovate and create new value. The traditional models and tools have the following characteristics:

- Already compared facts are described through quantitative research/analysis.
- The processes used are slow and established as the only plausible ones.
- They are efficient in controlled markets but incapable of providing an answer to the questions raised by risky markets, especially new ones.
- They concentrate on providing responses that simulate full control of all variables.
- The speed of the information society is not measurable.

It is necessary to know about people in order to innovate and be able to provide products and services with added value.

In contrast, today we need to explore new possibilities oriented towards a more user-centred type of research that allows us to gain in-depth knowledge and identify their needs as an essential point of departure. The aim is to put ourselves in the place of the person at whom our product or service is targeted, as though that person were developing it. The idea is to

empathise with that archetype and, if possible, incorporate it into the development process.

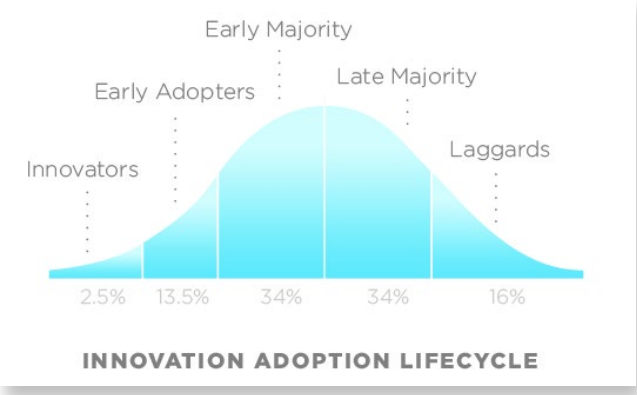
We are speaking to an extent of co-creation, a perspective that is chiefly addressed by the discipline of Design Thinking and currently taught at the most prestigious business schools, both international (Stanford, Harvard and Rotman School) and national (IE, ESADE and EOI).

It is true that if we build products that are consonant with the needs of the user or our customer (company) we are more than halfway there and we will possibly come up with "something" that someone is willing to pay for. However, although this is a necessary condition, it is not enough by itself, as most times we build perfectly executed products (Problem-Solution Fit) but lack a market (Solution-Market Fit). This takes us to the next lesson.

If we build products consonant with the user's needs we are more than halfway there.

Lesson four, companies often fail because instead of being concerned with SEARCHING they are obsessed with DELIVERY. That is, they focus on the functional building part but not on identifying and building the market. User-centred project management processes point to a direct active presence of the user in the process of developing the product or service, but lack an approach centred on converting users into customers, that is, the need to monetise (sell).

To understand this better, let us take as a reference the technology adoption lifecycle or Rogers' Bell curve. Good development underpinned by a project methodology mostly ends up satisfying innovators or early adopters, but lacks the ability to reach the following groups of users. This is not due to faulty development of the product or service; it is because the mechanisms and adjustments needed to ensure a good market fit have not been provided for.



Source: Rogers' Bell curve, innovation adoption life cycle

Basically, we are speaking of a situation in which, without having defined the business model canvas, we set about building a group of hypotheses that need to be tested and understood in order to ensure the feasibility of the project. Because in addition to product/service development, further variables need to be taken into account, such as channels, customer relations, poor identification of segments, etc.

It is in this context that agile customer development methodologies or processes are emerging as part of the Lean Startup philosophy where building a clear and concise ecosystem or niche takes priority over developing a satisfactory product. Its

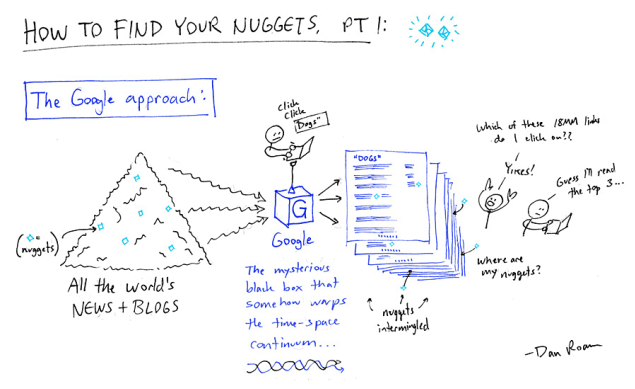
function is to facilitate and provide our product with the ability to appeal to more than just early adopters and secure a good market position.

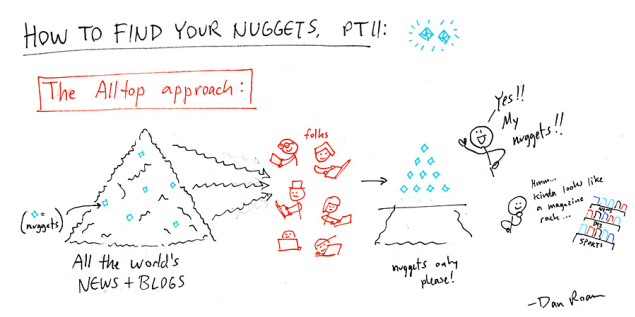
2. How to develop new business opportunities: from generating ideas to putting them into practice

Innovation is in vogue, as is the need to apply it, to create new things, to develop new business models, and so forth. But the truth is that things are continuing to be done in the same way as before. Roughly speaking, when faced with the possibility of starting or building a product/service, it is likely that in 90% of cases drawing up a business plan for the idea/project is recommended as the most appropriate action to be taken as the initial stage of the work. The error does not lie in using a business plan, but in the moment of using it plus its interpretation as an absolute reality at initial stages of the projects – something that is starting to be proven to be mistaken. And much more so if it is used before taking any other step or action regarding our potential product. In the context we have described above, presupposing and defining the future development of a company (or a startup) in a linear and theoretic manner is ambitious at the very least, if not impossible. Theory without possibility of praxis and praxis without reflection are senseless.

This is where the first challenge of a new enigma/project/undertaking arises: how to control uncertainty? In this respect Design Thinking (DT) is a very useful tool at such early stages because it combines rational and intuitive thinking, allows us to give sense and order to the typical suppositions that are usually made before releasing the product onto the market and helps really pinpoint the underlying problems, which are always to be found. All this makes it possible to come up with a better proposition that has real value and is shaped, oriented and adapted to the possible market (user-customer).

The various tools for qualitative research can be merged with Visual Thinking in order to get to the bottom of the matter (problem/process) – which, in turn, may entail a new enigma – and, ultimately, propose a valid but not unique idea. ***A not so evident fact: there is never a certain answer, only the answers we believe there are.***





Example of visual thinking: *difference between using Alltop and Google.*
Source: Dan Roam, author of *Back of the Napkin: Solving Problems with Pictures*

In Osterwalder's writings, Business Design is presented as a new developmental step in this field whereby the use of DT leads to an outline of the business model. Having understood the complexity of the context and outlined an idea, the so-called Business Model Canvas (BMC) makes it possible to establish a diagram of how this business model functions. Nevertheless, in the main business focus of this line of work, and the use it is being given, DT is employed as a tool for building the idea that brings the BMC into the picture, but it does not actually explore the real potential of DT.[10] It is important not to forget the foundations, and to realise that it is not sufficient to fill in a canvas with nine building blocks, however attractive, simple and clarifying it might seem, but rather that we can and must go further than this.

Business Model Canvas (BMC)
Source: http://ciberopolis.com/wp-content/uploads/2011/08/Lienzo-modelos-de-negocio.jpg
(clockwise, starting left)
Partner network
Key activities
Value proposition
Customer relationship
Customer segments
Revenue streams
Distribution channels
Key resources
Cost structure

Even with a clear context and ideas, and having developed an initial BMC (there can be several),[11] it is still not time for the Business Plan. It is necessary to iterate the business model, for which a Minimum Viable Product needs to be developed and tested against the market. It is here that a new actor/concept comes into play in the equation we propose: Lean Startup, from the technological world (Silicon Valley). We are convinced that today it is necessary to think and act like a startup.

To quote Steve Blank, a leading name in Customer Discovery processes, "a startup is a temporary organisation formed to search for a repeatable and scalable business model".[12] In other words, it is an experimental phase with which to confirm our suspicions and check out the possibility of generating revenues, taking for granted that we cannot foresee the market response, but that we must test ourselves until we hit on what works, and how and why it works.

Finally, having validated our assumptions, the business model, the market and the initial sales, at this point we can venture to draw up a sound Business Plan that will evolve over time or will be necessary to redefine in the short term, but will be built on thorough knowledge.

Two further lessons to end this section:

Lesson five, genius exists, there is no denying it; we will always come across visionaries who set new standards in the blinking of an eyelid. However, most cases of success stem from hard work from the outset aimed at understanding the user and discovering the market around a solution.

***Lesson six*,** it is as important or necessary to experiment as it is to learn from the experience of both those who failed and those who succeeded. As a result of reflecting subsequently on the work performed by entrepreneurial leaders and cutting-edge enterprises, nowadays we are more aware of how to replicate and adapt processes, and this allows us to ensure not the success of our projects but the certainty of minimising the mistakes that can be made.

So far we have dealt generally with the change of approach. At this point it is necessary to examine in a certain amount of detail two of the basic tools/perspectives we uphold as a working and innovation method in the new context: Design Thinking to establish our goal; and Lean Startup to develop our product or service. The Business Model, by using Osterwalder's tool, complements both and bridges the gap between the Generation and Validation of the idea.

2.1 Generation of business ideas: understanding my user's needs and developing new business ideas (Design Thinking)

It is in this context of incipient design immersion in the company that new skills and imaginaries come to the fore and management begins to adopt Design Thinking as a specific manner of addressing problems and projects. We are speaking of Design Thinking as an approach to strategy and management and not only as a framework for conceptualisation and delivery.

The challenge posed is twofold. Firstly, because new scenarios do not exist and have to be created. The huge goal is to determine where we want to focus on or head for (our vision/mission). An unattainable mission offers more possibilities of creating new ways of acting at an early stage and of identifying incipient needs that have not yet been recognised or validated. It is in this area that we must act. Secondly, because what matters is to know how to capture these ideas and have the intuition, at least, to identify and distinguish a good idea from one that is not so good.

DesignThinking is a discipline that attempts to apply the design process as a holistic approach to problem solving.

DesignThinking (DT) is precisely what makes it possible to provide a response to the challenges of ideation and execution such as that described above. In short, it is a discipline that aims to apply the design process as a holistic approach to problem solving. As a rule, it has a practical approach based on addressing the challenges of management, business development, service development and so forth from the same perspective and systematics with which a designer addresses and solves projects. Therefore, it is important to take design to be a process that helps us plan, and not merely an attractive definition and the functionality of a product.[13] The main strength of this approach lies in the fact that it is a valid tool (neither exclusive nor excluding) for developing innovative and creative solutions by achieving optimal decision making points. The framework that emerges when rational and logical thinking are combined with intuition goes beyond traditional deductive

thinking (valid solutions to choose from) and explores abductive reasoning (undiscovered or not previously considered solutions to be explored).

Design Thinking is Creative Problem Solving that falls into the category of Human Focus Centred, which makes people the centrepiece and basis of the innovation process. Technology and market become a mere commodity of secondary importance. The objective is to find and stress deep needs – insights – that are not met, or incipient conflict points. The challenge stems from the subjects who are involved and we must understand their context and reality. Only when we have understood this reality will we be in a position to develop coherent and strong ideas and solutions.

With multidisciplinary teams it is a genuine tool for co-creation in which the voice of our stakeholder is essential, and qualitative research takes priority over data. It is a radical shift of perspective from designing FOR people to designing WITH people. Creating value is thus what matters, and therefore having an idea and not knowing how it is going to improve people's lives is not a good idea.

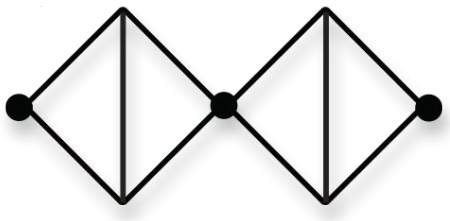
But as well as being good, it must be capable of connecting with a story and managing to entice the user to empathise and imagine themselves in the scenario we propose. For innovation is no longer centred only on creating the optimal technology or the cheapest product or the most disruptive business model. It all begins with a story (indeed, this has always been the case: in the beginning was the word): with an ***(a) introduction*** (do you know your customer? Do you know that person?), and continues with the ***(b) development*** (could you tell me your daily story?) and ***(c) an outcome*** (do you see any point in this story at which we could help you, that is, improve your story?).

Design Thinking can therefore be used to solve a broad range of problems and environments as distant from each other as the development of products or services, the design of business models or the definition of social assistance programmes.

2.1.1. How is it put into practice?

Perhaps the most critical point in Design Thinking is its implementation. If we conduct a Google search we can find various types of modelling and processes, from the main and most widespread one developed by Stanford to those defined by private enterprises. It is really difficult to search for a legitimate work process and define or apply it exhaustively.

Despite the foregoing, we can infer a basic common "design process" that underpins the various models or visualisations of Design Thinking. In 2005 the British Design Council,[14] the highest design authority in the United Kingdom, came up with a simple diagram based on a study carried out on leading companies: the double diamond.



The "double diamond" design process model
Source: British Design Council

The double diamond is divided into the phases of discover, define, develop and deliver and furthermore represents the various diverge and converge stages involved in the design process, showing the different ways of thinking that designers use in a standard process. As the figure explains, it is necessary to complement convergent thinking with divergent thinking and go through cycles of opening out in search of information and subsequently narrowing the focus.

A final observation: it is not a closed model but is subject to systematic modelling/adaptation, often with variations or reservations, which lead to various drawings that are each company's visualisations. Ours is called *Designpedia*[15] and brings together 80 tools for developing creative and innovative processes in the business environment.

At this point Osterwalder's Business Model Canvas takes over in order, following initial iterations on understanding the user and generating/defining a product-service solution, to make the first draft business model, meaning its implementation and functioning. The solution plus the initial business model, with hypotheses for distribution channels, income methods, costs, etc., is what gives an idea of the business.

2.2 Validation of business ideas: visualising opportunity and finding the path (Lean Startup)

For decades creating companies has gone hand-in-hand with developing a winning product targeted at meeting a major market need. This focus faithfully relies on the vision of the entrepreneur, on his ability as an advanced detector of obvious needs to be met, and on his determination to be able to build the product. This approach can work in highly delimited markets where customers' behaviour is known and a better product than competitors' can be made. But it is burdened by a huge marketing expense as a condition *sine qua non* for introducing and positioning it on the market.

Today, however, innovations and improvements in technology have grown faster and markets are more complex and global. To this should be added the fact that traditional companies also have to battle in an ocean where not only large cetaceans are king but there is also a shoal of startups with innovative products that do not yet have a market or are seeking to segment an existing market to secure a new niche. In this context, such a traditional product-centred approach is completely ineffective. Therefore, although the current method proves successful in today's markets in the short-medium term, it is useless to entrepreneurs. And this is simply because the latter embark on building something new and hitherto unseen, and therefore to expect their product vision to perfectly fit consumers' needs is wishful thinking indeed. On the contrary, we have at last realised that the customer is not conscious of what they want or of where they can find it. The discovery made by an entrepreneur to solve this is a process whereby the proposed solution is progressively adjusted to fit the market.

Therefore, it is essential to involve the customer in the various stages of iterative or incremental development, carry out intermediate requirements elicitation, and update our vision and

understanding of the business project as time progresses and we attain certain milestones. We must seek new forms of managing projects based on continuous and frequent delivery of value to customers.

It is here that agile methodologies emerge for creating and developing products based on iterative cycles with the customer and comparing results for a correct incremental development, adapting to the customer's understanding. Furthermore, customer/business development marks an about-turn in this approach and a focus on learning from customers in order to develop the product they really need, making not only the product but the whole business model hinge on the first stages of the enterprise.

The key word is **learning,** as it is a continuous learning process ("the essence of Kaizen") in which contact with customers should be abundant and speaking to them our main means of focusing product/business model development, and not only the entrepreneurs' vision, as occurs in most enterprises.

The combination of agile product development and the pursuit of a business model to underpin it in order to ensure profitability, sustainability and scalability give rise to the concept of Lean Startup, which was coined by Eric Ries in the book with the same title. Built on Toyota's principles of Lean Manufacturing (1980s), a methodology for factories aimed at seeking efficiency and eliminating waste, its maxims are clear and concise:

- **Create quickly:** that is, do what needs to be done at the right time and eliminate the inefficient – in other words, anything that does not provide value at the right time.
- **Measure quickly:** be capable of establishing metrics that help us obtain knowledge of what we generate.
- **Learn quickly:** based on the knowledge gleaned, be prepared to pivot and improve our proposition.

Lean Startup is a working methodology aimed at seeking efficiency through continuous learning.

Other authors have emerged in connection with the lean concept, such as Ash Mayura with his Running Lean model that is geared more to technological entrepreneurs (web, app), and concepts such as Lean UX and Lean Sales, among others. Roughly speaking, Lean Startup is the standard for how new entrepreneurs build and launch new products; the rest provide other more detailed interpretations or processes. Basically, what Ash sums up in a great phrase is the sole objective: "Life is too short to build something nobody wants". The focus should therefore be on discovering whether your hypothesis on the problem you are solving, the product you wish to develop and the customers you must target are valid. That is, carry out a problem-solution fit. The process offered by Steve Blank's Customer Development is an optimal method. Four clear steps that can and should be repeated until the customer knowledge needed to successfully launch the product/enterprise is gleaned.

- Customer Discovery
- Customer Validation
- Customer Creation
- Company Building[16]

To this end, it is essential to go out and talk to potential customers, carrying out qualitative experiments and research. It is a laborious and very important stage in which technical entrepreneurs are the least accustomed and tend to take refuge in the office to develop their product; however, in order for the product to be successful, it is necessary to spend a lot of time in contact with customers.

At an initial stage we should not talk to possible clients to obtain lists of product specifications, but rather to find out whether our product vision has customers who are willing to buy it. At this stage we can use the philosophy of Minimum Viable Product (MVP)[17] as an alternative to questionnaire systems, applying the Lean Startup method.

To incorporate this methodology properly a product development team and customer development team are needed.

The aim is to find the early adopters, customers who are generally at the forefront of technology or are simply more inclined to our proposition owing to evident needs and do not mind acquiring unfinished products still at the test stage.

The idea is thus to validate the solution we have in mind, which can mean simple experiments based on bringing our potential customers face-to-face with prototypes such as storytelling, or initial product visualisations (wireframes). What we seek is to convert initial business model hypotheses into certainties on the problem and the proposed solution.

On the basis of the initial customer identification, with the product defined and the business model at the initial stage, validation is more than necessary: we are talking about first pre-sales. If everything goes as it should, this stage witnesses the creation of new customers that will eventually demonstrate and take us to the generation and establishment of the pillars of our company. At this final stage we are no longer seeking a business model but implementing it.

Finally, in order to incorporate this methodology properly, we need a product development team such as the so-called Customer Development Team, working in parallel to ensure that startup goes smoothly. Thanks to its resemblance, with reservations, to a pure business creation approach, we can understand that its application in established companies is in turn highly effective when we are developing new business lines, that is, by generating intrapreneurship

Can anyone then apply these methods and in any environment, even culture? The answer is yes, but under certain conditions. We will examine this in the next and last section of the article.

3. Six essential lean business refocuses for applying DT and LS successfully

Prototyping, failing, making mistakes, redesigning, evaluating, user, needs, etc. are the usual concepts that appear recurringly in different methodologies, perspectives and processes such as Design, Agile, Lean and Business.

Nevertheless, there is still a certain semantic divergence despite common denotations. It is inevitable that over time a good many of these concepts will end up sharing the same territories. Until the time comes, in the short-medium term it is necessary to overcome the barrier that terminologies and their origins can create and concentrate on building a new paradigm in companies – one with an integrating focus that does not leave out the culture industries.

As a company, we have never believed in the need for major investments to build initial products or services, while we have always expressed the need to experiment, play and examine unexplored paths. We have always had and have the annoying ability to cast doubt on and attempt to reconsider the status quos we come across. And indeed, this article implicitly calls for action inspired by passion for and belief in what we do, but above all for sharing and disseminating it.

But beyond our own beliefs and experiences analysing customers, sharing with friends, etc., we are sure that in businesses, apart from processes and methodologies, we will inevitably have to end up talking about change in general:

1. Think in terms of **foresight** instead of making provisions. That is, how much I can take instead of how much I hope to earn.

2. Be totally or partly **flexible**, depending on the situation, instead of rigid in our approach to all the fields that affect our product/service.

3. **Tangible proactivity** whereby I am the one who makes the moves and don't wait for various customers, suppliers and agents, instead of a reactive attitude of waiting for them to come to me.

4. **Try** out new things, **embrace uncertainty** as a variable of the ecosystem and life in perpetual beta, instead of paralysis/incapacity or refusal to experiment.

5. **Become our customers' travelling companions** instead of merely a product services provider. Shorten the distance from our customers with a closer relationship and deeper knowledge of them.

6. Use **iterative processes,** those which allow us to live in the context defined in the previous points, instead of linear processes and methods.

The new paradigm involves foreseeing, being flexible, proactive, innovative, close to the customer and using iterative processes.

Only if we accept the proposed change of perspective as something natural will we be in

a position to be able to develop the mindset provided by Design and Lean Thinking, which we have pointed out throughout this article. We consider that the process can be summed up in three main iterative steps that are the basis of what we have called Lean Business:[18]

1. Generate

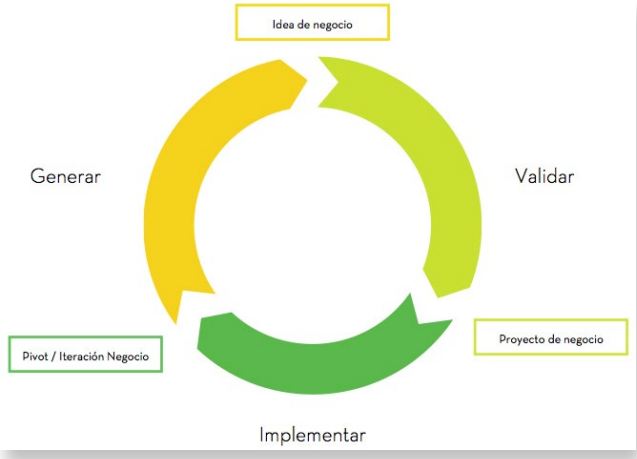
- Identify the need or opportunity on the basis of interviews with six to ten users.
- Build up an idea putting the focus on a single type of customer (developing new business ideas entails major strategic decisions).
- Test the initial idea and reconceptualise on the basis of the test results.

2. Validate

- Design one or several business model(s) with which we can answer questions such as: What is our value proposition? Who is our user/customer? What are we going to do? Through what channels are we going to communicate with our customers? and so forth.
- On the basis of the foregoing, select a model, initiate a process for validating our initial hypotheses with at least fifty interviews with users (according to Steve Blank) to gather information and validate the starting assumptions.
- On the basis of our findings, iterate with new approaches (minimum changes in the business model) and/or if necessary pivot our business model (substantial change) until a perfect fit is achieved.

3. Implement

- Develop the product or service gradually, inspired by the philosophy of think big to make it small or specific.
- Finally, restart the process in order to try and seek more users for our product that allow us to achieve a suitable initial profitability and plausible medium-/long-term scalability.



Lean Business: from generating the business idea to its consolidation.
Source: Thinkers Co.
(Clockwise, from left)
Generate
Business idea
Validate
Business project
Implement
Pivot / Business itineration

In short, in the current context, any sector – including culture – must undergo this reframing in order to have the possibility of innovating.

We personally believe that we can and should work by applying all these techniques and harnessing their potential. There are examples of success that confirm this and "traditional" business models can be transformed, despite (or sometimes due to) the current crisis, both economic and of the system. The challenge is considerable, but we believe that there is sufficient talent and energy to achieve this. To do so, we must go beyond professional recipes, as we are currently experiencing in a period in which we must seek simple processes such as the one described in this latter section and even, if possible, find our own process.

In this respect, we will leave the reader with a last lesson-summary: ***Take risks, don't be afraid of making mistakes, because we only learn from mistakes and it is from mistakes that truly interesting things arise. We only learn when we try.***

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Notes

1. Juan Gasca is CEO of Thinkers Co. and José Manuel Jarque is Senior Project Manager of Thinkers Co. (http://www.thinkersco.com).

2. An example is the challenges to be addressed by sectors such as finance. In this connection we recommend reading, as an introduction to the subject, the report by the Lantern consultancy firm *SECTOR FINANCIERO: 9 preguntas para su transformación* en: http://www.lantern.es/white_papers/sector-financiero/?lang=en. The nine questions they ask are: (1) Why should we think about doing things differently? (2) Are we being disruptive? (3) Is the customer the focus of our innovation? (4) Are we making use of customer experience design to compete better? (5) Are we really innovating in our products? (6) Are we making the most of the full potential of mobile devices? (7) What is the future of our network of branches? (8) Do we know how to integrate the social media and Web 2.0? (9) Are we prepared to innovate?

3. According to Carlos Scolari (2014), "within the new generation of consumers, there is a sector that is committed to going beyond that role and becoming media prosumers. These are the prosumers who will take over a story world and extend it by creating new characters and adventures".

4. For an outline of the different business models based around culture and the digital, we recommend Dosdoce's report *Nuevos modelos de negocio en la era digital* at http://www.dosdoce.com/articulo/estudios/3924/nuevos-modelos-de-negocio-en-la-era-digital/

5. An example in Spain is Yomvi Televisión, which provides consumers with a multi-channel experience by allowing them to consume content from any device and whenever they want. In the field of applications, the experienced offered by the Evernote app is perhaps one of the most notable. Proof of the significance and relevance of multi-channelling is WhatsApp's recent announcement of a web service accessible from any device (*La Vanguardia* 16 December 2014: *WhatsApp se podrá usar en ordenadores en 2015,* http://www.lavanguardia.com/tecnologia/moviles-dispositivos/aplicaciones/20141216/54421875104/whatsapp-ordenadores-2015.html).

6. According to Alfons Cornella's definition, "infoxication is an excess of information. It is therefore the same as *information overload.* It is always being "on", receiving hundreds of pieces of information every day to which you cannot devote any time". At http://alfonscornella.com/thought/infoxicacion/

7. "The Observatorio de la Cultura carries out a half-yearly survey on the state of affairs with a panel of experts consisting of leading professionals in Spanish culture: writers, artists, directors and actors, musicians, architects and creators in all fields; managers of foundations, directors of museums and cultural centres and institutions; publishers, producers, promotors, gallery owners

and people responsible for the cultural industries; exhibition curators, cultural managers and sector professionals, as well as those responsible for cultural areas and institutions in the central, regional and municipal government" (2013b).

Its report consults **public and private** cultural organisations and the various organisations are divided into four types: "**Museums** (museums and exhibition halls, to which access is often free of charge, with revenues from ticket sales, catalogues, shop); **Shows** (theatres, cinema, concerts, spectacles; revenues from ticket sales); **Publishing** (books, records, DVDs: sale of copies); **Centres** (multidisciplinary centres, combination of some of the previous formats)".

8. The three days of discounted cinema tickets known as the "Fiesta del Cine", to cite one case, has brought up for discussion the question of whether the drop in cinema attendance is related to factors such as piracy or others such as the price of tickets. In this connection, see *El País* (30 October 2014): "El récord de la Fiesta del Cine reabre el debate del precio de las entradas" at http://cultura.elpais.com/cultura/2014/10/30/actualidad/1414700853_184092.htm

   On the question of VAT, for example, in the report by the Observatorio de la Cultura (2013a) various cultural agents underline the impact it has had and what strategy they have used: "In the opinion of approximately half of those polled, the effect has been determining and highly negative on shows most dependent on the box office (theatre, cinema, concerts), amounting to the "last straw" for the sector (an expression repeated several times). For the other half, the increase has not had a major effect on their audiences, including the publishing sector (no VAT rise), free activities or those which have decided not to reflect the increase in their prices".

9. As we read in *La Vanguardia* (15 December 2014), "Various studies show that Internet users prefer to share material privately to doing so in open networks, whose activity can be better controlled" at http://www.lavanguardia.com/tecnologia/internet/20141215/54421436357/participacion-social-oscura.html. So although influence and presence in the social media is important, it is by no means the place in which to work on capturing our users' or customers' real needs and opinions. For further details, readers can download the report to which the Barcelona daily newspaper refers from RadiumOne's website through the following link: http://info.radiumone.com/rs/radiumone/images/RadiumOne_DarkSocial.pdf

10. A good summary can be found in the ZDNet article (1 December 2011) "Design thinking: A new approach to fight complexity and failure". At http://www.zdnet.com/blog/projectfailures/design-thinking-a-new-approach-to-fight-complexity-and-failure/14977?tag=content;siu-container

11. Idem, note 3.

12. http://steveblank.com/2010/01/25/whats-a-startup-first-principles/

13. To quote Steve Jobs, "Design is not just what it looks like and feels like. Design is how it works". It is not something so new despite seeming the opposite, as in the mid-twentieth century Charles Eames, one of the furniture design icons, defined the boundaries of design as the limits of the problems.

14. We refer readers who are interested to http://www.designcouncil.org.uk/news-opinion/introducing-design-methods

    We also recommend reading the institution's eleven design lessons that can be accessed from its website at http://www.designcouncil.org.uk/knowledge-resources/report/11-lessons-managing-design-global-brands

15. On this basis, during 2013 and 2014, while reviewing the various projects undertaken at our company Thinkers Co., the founders, Juan Gasca and Rafael Zaragoza, carried out a reflection and explicit visualisation process that gave rise to our work process built from compiling 80 tools in four phases: map, explore, build, test. It respects the principles of the double diamond model and is featured in the book *Designpedia,* published by LID (http://www.lideditorial.com/novedad/libros/1002734014101/designpedia.1.html). Templates of these tools and case studies in which their development and application is exemplified can be found on our website www.designpedia.info. For other applications or viewpoints, see, for example:

    http://www.designcouncil.org.uk/Case-studies/FeONIC/

    http://www.designcouncil.org.uk/Case-studies/Northern-Way-worklessness-pilot/

    http://www.designcouncil.org.uk/Case-studies/Arcam/

    http://www.ibscdc.org/Case_Studies/Marketing/Marketing%20Strategies/MM0025.htm

16. For reasons of space, we cannot discuss in detail the different techniques listed. For further information about the different stages proposed, see Steve Blank's two fundamental works: *The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company* and *The Four Steps to the Epiphany.*

17. This is a somewhat ambivalent concept in the entrepreneurial world. Based on our experience, we define it as "the product that meets the fundamental functional characteristics of stability, usability and design that define the core of what the final product/service will be".

18. Each of the states described has a complex development depending on the casuistry of the type of product/service we build and the techniques we wish to use in each part of the process. Only the three necessary phases are mentioned here.

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Using data to create value in the arts and cultural sector

Juan Mateos-Garcia, @JMateosGarcia

The data revolution

What have been the most important innovations in the last 30 years?

When answering that question, many of us will mention digital networks, devices and services: the World Wide Web, Smartphones, social media platforms such as Facebook or Twitter, search engines like Google, content platforms like iTunes or YouTube, or e-commerce sites such as Amazon or e-Bay. These technologies have changed the way we access information and content and communicate with each other, how we work and how we consume.

They also share a less visible but essential feature: they all collect amazing amounts of data. Just think about it: every single action that you take inside any of these networks, devices or services requires a click, a swipe or typing some text, and each of these actions creates data about your behaviour, your interests and your desires.

The numbers involved are extraordinary: Facebook processes 930 million photo uploads, 6 billion "likes" and 12 billion messages each day.[1] Google receives 40,000 searches every second,[2] and YouTube users upload 100 hours[3] of video to YouTube every minute. This has created a data avalanche: According to IBM,[4] 90% of the data that exists today was generated in the last 2 years.

Transforming this raw data into knowledge that can inform action is not easy though. Not long ago, data was thrown away because it was expensive to store and difficult to analyse: it was a cost. However, improvements in data storage and management technologies, and innovations in analytical tools, have transformed data into an incredibly valuable resource – "the new oil", according to UK broadcaster David Abraham[5]

– or even a new type of asset, according to the OECD.[6] In the words of Kenneth Cukier[7] and Viktor Mayer-Schönberger,[8] authors of an influential book on this topic,[9] we are becoming "Datafied".

Differently from other technologies, which are relevant in a small number of sectors, the data revolution has the potential to transform all industries. The reason for this that every sector, from agriculture to biotechnology, as well as the public sector and NGOs – needs knowledge to operate: knowledge of what to do, how to do it, where and when. Relevant data analysed carefully, and applied effectively can help these organisations do these things better.

The data revolution has the potential to transform all industries. Its analysis and application allows organisations to innovate and progress.

Does this also apply to the Arts and Cultural sector? When we think about what happens in performing arts venues, galleries, museums and publishers, words like "passion", "emotion" and "creativity", come to mind before "data".

There is in fact a tendency – even a prejudice – to think of creativity and data as opposites instead of potential complements (another example of the unproductive conflict between the two cultures[10] of the "Arts and Humanities", and "Science and Technology", which is so detrimental to everyone). In this essay, my intention is to challenge this view, presenting examples of the way in which data can create value in the arts and cultural sector, and identifying actions that can be taken by policymakers and practitioners in order to help the sector become a full and successful participant in the data revolution.

But before doing that, it is perhaps a good idea to clarify some of the terminology around data, which can be quite confusing, and even intimidating.

Data dictionary

The data revolution is being driven by the convergence of data 'inputs', data technologies, analytical methods, opportunities to apply data, and skills. I will go through these things in turn. My aim is to provide some clarity around concepts and ideas that sometimes get entangled, and to provide a foundation to discuss applications of data in the Arts and Cultural sector later on in the essay.

Let's begin with *data*. Data is simply a set of measurements of a phenomenon: It could be transactions in a website, the content that someone posts in a social media platform, or responses to a survey. Data can be numbers, text, video, audio, relations (e.g. the people that you are connected to in a social network like Twitter) or outputs from a sensor (e.g. an infrared sensor counting how many people enter in a room).

Metadata is information about items of data that can be used to archive them, organise them and retrieve them (for example, a "timestamp"

in a transaction, the bibliographic reference for a book in a library, or the demographics of the users who register in a website).

Data can be *proprietary* or *open*. Proprietary data is generally collected by organisations from their own websites and platforms, and often kept private. Open data[11] is, on its part, publicly available for anyone to use. This data, often gathered by academic researchers, public bodies and the government[12], can be downloaded or accessed via Application Programming Interfaces (APIs) from the web.

When we start to collect and combine data, we can end up with *Big Data*. This popular concept was first used by technology consultants Gartner in 2001[13] to refer to datasets that are hard to manage using traditional database and analytical technologies. The reasons for this are that these datasets:

- Have high *volume*: They are too large to be stored in a single computer, or even in a single server. Instead, they need to be distributed across a company's data infrastructure, using multiple computing clusters.

Data can be proprietary or open. Open data are publicly available for everyone to use.

- Have high *variety*: these datasets often bring together data from many different sources, including 'unstructured' data like video, audio and text which are very different from 'well structured' tables of data (like financial information). "Messy" data has to be cleaned before one can work with it, and can be hard to store in 'relational' database architectures such as SQL.

- Have *high velocity:* These datasets are generated at a high velocity (remember those 40,000 Google searches every second I mentioned before), and in order to create value, they need to be analysed and acted upon "in real time" (faster than any human could do, which requires automation in analysis).

Nowadays, the term "Big Data" is used to talk about the ever-expanding collection of technologies that help organisations deal with large volumes, velocities and varieties of data. They include *Hadoop*[14] (a framework for distributed data processing), *Cassandra*[15] (a big database system) and *Hive*[16] (a big data warehouse) among many others.

So far I have focused on data inputs and the technologies to manage them. However, if data is going to generate benefits, it has to be analysed. This involves a variety of methods coming under the umbrella of *Data Analytics* (see this Booz, Allen Hamilton's Field Guide to Data Science for a summary[17]), including:

- *Statistics* to summarise and test hypotheses about the data, and see how generalizable anything we find is beyond the data we already have.

- *Text mining* to explore unstructured information, for example through "sentiment analysis"[18] that can determine whether the

content in a social media post contains a positive opinion, or a negative one.

- *Social network analysis* to visualise and analyse communities and social groups (like Facebook's "Social Graph").

- *Machine learning* and *Data mining* algorithms to classify individuals in groups and predict their behaviour, and to discover new patterns in data. This is often done without human intervention, as data models learn from their own performance and improve their accuracy over time.

- *Data visualisation* methods to represent data graphically in order to explore it, or to communicate findings to others (see the "Visual Complexity"[19] website for an excellent collection of enlightening and often beautiful data visualisations.)

- *Web analytics* uses data about visitors to a website to optimise its design and the marketing investment to promote it. One important technique used in web analytics is *A/B testing*, where visitors are shown different versions of a website in order to determine which of those versions works better.

Data mining includes a series of statistic and analytical methods that make it possible to classify, detect patterns and predict behaviour.

There has been an explosion in the areas for *data application*, that is, the domains where data insights can be applied to create value inside an organisation (or societally). These include:

a) Measurement and optimisation: Here, data insights are used to increase the efficiency of processes, evaluate the return on investment of different activities (e.g. spending in different marketing channels) and allocate resources to the areas with the greatest impact.

b) Segmentation and prediction: Data can be used to classify users into different groups in a way that allows more personalised targeting of content, marketing messages, promotional offers and so forth. Patterns in historical data can also be used to predict future outcomes. For example, there are regularities in the behaviours of people who commit credit card or insurance fraud that can help to predict such instances in the future.

c) Discovery: Data can be mapped and mined to identify new market opportunities. This can be done for cross selling, to find gaps in the market (e.g. regions where people are not engaging with a brand), and to identify new consumer trends that might require a change in business strategy.

Many of these areas of application are not new: retailers, financial service companies, insurers and many others have used data to make strategic and operational decisions for decades and even centuries[20]. What is the novelty in all of this?

What is new is that greater access to data, and innovations in 'big data' technology, are increasing the velocity and precision with which data can be used to optimise, segment and

discover. As a consequence, data now provides the 'engine' for many successful products and services. Some examples include the personalised recommendation systems in websites like Amazon or Twitter, Apple's personal assistant *Siri*, Google Search and Translate, and the customised health and financial advice provided by health apps and online banking services.

Realising these new opportunities requires new skillsets. In the data landscape that I have overviewed, value is created by combining digital technologies (websites, databases and data products) with large-scale analysis. A new role – the *data scientist*[21] – has emerged in the nexus between these two areas.[22] In addition to computing and analytical skills, Data Scientists also need to have industry and business knowledge, and the ability to communicate their findings in order to make things happen inside an organisation.

Innovations in big data technology are increasing the ease, speed and precision with which data can be used to optimise, segment and discover.

Recent research by Nesta[23] and other bodies in the UK suggests that people with this profile are very hard to find. Many organisations across the economy are facing analytical skills shortages, and as a response, they are innovating to find, organise and manage this rare talent. I will discuss later what this means for the Arts and Cultural sector. But before doing that, I want to make a case for why the Arts and Culture should pay attention to the data revolution in the first place.

Data, Arts and Culture

I use the term "Arts and Culture" to refer to those sectors involved in the creation and distribution of artistic and cultural goods, services and experiences, and of creative content. This includes sectors with a strong presence of not-for-profit organisations such as Libraries and Museums (repositories and preservers of culture) and arts and cultural organisations, as well as commercial industries like music and book publishing. How do they fit within the data landscape that I have described above? Is any of this relevant to them?

Perhaps a more precise way of asking that question is to consider whether, in their operation, they collect data that they could analyse, and whether that analysis would enable them to act in ways that create value.

I think that the answer to those two questions is a resounding yes. I will justify my answers by referring to research[24] on digital innovation in the English Arts and Cultural sector undertaken by Nesta in collaboration with the Arts Council England[25] and The Arts and Humanities Research Council,[26] as well as some innovative examples of the use of data in the sector.

Regarding the first question, Arts and Cultural organisations are already involved in activities that enable them to collect many of the types of data I mentioned above:

- *Website data:* 95% of the 895 organisations that Nesta surveyed for its 2014 Digital Culture Report[27] have a branded website, and 85% publish content in that website for

users to engage with. 26% publish stand-alone digital exhibitions, and more than half receive over 1,000 monthly unique visitors to their website.

- *Transaction data:* Almost half of the Arts and Cultural organisations surveyed sell tickets online, 39% accept donations online, and 38% sell other products and merchandise online.

- *Social media and social network data:* 9 in 10 have a social media presence. 50% of these organisations have over a thousand followers in Twitter, and 40% have over a thousand 'fans' in Facebook.

- *Archival data:* Many museums, libraries and galleries have a wealth of information about their own collections. 57% of the organisations Nesta surveyed are digitising their collections and archives.

Big data can provide the cultural sector with opportunities if culture organisations pool their data.

Although these data sources are rich and diverse, very rarely will they "add up" to Big Data, at least in terms of their volume. While, as US economist Michael Rushton rightfully points out, the Arts and Cultural sector should avoid getting obsessed with Big Data at the expense of other important goals,[28] it is also true that there may be some Big Data opportunities lying ahead for the sector, especially if groups of arts and cultural organisations pool their data together.

The fact that many of these organisations are not motivated by profit can make it easier for them to do this better than commercial organisations worried about sharing valuable data with their competitors. I will provide below some examples of how this data pooling experiments are happening already.

In any case, the question at the end of the day is not so much whether Big Data is possible or not in the Arts and Cultural sector, but whether data (big or small) can be useful for solving important problems for the sector. For example:

Can data help to measure the impacts of Arts and Culture better, providing a stronger rationale for any public or philanthropic funding received by organisations in the sector?

Can data help Arts and Cultural organisations with a variety of funding mixes and missions behave more economically, innovatively and transparently, deploy their resources more efficiently, and identify new opportunities faster?

Can data even become a source of inspiration and new ideas that drives the creative and innovative activities in the sector?

I believe that data can make a critical contribution in all of these areas.

As before, I explore how this is happening, drawing on the activities of English Arts and Cultural organisations recently surveyed by Nesta, as well as practical examples of innovations taking place in this space:

a) Measurement and optimisation: Regardless of their sources of funding and their mission, Arts and Cultural organisations need to engage their existing audiences, and reach new ones[29]. To do this, they invest in marketing and in website development. Evaluating whether such investments are generating a return, and how those returns can be augmented, requires data. 43% of the Arts and Cultural organisations surveyed by Nesta used such data to improve their website in 2014.

NT Live,[30] Nesta's collaboration with the National Theatre[31] in London, shows how data can help Arts and Cultural organisations measure the value of their activities, and their impact. Nesta researchers collected data from attendees at digital broadcasts of a National Theatre performance across the country in order to understand the quality of their experience, and how they differed from those who attended the performances at the National Theatre itself. The analysis of the data[32] revealed that attendees of the digital broadcasts were significantly less affluent: an implication of this is that NT Live was increasing the "capacity" of the National Theatre, and helping it connect with new audiences.

Culture Counts[33] is an example of a "big data" project aimed at helping arts and cultural organisations measure their impact better. This project, based on a collaboration between researchers and Arts and Cultural organisations in Manchester, uses a mobile app to capture feedback from audiences, artists and peers at arts and cultural events in a way that respects the qualitative and public value aspects of such experiences, and can be used to measure impact by arts funders. Another interesting project in this space is Arts API[34], which uses data from Arts and Cultural organisations in order to map their collaboration and influence networks.

According to the Nesta survey of 2014, 50% of cultural organisations already use data to identify and engage with their audiences.

Going forward, some commentators hope that the combination of many different datasets – including, for example, sensor metrics from inside Museums and Galleries[35] – might make it possible to track some of the most elusive (but perhaps more important) impacts of Arts and Culture, for example on quality of life, and health and educational outcomes – in other words, to "Count what Counts"[36] for the sector.

***b) Segmentation and prediction*:** Arts and Cultural organisations need to understand their audiences in order to engage with them, boost their loyalty, and develop new business models (by increasing levels of donations, selling merchandise online etc.). Again data is critical for this. According to Nesta's 2014 survey, 50% of Arts and Cultural organisations already use data to identify and engage with their most valuable audience members, visitors and supporters, and to create profiles of their audiences. 37% use data to personalise and tailor marketing and fund-raising campaigns.

As the 2014 TrendsWatch[37] report by the US Centre for the Future of Museums[38] points out, more and more museums are entering this space. For example, the History Colorado Center[39] is

using analytics technology from IBM[40] to combine and analyse admissions, food, merchandise and membership data in real time in order to understand its visitors better, and to personalise their experiences in a way that encourages repeat attendances, and improves fund-raising. One opportunity going forward is to use Near Field Communication[41] (NFC) data to obtain detailed information about visitors "journey" through a museum, which can be used to personalise and improve their experience.

The Unusual Suspects[42] project also highlights how Big Data can help Arts and Cultural organisations segment and profile audiences more effectively. Unusual Suspects is a coalition of 9 Arts and Cultural institutions in Newcastle covering a wide range of cultural forms, from modern art to cinema and museums to theatre, who are pooling their data into a "Big Data commons" which will be analysed to identify infrequent visitors who could be encouraged to participate more actively in local Arts and Culture, and also to identify opportunities for cross-promotion between the organisations participating in the project.

c) Discovery: Many Arts and Cultural organisations are going beyond the use of data to improve the efficiency of their operations, and bringing it into the development of their social media strategy and wider strategic direction (over 4 in 10 of those surveyed by Nesta do), as well as informing the development and commissioning of creative artworks, events and exhibitions (a quarter are using data this way).

Audience Finder[43] is an example of a data platform that can support these discovery activities. It has been set up by the Audiences Agency,[44] a not-for-profit consultancy that supports audience development in the English arts and cultural sector. Audience Finder provides those organisations who join the platform (and contribute their data) with access to standardised information about audiences across England – including their location, their behaviours and their attitudes – through a variety of data visualisation tools and dashboards that they can use to benchmark themselves against other organisations, and generate "area profiles" they can use to identify new opportunities to promote their work. Audience Finder is currently being augmented through the Arts Data Impact[45] project, which will bring other open datasets into Audience Finder, and develop an API which can be used by other organisations to tap into its data.

Understanding and measuring impacts can help target investment on activities that create higher public value.

Audience Finder data is also being used to improve our understanding of the impact of Digital R&D in the arts. A recent statistical analysis of 12 million ticket sales from performing arts organisations[46] in England shows that the NT Live digital theatre broadcasts that I mentioned before generated a "spillover" effect by increasing the numbers of people who go to see other arts performances in local venues, instead of taking audiences away from those venues. Understanding and measuring these impacts can help Arts and Cultural organisations and funders target their innova-

tion investments on those activities that create higher public value.

d) Building new data products, services and experiences: Finally, data can provide the foundation for new products, services and experiences in the Arts and Cultural sector. By this I mean three things:

1. There are many opportunities to develop personalised platforms and services for Arts and Culture lovers. Going beyond well known examples in video and music, such as Netflix or Spotify, both of which analyse their data exhaustively to optimise the user experience and, in the case of Netflix, even use audience engagement data to identify new project ideas to develop,[47] there are also arts-oriented platforms such as *Artfinder*,[48] an e-commerce site where users can buy artworks from thousands of independent artists. Like many other e-commerce sites, Artfinder includes collaborative filtering techniques to help its users discover artists they might like based on the behaviour of other users similar to them.

2. Arts and Cultural organisations are creatively incorporating data into the artworks, events and exhibitions that they commission. This makes sense, given the central position of data in modern culture. Some examples of works that use data as an arts material include Ryoji Ikeda's[49] audiovisual installations, or Stefanie Posavec's[50] visualisations of literary data. The Open Data Institute[51] (a UK based body with the mission to help other organisations unlock value from open data) has a "data as culture"[52] programme to exhibit and commission works of art based on data. Barcelona's CCCB[53] recent "Big Bang Data"[54] exhibition acted as a forum to discuss the cultural implications of the data revolution. In addition to providing a foundation for new art, data is also acting as a tool to encourage audience interaction in Arts and Cultural events and performances. One example of this is Lightwave,[55] a start-up that is developing a wristband that monitors the behaviour of audiences at cultural events in real time, allowing performers to react to this information immediately, and even projecting visualisations of this data back at the audience.

3. Arts and Cultural organisations can also make their data openly available as another avenue to create public value. OpenGLAM[56] (Open Galleries, Libraries and Museums) is an initiative coordinated by the Open Knowledge Foundation[57] to encourage Arts and Cultural institutions to make their datasets and content openly available. It includes, for example, 111,000 objects and their metadata from the Amsterdam Rijksmuseum.[58]

Making it happen: some policy and practical implications

The previous section provided data and examples of the many different ways in which Arts and Cultural organisations can use the data that they collect to create value. But realising these opportunities will not be easy.

As previous Nesta research[59] on the impact of analytics on organisational performance has shown, collecting data on its own is not enough to produce a benefit. It is also necessary to build up the right skills and capabilities, transform processes and develop a culture of data-driven decision-making. Accomplishing this in the Arts and Cultural sector presents some challenges that I shall overview in turn, identifying what the obstacles are, and their implications for practitioners and funders.

The first challenge is how to **access skills**. As I mentioned in section 2, people with the skills to create value from data – data scientists – are hard to find. Moreover, the Arts and Cultural sector is not perceived as a destination for quantitative data analysts: young people studying advanced statistics, social network analysis or Artificial Intelligence in universities do not realise that they could have a career in the Arts and Cultural sector, while those passionate about the Arts and Culture are not aware that analytics skills would be very beneficial for their future career in the sector, and for the organisations that employ them. Addressing these misperceptions requires creating more spaces for disciplinary crossover at schools, and improving the visibility of the Arts and Cultural sector among graduates from data disciplines.[60] In doing this, Arts and Cultural organisations can follow the example of other organisations in the creative industries – including TV broadcasters and advertising agencies – who are collaborating with universities[61] to spot young analytical talent, and using the unique characteristics of their organisations (creative environments, interesting datasets and the opportunity to have an impact in a "green-fields" site) as "magnets" for data scientists who are, in many ways, creative workers themselves.[62]

Another potential strategy that Arts and Cultural organisations can adopt to access analytical talent is using broker organisations like DataKind,[63] a global charity that connects data scientists with NGOs. DataKind assembles data science teams who work pro bono with the NGO, exploring how the data it already has (or that it could collect) can help achieve its goals. An example of how this has been done in the Arts and Cultural sector is the Cultural Data Project,[64] where DataKind's data scientists explored a large dataset of the activities and financial performance of 11,000 US Arts and Cultural organisations in order to understand what behaviours were linked to financial sustainability in the sector. The analysis revealed distinct "clusters" of performance that the Cultural Data Project is now using to design better support services and peer-support activities for its members.

A potential strategy that cultural organisations can adopt to access analytical talent is using broker organisations.

Other options that the sector can use to connect its datasets with the data science community include Open data challenges[65] where Arts and Cultural organisations open up interesting datasets for external analyst to explore (offering a prize for those who do the most interesting work), and "data scientist in residence" schemes

such as those being used in the Arts Data Impact project I mentioned in the previous section.

The second challenge I would like to mention is to **build data capabilities** in the Arts and Cultural sector, something that goes beyond accessing skills, and also involves identifying examples of good practice in the design and management of data projects, understanding what is the potential and limitations of different data sources, and creating case studies and examples of how to go from data to impact.

As more Arts and Cultural organisations start exploring this space, peer support groups and knowledge sharing initiatives can be very helpful, by creating spaces where these organisations can discuss their experiences, learn from each other and even identify opportunities for collaboration and data sharing. Culture24,[66] a UK organisation supporting digital innovation in the Arts and Cultural sector, recently ran *Let's Get Real,*[67] a set of collaborative action research projects to define and measure online success in the cultural sector. In addition to generating benefits for the participating organisations, the project has produced a series of reports codifying its findings to upgrade the capabilities in the rest of the sector. The Audience Finder project I referred to previously also embraces the potential of peer-based learning, by encouraging the creation of networks that bring together Arts and Cultural organisations in different geographical and sectoral clusters across England.

The third challenge for the Arts and Cultural sector is **to find the time and resources to invest in innovative, exploratory data projects.** Arts and cultural organisations are often small, and lack the resources to invest on analytical capabilities with real costs in the present and uncertain benefits in the future. Their situation is often different from commercial organisations where market imperatives impel the adoption of new technologies. For this reason, funding and support bodies have a central role to play in creating spaces for experimentation for the sector, and helping it connect with other businesses – such as digital agencies and start-ups – who can support the upgrade of their data and analytical capabilities.

Knowledge sharing initiatives create spaces for discussing experiences, learning and identifying opportunities for collaborating and sharing data.

This is precisely what the £7 Million Digital R&D Fund[68] for the Arts set up by the Arts Council England, Nesta and the Arts and Humanities Research Council has been doing in England. This fund is designed to bring together Arts and Cultural organisations, digital technology companies and evaluators in a way that generates collective learning about digital innovation in the sector. A recent call for "Big Data projects" undertaken as part of the fund is supporting several of the projects that I have talked about above (including Culture Counts, The Unusual Suspects, Art Data Impact, and Arts API).

In addition to a "Supply push" effort to provide more resources for experimentation in this area, funding bodies (including foundations and

philanthropists) should also "pull" the adoption of data practices in the Arts and Cultural sector, by asking the organisations that they fund for better data about their activities and impacts, and using more data to inform their operations and strategy (something which might require them to upgrade their own data and analysis capabilities).

Conclusions

There are many potential opportunities to apply data in the Arts and Cultural sector: it can strengthen the case that Arts and Cultural organisations are able to make about their own impact, capturing in a way that was not possible before hard-to-measure public and social benefits. It can increase the effectiveness of operations and marketing, and help identify new ideas, diversify revenues and make business models more resilient. It can also provide the foundation for new products, services and experiences. As the Arts and Cultural sector continues experimenting and innovating with data, and exploring what "big data" in the Arts and Culture means, it is likely to generate new ideas, tools and ways of working together (for example around data sharing) that can be applied elsewhere in the economy and society.

The prospects are very exciting, but a lot of work will be needed, by Arts and Cultural organisations who need to access the right skills, and adapt their processes and culture in a way that enables them to create value from data, and also by funders who should encourage and support experimentation, and increasingly demand and use data to inform their funding decisions.

Of course there are also risks in this space that the sector needs to be very careful with. Privacy and data protection are in everyone's minds after the Snowden revelations and controversies about targeted advertising, data leaks and online experimentation by Silicon Valley businesses. The Arts and Cultural sector should learn from this, and build its data capabilities on the basis of ethics and trust, being transparent about how it uses its audiences' data, and offering excellent value whenever it does so. The "Friends" programme set up by the Dallas Museum of Arts[69], where visitors are offered a basic Museum membership if they provide some of their data, and where only data that "Friends" "opt in" to share is tracked, is an example of how to do this.

Another risk worth noting is that Arts and Cultural organisations might become too data-driven, and forget that intuition, passion and risk-taking should also be essential ingredients of the way they make decisions. Accepting that data and analysis are much better at providing answers than asking questions is one of the first lessons that an analyst learns, and this is another reason why it is so important that the Arts and Cultural sector advances its data and analytical capabilities: so that it understands the limitations of data, as well as its potential, for only with the understanding that comes from experimentation and practice, will it be able to create the rights sorts of value as the data revolution continues unfolding.

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Twitter accounts worth following

Big data, data analytics, data science and data visualisation

Kenneth Cukier: https://twitter.com/kncukier

Manual Lima: https://twitter.com/mslima

Hillary Mason: https://twitter.com/hmason

Michael Cavaretta: https://twitter.com/mjcavaretta

Kate Crawford: https://twitter.com/katecrawford

Santiago Ortiz: https://twitter.com/moebio

Data and digital innovation in the Arts and Culture

Tandi Williams: https://twitter.com/tandi_will

Culture24: https://twitter.com/culture24

Chris Unitt: https://twitter.com/chrisunitt

Kealy Cozens: https://twitter.com/kealyc

CCCB Lab: https://twitter.com/cccblab

Jose Luis de Vicente: https://twitter.com/jldevicente

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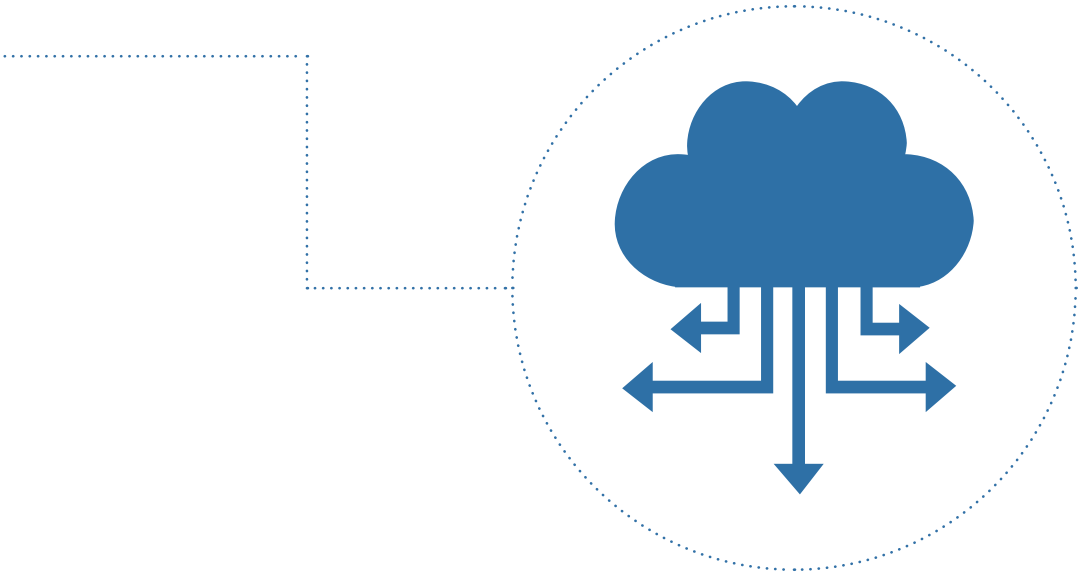

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She completed postgraduate studies in Television and Electronic Art at the University of Dundee in Scotland. Her artistic work has been shown in new media festivals in Europe, the Americas and Asia. In 2002 she was awarded a new media fellowship by the Rockefeller and MacArthur Foundations; in 1997 she won the first national prize for Cultural Television awarded by Canal 22 and the Red Nacional de Radiodifusoras y Televisoras Culturales. She was a member of the Sistema Nacional de Creadores de Arte of the Fondo Nacional para la Cultura y las Artes (Fonca) for two programmes.

Her work as a curator includes *¡Juega!,* a show featuring the work of women video artists, commissioned by the Museo de Mujeres Artistas Mexicanas (MUMA), and *Familiar / Memorable* on emerging artists in the electronic arts, commissioned by the Laboratorio Arte Alameda.

She served as artistic director at the Festival de Artes Electrónicas y Video Transitiomx_02: Fronteras Nómadas. She was a member of the Consejo de Artes y Letras of the Fonca from 2004 to 2006 and honorary member of the Consejo de Evaluación y Planeación of the Festival Transitio from 2008 to 2010, and has been a member of the Consejo Consultivo of MUMA since 2008.

The transgressive power of sharing

Grace Quintanilla, @G_Kintaniya

This article takes as its point of departure the fact that, in the digital world, the future is the present continuous. This continuity is not limited solely to a temporal quality but extends to the blurring of boundaries between specialised disciplines, production habits and forms of marketing that seem to be opposites in the material world. I shall concentrate on physical and digital cultural spaces whose content is produced by users as a clear example of this continuity, for there is no precise moment in the temporal processes of networks at which the consumer becomes a producer, at which the amateur becomes a professional and at which the buyer becomes a seller.

I propose we concentrate on this continuum as a place of action for devising models for the design, production and economic feasibility of cultural projects through my experience as director and founder of Conaculta's Centro de Cultura Digital[1] (Digital Culture Centre, CCD) in Mexico, and by sharing a few findings made this year at various events related to digital culture, open data and entrepreneurship.

Professional amateur

There is a sort of unwitting professionalisation among the users of devices, applications and authoring software, who acquire knowledge passively by being exposed to an overwhelming amount of Internet content. This knowledge is applied in the production of materials of high creative, technical and experimental quality, a fact which is making the gap between professional and amateur increasingly flexible. A recent and very well-known example of this phenomenon is David Uzochukwu,[2] a boy aged only sixteen who won the EyeEm Photographer of the Year Award[3] in 2014 out of more than 14,000 photographers. Reactions of surprise and condemnation were not long in appearing

in the media, as it is difficult to conceive how a self-taught sixteen-year-old could have lived long enough to acquire a profession through actual experience, as dictated by the norms.

Uzochukwu is one of the millions of young people who have adopted technology intuitively without necessarily possessing historical and theoretic knowledge of the languages they use and without being aware of the social, economic and cultural value of that production. Many of these individuals regard themselves as consumers of digital culture, but do not value their role as producers of cultural content; they learn languages empirically without being fully aware of the expressive, aesthetic and commercial scope of these languages. Millions of photographs, videos and texts are produced and shared on the Internet daily as objects that reflect, more than finished works, experimentation processes ranging in quality from very poor to highly sophisticated.

On networks, the system of merits and (self-)assessment is more flexible and appropriate to the intelligence of each individual.

These facts are forcing the artistic community to reinterpret its role in society, as training, production, exhibition and marketing spaces have lost their legitimising capacity and, unless they adapt to this new reality, public and private institutions will become obsolete in both their substantive and administrative purposes.

Young people identify emotionally with strangers from uncertain parts of the world and often find that skills that are not acknowledged in classrooms or young people's institutions are valued on the Internet. On networks, the system of merits and (self-)assessment is more flexible and appropriate to the intelligence of each individual. Networks have become crucial spaces for self-realisation, for providing incentives for creative production according to collaborative models that are not considered feasible in the logical training and dissemination channels.

We live in a world of demanding, self-taught and self-administered audiences/authors, where children with Internet access learn to read and write before they reach school age; there are neither left- nor right-handed people when you write with a keyboard; they call themselves *cyborgs*; they learn languages as needed; they build principles of citizenship (digital) and replicate them in their daily life; they choose to learn from their peers through tutorials on social platforms such as YouTube because "they explain better than teachers and parents, are more up to date and you can choose the subject or skill you need at that particular moment with just a couple of clicks". It is more efficient to search on Google than to ask adults or go to libraries to look things up in printed books.

We are thus witnessing the imminent demystification of academic and cultural institutions as the highest validation organisations. Professionalisation is currently gained in spaces that are self-generated by peers who design their learning eclectically, incorporating "unconnected" disciplines and matters that are unthinkable within rigid academic programmes geared more towards specialisation than hybridisation. The new professionals are unaware of institutional

assessment systems because the latter do not take into account the huge quantity and quality of skills that are innate and/or acquired in processes chosen and designed by them in accordance with what they need to learn to perform their work more effectively.

Audio and video tutorials, textbooks, MOOCs (Massive Open Online Courses), participatory encyclopaedias, books, educational videos, virtual visits to museums, and open and specialised social networks have become much more than educational resources that complement users' formal academic education. Gradually, without necessarily being designed for that purpose, they have become spaces of materialisation that make it possible for a large number of imaginative and creative people, owing to their divergent thinking, to discover and realise personal talents that are not envisaged in the student profiles of the large majority of schools and universities. Although they do not aim to replace actual teaching, MOOCs, for example, offer the possibility of contacting and learning with eminent teachers anywhere in the world and at a price that is very often affordable.

Sharing the results of this learning on specialised networks has proved to open doors to this profile of young people with undervalued talents, such as Jordi Muñoz,[4] a boy from the city of Tijuana who was rejected twice as a formal student of the Instituto Politécnico Nacional in Mexico and, teaching himself through free online tutorials and courses, began to build drones in the garage of his home. His models attracted the attention of Chris Anderson, the founder of *Wired Magazine*, when Jordi shared them on the DIY Drones blog. Shortly afterwards the two of them founded a million-dollar corporation in San Diego: 3D Robotics. Jordi was twenty-one and by no means a professional by the standards of the institutions from which engineers graduate. Jordi had no idea who Chris was; their disinterested connection came about thanks to the informality of the blog and its principle of providing a space where people can get together to share and exchange discoveries and ideas.

MOOCs offer the possibility of contacting and learning with eminent teachers anywhere in the world.

Stories like those of Jordi and Uzochukwu are made possible by the fact that we have created and provided networks with knowledge and talent. Semi-anonymity in collaborative blogs allows humans to relate to each other through symbols that unite us, creating territories with significant logics that know no socio-political, geographical or meritocratic boundaries.

Producer consumer

A key factor in the professionalisation of networks is users' awareness of their role as consumers and as producers. Nowadays Internet users are both audiences and creators. In my field of action, which is culture and art, I deal daily with artists who both read and write, watch films and make videos; look up things on Wikipedia and contribute with articles, take selfies, produce chronicles of everyday stories that range from

the most banal to profound reflections; self-publish their texts, music, videos and photos; generate viral memes, plagiarise as a matter of principle, share, republish, and intervene; open virtual galleries, independent record companies and design, ecotechnology and food businesses; play and create videogames simultaneously; and write novels in instalments of 144 characters posted on Twitter. They produce highly complex videos as part of online videogames with other gamers. They work from the boundaries of various disciplines: they make pieces of sculpture with neuroscientists; together with astronomers and physicians construct and send into orbit civic satellites imbued with music and kinetic poetry; produce choreographies clothed in sensors that make live animation with dancers from the other side of the world; and organise mass hackathons, edit-a-thons, programarathons and makerthons.

A key factor in professionalization in networks is users' awareness of their role as consumers and as producers.

How do we come to grips with the overwhelming quantity and diversity of creative output? How are we to understand these new forms of authorship? What form does a contemporary artwork take and how can it be distinguished from a work generated by the audience? What exhibition spaces should be built? What production chains are taking shape? And, of course, under what budget item can we fit all this, to which we have not even had time to give a name?

The questions are old ones, and the answers are still uncertain. The models that give us the most clues to finding the answers are located in the United States, Europe and Asia – countries which, unlike Mexico, have a tradition of technological production that facilitates our understanding of prosumption and are more willing to take to create new schemes for sustainable cultural production that I often find in three aspects to be implemented in our practice: increased participation as an instrument for creation and production, big data as a resource or raw material, and monetisation of content as a basis for economic models based on building values obtained through sharing (the sharing economy,[5] sharism[6]).

These aspects materialise through a simple action: sharing.

Sharing is an everyday act on the networks and calls for production chains that require new economic models. What new challenges do these phenomena entail in our work as cultural managers? What strategies must we devise to avoid lagging behind in the adoption and understanding of the digital, in order to incorporate the creative and critical utilisation of digital technology on time?

Participatory creation

Participatory creation is becoming increasingly accepted by artists and creative people, who are establishing new concepts of authorship that are very different to the traditional ones. Prominent artists such as Aaron Holbin,[7] George Lucas[8]

and Ridley Scott[9] are producing artistic projects with increased participation which function as models for new forms of artistic and cultural production that are still underestimated in Latin American countries. Digital narrative in our countries is still conceived as books or videos in electronic format; works generated from data seem very technical; code programmers are not regarded as artists; videogames are viewed as leisure programmes, expanded literature as failed experiments, and transmedia performing arts as light shows, etc.

Digital technology is transforming the technical, formal and aesthetic languages of each of the artistic disciplines.

I believe that this backwardness stems from dissociating the technological from the human, from regarding digital as a complementary discipline. In Mexico we have progressed by viewing digital as a tool for disseminating and preserving heritage, and we now face a new challenge: digital technology is transforming the technical, formal and aesthetic languages of each of the artistic disciplines and, therefore, of the country's cultural output. Most of the digital and technological pieces most widely recognised by the community fall into two variants that are extremes similar to those of the pre-digital world: popular entertainment is produced through YouTube vloggers such as Yuya,[10] Werevertumorro[11] and Colibritany,[12] among others, or in artistic projects involving an aesthetic and formal pursuit that appeal to a specialised audience, such as the microstories of Alberto Chimal,[13] El Hombre de Tweed[14] and hybrid artists such as Gilberto Esparza,[15] Marcela Armas[16] and Ariel Guzik.[17]

The recent creation of Conaculta's Centro de Cultura Digital in Mexico has made it possible to open new institutional spaces which foster the critical and creative adoption of technology through a programme that ranges from literacy to specialisation. The programme is based on reflection on the progress of new forms of cultural production that spring from our daily relationship with the digital media. It chiefly supports the production and dissemination of a broad range of work executed by producers of digital culture who are not regarded institutionally as artists: programmers, creators, designers, producers of authored videogames, writers of poetry and expanded literature, event organisers and narrators who work with data, DJs, VJs, entrepreneurs of publishing and record companies and developers of cultural applications, among others.

At CCD, we attempt to replicate a network logic in which the production and exhibition of culture is not one-way – that is, culture is not taken *to* the other; rather, culture is made *with* the other; a space where we recognise each other as consumers and producers simultaneously. As a young institution, we began by accepting that few young Mexicans are populating the Internet with content that reflects the wealth, originality and prevalence of our culture – which is why we are developing a collaborative platform entitled güiquimí,[18] an archive for content in the form of text, audio, stills and video footage

that provides a first-person account of aspects of collaborators' daily life. Through individual stories labelled at the decision of the authors, a collective history is constructed that can be consulted by specific subjects such as my neighbourhood, my family, my dreams, my fears; or it can be read, listened to or viewed, depending on the chosen format.

On networks the production and exhibition of culture is not one-way, culture is made with the other.

In güiquimí, the authors preserve copyright over their works at all times and the information generated by the platform is not shared for any commercial purposes.

Big data

Big data is possibly the most important challenge currently faced by those of us who develop cultural platforms, as open data have so far not been considered a raw material for the production, dissemination and sale of culture. In the culture sector, data provides information that is of great value in assessing audiences and disseminating specific projects; administrative projections for cultural programmes are often carried out in accordance with models that use hard data to assign budgets to projects in accordance with more or less traditional instrumentation parameters.

Big data expands the Internet in all its dimensions and has direct effects on the materialisation of cultural projects in countries that already implement open data for transparency purposes, statistical analysis, accountability and the shaping of specific programmes in the health, political, economic and science sectors.

The implementation of open data policies in the cultural sector is no doubt highly valuable to society, as it gives a human and creative meaning to the data that are generated and shared on the Internet. For managers, open data provides a general overview of much more than just ratings and audience profiles or the efficiency of the economic investment. Sharing open data has led artists, designers, developers, journalists, communication specialists and members of organised civil society to work together on developing applications and participatory software for programmes with a social impact that modify our conception of culture.

The stories we tell, the reports we write, the pieces of art we generate with data are, without a doubt, new forms of art and culture. Artistic projects based on data in non-virtual spaces, such as Synthia[19] by Lynn Hersman-Leeson, which dates from 2000–2, the piece entitled Pan-Anthem[20] by Rafael Lozano-Hemmer or Bio-lencia[21] by Alfredo Salomón, are increasingly frequent in exhibitions staged by museums of electronic arts in which data generates sounds, gestures or forms in physical space.

Data-based projects for digital narratives were a prominent feature of the Data Bootcamp[22] held in collaboration with the Coordination of the National Digital Strategy of the Presidency of

the Republic and the World Bank Group. For example, the Argentine newspaper *La Nación* has a department[23] that is fully devoted to open-data journalism, and the African Media Initiative[24] directed by Justin Arenstein works on implementing more horizontal government models in the public and private media industry throughout the whole of Africa.

In Mexico, SocialTic,[25] a non-governmental organisation dedicated to promoting and enabling social groups to enhance their activity through technology runs, AbreLatam,[26] an initiative that aims to strengthen ties in order to generate common projects in Latin America among technologists, organised civil society and governments. The various social applications generated through its programmes have progressively raised awareness of the importance of the use of open data in shaping better organised social and cultural projects with a greater impact.

Among the open data social projects I had the chance to see at this year's ConDatos,[27] my attention was drawn by OpenStreetMap,[28] which brought together urban planners, geographers, artists, government and private sector to create open maps with ideas for improving our cities, warning of natural disasters, planning public transport and offering business opportunities.

An open-data culture is indispensable in shaping organic cultural projects that are capable of adapting to the changes that arise and, accordingly, are financially feasible. I believe that 2015 will be a year in which we will see growth in the implementation of open data systems for open culture projects.

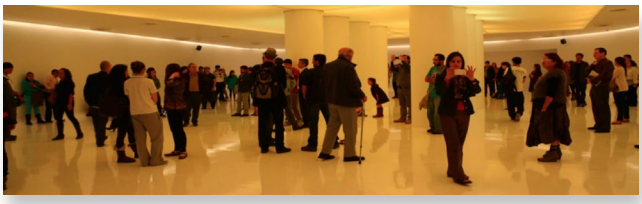
Sharing economy

Sharing is the transgressive act that powerfully brings us face-to-face with the need to change the paradigms under which we operate. When digital platforms are developed, the need arises to implement inward changes in our organisations. We must make decisions from an uncertain place because clear standards for adapting to this new reality do not yet exist. For example: How to reorganise our policies for transferring rights in order to be able to openly share cultural production without infringing copyright laws made for other times? Under what paradigms should we propose new cultural programmes that adapt to the current economic models of production and exhibition? What logics of correspondence will I establish as an institution with the artistic community and with citizens? Or how to generate solid and long-term programmes in a world of fast-paced changes?

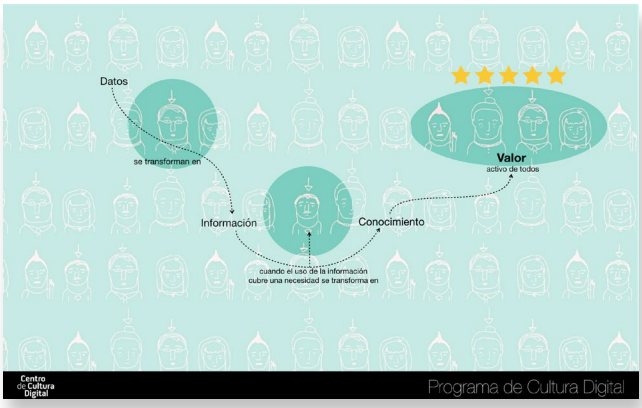
> An alternative copyright model that does not focus on the resource but on the use and where information becomes valuable for its use.

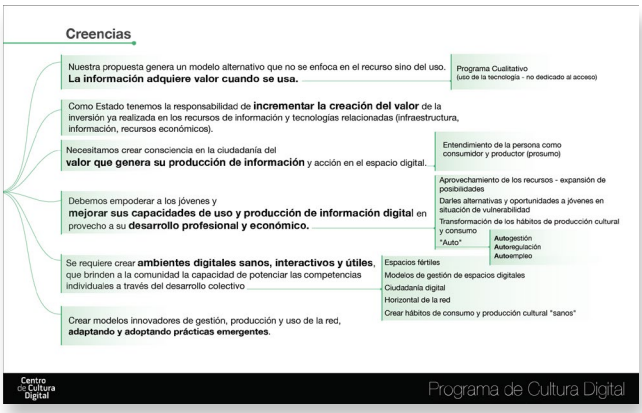
At the Centro de Cultura Digital,[29] we view physical installations as a great network container in which the work that is shown is mainly produced by the community of the centre itself,

through workshops or production laboratories. That is, the physical space shows its users' content in such a way that we can be coherent with the aim of presenting the consumer of culture in their role as producer.



Our proposal generates an alternative model that does not focus on the resource but on use. That is, information becomes valuable when it is used. We thus boost the creation of value of the investment already made in information resources, infrastructure and related technology. The idea is for young people to be made aware of the direct or indirect economic value generated by their production of information and action in digital spaces. For this purpose we create healthy, interactive and useful digital environments that provide the community with the ability to further their individual skills through collective development.





As we have the possibility of teaching workshops at no cost, we establish a correspondence programme with our students, so that in return for free courses or laboratories they support vulnerable communities in our teaching programmes by giving workshops on literacy or providing other skills the centre needs such as translation, transcription of interviews or monitoring at special events. By establishing models of correspondence, we cultivate the sharing culture through a scheme of economic exchange between the institution and its community of students whose currency is knowledge.

Content is a digital object that has been monetised under a scheme similar to that of content

for traditional media. It takes the form of all kinds of text articles, animated video, audio and stills. The publishing platforms that hire artists and designers for fixed content undoubtedly contribute to a healthy economy within their fields of action. However, models of payment for the new content dealt with here have yet to be established.

Direct monetisation models, crowdfunding, exchange, online donations, mixed payment and funding schemes and the creation of currencies such as bitcoins are models that are progressively gaining the confidence of Internet users and must be taken into consideration when designing cultural management programmes.

We institutions need to rise to this challenge. We still take content in its limited sense, to mean fixed objects in text, audio-visual, audio and image format; files that are contained in containers. Currently, with the new Internet applications and platforms, content is the container of other content and so on cyclically. It has a changing and organic form, is related and cross-referenced with other content all the time and has a direct impact on the material world and on how our work is organised. We have to be very open to investing in the production of this type of content and to finding economic models which function under more horizontal schemes that assign economic value to increased participation in accordance with the economic benefits it provides to society directly or indirectly.

Capitalising on the prestige secured through sharing content on the networks has proved to be effective in certain cases. A clear example of economic benefits superior to those of direct monetisation through content, obtained as a product of popular prestige secured on the networks, is Zoella,[30] a 24-year-old vlogger who gives advice to teenagers. A week after her book *Girl Online* was released, it outsold *Harry Potter*, with sales of 78,000 copies.

Is it feasible to model swarm intelligence economically on the same pattern as the social brain, so that the sharing economy can be democratised? I believe that governments should regulate online commerce under new types of logic, as it is unfortunately following the same corporate pattern as in physical spaces; unless it is legislated under schemes that are more adaptable to the actual Internet structure, it could render exponential the inequality and exploitation of those who produce and are committed to a non-profit economy and those who replicate the lucrative business logic. Culture is not free, even if it is made up of the production of "non-professional" users.

Culture must find bridges of communication between those who produce and are committed to a non-profit economy and those who replicate the lucrative business logic.

Our role as managers of culture in the digital world must go further than digitising, producing and promoting cultural content for technological devices so that it has an economy based on supply and direct demand. To address these challenges, and based on what has been learned in digital creation spaces, I propose:

1. Incorporating, as part of the development of our cultural programmes, the establishment of models of correspondence that involve offering and receiving, and of consecutive chains of action. The social fabric is enriched when citizens are regarded as an active part of the production of culture and not as a passive audience that needs to be cultivated.

2. Not resigning ourselves to number of electronic visits or likes as factors for measuring success that will determine the assignation of resources to programmes.

3. Fostering a deep interaction between the communities to which we cater. Experience should become significant, and we can progressively create a rich Internet culture. Internet communication is superficial in nature because there is no awareness that, or of what, we share; it speaks of our culture as individuals and as a nation.

4. Assigning resources in accordance with schemes in which what has value is the transformation of information into knowledge.

5. Training our artists in the creative and critical adoption of digital technology, where the formal languages of each discipline are enriched and reconfigured. With short-term programmes to update and refine the artistic, technological and literary languages needed to produce flexible and quality content.

6. Equipping artistic and cultural producers with skills in areas of entrepreneurship, so that they can also become economically productive.

7. Promoting an institutional culture of sharing; sharing in all possible ways, freely and with new systems of charges and payment for production; sharing everything – content, knowledge, memories, information – in a data format that keeps our heritage alive, optimises the investment carried out by institutions, citizens' organisations and individuals, and is accessible to the applications that continually arise.

8. Establishing economic models for each cultural project. Knowing the necessary investment and the returns to be obtained. Understanding that sharing has a cost, even if the action is free.

9. Bearing in mind that data are a new raw material for cultural production, for the dissemination and development of social programmes. Content consisting of and with open data is what is "in" today.

10. Overcoming fear of expiry and the ephemeral. When consciously adopted, digital technology is the perfect tool – at the moment – for perpetuating the greatness of cultures and for sowing its seeds in the Internet which, until we populate outer space, is the biggest public space in the world.

Links

Institutions:

Centro de Cultura Digital. http://www.centro-culturadigital.mx/

Coordinación de Estrategia Digital Nacional.

Data Lab of *La Nación*. http://www.lanacion.com.ar/data

Projects:

Open Street Map. http://www.openstreetmap.org/#map=5/51.481/-0.088

Güiquimí. http://www.guiquimi.org.mx/

NGOs:

Abre Latam. http://www.abrelatam.org/

SocialTic. http://socialtic.org/

African Media Initiative. http://africanmediainitiative.org/about

Events:

Data Bootcamp. http://mexico.dbootcamp.org/

ConDatos: http://condatos.org/mapa.html

Vloggers:

Werevertumorro. https://http://www.youtube.com/user/werevertumorro

Colibritany. http://www.youtube.com/watch?v=c2ByEeR9Jbg

Yuya. https://www.youtube.com/user/lady-16makeup

Zoella. https://www.youtube.com/user/zoella280390

Artists:

Gilberto Esparza. http://gilbertoesparza.blogspot.mx/

Marcela Armas. http://www.marcelaarmas.net/

Ariel Guzik. http://www.mexicobienal.org/english/ariel.html

Alfredo Salomón. http://www.artealameda.bellasartes.gob.mx/Archivo/archivo/index.php/Bio-lencia

Aaron Koblin. http://www.aaronkoblin.com/work.html

Lynn Hersman-Leeson. http://www.lynnhershman.com/synthia/

Rafael Lozano-Hemmer. http://www.lozano-hemmer.com/

David Uzochukwu. http://www.daviduzochukwu.com/

Writers/bloggers:

El Hombre de Tweed. https://twitter.com/Elhombredetweed

Alberto Chimal. http://www.lashistorias.com.mx/

Notes

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27. http://condatos.org/
28. http://www.openstreetmap.org/
29. http://centroculturadigital.mx/
30. https://www.youtube.com/user/zoella280390

Pepe Cerezo is specialist in strategy and development of digital businesses. Linked for more than 15 years to the world of new technologies and the digital transformation of organisations. He has held management posts at Prisa, Fundación Orange and RocaSalvatella. For seven years he directed the *Informe sobre la Sociedad de la Información en España: eEspaña* and coordinated *La blogosfera hispana* and *La Web 2.0*. Selected by *El Mundo* daily in 2007 as one of the 25 most influential Spaniards on the Internet.

The challenge of the digital transformation of the culture industries

Pepe Cerezo, @PepeCerezo

Introduction

Since the emergence of the WWW some 25 years ago, the process of digitisation has been transforming sectors and businesses, upsetting balances and the models established since the industrial revolution. This process has not been homogenous – either in the speed at which it has occurred or in the impact it has had on industries and sectors.

Owing to its very complex and multifaceted nature, the culture industry deserves a thorough analysis. In some cases it is a semi-regulated sector in which the host of public and private agents involved make it one of the most interesting with respect to analysing the digital transformation.

Digitisation, in addition to transforming business processes and models, has an impact on people and teams. It is therefore necessary to identify and encourage the new digital skills that are required to properly meet the demands of the digital ecosystem. Digitisation likewise involves rethinking the role of culture in an environment that is less hierarchic and more open, participatory and dynamic.

Based on an analysis of the current state of the digitisation of organisations, the aim of this article is to point out the risks and opportunities for each of the subsectors.

Point of departure. 25 years is nothing

Ever since Tim Berners-Lee[1] conceptualised the WWW twenty-five years ago, we have witnessed the start of the digital revolution, whose social, political and economic impact on sectors, organisations and professionals we are now beginning to perceive in its true dimension.

Although this past quarter-century has seen a succession of countless occurrences, changes and landmark events, we are still at the dawn of the transformation process we call the digital revolution. Nevertheless, despite the uncertainty and friction it triggers, a few signs are gradually appearing of its future evolution. We are therefore at a unique stage in digital development, as discovering the keys to how we have come so far will to an extent allow us to anticipate its future evolution.

Welcome to the expanded Internet

Digitisation has especially affected the sectors of content, leisure, culture and entertainment, as they work with products or services that are easily digitised. In order to understand the current state of digitisation, it is appropriate to identify the key factors that explain what we have defined as the expanded Internet and embody the game rules of the digital economy:

1. The cloud economy: from products to services

The Internet has provided distributed access to services and content, which has been conceptually defined as the "cloud". The digitisation of content and hyperconnectivity have led access to become more important than ownership of goods. There is no longer any need to own physical formats (books, discs, DVDs…) or even to download them in digital format (files); users can simply gain online access where, when and how they wish.

Success in the cloud economy has been achieved by companies that have managed to offer value-added services. A salient feature in this connection is the capability provided by distributed computing with respect to automation, personalisation and recommendation models, by improving the user's experience and modifying consumption habits. All this has triggered the emergence of new agents not belonging to the culture sector, such as Amazon and Google, which have changed the previous rules. An example of this is the launch of Kindle Unlimited, which provides access through its tablet to approximately 700,000 titles for a flat rate. This model has been followed by publishers such as Bertelsmann with Skoobe, which provides access to some 50,000 titles. In Spain there is the case of 24symbols, a pioneer in our country in converting cultural products such as books into services. Not to mention platforms such as Spotify and Pandora in music, or Netflix, Waki and Yomvi for audio-visual content.

The Internet has provided distributed access to services and content, which has been conceptually defined as the cloud.

2. Social

2005 saw the start of the "Web 2.0", which has been gradually evolving to give rise to what we now call the social Internet. Irrespective of the birth, rise and, in some cases, disappearance of some social networks or others, it seems inarguable that the social sector is now part of

the very nature of the web. Users participate actively, with comments, by exchanging and recommending content, or by creating their own. The web as "conversation" between users, brands and organisations has come to the fore in the business world. Museums, publishers or authors, and creators have developed a model of digital presence through the social networks that enables them to remain in contact with their users and readers. The social networks have opened up a new dimension for creation and relationships, making it possible to diversify touch points and establish conversations between artists, creators, institutions and users. If the cloud economy has converted cultural products into services, the social media have made it possible to deepen and enrich the experience between audiences and creators, making culture more open and participatory. The culture industries have become "conversations".

3. The post-PC era

2014 will go down in digital history as the year in which Internet access through mobile devices surpassed access with PCs for the first time worldwide. In other words, people now access the Internet more from mobile telephones than from computers. Mobile devices are the driving force behind the expanded, ubiquitous and distributed Internet that is leading to a new paradigm, giving rise to an ecosystem of its own with specific habits and customs. Some of the most successful digital services and companies of the past years are designed for and to be used by mobiles: WhatsApp, Instagram, Zite and Flipboard are but a few examples. Mobility as a window on new experiences of collaborative participation and creation is rapidly being incorporated into the culture and leisure sector, providing a broad range of opportunities both for the consumption of content, music, video and books etc. and for enriching the user's experience in museums and plays. We are witnessing the downfall of institutionalised habits of asking people to "switch off their mobiles" and the rise of more innovative ones that call for them to interact during the performance.

2014 will go down in history as the year in which Internet access through mobile devices surpassed access with PCs for the first time worldwide.

4. The Internet of Things (IoT)

The consultancy firm Gartner[2] reckons that by 2020 there will be some 26 billion devices connected to the Internet. We are therefore witnessing the first steps of a new phase of digital transformation in which not only people but objects are connected – a new phase whose economic and social implications we are now beginning to glimpse and which, as with mobiles, will have an impact on the content and entertainment industry. The evolution of the IoT in combination with virtual reality will provide opportunities for the content and entertainment industry. We will pay attention to the development of technologies such as iBeacons[3] in museums and cultural centres.[2]

5. DATA culture

The digital economy is based on the management, processing and exploitation of DATA. Data-based decision making has surpassed the boundaries of the business environment and is even being embraced by the field of creation. Companies such as Netflix and Pandora have incorporated data processing in order to improve their knowledge of users' habits, which allows them to anticipate their tastes and demands. Netflix, a company that offers online video and has created successful series such as *House of Cards* and *Orange is the New Black*, has developed a complex system of labelling the different audio-visual genres that allows it to anticipate consumption trends based on users' tastes; while Pandora, the most popular online radio station in the USA, can recommend, based on big data, different types of music depending on the device being listened to, the time of day or the user's tastes.

Using big data, the entertainment industry can measure its consumers' tastes and habits in order to make recommendations.

The traditional publishing sector, for its part, is facing a serious problem. It is lagging behind the rest of the entertainment industry in gauging consumers' tastes and habits through data analysis. On the contrary, new actors such as Amazon, Apple and Google have a massive amount of information – how long they spend reading, their tastes, what they underline, even how fast they read – that grants them a huge competitive advantage. What is more, new platforms are emerging such as Copia, Kobo and Coliloquy, which have established gathering and analysing data as new models of which the traditional sector should take note. [4]

Furthermore, when we speak of big data we can also speak of an approach from an open-data perspective which is offered by institutions and administrations that are generally public. In this regard, we should underline the possibilities that linked data offers the so-called memory industries, such as libraries or other cultural institutions. To quote Todd Carpenter, executive director of NISO (National Information Standards Organization),[5] "While [the move to a linked data model] completely alters the way we have always described and cataloged bibliographic information, it offers tremendous opportunities for making this data accessible and usable in the larger, global web community."

The digitisation that is transforming everything

Digitisation has led to the redesign of the value chain in many sectors, especially that of content. The introduction of new tools and technologies is altering from creative processes to business models. Tools such as Protools in music, for example, have opened up new testing ground and spurred developments in creation by lowering entry barriers. Meanwhile, technologies such as streaming have transformed the distribution and sale of audio-visual content, as a result of which in many cases traditional agents have been relegated to a secondary role if not gradually forced out of the picture altogether.

As Christensen anticipated in his now classic *The Innovator's Dilemma*, it is the new agents – most of whom do not belong to the sector – who have transformed and reinterpreted sectors, businesses and processes thanks to the reduction of barriers. To date none of the most disruptive models in the distribution and sale of cultural goods and services or entertainment has been spearheaded by the traditional leaders.

The digital transformation has changed business models and relationships with the audiences of culture industries.

Pandora and Spotify in music distribution, Netflix in the audio-visual sector, Amazon and Google in publishing, Buzzfeed and the Huffington Post in the media and Apple in all of them with iTunes are companies that are newly founded or came from other sectors. It is evident that this industrial reconversion is sparking friction between new and traditional agents. We should remember what happened in the first years of the decade with record companies and P2P networks or, more recently, between Amazon and Hachette.[6]

Although there are similarities between the different sectors, each one has specific features that affect the depth of the process or the speed at which digital transformation occurs. Within the different sectors that make up the culture industries, we might draw a distinction between two main groups with respect to the impact digitisation is having on them. Roughly speaking, there are those that have witnessed how their business model has radically changed, such as music, the publishing and audio-visual sectors and the media. Then there are those such as museums, galleries and performing arts whose type of relationship with the public is affected by digitisation. The next section analyses the digital transformation the different industries are undergoing.

Music

Music and film are two of the sectors most affected by digitisation. Since the first appearance of P2P networks such as Napster and later, with the boom in streaming platforms, the record industry has continued to seek a sustainable business model having become a paradigm of digital transformation. It would be necessary to go back to 1999, the year of the appearance of Napster – the first service for the exchange and distribution of files in MP3 format through P2P networks – to understand the transformation of the phonographic industry. Digitisation has changed not only business models but more deep-seated aspects, such as the very concept of intellectual property.

Although Napster has evolved into one of the hundreds of available services, its emergence marked a turning point not only in the sector but in the very history of the Internet. Exchange networks have now grown sophisticated and decentralised. Their use has declined to the benefit of other platforms that deliver streamed content. The "napsterisation" of the beginning of the century is giving way to the "streamification" of audio-visual content.

If we observe developments from 2000 to 2013, we find that, despite one of the most important economic recessions in recent history, the total revenues of the record sector have fallen by only 3%. According to data gathered in the IFPI's annual study, in 2000 60% of music revenues came from recorded music, whereas the figure was down to 36% by 2013; the rest came chiefly from live music, which has increased by more than 60% in the same period.[7] These statistics appear to indicate that the sector is not experiencing a crisis but rather a deep change that is mainly affecting traditional business models.

The music consumption model that currently seems most firmly established is led by the access-by-subscription model.

The music consumption model that currently appears to be most firmly established, despite the uncertainties over the distribution of royalties, is led by the access-by-subscription model such as that of Spotify. The Swedish company currently has more than 40 million users, 10 of whom pay for its services. Other services such as Deezer and Pandora or Apple's recent acquisition of Beats appear to indicate that the future of music consumption lies in streaming services. It remains to be seen how the relevant business models will develop and how revenues will be distributed across the value chain.

Nevertheless, the sector's transformation has only just begun. Whereas the main source of income of concert musicians and promoters is live events, technological platforms obtain theirs from streaming services. We will have to wait and see how the rest of the agents reposition themselves with respect to the new ecosystem.

Publishing

Albeit with a slightly bigger delay, the publishing sector – in both the educational and purely publishing aspects – is in the grip of an unstoppable process of reinvention, as occurred earlier with music and film, though with significant particular features of its own.

Compared to the consumption of music or video in which the average user's experience does not undergo any changes, reading on paper is different from reading on a screen. Although it may slowly evolve, the studies available to date[8] show that the paper format for reading continues to offer sensory advantages over reading in digital format. Books as physical objects continue to hold considerable appeal compared to newspapers or discs, which have lost value, and have accordingly experienced greater changes in their traditional value chain.

The sectorial data gathered in the analysis of the publishing market in Spain (*Análisis del Mercado Editorial en España*[9]) indicates that 2013 closed with a turnover of 2.708 billion euros, representing a drop of 11.7% with respect to the previous year – lower figures than those of 1994 for the sector. This fall is common to all the channels but is particularly significant in digital, which slumped by 14.9%. In Spain 23% of published books are digital, meaning that this format accounts for only three out of every one hundred euros of revenues. This abnormality

can largely be explained by the high tax rate on digital books: a 21% VAT rate compared to 4% for print books.

But this situation is not the same in all markets. According to statistics released by the British Publishers' Association, [10] nearly 30% of the sector's annual turnover of 4.7 billion pounds relates to digital products and services. Fiction e-books accounted for 39% of the total digital book market, whereas academic digital books – the other main digital segment – accounted for 43% of sales. In other words, the crisis in Spain could be explained by circumstantial factors such as the application of a different VAT rate for different formats. The publishing sector also needs to respond to changes such as the rise in self-publishing, which currently accounts for 12% of book sales in the United Kingdom.

Innovation in the publishing sector is underpinned by self-publishing models and by publishing on demand services.

All this points to the need to adapt structures and processes to these demands with respect to products and services, through innovation in media and new narratives, as well as to experimentation and the development of new business models. In this regard, the big Internet companies are in the lead in controlling distribution. Nevertheless, if we examine the retail sector, we find that future trends stem from on/off integration thanks to advances in 3D printing, for example. We see possibilities for reinvention in experimentation and innovation in self-publishing models, and in publishing on demand services for both the publishing and education sectors.

Another trade that is attempting to adapt is bookshops, which have opted for diversification[11] – by offering restaurant services, for example – or specialisation in particular themes, and must progressively include new technologies such as printing on demand in order to survive.

The transformation of experience

Within the culture industries it is necessary to distinguish between those based on the distribution of content, irrespective of the medium, and those based on an experience linked to an actual event held in a particular physical space, such as museums, performing arts or live music, among others. In the latter it appears that not only has digitisation not strictly modified the business model but that opportunities have arisen for deepening interaction with audiences before, during or after the event.

Museums

Museums are an exception to the rest, as digitisation provides them with new business opportunities. Information technologies have made it possible to broaden institutions' touch points with users. Despite the emergence of services such as Google Art Project, which bring art closer to users outside traditional spaces, they have not affected the traditional business model as they have with the publishing and

record industries. On the contrary, digitisation provides both creators and institutions with new opportunities for interrelation.

During the late 1900s and early 2000s museums surpassed the cultural boundaries to become part of other socioeconomic environments connected with mass culture and interlinked with other sectors such as tourism and even town planning.

With the property boom and rise of showpiece architecture of the 1990s and early 2000s, the museum model became linked to local economic and land development. Since the bursting of the museum-architecture bubble and the advent of digitisation, museums have found a path for growth and development by using new technologies. During this stage their visitor numbers have steadily grown, and the arrival of digitisation has afforded them a new opportunity for developing initiatives that enhance users' experience and provide alternative sources of income.

In the art and museum sector, digitisation provides both creators and institutions with new opportunities for interrelation.

The study *Los museos en la era digital* (Museums in the digital age)[12] reports a considerable number of initiatives by national and international museums that have incorporated technologies analysing the customer journey, i.e. how they are used "BEFORE" the visit, in which the social networks and the web help discovery and planning, "DURING" the visit, when technologies such as apps help innovate and enhance the user's experience, and "AFTER" the visit, when the bond and loyalty with the user are deepened.

Nevertheless, irrespective of the unstoppable functional use of technologies, digitisation raises new questions and requires more thorough reconsideration. From a more conceptual angle, digitisation calls for new responses to the future role of museums. In this connection Pepe Serra, director del Museu Nacional de Catalunya, [13] foresees a digital revolution of cultural centres as a whole:

> *Today's public publishes content, compares and creates new content. Therefore the museum cannot be just an emitter; it must be a meeting point, a locus of dialogue. I believe in the museum as a public agora… We no longer have sole control over the media or sole authority over the works; authority has come to be shared and so have the distribution channels.*

Performing arts

Viewed from a digital perspective, the performing arts take on a new dimension as they offer new channels for creative and business development. We have witnessed more changes in the past ten years than in the previous one hundred and fifty. On the one hand, the emergence of cutting-edge technology on the stage, such as virtual reality, holograms and 3D stage sets, is modifying the works themselves and having an obvious impact on organisations and professionals. New business opportunities are also arising in subsidiary sectors. Companies

such as Realisations.net, which is linked to the Cirque du Soleil, have been pioneers in creating computer-generated 3D settings and are a reference in the sector as regards technological innovation.

But the incorporation of technologies that help design shows such as those described above are nothing compared to the revolution the social networks are causing. In addition to boosting dissemination and marketing, they are substantially modifying creators' and institutions' relationships with audiences, which is what the authors of *Beyond the curtain. How digital media is reshaping theatre*[14] call "social media beyond the stage".

The social media make it possible not only to secure the loyalty of audiences who were already theatre goers but also help bridge the gap that exists between the performing arts and the new generations. As with museums, the social networks make it possible to interact before, during and after the performance, lengthening the touch points and establishing more intense relationships with audiences – be it to debate on what they are watching through personalised commentaries, to consume additional information on the context of the work and author, or to access additional content (recordings, photos, etc.) after the performance.

It is also necessary to consider the importance of the social media in strategies for marketing and selling shows. In this respect, a study on the impact of the Internet on the theatre carried out by the Society of London Theatre[15] (Solt) highlights how blogs and the social networks, especially Facebook and Twitter, are the channels that most boost ticket sales, more than traditional advertising or written press reviews. 65% of those polled stated that the social media influenced their decision to go to the theatre.

Theatres have furthermore found new sources of income by selling their performances online. The Shakespeare Globe Theatre in London is one of the pioneers in making more than fifty of its performances available to the public through its website, enriched with additional material such as interviews with the actors, etc., who can purchase them by streaming or by downloading them for different prices – a formula for reaching new audiences.

Professionals must be prepared to provide a response to the new functions that are required, by adapting their skills and retraining.

Finally, we should not forget the rise in crowdsourcing, which might be defined as "mass collaboration or outsourcing", that has been adopted by a few organisations as a means of "reducing costs, ensuring profits and coming closer to customers". This technology has provided the performing arts with a way of being more participatory and open. The 2014 *AC/E Digital Culture Annual Report* lists a good many initiatives and projects that "arise precisely from the material contributed by the public that becomes part of the historical heritage" .[16] These new models offer major opportunities for organisations but require innovation in processes and skills.

Digital skills for the culture economy

How to adapt to this transformation is one of the key questions that all organisations are asking. The depth of the digital transformation has an impact on teams and people, who must adapt to the new needs arising from the sector's transformation. It is not only a case of knowing how to use the new tools but of something deeper and, accordingly, more complex. Basically, it is necessary to identify the skills required for professionals to perform new functions successfully in an uncertain and constantly changing landscape.

From artists and creators to traditional technical teams, to administrative and management departments, all are affected to some extent. Like traditional organisations, most professionals were not prepared to come up with a response to the new functions required, which posed a serious problem of adaptation and retraining.

Of the existing competency models, we have chosen the "eight digital abilities" developed by RocaSalvatella, which lists the basic skills that should allow organisations and professionals to adapt suitably to current needs. It should be stressed that the most important approach is to realise that technology must be subordinate to the vision and not vice-versa. The culture industries are a sector that is used to managing talent. But this talent must be adapted to the new skills required in the digital world, which are listed below:

1. **Digital knowledge**: the ability to cope creatively, professionally and personally in the digital ecosystem. This means incorporating digital logic into exercise of the profession. Basically, understanding the dynamics of connected and networked society. From how to improve processes in administrative areas to knowing how to search efficiently or incorporate data culture to improve decision making. As stated, it is not so much a question of how to use technological tools as of developing a digital vision in order to consider "how would I do it digitally".

2. **Information management**: the ability to locate, obtain, evaluate, organise and share information in digital contexts. The culture industries are largely industries whose main driving force is the management of information and its transformation into knowledge. Knowing how to manage it efficiently within the organisation and being able to offer it in an organised manner is essential to the creative and business process. It is evident that these skills are important to industry as a whole, but they are vital to institutions such as museums, galleries, libraries, etc. This ability has an impact on the building of specific digital skills and the redesign of processes.

3. **Digital communication**: the ability to communicate, relate and collaborate efficiently with tools and in digital environments. In this respect, we have seen the importance of incorporating the use of the social networks into the whole organisation and during the different stages of the creative process. It therefore affects creators in their relationship with the public and managers and producers with respect to improving models for relating, disseminating and selling shows.

4. **Networking**: the ability to work, collaborate and cooperate in digital environments. The culture-related institutions and industries have traditionally worked with multidisciplinary teams. From organising an exhibition to staging a show, the collaborative effort of multidisciplinary teams has always been required. Therefore the culture sector has an advantage over others with more of a culture of working in "silos". Nevertheless, digitisation offers new ways and possibilities that require the incorporation of tools and platforms and, more importantly, new processes for realising their full potential by redefining structures and hierarchies within organisations.

5. **Continuous learning**: the ability to manage learning autonomously, to have knowledge of and use digital resources, and to maintain and participate in learning communities. Digital is a process that is constantly changing; the impact of technology makes it necessary to think innovatively and remain alert to novelties and innovations in one's own and other sectors. Learning is no longer an obligation exclusive to the organisation but must be incorporated into the personal ambit. It has become a shared responsibility that should be incorporated into day-to-day personal processes and activities. In this connection we should stress the possibilities created by the rise in Massive Online Open Courses (MOOCs). [17]

6. **Strategic vision**: the ability to understand the digital phenomenon and incorporate it into the strategic orientation of the organisation's projects. It mainly affects management areas of cultural organisations but can be incorporated into the rest of the organisation and even on a personal level into the design and building of the "personal brand", making use of the possibilities offered by the social networks.

7. **Network leadership:** the ability to direct and coordinate working teams distributed in networks and in digital environments. The new structures, which are less hierarchic, flatter and vaguer, require a leadership different from the traditional kind. It is necessary to develop a distributed leadership model capable of managing talent and getting the most out of interconnected multidisciplinary teams.

8. **Customer orientation:** the ability to understand, comprehend, interact with and meet the needs of new customers in digital contexts. Users have been empowered by digital technologies, becoming "prosumers", and professionals must be capable of relating to and interacting with them on equal terms.

These eight skills require a detailed analysis for each role within the organisation and for each organisation. The transformation processes in the culture industries should be led by the organisations themselves, giving impetus to the vision and establishing standards and lines of action as well as milestones, goals and indicators that enable their efficiency to be evaluated. A good example is Tate London, which started up its digital transformation project in 2013 as set out in its strategy plan *Digital as a Dimension*

of Everything[18] establishing the cornerstones for making an organisation digital, which are consonant with the foregoing:

1. Development of staff digital skills: for this purpose Tate has implemented policies for continuous training and integrating technologies with the incorporation of performance linked indicators (KPIs) that allow the success of all projects to be measured in order to ensure that staff members are equipped to use digital as part of their work.

2. Introduce new ways of working by facilitating collaboration between departments with a view to ensuring they progress and comply with their roadmap. For this purpose Tate has created what it calls the "hub-and-spoke" model in which the digital department ("hub") acts as a facilitator for the rest of the organisation ("spokes").

3**. Governance and leadership.** Based on an in-depth analysis of all the organisation's departments, new governance structures have been designed that are oriented towards compliance with the digital strategy.

In conclusion, it seems to be a fact that digital transformation does not refer so much to the technological aspect as to a digital vision which places the spotlight on a new way of thinking that transforms organisational culture, processes, and relationships between different areas and sectors, and, most importantly, conversations and engagement with users. Talent-based cultural industries must incorporate the model based on the digital skills that make possible and promote this.

Links

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- https://www.google.com/culturalinstitute/u/0/project/art-project?hl=es
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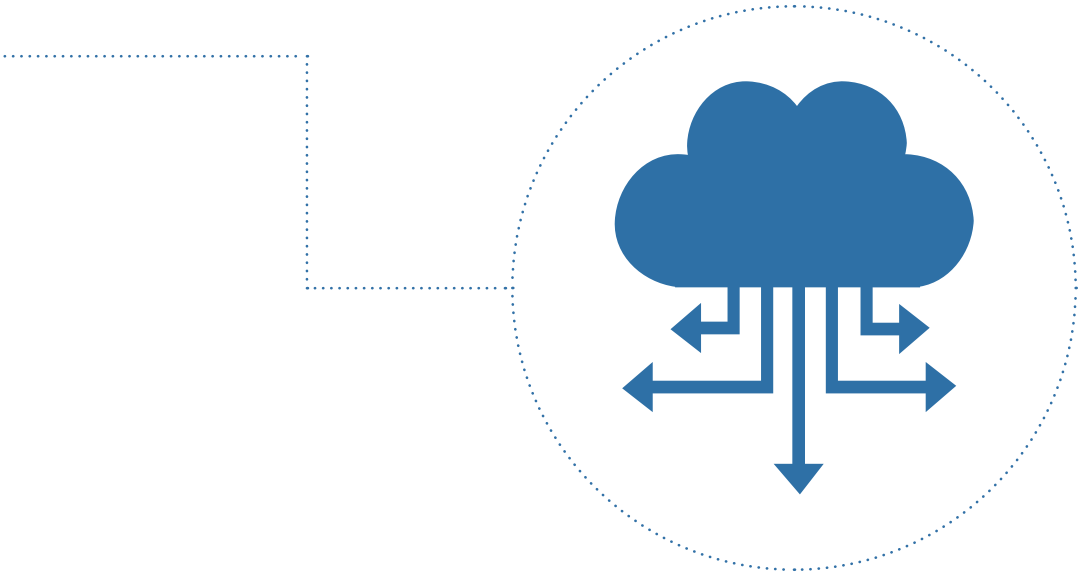


Hugh Forrest serves as the Director of the annual South by Southwest Interactive Festival (http://sxsw.com/interactive) scheduled yearly in March in Austin, Texas, USA. This event brings together more than 30,000 digital creatives from across the United States and around the world. These digital creatives are inspired by five days of panels, presentations, brainstorming, networking, deal-making, socializing, creating, innovating, and fun. Forrest was named "Austinite of the Year" in February 2012 by the Austin Chamber of Commerce (along with fellow SXSW Directors Roland Swenson, Louis Black and Nick Barbaro). In June 2014, Forrest and these other SXSW Directors were named Austin Entrepreneurs of the Year by Ernst & Young.

Impact of technologies on the cultural landscape

Hugh Forrest, @Hugh_W_Forrest

Toys of all stripes, flavors, shapes and sizes entertain my four year old son. These toys are like an ever-expanding living mass and their home has significantly expanded from what started as small corner of the family room. We now have small cars, building blocks, model trains, monster trucks, marbles, stuffed animals, balls, and train tracks in every corner of the house except the bath room and the laundry room. But I expect those two outposts will be colonized in the coming weeks.

But for all this expansion, one category of toys remains relatively underrepresented in their quest for space in our quickly-shrinking house. These are the various art-related toys. Yes, we have a few color pens ands markers, as well as several paint sets. There's also a dry erase board where Little Hugh can practice writing letters and numbers. An old fashioned hand-cranked pencil sharpener[1] he received for Christmas has also become very popular in the last few weeks.

Does my son have less of an interest in art than his various classmates and friends? Not really. Does he have less interest in drawing and painting than four-year-olds from previous generations? No, that assessment rings equally untrue. On the contrary, the main reason we have less space in our house delegated to art-related toys is that most of this activity occurs in the virtual realm. Like many other tech-savvy toddlers, he prefers a computer Tablet[2] over paper when sketching or doodling.

Little Hugh's evolution to on-screen canvas reflects a pattern seen by millions of other families around the world during the last 40 years. But, witnessing this virtual transformation in my own home helps reinforce many of the advantages of today's technology. On a tablet, the art he designs is easier to access, easier to create, easier to store, easier to manipulate, easier to change, and easier to distribute (when we want to share with grandpa) than in any

other form. My wife and I love the paintings he creates on paper at school, but storing all those masterworks has proved impossible.

Easier to access, easier to create, easier to store, easier to manipulate, easier to change and easier to distribute are the great advantages of digital technology.

Do my wife and I understand that shifting to a tablet will inevitably shape the kind of artwork that our little Picasso produces? Yes, of course, we understand that the medium influences the message. For instance, he tends to produce more rocket-related images (and fewer cat portraits) when working with paper than with pixels. But we are absolutely OK with these tradeoffs — and we can't wait to see what kind of new directions his creativity will evolve in as his computer skills become even more pronounced in the years ahead.

Little Hugh's experience reflects continued societal shifts. Indeed, the advantages that a tablet offers for my four-year-old son (easier to access, easier to create, easier to store, easier to manipulate, easier to change, and easier to distribute) parallel advantages that other advances in technology offer to other artists around the world. The value of more rocket-related images as opposed to fewer cat portraits notwithstanding, one would be naive to pretend that the changes wrought by the Information Age have always improved our overall culture.

Consider for example how the rapid growth of cheap / DIY online video is changing the cultural institution known as Hollywood. Over the last five years, YouTube and other similar online video portals have grown radically in popularity, particularly with younger viewers. This rapid de-centralized growth may eventually threaten the entertainment industry on which so much of Los Angeles was built. As Tad Friend explains in his recent "Hollywood and Vine"[3] essay in the New Yorker:

> *"Nowadays, YouTube is almost alarmingly professional. It has millions of channels devoted to personalities and products, which are often aggregated into 'verticals' containing similar content. The most popular videos are filmed by teen-agers and twentysomethings who use Red Epic cameras and three-point lighting to shoot themselves.*
>
> *And the platform's stars behave in ways that are contingent upon a camera. For instance, they act. One of YouTube's most visible shows—currently featured in magazine and subway-car ads everywhere—is an action series called 'Video Game High School' that would be right at home on MTV."*

So it wasn't entirely surprising that some of the most eager participants at this summer's VidCon,[4] a conference celebrating YouTube, were those who'd been displaced from the platform's dynamics: adults. Indeed, the conference felt like a May-December romance. Onstage at the Anaheim Convention Center, as the proceedings began, sat Jeffrey Katzenberg, the sixty-three-year-old C.E.O. of DreamWorks Animation. In the audience were more than a thousand middle-aged spectators—producers, agents, ad execs—as entranced as Katzenberg was by YouTube's smorgasbord of "snackable content."

"With the platform's users watching more than six billion hours of video a month, and people consuming more than nine times as much digital video as they did in 2010, Hollywood planned to secure its own future by consummating a merger. Last year, DreamWorks bought AwesomenessTV, a company that manages YouTube stars, for thirty-three million dollars, and a wave of old-media investment followed."

If you've watched in alarm as Hollywood releases more and more unimaginative content, then the idea of fresh new thinkers in this space sound attractive. But, before you get too overjoyed with these changes, understand that the brave new world of DIY video is likely to be even less intellectually stimulating than what came before. And the next trend after YouTube promises to be even more vapid: videos made with the app known as Vine[5] that last all of seven seconds.

The next trend after YouTube promises to be even more vapid: videos made with the app known as Vine that last all of seven seconds.

Seven seconds? Against this standard for stardom, Andy Warhol's famous quip about 15 minutes of fame[6] might as well have been uttered in the 19th century. But such is the Pandora's Box that we have opened in our quest for easier solutions that more and more of the population can access. Improvements in technology allow for lots of positive changes in our society. But almost every advancement also brings new perils and new problems. Technology makes questions of right and wrong, good and evil, benefit or hindrance so much more difficult to process.

While the online video space will be fascinating to watch in the upcoming months and years, technological advances (easier to access, easier to create, easier to store, easier to manipulate, easier to change, and easier to distribute) are imparting other equally radical changes in the non-virtual world. Indeed, our entire notions of art are changing as new systems allow us to manipulate the environment on a scale never before possible. One of these best examples of these changes occurred at SXSW 2014 with a project called "Pi in the Sky."[7]

On Thursday, March 14, this project invaded the skies over Austin. The day was perfect for this exercise in experimental art: perfect blue sky with very little wind not a cloud in sight. Five specially-designed airplanes spent the better part of an hour circling over the city. The message they created with their computer controlled sky-writing equipment was simple and yet profound: "3.14159265359." Seeing the formula for Pi written in such a way was a spectacular reminder of technology's significance in today's world. As noted on the wikipedia entry for this project:[8]

> Pi in the Sky was an experimental, aerial art display where airplanes spelled out pi to 1,000 places in the sky over the San Francisco Bay Area. The display took place on September 12, 2012. It was then displayed again in Austin on March 13, 2014, during the SXSW festival, at which time it was said to be the largest art piece ever displayed in the state of Texas.

The numbers, each 0.4 km (a quarter of a mile) high, were created by a group of five skywriting airplaines, and appeared as a dot matrix. The string of numbers was produced in a large loop 161 km (around 100 miles) in circumference, at an altitude of approximately 10,000 feet.

The aircraft used were 1979 Grumman AA-5B Tigers, small, single-engined planes provided by the company AirSign Aerial Advertising, based in Williston, FL. The numbers were produced by spraying natural, burnt-off canola oil, which dissipated, causing no environmental damage.

The 2014 display was part of an on going project, directed by artist ISHKY (Ben Davis), and again involved AirSign Aerial Advertising. The 2014 display quickly gained publicity making it the number 2 top trending hashtag on Twitter[9] during the display and within 24 hours it was shared and viewed a little over six million times.

Was the Pi in the Sky project an elaborate waste of time — a cute, attention-grabbing hoax that (quite literally) evaporated into thin area a few minutes after its birth? In some ways, yes. But, this attention-grabbing hoax encouraged thousands of people to think about math, technology, transportation, space, art and scale in a way they may not have done so previously. In my mind, all art and all cultural contributions should strive for such lofty goals.

How will technology continue to impact our cultural landscape in 2015 and beyond? The specifics of that question are almost impossible to answer (because accurately predicting the future is a fool's game). But, in a more general sense, we can be absolutely sure that the technology we create will intimately effect the lives we live. Said another way, by the time Little Hugh becomes a teenager, the high-tech toys that shape our existence will make today's gadgets seem like child's play.

Notes

1. http://amzn.to/1wogajs
2. http://www.gizmag.com/best-ipad-apps-toddlers/27295/
3. http://www.newyorker.com/magazine/2014/12/15/hollywood-vine
4. http://vidcon.com/
5. https://evolutionoftwitter.wordpress.com/2013/03/22/vine-sucks/
6. http://en.wikipedia.org/wiki/15_minutes_of_fame
7. http://www.forbes.com/sites/ericmack/2014/03/14/behold-actual-pi-in-the-sky-on-pi-day/
8. http://en.wikipedia.org/wiki/Pi_in_the_Sky
9. https://twitter.com/NASAJPL/statuses/444468518377885696

Matthew Caines is editor of the Guardian's Culture Professionals Network, an online resource and platform for those working in arts, culture and heritage. With more than 20,000 members, the site delivers the latest news, analysis, advice and comment for an international, cross-arts readership. Its mission is to encourage connections, debate and the sharing of insights between arts organisations and cultural institutions across the UK and beyond, no matter what their size, shape or programme.

Matthew (aged 26) has worked at *The Guardian* for three years. After graduating with a History degree from the University of Birmingham in 2009, he ditched the traditional academic route into publishing and co-founded a community journalism careers platform called WannabeHacks. His first job at *The Guardian* was as a desk journalist and community manager for the Culture Professionals Network. He became editor of the network in January 2014.

You can send stories and ideas for the network to matthew.caines@theguardian.com

The Guardian Culture Professionals Network: a case study in professional community publishing

Matthew Caines, @mattcaines

The Guardian Culture Professionals Network[1] was founded in November 2011 by two people. There was little fanfare; our readership totalled zero. We were two arts journalists talking with only one another. The room was empty; the community was absent.

I always like to think of those early days because it really puts into perspective what we achieved when, three years later (almost to the day), as part of our #LoveTheatre[2] initiative, we involved and spoke to hundreds of thousands of culture professionals and arts lovers from across the world.

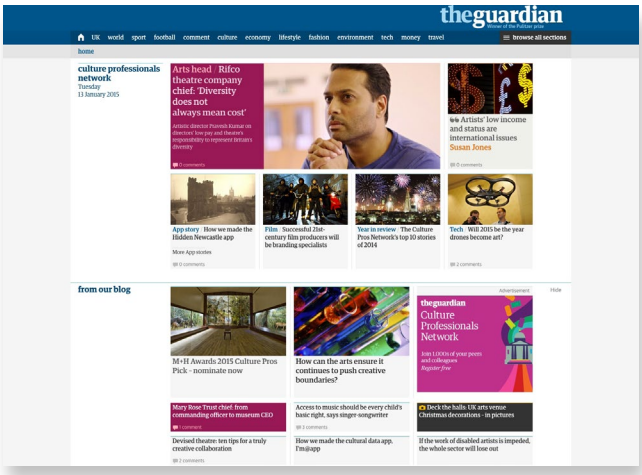
This time, the room was crammed and crowded. The community was energised, engaged and actively changing the face of the arts as we knew it. It had taken the Guardian a long time, but it finally felt like its mission three years earlier to bring together a ready, active and passionate group of arts professionals for the benefit of the community, and the arts sector itself, had been realised.

A love story

#LoveTheatre day was a celebration of all things stage. On Wednesday 19 November 2014, arts companies and cultural institutions from across the UK and beyond came together on social media site Twitter to celebrate the work that happens on, around and behind the stages of the UK, Europe and the world.

The 24hour event – run in partnership by the Guardian Culture Professionals Network (CPN), Twitter UK[3] and Culture Themes[4] – was open to all arts organisations, practitioners, artists, actors and audiences. We encouraged people to share images, videos, vines, comments, stories and anecdotes.

It was a true celebration that flew in the face of deep funding cuts and company closures. It presented an opportunity for theatres to shout about the great work they do, reach wider audiences and forge relationships and collaborate with other venues and stage companies from across the world.



The event was a great success and testament to the power of the community we had brought together over the previous three years. Twitter UK revealed the following morning that more than 40,000 tweets published during the day contained the

#LoveTheatre hashtag which, as reported by the social media team at Dewynters, achieved just shy of 300m impressions worldwide. To put that into perspective, it took Coca Cola's award-winning "Share a Coke" campaign six months to achieve 330m global Twitter impressions.[5] We almost beat it in one day.

While most certainly a collaborative effort, #LoveTheatre was a perfect example of the spirit of CPN and the power of its community. It was an unintentional but brilliant microexample of the ingredients required to create a powerful professional community around the arts: a pinch of fun, glugs of severity and professionalism, lashings of participation, spoonfuls of authority and curation, plus a coating of purpose to top it all off.

CPN is a living, breathing online community and resource for arts and culture professionals.

So how did we do it? How did we go from just two newspaper journalists to the global (and now annual) phenomenon that is #LoveTheatre day? In this essay I hope to outline just that, by revealing my own experiences of working on and managing the network over the past three years, the importance of creating professional communities around content, what trends and challenges relate to networks like CPN, plus some insights and lessons around what makes for a healthy and satiated community.

What is the network?

The Culture Professionals Network is one of the youngest in a much larger family of Guardian professional network communities.[6] From health and social care to sustainability, global development, education and many more, these networks were not all created for the same reason. Some, for example, were seen as commercially viable opportunities: sites that could partner with sponsors and brands to bring relevant content to niche audiences for commercial gain. Others

were designed to support our existing editorial channels: to serve specific communities of the Guardian's readership, for example teachers or students, more directly – delivering relevant content to them in familiar formats, via channels they use and at times they are most likely to read and engage with it.

In the case of CPN, our mission is simple: to be a living, breathing online community and resource for arts and culture professionals across all verticals and artforms.

But at the heart of that mission is and will always be strong content. The Guardian's arts and culture coverage is unrivaled. It's one of the few national newspapers to employ such a large team and cover such a wide range of cultural verticals and artistic forms.

What the paper sees in CPN is an opportunity to augment its coverage, by giving a complete 360degree view of arts, culture and heritage.

To put it simply: if the core culture editorial team was going to cover the next big film to hit UK cinemas, review it and interview its bigname stars at the red carpet premiere, CPN would want to find out and write about all the work going on behind the scenes: the funding, management, direction, production, press, marketing, audience engagement, technological innovation and so on. For example, while an interview with *Electricity* star Agyness Deyn might interest all Guardian readers, features on any of the film's professional elements – its funding, scientific connections, its medical-educational mission, its multicompany production – would most certainly interest and be relevant to the arts professional community, while not excluding more general film/arts fans.

The community publishes articles on professional elements of cultural issues such as funding, scientific connections, educational mission or production.

That last point about not being exclusive is important. CPN may be a separate entity to core Guardian culture editorial – with its own team, strategy and output – but it's still joined up to the paper's core missions and values. As a branchedoff community site, it would be easy for CPN to be selective about the rules it follows and stray from the path to which the Guardian walks; after all, it doesn't serve the paper's majority readership.

But it's in Guardian editor Alan Rusbridger's vision of open journalism where you can find the real essence of what CPN does. It's a vision he sees for the whole organisation. When asked in 2012 by online journalism resource site, the Nieman Journalism Lab, about the concept of open journalism, he replied:[7]

> *"The simplest way I explain it is to think of the theatre critic. The Guardian's got a wonderful theatre critic whose been doing the job for 40 years, and no editor I can think of in his right mind would get rid of Michael Billington or not have a theatre critic. If you asked the question: what about the 900 other people in the audience next door to Michael? Is it conceivable no one else in the audience has an interesting opinion that could add to your understanding?*

"Editorially, it is generally better to try and harness multiple views. So then, if you accept that, there are only two questions. One is how do you sort interesting people from uninteresting people, and how do you sort people of particular interests from other interests? That's something which is not unique to newspapers. Many, many people are trying to crack that nut in an age of overabundance of information."

Another useful definition of open journalism again comes from Rusbridger. Asked about the concept in an online Q&A session[8] with Guardian readers also in 2012, he responded that the newspaper team drew up a list of 10 principles for open journalism. He added: "You can stick a 'not' in any of these sentences to see what closed journalism looks like."

- It encourages participation. It invites and/or allows a response
- It is not an inert "us" or "them" form of publishing
- It encourages others to initiate debate, publish material or make suggestions. We can follow, as well as lead. We can involve others in the prepublication processes
- It helps form communities of joint interest around subjects, issues or individuals
- It is open to the web and is part of it. It links to, and collaborates with, other material (including services) on the web
- It aggregates and/or curates the work of others
- It recognises that journalists are not the only voices of authority, expertise and interest
- It aspires to achieve, and reflect, diversity as well as promoting shared values
- It recognises that publishing can be the beginning of the journalistic process rather than the end
- It is transparent and open to challenge, including correction, clarification and addition

Much like Rusbridger's "not" caveat, you could replace "it" with "CPN" at the beginning of each of the above 10 bullet points to really get a feeling of what the network is, how it operates and the way in which it fits into the wider outputs and operations of the newspaper as a whole. But that's the network now. What did it look like at its inception?

The early network

In its first year, CPN looked very different to how it appears and operates now. Currently, the site exists as a living, breathing online community and resource for arts professionals across a range of verticals: museums, music, performance arts, visual art, design, film, books, music and more. It covers these through a wide variety of content types and styles, from indepth comment articles and longform features to community-focused webchats, polls and quizes.

However, the site was originally intended to be a support site for the Guardian Jobs,[9] the

newspaper's jobs business. The aim was to bring together a community of culture professionals on the Guardian website and to create useful and independent conversations around arts careers, jobs and the workplace. This was to reinforce the idea that the Guardian and CPN were the place to go if you were looking for a new job or thinking about it.

As one of the most respected and used arts jobs services in the UK, the Guardian's arts careers offering didn't require any major marketing push; CPN wasn't brought to life to shout about roles and openings. Rather, we wanted to open a conversation up around careers in the sector: to educate graduates and freelance artists about what opportunities were available to them; to help existing employees do their job better; or to help them find a new role. These are all things the network still does today, but no longer exclusively.

The first web content was very much employment oriented, intended as a support site for The Guardian Jobs.

Early content launched on the site was therefore very career focused. Examples of articles include: *10 tips on writing a successful CV*, *How to be a happy freelance worker*, as well a themed week in November 2011 on internships, aimed at both employer and employee. With time, as the overall objectives of the Guardian changed, so too did those of CPN, which meant changes to the way we operated.

Development of the network

In the three years that followed its launch, CPN continued to iterate, innovate and improve. Some of these innovations were accidental, others were deliberate and required weeks or months of planning. Other innovations, like any small publisher, failed significantly, but we learned from those mistakes.

Data and analysis

In the modern publishing age – where readers find and engage with content in such a variety of ways (and mostly online) – data is extremely important. For an online community such as CPN, where you must continually ensure readers are being served relevant content in the right ways, data is vital.

Audience and content data (much like the arts) can mean the difference between an incredible or abysmal month of traffic (footfall). Similarly, it can strongly affect the engagement and happiness of your readers (visitor experience). Most importantly, it can help to create content and experiences that will encourage readers to come back for more (return visits).

Like any online community, we knew that we would not be able to intimately know every single individual member of our community which, as of 1 January 2015, stands at 20,000 signedup members and more than 120,000 monthly unique readers. Likewise, we understood that drawing a single CPN member in broad brush strokes was dangerous. Much like snowflakes, no two CPN readers are 100% the

same. We settled on the mission that we would try to find out as much as we could about our readership, but avoid overgeneralisation.

Audience and content data can mean the difference between an incredible or abysmal month of traffic.

This mission has remained constant ever since CPN's inception. While the methods and tools at our disposal have advanced and changed over the years, in general, we still collect and analyse data on and about CPN in three separate ways.

First, we collect and crunch content data, which can tell us significant information about the ways in which our articles are being read and who's reading them. Using an inhouse Guardian analytics tool called Ophan, as well as several third party applications, we can uncover this information with great ease and speed. At a basic level, we can tell, among other things, how many people read a particular piece, how they got to that page (via social media or from another article), for how long they read it, and where online they went next (another article or an external link). For more advanced queries, we can examine, for example, minute-by-minute spikes in traffic. We can then crossreference that data with information about the device people read a particular piece on or their country of origin. That analysis can help to inform the times at which to launch our easy laidback reads versus our heavier, more thoughtful comment pieces.

Another way we collect and analyse information is via membership data and surveys. Readers of CPN can become members of the network for free via a light data wall.[10] Members receive discounts, exclusive offers on events, two weekly newsletters – a careers bulletin and a weekly content roundup – as well as a free eBook on entrepreneurship in the arts. In return, we kindly ask potential members for some standard personal details as well as information about their industry, company, job title, area of work and interests. All these details are used to get an understanding of who our members are and how we can better serve them from a content perspective

The third way CPN collects and crunches data is through individual feedback. This is an incredibly valuable tool for gaining information about the site that isn't numerical. It's also a good way of making sure members don't feel like they're a percentage or number; that they're able to say something to a human behind the site. In general, we facilitate this kind of feedback via surveys – giving users space to type up what they like or dislike about the site and its content (ie not "agree" or "disagree" options) – and by making the contact information of the site's editorial team freely available via the newsletters and on social media, among other channels. Importantly, we respond directly and personally to that feedback, whether it results in a change to the community or not.

Editorial development

Content and storytelling should always be at the heart of any newspaper, blog or content startup. The methods by which you deliver those stories may be innovative, advanced or

flashy, but unless the content itself is arresting or interesting, your output will simply be style over substance. This is something community sites desperately need to be aware of; all that glitters is not gold. That balance, of style and substance, is something CPN has always come up against.

Gaining information through individual comments so that members feel they can say something to a human behind the site.

What's worked for us in addressing this balance over the past three years has been to adopt a content strategy that contains rigour, routine and flexibility, although not always in equal parts.

Rigour is important for a site like CPN because it means we bring a thoughtfulness and carefulness to our publishing. While we accept and launch contributions from our community alongside those of our own inhouse journalists (a central concept of open journalism) that does not mean they are not exempt from the practical, legal and ethical considerations that must be taken into account before hitting that "launch" button. Editorial oversight – considering content for its quality, relevance, accuracy and any legal or ethical issues – is important if a site like CPN wants to maintain its integrity and ensure the "substance" aspect of the balance is strong and consistent.

Routine is equally important. Establishing a sense of regularity to what the network publishes brings order to proceedings and helps to avoid a random, scattergun approach. In much the same way a newspaper reader will browse headlines and pages, but home in on features, series or columnists they like to read, online sites should follow suit. For CPN, series include: Arts head[11] – a regular feature in which we interview some of the most influential and inspiring people heading up UK arts organisations and venues – and App story,[12] a blog series in which the digital brains behind some of the best arts apps out there tell us how they made them. We also run a series for young arts professionals (Tech talk[13]) and regular formats, such as live webchats.[14]

The third aspect, flexibility, simply means being able to break from the rigour and routine where time and resources allow to bring readers new and exciting articles and experiences (the "style" aspect of the balance). This could be reactive, for example a news story for which you have to drop everything else – or proactive, ie deliberately breathing some fresh air into your usual formats through new digital platforms or social tools. A good example of this is CPN's use of embedded multimedia in new articles.

Stylistically, it's a great addition to what we do, but we have to be careful it doesn't overshadow the core message of the story, nor cloud the team's editorial judgement, for example, overlooking the quality of content in an article because the overall picture quality is so high.

Flexibility also means knowing when to quit. The idea that something is failing is not always an easy one to come to terms with, especially in new projects with lots invested in them. But being smart about failure is key. Small startups do this very well, finding lessons from projects

that didn't work and applying those learnings to the next project or pivot. A good example of this on CPN was our weekly Culture tweets series,[15] which featured five accounts to follow that week. We quickly realised that traffic was poor compared to the amount of time it took to search and write up the lists, so after only a handful of installments, we pulled the plug. The lesson? We learned that a monthly series would have worked more effectively, which is something we've applied to lots of new, similar projects.

Flexibility means knowing when to break from the rigour and routine but also knowing when to stop.

The importance of face-to-face relationships

Quite early on in the development of CPN, we realised that we had at our fingertips a whole host of knowledgeable, chatty and engaged readers and members, but knew them only as Twitter avatars or faceless email signatures. In much the same way that viewing a work of art online doesn't beat getting to see the intricacies of its brushstrokes in real life, an online community needs a physical and human touch if it's to become anything more than an online chatroom.

This is something CPN initially did well. We hosted meetups in London pubs and ensured that any chats or phone calls were turned into face-to-face meetings where time and location allowed. We also made efforts to join other meetups and events that brought arts and culture professionals together, to put the network on their radar and ensure our fingers remained firmly on the pulse of the wider arts conversation.

However, it became something CPN neglected as the community grew more self-sufficient. We (wrongly) didn't see the need to encourage the human element if readers and members were already doing it among themselves. It was the easy option for us as curators of the community and one the network will change in 2015 as we look to reignite a culture of events and meetups.

We also want to be better at bringing that face-to-face element to the regional and international readers of our community, who (rightly) won't spend hundreds or thousands of pounds on a train/plane ticket to London for only a quiet pint in a London pub. Already we are experimenting with Google Hangout technology to test out the concept of international or cross-country online meetups.

Collaboration

Collaborating with other sites, events and communities is very important for any publication or community starting from a standstill. In CPN's case, we had no members, readers or content, no initial marketing and an editorial team of two. We needed other ways of making a noise and bringing people to our website. Content sharing and marketing contras (agreements in which money doesn't change hands) are two

things that can help a lot. For CPN, it brought us our first wave of readers and members.

Early collaborations for CPN included content sharing contracts with art and design blog Creative Boom,[16] the Creative & Cultural Skills network,[17] the Museums Association[18] and the Arts Marketing Association.[19] These contractual agreements between the two sites decreed that a set number of articles could be shared between them over the course of a week, month or longer. Permission had to be sought from the editor for each article, to make sure specific features weren't protected from being shared. It worked because it brought us new readers on other sites, and helped to legitimise the strength of our content and network in the early days when we had little output.

Content sharing and marketing contras helped bring our work to new communities.

Marketing contras on CPN were also contractual but instead allowed the sharing of marketing slots or ad collateral, for example a newsletter promotion slot. Again, these helped to bring our work to new communities. Longrunning marketing and media partnerships include ones with the REMIX summits[20] and the Museums and Heritage Awards.[21]

The importance here, like any strong collaboration, was to ensure both parties benefited and that an open and honest conversation continued to be had. For some agreements, one side found more gain than the other, so they were openly discussed and terminated. Others were strong mutually beneficial agreements that continued for many months. While the network doesn't honour any contractual agreements any longer, the site still enjoys the sharing of content on an adhoc basis with a range of writers and blogs.

Social media

An online community can live and die by its social media strategy and use. For CPN, social media accounted for a quarter (23%) of all unique visitor traffic to the site in 2014. While some of that social traffic comes from encouraging readers to share stories themselves, with their own followers and fans, ensuring CPN has a presence on social media is also important for seeding pieces initially and letting followers know when articles have been launched.

Much like the Guardian, the network continues to experiment with new tools and platforms, but two key social networks sit at the heart of its social activity: Facebook and Twitter.

Twitter has and will always be the network's highest referrer of traffic. It's highly useful mainly because it's unintrusive, which means we're able to share the same story several times per day. It's also a great aid because it's where the majority of CPN's followers (20,000 of them[22]) are.

Facebook[23] drives significantly less traffic – one post is usually equal to one tweet in terms of clicks – which is partly due to the fact that, unlike Twitter, posting a piece once is enough without intruding on user feeds (and encour-

aging unlikes). But with 2,700 likes, Facebook still gives our community a place to connect and share content.

The key for CPN has been to experiment and see what works. We also always remind ourselves that one size doesn't fit all. What works for CPN might not work for the Guardian's Teacher Network, whose readers, for example, are unlikely to connect with them on social media during the day (working hours).

The network now and what's next

It would be remiss to talk about the development of CPN without giving some context to the changes that have taken place in journalism and publishing over the past decade.

Those changes and their impact are far too complex and wide-ranging to summarise in such a short chapter, but there is one thing in particular that can be said of the sector that relates to the future of professional networks like CPN: print revenues have declined significantly and readers are now turning to digital channels for their content fix.

In June 2014, Ofcom research revealed that for the first time, consuming news on websites or apps was as popular as reading newspapers.[24] According to that same report, of 2,731 UK residents: "Younger people (1624) are driving the surge in consuming news on the internet or apps, with 60% doing so in 2014, up from 44% last year. Some 45% of 1624s said that websites or apps were their most important sources for news, up by a half over the year (30% in 2013)."

The rise in users reading news and articles online means we have to continue to innovate and cater for increased numbers of digital readers.

How does this impact CPN? First, the rise in users reading news and articles online means we have to continue to innovate and cater for increased numbers of digital readers. To address this, the network switched over to the Guardian's new responsive layout in early December 2014.[25] With roughly 40% of CPN's readers consuming content via mobile channels, it was important that we adopted a responsive design to ensure that whether on a smartphone, tablet, phablet, laptop or desktop, the user experience remains clear, comfortable and familiar.

The second way in which Ofcom's research impacts how CPN operates is how many young people are using online, and only online, to consume content. It means that online sites must wiseup to the ways in which young people engage with digital content. Do they still use Facebook or are new messaging apps like WhatsApp and Snapchat their preference? Are they more likely to comment on certain types of article? How loyal are they to branded community sites such as CPN? These are the types of question that publishers and online communities like ours need to ask themselves heading into 2015.

How to create a strong a satisfied online community network

What makes for a healthy and satiated professional community? Over the past three years, working for and editing CPN, there are some key insights and lessons I've picked up along the way. These four tips are by no means a winning formula for creating a winning community, nor are they the only things you should do, but they do hopefully shed some light on what to do and what to avoid when starting out.

You won't please everyone, but that doesn't mean you shouldn't try

Communities are complex beasts. They are made up of hundred or thousands of individuals, each with their own ideas, views, attitudes, personalities, likes and dislikes. They are rich communities for this very reason.

Some of these views and attitudes, however, will directly contrast how you operate as a community. A change to CPN that 90% of its members support, for example its newlook website, means that 10% do not. The key therefore is to continue to engage and talk to that 10% – explain clearly why certain actions have been taken, as transparently as possible, and provide opportunities for feedback and compromise, where appropriate. Address specific concerns and encourage other members of the community to do the same.

A professional community like CPN will only ever grow and move forward as one – as a whole, which means trying to ensure everyone is happy, catered for, involved and enjoying themselves. That should always be your mission as a community, online or offline, but it's not one that is always 100% achievable.

Communities take significant time to grow organically

It has taken three years to grow an engaged community of arts and culture professionals. Three years of hard work. Any publisher, organisation or company that thinks a 20,000 strong community of members is possible within one month, from a complete standstill, will fail. An article that goes viral on Reddit and picks up 200,000 readers will not bring you a sustained and frequent readership, nor will piggybacking off a much larger organisation or readership. It's for this reason that CPN has never been directly marketed to general Guardian readers.

Communities require a solid infrastructure. They require that you find and engage with potential members individually, as opposed to casting out a trawling net and seeing what comes in. They require love, care, consideration and attention. CPN's figures for return visitors (66% for 2014) are testament to the ways in which the above requirements can help to build strong and loyal communities.

Always ask yourself: what does the community get from this?

Whatever and whoever your community – professional, consumer, large or small – you

should always ask yourself this question. In the case of CPN, each piece we publish and project we implement, however minor, is done for our readers, so we ask ourselves: what does the community gain from this? If the gain is nonexistent or very minimal, perhaps we're not doing it for the right reasons. It's also a question that can result in improvements to projects and articles.

Finding the right tone

Finding the right tone for your community is key. Too much "officialness" and you will appear unapproachable and faceless. Too casual and you might undermine the importance and severity of what you do. There's no winning formula for what produces a correct tone, so it's a case of experimenting, adjusting and gaining feedback from your community. The more your converse with users via social media and below the line on comments will also naturally force you to be more chatty and attuned to how your community speaks with you and one another, so do it often.

On CPN, we use a more formal tone for tweeting and sharing headlines, especially when they cover serious or grave subjects, and adopt a more chatty tone when engaging the community in "what do you think?" features, live webchats and direct responses, all of which require a twoway conversation, a core tenet of what an online community should be.

Useful links and resources

On the Guardian Culture Professionals Network

The Culture Professionals Network
http://www.theguardian.com/culture-professionalsnetwork

Culture Professionals Network membership
https://register.theguardian.com/culture-professionals/

The Culture Professionals Network on Twitter
https://twitter.com/GdnCulturePros

The Culture Professionals Network on Facebook
https://http://www.facebook.com/GdnCulture-Pros

Introducing #LoveTheatre day (2014)
http://www.theguardian.com/cultureprofessionals-network/2014/nov/05/lovetheatredaytwitt eruk

On open journalism

Alan Rusbridger on open journalism at the Guardian – video (2012)
http://www.theguardian.com/media/video/2012/feb/29/alanrusbridgeropenjournalismguardianvideo

Catherine Shoard on open arts journalism – video (2012)
http://www.theguardian.com/media/video/2012/feb/29/catherineshoardopenartsjournalism video

Q&A with Alan Rusbridger on the future of open journalism (2012)
http://www.theguardian.com/commentisfree/2012/mar/25/alanrusbridgeropenjournalism

Alan Rusbridger on the Guardian's open journalism, paywalls and why they're preplanning more of the newspaper (2012)
http://www.niemanlab.org/2012/05/alanrusbridgerontheguardiansopenjournalismpaywall sandwhytheyrepreplanningmoreofthenewspaper/

10 ideas on open journalism from the Guardian's editor Alan Rusbridger (2012)
http://thenextweb.com/media/2012/03/27/10ideasfromtheguardianseditorinchiefalanrus bridgeronopenjournalism/

Resources and tips

12 top community managers share their tips for better engagement (2012)
http://mashable.com/2012/03/15/communitymanagerengagementtips/

Five social media tips from The Wall Street Journal (2014)
https://www.journalism.co.uk/news/fivetipsforsocialmediasuccessfromthewallstreetjour nal/s2/a555772/

26 tips for managing a social media community (2012)
http://www.socialmediaexaminer.com/socialmediacommunitymanagement/

10 significant things you likely didn't know about social media but should (2014)
http://www.fastcompany.com/3032553/10significantthingsyoulikelydidntknowaboutsocialmediabutshould

The best and worst times to post to social media (2014)
http://www.fastcompany.com/3036184/worksmart/howyoushouldtimevirtuallyanysocialm ediapostinfographic

Community managers share tips for engaging audiences (2014)
https://http://www.journalism.co.uk/news/communitymanagerappreciationdaytipsforengagingaudiences/s2/a555697/

8 top Twitter tips for journalists (2014)
http://blog.newswhip.com/index.php/2014/03/8toptwitterjournalismtips

YouTube for the arts: expert tips (2014)
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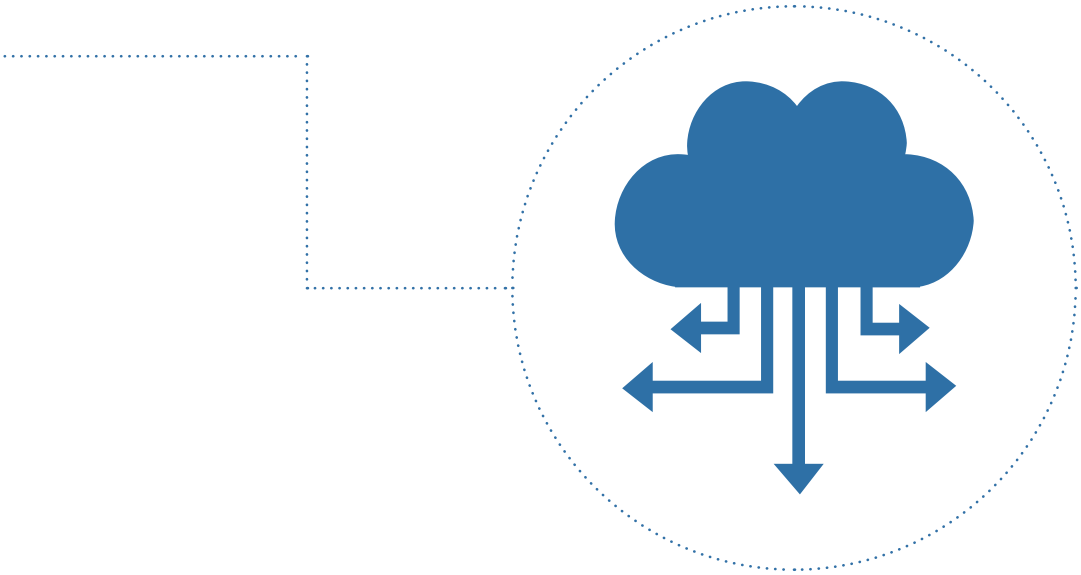

Marco Ferrario: I left Mondadori, Italy's biggest publishing house, in 2008, a few months after Kindle came on the market in the United States. I decided to ditch a traditional publishing company where I had worked for sixteen years, spending much of this time in charge of the Internet and multimedia projects and a few imprints. I soon realised that innovation in a well-established organisation was much more difficult than in a startup: we are so lucky to be experiencing a historic revolution in the publishing industry and I had no intention of spending the rest of my career protecting my company from it. I wanted to join in this revolution and be part of it. Bookrepublic was set up after I spent a year in Europe and the United States developing a business model, seeking investors and doing a lot of personal work to stop thinking like a manager and become an entrepreneur.

The trade of publishing books and, chiefly, what is going to become of this trade continues to be my main interest; therefore we are working in different fields, as we are aggregators, retailers and publishers with two international digital imprints. I firmly support the creation of global networks for sharing experiences and ideas; in 2011 we started up IfBookThen in Milan, an international conference on digital publishing increasingly focused on digital storytelling and "stories outside books"; and last year we set up Bookrepublic Content Agency to offer corporate brands the best content.

The digital age is transforming storytelling

Marco Ferrario

The great irony of existence is that what makes life worth living does not come from the rosy side. We would all rather be lotus-eaters, but life will not allow it. The energy to live comes from the dark side. It comes from everything that makes us suffer. As we struggle against these negative powers, we're forced to live more deeply, more fully.

Robert McKee

May we have the strength to struggle against adversity, against evil: that is the *Odyssey, Star Wars,* the story of any story. But it is also the life of every one of us.

Vulnerability, the possibility of winning, and also of succumbing, is what makes stories "real" – that is, credible. When the main character in a television series falls, exits the stage or dies, the emotional impact on fans peaks. The possibility of evil triumphing is embedded in every instant of our lives and makes us fearful, causes us pain; we would rather avoid it – it is the "dark side" that stories bring to light.

And then there are the good and strong feelings – extremes that make us throb with emotion, cry, suffer, enjoy – that fill the stories that we wish would happen in real life, that we wish were true, that we would like to experience ourselves.

What has all this got to do with the Internet? Why is there all this talk of storytelling precisely now, as if the Internet had given an extra boost to the already extraordinary power of stories?

There are words so hackneyed that we are sick of hearing them; "storytelling" is one of those words today: anything can be told, anything can be turned into the story it entails.

And the Internet is partly to blame for this, for a number of reasons:

1. We publish many more stories, there are many publishing platforms, we are affected by many more stories with all their potential;

2. We carry around with us instruments that provide immediate and easy access to many types of stories;

3. The narrative potential at storytellers' disposal is much greater, technology makes it possible to tell stories that did not previously exist;

4. The purpose of stories is to engage, in themselves or through a system of values, and the Internet is the ideal place for this;

5. The emotional impact of stories can be shared in real time and, above all, it can be measured;

6. The potential of stories can be renewed, rediscovered and reactivated, because the potential audience to whom they can be told is huge, greater than ever.

What is more, what we expect of stories is changing or has already changed. As Frank Rose rightly pointed out (*Schumpeter and the Future of Media*[1], The Milken Institute Review, 2013), we are increasingly taking for granted that stories

- are interactive,

- are available always and anywhere and

- transport us inside them, are immersive.

In short, the Internet has equipped stories with new instruments; more specifically, it has added a number of contextual elements (how content is accessed, possibility of relating to it in real time, simultaneous use and incorporation of several languages) that have paved the way for experimentation with the creation of stories and their enjoyment.

The Internet has equipped stories with new instruments, it has paved the way for new territories where anything can be told as a story.

So much so that we do not even know what to call a person who "enjoys" stories: user, reader, spectator, listener, visitor. A completely new term will probably be coined in the near future to encompass all these meanings.

The new territories of storytelling are a place where digital technological innovation has added many possibilities to the narrative techniques with which we were familiar; the possibility of using new structures, new forms and new languages has given rise to a period of experimentation that is only just beginning.

The self-publishing phenomenon has exploded in several directions: from the many platforms where we all publish stories or, more commonly microstories, daily, to self-published e-books or famous authors who have opted for self-publishing after working out the figures. A hitherto unseen quantity of texts, videos, podcasts, images and illustrations.

Now that the most widespread instruments that provide access to stories are smartphones and tablets – that is, objects we always carry around with us – we are also affected by push-type stories with propositions of many kinds. And it is not just authors or publishers that invite us to buy content, but also companies and *brands* that wish to establish a relationship with us, by conveying to us emotions related to the value system they represent. Also in this case, very old techniques such as "content marketing" are being revived thanks to the unprecedented potential of the technologies we use.

On the following pages we will attempt to analyse all this with specific examples in order to illustrate how, in only a few years, stories have returned to the centre stage of any media industry, the possibility of gauging the emotional impact of stories, how advertising is being used, and how technology has made them an area of deep innovation.

We will end with a quick survey of what the Internet is today, leaving open all channels that have yet to be explored to harness the potential of this extraordinary context.

Business models

The crisis that is dragging on in the various sectors of the media industries stems from three main factors:

- the *disruption* of certain companies that have rapidly become global (Google, Facebook, Amazon and others);
- the consequent global dimension of economies of scale to compete;
- cost structures that have ceased to be sustainable now that the prices of content (stories) are low and experiencing a downward trend.

The changes we are experiencing are structural and are shaping a landscape that is very different to the previous one. However, the ways of achieving turnover and profit margins (business models) in the new digital context are not much different from the traditional schemes and can be regrouped into four categories:

- *e-commerce*, that is, the sale of stories (content) in exchange for a price and in different forms (one-off sale, streaming, lending);
- *advertising*, stories create interaction and engagement with communities, making it possible to define in real time the profile of the person who accesses content;
- paid (and also free) *services* for anyone who wants to write, publish and read stories;
- *data*, which is the chief novelty in the new content industry, because the possibilities of gauging the impact of stories are vastly superior to those of the past.

Platform publishing

The creation of publishing platforms based on the Web infrastructure has not only made it possible for practically anyone to publish (make public, accessible to others) a story but, above

all, it has made the traditional distribution channels for stories very costly and outdated. The result is that nowadays we publish a large amount of stories – at very little or no cost – that was unimaginable only a few years ago and consequently there are loads of stories, often free of charge, that vie with stories in traditional format (newspapers, films, books, etc.) for our attention. In our opinion, this is the main cause of the decline in the traditional media.

The use of **Facebook**, **YouTube**, **Twitter** and **Instagram** as publishing platforms on which to experiment with formats and languages is increasing; the quality of some posts and videos would appear to indicate that we are witnessing the emergence of the telling of real stories based on these platforms.

Other platforms, such as **Tumblr** and particularly **Medium**,[2] seem to be turning into spaces for publishing slower, longer and more thought out stories that differ from the publication of immediate moods or moments that seem special to us; and above all they have the aim of creating a web context suitable for immersive reading. Medium has affirmed its status of "publisher" several times.[3]

We are witnessing the emergence of the telling of real stories posted on platforms such as Facebook, YouTube, Twitter and Instagram.

In contrast to the platforms that invite everyone to publish, there are professional service platforms such as **Atavist,**[4] **Aerbook**[5] and **PressBooks**,[6] which provide several publishing instruments in exchange for a fee.

The potential of these platforms is actually greater and there is still scope for taking fuller advantage of it. At the beginning of 2015 Aerbook entered into important agreements with Simon&Schuster and Harper Collins to become the technological platform for a "direct-to-consumers" model.[7]

Self-publishing platforms are very numerous and different in nature. **Smashwords**,[8] established in 2008 (that is, shortly after the launch of Kindle in the United States and before iPads existed), has been one of the first to offer a space to "Indie" writers who are unwilling or unable to access the official channels. **Kindle Direct Publishing**[9] (KDP) is the Amazon programme aimed chiefly at authors in the middle to high range, offering them much higher earnings than traditional publishers (70% compared to 10%–15%); therefore, by lowering prices, authors can sell more, maximising their revenues; this is, to all intents and purposes, a plan for cutting out the middlemen of traditional publishing. At the end of 2014, Amazon launched **WriteOn**,[10] a platform aimed at communities of authors-readers for creating, publishing and correcting among themselves; it is a response to **Wattpad**,[11] a highly successful platform that started out as an app in 2006 and now has more than 35 million users who publish more than 100,000 units of content daily (in other words, more titles than Penguin Random House publishes in a year). Wattpad also has a crowdfunding system that authors with a large following can activate to fund their work.

Over the course of 2014 *After*,[12] a fanfiction series starring a member of the group One Direction, came out on Wattpad; altogether its episodes have been downloaded more than a billion times. The new author Anna Todd[13] uses community feedback and Twitter and Instagram to share the backstage; the paper version was published in October 2014 and it is likely that a film will be made on the subject.[14]

It should be stressed that in contrast to some – very few – astonishing successes, many titles have a very limited dissemination: self-publishing is very appealing to anyone who wishes to publish, but as it cuts out the filter of the publisher, it ends up passing on to the reader the expenses and cost of making the selection. If there are more titles to choose from of inevitably lower quality, readers are more likely to find titles that are less satisfactory.

Scribd,[15] which started out as a repository (especially of PDF files), has become a platform for posting content in several formats, which is sold through a monthly subscription fee. It is also used by a few major publishers (Harper Collins was the first) as a sales channel.

The "all you can…" model – i.e. access to a catalogue of titles in exchange for a monthly fee – is surprisingly widespread in the music world, where **Spotify** has become established as an alternative to Apple's **iTunes**, and in video, where **Netflix** has outperformed Amazon **Instant Video**. As for books, the Spanish company **24Symbols**[16] (in which Zed, a multinational that creates content for the telecommunications industry, recently bought a stake) has been a pioneer, together with the German firm **Skoobe**[17] (whose main shareholders are the Bertelsmann group and Holtzbrinck), the Danish firm **Mofibo**[18] and New York's **Oyster**.[19]

These models differ in some aspects, particularly the size of the catalogue to which they provide access: some guarantee unlimited access (such as Oyster), but most however provide access to a limited number of titles at any one time (a model used by Amazon for the recent launch of **Kindle Unlimited**).

Prominent among the book subscription platforms are the Spanish 24Symbols, the German Skoobe, the Danish Mofibo and Oyster of New York.

Actually, as Andrew Rhomberg claimed some time ago,[20] there is a big difference between the same models when applied to different industries and no guarantee that the same model will function everywhere.

Lastly, platforms with distinct goals are de facto spaces for the production of stories: **Kickstarter**,[21] **Indiegogo**[22] and other crowdfunding platforms, perhaps even more than funding instruments, are places where every project becomes a story. And sites that bring together petitions, such as **change.org**[23] or the Benetton foundation's **Unhatenews**,[24] are also storytelling platforms: stories are a great way of inviting others to support a cause.

In short, what is needed to publish a story in the digital context?

A *platform*, that is, an infrastructure that offers:

- a *repository* for the content;
- a few *publishing* instruments (that is, which make it possible to improve the quality of content, publish it and make it visible on the Internet);
- a *content delivery* service (that is, the possibility of transmitting content to users);
- an *interface* (that is, an access and meeting point for users and content that is functional and attractive);
- *data* available to the platform administrators and, through them, to the *content owners* in order to have better access to the point where supply and demand meet.

And the ability to generate *engagement* (users' interaction with content) on the platform, for which the following are necessary:

- a *brand* (that means fame, reputation, identity);
- a *community;*
- *specific techniques* that activate and maintain the interaction.

The abovementioned examples, to which many others could be added, meet all or most of the requisites listed.

Platishers (a definition derived from the combination of *platform* and *publishers*) are regarded as the new publishers in the digital context and *platform publishing* as a model to which traditional content producers should orient their change efforts.

In general, content producers have ceased to be characterised by their ability to locate and direct creative talents and improve and sell their work, and are characterised instead by the ability to make available to everyone (and therefore not only to potential talents) a technological infrastructure that allows them to express themselves and relate to their own communities.

Stories

"Platform" and "platform publishing" are terms that require an infrastructure, code lines that define an environment in which we can write, edit, publish, share, comment and recommend. But what if, instead of that, digital technology were a new and powerful instrument for creating content? And what if not platforms but the actual content, the stories, were the field of innovation?

At the end of 2012 the ***New York Times*** published **"Snow Fall"**,[25] a long article exclusively in digital format that had major repercussions among readers, especially among professionals, and dealt with an event (the death of several expert skiers as the result of an avalanche they had triggered themselves when skiing down a slope off the trail).

The use of images, computer graphics, videos and the audio recorded by the skiers themselves during the tragedy and the interviews created

a very innovative mix: it was the first public example of the use of technology in storytelling that involved the reader in a striking and totally new way.

Along the same lines, in May 2013 ***The Guardian*** published **"Firestorm",**[26] a chronicle of the tragedy experienced by the Holmes family in Tasmania when their home and the village they lived in caught fire. The story was told in first person and, in comparison to "Snow Fall", the dramatic tension is created more by the images and sound than by the text.

And in April 2014, *The Guardian* published **"The t-shirt on your back"**,[27] a touching story of yet another tragedy in Bangladesh in which more than 1,100 people died in a precarious factory that produced t-shirts and shirts for the western market. The use of sound is surprising, the images are very high quality and the inclusion of a few non-narrative elements reinforces the interactivity (for example, a counter calculates the money earned by the person who makes the t-shirts in Bangladesh compared to those who sell them in London) and the result is a story with a narrative tension that no other form of journalism had previously managed to create.

The use of technology in storytelling involves the reader in a striking way and creates stories with powerful narrative tension.

Although the results are extremely interesting from the point of view of the stories, we cannot speak of new forms of sustainable journalism; production costs are very high and advertising revenues, although encouraging, are not yet sufficient to cover them.

Other non-journalistic experiences based on the storytelling format have not fared so well: the New York firms **Atavist Books**[28] and **Byliner**,[29] despite a very encouraging start, have run into a considerable number of difficulties; the second was bought by the publishing platform Vook last year.[30]

An interesting example of the use of an author's fame to produce a content system is the TV series + book **"How we got to now"**[31] and also the site **"How we get to next"**,[32] based on the fame and authority of Steven Johnson, which deals with the subject of innovation in time. It is curious that in a hub for imaginary time the story that already happened should be told through traditional media while the story yet to be written is told through the press directly on the website.

Another very interesting case is the Indian **YourStory**.[33] The complexity, linguistic diversity and stratification of Indian society make it very difficult to create interest-based communities in the country. The apparently very simple idea that people's stories told over the Internet (to which fewer than 20% of the Indian population have access – one of the lowest penetration rates in the world, though it is also one of the fastest growing) – can inspire other stories is proving to be very powerful. The Internet is innovation and the stories of business or social innovation that are told on the Internet show an elite with values who uphold and transmit a certain idea of

economic and social development. It is probably one of the cases in which the Internet gives back to stories their oldest and most intrinsic power, which is none other than that of gathering and grouping people together around a story that contains a message.

Does the Internet have anything to do with the surge of interest in many **television series**? The social media are a vast territory for sharing emotions and commenting on different episodes in real time, and for measuring emotional peaks and identifying emotions in relation to the story.

Fanfiction stories run in parallel to TV series on the social media and generate large communities and significant content.

Television series (like some talent contests) are the first case of real-time collective interaction of huge communities with content. Spontaneous and highly popular fanfiction stories run in parallel to the TV series on the "second screen", to the extent that there are people who follow episodes through what the communities say about them on the social media. This is not only hugely broadening the scope of traditional broadcasting, but also steering the path of its successive development: authors greatly take into account all the interactions and reactions of the communities when deciding on how the stories are to unfold.

TV series are also interesting because they are very long stories on which fans develop a sort of dependence, a need not to miss an episode and not to let anyone tell them beforehand about episodes that have already been aired (in other countries, other languages, etc.), a wish to share and comment with other fans. All this goes on for months, even years, in a story that cannot and should not ease the emotional tension.

At the opposite extreme, we have immediate, very fast-paced stories aimed at achieving maximum engagement in a limited time. One of the most striking examples is the well-known **Humans of New York**,[34] a Tumblr created in the summer of 2010 that has a Facebook community of nearly twelve million people and has become a format for publishing on this platform. Posts consisting of a photo and a text capture an instant and a fragment of a person's life but are capable of harbouring a whole story, in a city with one of the strongest identities in the world. The result is several hundreds of thousands of "likes" and dozens of thousands of comments and shared stories.

The gathering power of the stories of large and small communities has been given a new lease of life thanks to the Web. Stories that arise in another place are topics of discussion and are shared on the Net: the most striking case is the "**TED talks**", videos that are often shared millions of times, creating real Web stars; Candy Chang's offline project **"Before I die"**[35] and live storytelling shows featuring ordinary people, such as **"Spark London"**,[36] are just a few more examples.

We should also mention **libraries**, around which a major debate has revolved for years on what their future role should be. Thanks to digital technology, they can increase their functions:

become repositories for the stories of a territorial community, provide access to new experiences based on content or be the physical meeting place for virtual communities.

And speaking of physical places, stories are representations that can provide different experiences**. Story**[37] is a concept store which "enacts" a programme of stories that introduce users to various purchase experiences.

Selling stories has become an increasingly difficult task; creating added value through technology is one of the most interesting ways forward.

One of the most interesting areas in the development of storytelling is the so-called **"Internet of Things"**. The spread of sensors that establish relationships between objects and between objects and people opens up a totally new ground for the creation of stories. Lance Weiler,[38] who defines himself as a "story architect of film, tv and games", is one of the most interesting practitioners of this new art, which he explains as follows:

> *Historically, where technology goes, storytelling follows. This has been the case with production and distribution technologies. But now we are experiencing a shift; the ability to creatively embed stories within the real world will influence the next generation of social applications.*

In short, as pointed out, we live among stories, we have never lived in a period in which so many stories have circulated. Most of them are accessible free of charge, and although the quality difference is sometimes evident, stories that have to be paid for are facing a new competition. Selling stories has become an increasingly difficult task; creating added value through technology is one of the most interesting ways forward.

In this territory which is expanding daily we will witness the emergence of new narrative structures, forms and languages: the challenge is for them to give rise to a new content industry in which people recognise a value and are willing to pay a price that makes a new supply system sustainable.

Advertising

A different and in many ways more active model is that which sets itself the goal of monetising the communities that stories are capable of bringing together. In this case, stores are not an area of innovation in themselves, but have the function of creating the maximum engagement possible in order to translate it into advertising revenues.

It is no coincidence that precisely now, and in relation to the digital context, terms such as "content marketing" and "brand storytelling" have made a powerful comeback and are even being overused.

Upworthy,[39] launched in March 2012, is a clear example in this respect. The strength of this model lies in the selection made by a team of editors of stories already published on the Internet and in the ability to choose titles that

are shared virally, guaranteeing a very wide dissemination: within a very short period it has come to have more than 30 million visitors per month – by republishing other people's stories.

This example leads us to reflect on another crucial aspect of stories in the Internet age: who is the owner, who holds the rights and how are those rights exercised? A few days before being dismissed, Jill Abramson, the powerful former director of the *New York Times,* had put the question to the editorial staff: on the Internet there are people who make money out of republishing stories previously published by the NYT. Is this legal? How can the NYT take advantage of these revenues? All the answers probably lie in a vision of copyright that is very different to today's.

Whatever the case, in a context where platforms make us all potential authors and publishers and where self-publishing has become a very widespread practice, stories are also a perfect means of conveying emotions and values that identify a brand. Brands represent renowned and quality publishers.

Content marketing precisely harnesses the emotional communication potential of stories and disseminates, shares and viralises it on the Net.

Content marketing in brand communications, which is widespread and undergoing significant development, precisely harnesses the emotional communication potential of stories together with the Internet's ability to disseminate, share and viralise. The result, in a few successful cases, is millions of reproductions of videos that are often very well made.

There are many examples, prominent among which are: **Coca Cola**,[40] which has an internal division in charge of storytelling, has produced a video on the concept of sharing that has been the brand's main communication value for several years; **KLM**[41] has produced a video showing how the brand is focused and how customer service is central to its business; some time ago **Volkswagen**[42] devised a "fun theory", that is, how fun and happiness can lead people to make more innovative and less common choices; **Honda**[43] has made "The Other Side", a video of outstanding quality that tells two parallel stories which convey the different spirit of two versions of the same model of car; and **Airbnb**[44] has involved its own community by requesting contributions in the form of *vines* (the Twitter video format) that are put together to tell a highly moving story which represents the values of the voyage, discovery, meeting and freedom that define the brand.

In all these cases the story is a fully predominant element and the brand appears almost out of the blue to reveal itself at the end to put its "signature" to the story; the first step must be to convey emotions, which represent the system of values associated with the brand.

A widespread model is native advertising, magazines or editorials that speak of products. This model is by no means new or specific to the digital context, but it is enjoying a new lease of life for reasons similar to those mentioned above.

The idea is for the brand to offer users high-quality content or a service without direct communication. We can also cite very many examples in this case, among them **Nowness**,[45] LVMH's sophisticated luxury and lifestyle webzine, or the joint venture **Netflix-*New York Times***[46] for the launch of the television series *Orange is the New Black* (produced by Netflix itself), where Netflix discreetly offered an in-depth and documented journalistic service on the conditions in women's prisons, whereas in the series no more than two lines were dedicated to it in a fairly long passage; or even in the success story of **TheVerge**,[47] a portal on innovation belonging to the Vox Media group that emerged as a container for stories on products and brands, normally paid for.

If we are to continue underlining the difference between content and advertising, we should admit that the new context has made this boundary much more blurred and difficult to distinguish. Thanks to technology, being publishers and publishing stories is within reach of everyone today; companies are becoming aware of the importance of learning and performing this work in person, in order to establish direct, more genuine and effective relationships with their customers through stories that are of value to them, instead of inundating them with repeated information about themselves or their products.

Visiting a museum

Technology has not only found its way into the creative processes, works and performances of many artists; like libraries, museums too are attempting to use technology to reinforce the concept of "visitor to the centre", improving the experience of the visit.

Museums can use technology to improve the experience of the visit and create a relationship and rapport between people and artworks.

Cleveland Museum of Art's **Gallery One**[48] is a system of digital applications that range from an app (Art Lens) for tablets and smartphones that guides visitors through collections and can be used inside and outside the museum, a small network of iBeacon sensors which interact with the app to activate a variety of content and orient visitors during the visit, with ten interactive thematic panels (three of which are specifically for children), to the Collection Wall, an interactive multifunctional wall that is updated every ten minutes and allows many people to interact simultaneously in different ways, both with art works or, through them, with other visitors.

New Experience[49] of the **Cooper Hewitt Museum**, the New York design museum that reopened on 12 December 2014 after more than three years and an investment of approximately 90 million dollars, consists of: a Collection Browser made up of seven interactive tables on which several people at once can explore thousands of objects in detail; the People Browser, where the stories handed down by the creators of the works and by the works themselves are told; the Immersion Room, whose walls can be decorated with hundreds of digitised tapestry

models; the Process Lab, a lab room devoted to practical experimentation with design thinking and design solving methods; and the Pen, created in the early months of 2015, that makes it possible to store each visitor's whole visit and experience on a unique web address so that it can be kept, shared and worked on.

This is also a rapidly evolving world that is attempting to harness the full potential of technology to create a relationship and rapport between people and artworks. It is only a question of time and budget: but museums will become places where the distance between people and works will be considered a very negative boundary.

Theatre

There is also a space for theatre where, among other things, specific marketplaces have been designed, such as the **Digital Theatre.**[50]

In parallel with the development and spread of the Internet, a type of playwriting has been developed that takes into account new languages and the impact of the Internet on personal relationships. Whereas the cinema has extensively explored the near future of an increasingly connected and technology-dependent mankind – even telling the love story between a man and an operating system in Spike Jonze's ***Her*** – the theatre has analysed much more our "dark side" that resides in the Internet, almost to the point of considering it the parallel world where we harbour our obsessions, our anxieties, but also our criminal instincts under the guise of anonymity.

It is impossible to provide a complete survey in this article. We will merely point out the existence of an active theatre art that is exploring tricky issues such as the pornography, paedophilia and cyberbullying that are found in chatrooms: ***The Sugar Syndrome***,[51] by Lucy Prebble (2003); ***Chatroom***,[52] by Enda Walsh (2005), the basis for Hideo Nakata's film with the same name made in 2010; and ***The Nether***[53] – which, among other things, is the name of a parallel dimension similar to hell in the popular game Minecraft – by Dominic Cavendish (2014). But there are also those which use a comedy format to speak of complex worlds of existential anguish such as the Hikikomori syndrome, that is, people who go into isolation and withdraw from social life: ***Rooms 2.0***,[54] by Lisa Moras (2014).

The theatre analyses the dark side that resides in the Internet as a parallel world where we harbour obsessions, anxieties and criminal instincts under the guise of anonymity.

In all these cases, the most interesting quest consists in introducing the language of the Internet into the theatre. An even more extreme and cutting-edge example is the **Internet Theatre**:[55] a Lebanese actor and scriptwriter, Lucien Bourjelly, in collaboration with Elastic Future, an experimental theatre of San Francisco, has staged ***Peek A Boo***,[56] a comedy in which five actors in New York, London and Beirut, after preparing and defining a script, improvise a dialogue by interacting on video through streaming. The audience, scattered all

over the world, could view the performance by registering at a Google hangout or by following the feed on Elastic Future's site or by chatting to the characters on Twitter.

The **Teatreneu Club** in Barcelona, where comic actors perform, has made a different but no less effective use of technology by inventing ***pay-per-laugh***.[57] A tablet installed in each seat before the performance, using technology developed at the MIT, measures the level of amusement of each spectator by calculating how many times they laugh. Every laugh out loud costs 0.30 euros up a maximum of 24 euros; after that laughter is free. This initiative has not only succeeded in greatly boosting attendance figures, but the average price of tickets has also increased. It might be thought that it is a brilliant marketing action, but it is not. Technology adds totally new elements to the audience's experience and relationship with the actors.

Games

It is worth ending with a quick survey of the videogame industry, a growing sector (with overall revenues of approximately 100 billion dollars, according to Gartner) that is characterised by:

- a significant increase in games for mobiles and dedicated consoles (which are the main channel), that is, the presence of a widespread, powerful and non-costly distributed network;
- the most extreme interaction possible to allow the player to turn into the characters;
- wide use of stories to make the context immersive, so that players become involved in the stories and are part of them;
- sophisticated work to make the players dependent;
- the inclusion of aspects of real life (especially related to the "dark side") so that the context is extremely lifelike (the inclusion of paid sex in a popular game such a GTA5, for example, has triggered considerable controversy.

Aside from the merit of an industry that has a system of demand and supply and highly specific investment and distribution logics that differ from those of the media industry, it is appropriate to highlight the influence it has had and can still have on the content and storytelling industry:

- streaming is a model that has also become widespread in the music and video market and is now also finding its way into other types of content (books);
- the pursuit of storytelling resources for creating immersion and dependence in users, which is very evident in television series and genre literature, in the combination of narrative elements and the dynamics of play, sophisticated forms.

These aspects are important, because whereas the media industry is recording an overall fall in revenues derived from traditional business models and a tendency towards free content models, an industry that knows how to use stories to increase its size and profits can constitute a highly useful model.

Conclusions

In conclusion, we can affirm that the Internet has modified and will continue to modify stories and how they are told, how they are read, why and by whom. To sum up:

- many more stories are published now than before;
- most are available for very low prices or are even free;
- the average quality of the stories to which we have daily access is probably lower;
- nonetheless, we have more possibilities of customising the stories we wish to access;
- all of us, individuals and institutions, can publish more easily;
- among the new publishers, brands have interesting budgets and create quality stories;
- the boundary between advertising and independent stories is increasingly blurred, because the Internet requires greater attention and respect for those who access stories;
- stories are increasingly accessed through smartphones and tablets;
- the spread of sensors relates physical and personal objects through smartphones and tablets; stories are often involved in this new relationship;
- the aim of publishing stories is to make us interact with them, so that we leave the mark of our experience;
- this mark is measured and stories are thus a powerful instrument for establishing profiles;

At the beginning of 2015, Doc Searls and David Weinberger,[58] two of the authors of a historic Internet document – the "Cluetrain Manifesto" published in 1999 – proposed updating it in the light of the experience of sixteen years of life, dissemination and development of the Internet. Made by Internet insiders, it is perhaps the best summary of the context we have attempted to describe and in which the major transformation of storytelling is taking place.

This new version features 121 keys and many of them refer to the issues dealt with here.

We will cite a few of them:

19. The Net is not a medium any more than a conversation is a medium.

20. On the Net, we are the medium. We are the ones who move messages. We do so every time we post or retweet, send a link in an email, or post it on a social network.

52. We were right the first time:[59] markets are conversations.

53. A conversation isn't your business tugging at our sleeve to shill a product we don't want to hear about.

54. If we want to know the truth about your products, we'll find out from one another.

56. You're welcome to join our conversation, but only if you tell us who you work for and if you can speak for yourself and as yourself.

57. Every time you call us "consumers" we feel like cows looking up the word "meat".

60. Ads that sound human but come from your marketing department's irritable bowels stain the fabric of the Web.

67. Advertisers got along without being creepy for generations. They can get along without being creepy on the Net too.

95. So let's not minimise what the Net has done in the past twenty years.

96. There's so much more music in the world.

97. We now make most of our culture for ourselves, with occasional forays to a movie theatre for something blowy-uppy and a $9 nickel-bag of popcorn.

99. Anything you don't understand you can find an explanation for. And a discussion about. And an argument over. Is it not clear how awesome that is?

We cannot like all the theses and they are not even intended to be to our liking. The manifesto had a significant impact in 1999, in that it established a dividing line, and gave Internet users citizenship. After sixteen years, and with an Internet penetration that is exponentially greater all over the world, it may sound like a nostalgic vindication of the first pioneers.

But in our opinion, it embodies much of the Internet spirit that all users should still understand and embrace, particularly as more of us are on it every day. The Internet is a teenager and the stories people tell on the Net are the muscles of a developing body: we are at the dawn of a journey, be it the rediscovery of stories freed from their container or major experimentation with new narrative structures, new forms and new languages. Fascinating and risky, like all new and unexplored paths.

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Rich Cherry is the deputy director of The Broad Art Foundation. He oversees operational management of the foundation and supports the planning and construction of The Broad. Additionally, he is leading all aspects of planning, staffing and running the museum, focusing on operations, marketing, technology, finances, security, collections, and visitor services. He is also co-chair for "Museums and the Web," the largest international conference exploring the social, cultural, design, technological, economic, and organizational issues of museums in a digital world. With more than 600 attendees from 40 countries, the conference reviews and analyzes the issues and impacts of networked cultural, natural and scientific heritage. Previously, Cherry was the founding director of the Balboa Park Online Collaborative (BPOC), a consortium of 27 cultural organizations whose mission is to facilitate and execute the use of online technology in the museums, cultural arts, and science institutions in Balboa Park, San Diego. Prior to BPOC, he was the Director of Operations at the Skirball Cultural Center in Los Angeles, where he oversaw Information Technology, Operations, Admissions, Facilities, Security, capital projects and more than $70 million in ongoing construction. His has also held concurrent positions as the Chief Information Officer (CIO) and Director of Facilities and Head of Library and Archives at the Solomon R. Guggenheim Museum and before that was the CIO of the Albright-Knox Art Gallery. He has also taught New Media theory, web design and animation in the Media Studies department at the State University of New York at Buffalo. Before his museum career, Rich practiced technology in the fields of banking, manufacturing, and worked as a field service engineer. He also worked as a commercial diver in the Gulf of Mexico and served 6 years as a United States Marine.

Practice not theory: a new art museum in the digital age

Rich Cherry, @richcherry

John Cotton Dana said in *The New Museum* in 1917: "The new museum…does not build on an educational superstition. It examines its community's life first, and then straightway bends its energies to supplying some the material which that community needs, and to making that material's presence widely known, and to presenting it in such a way as to secure it for the maximum of use and the maximum efficiency of that use."[1] If we take that suggestion to heart, and bring forth a new art museum into today's digital culture, into today's always on – always connected community that has rapidly adopted digital, mobile and social media tools, what are the things we need to consider?

Digital in museum is not new. In 1967, an informal grouping of museums in the New York City area established the Museum Computer Network (MCN) with the goal of automating their registration records.[2] Nonetheless, the Internet's coming of age in the 1990s and the social media and mobile revolutions of the 2000's, and the adoption of both by the general public has driven its adoption in museums. Museums that already existed had to retrofit the infrastructure necessary to support this rapid expansion of digital since museums built during the last century had hardly taken this kind of expansion into account. Older buildings make it hard to add the digital infrastructure and pre-existing staffing structures make it hard to add the staffing.

What about new museums opening now or museums expanding or restructuring? What considerations when planning buildings and new staffs should be made? As Graham Black notes in *Transforming Museums in the Twenty-First Century*: "We are living through a period of profound change in Western society, underpinned by a rise in new media and a fundamental shift in Western economies to a globally interconnected information economy."[3]

Over the past 20 years certain digital areas have emerged and stabilized. Almost all museums consider a website as necessary as a building… in fact some museums lack a building and exist only in the digital realm. Many museums have put their entire collections online, and many more, like the Philadelphia Museum of Art, are in the process of doing so. Recently the Whitney Museum of American Art put its collection of more than 21,000 objects by more than 3,000 artists online in an exceptionally easy-to-use format, with pages of thumbnails in alphabetical order.[4] Ticketing and customer relationship management are driven by the need to communicate with visitors, develop members and donors and track interactions. Email, email newsletters, social media and distributed content (like artist videos) have taken over while mailed newsletters and print publications have begun to taper off. Audio tours with proprietary hardware have given way to bring your own device cell phone tours and more recently smart phone and tablet applications. Phone systems have shifted from dedicated wired devices to Voice over IP and to bring your own mobile and some organizations have migrated to telecommunication applications like Skype leapfrogging even VOIP phones. Security cameras with VHS tapes and key based security systems have also shifted to digital with Digital Video Recorders and Video over IP and RFID based keycards and bio metrics. A relatively new system in the museum digital ecosystem is the Digital Asset Management System which consists of a set of software tools that are used for the ingestion, tagging, storage, retrieval and distribution of digital content such as digital photographs, audio and videos to other systems. Backups and disaster recovery has moved from tape, to near line storage to cloud backup and archiving systems. Last but not least, some early adopters are working with the ideas of loyalty systems and gamification to enhance engagement, Massive Open Online Courses (MOOC) and Learning Management Systems to teach web visitors and more recently staff as well as venturing into cloud services, digital signage and e-paper labels.

Many museums have put their entire collections online, such as the Philadelphia Museum of Art and the Whitney Museum of American Art.

The Broad

The Broad is a new contemporary art museum being built by philanthropists Eli and Edythe Broad on Grand Avenue in downtown Los Angeles. The museum, which is designed by Diller Scofidio + Renfro, will open to the public in 2015. The museum will be home to the nearly 2,000 works of art in The Broad Art Foundation and the Broads' personal collections, which are among the most prominent holdings of postwar and contemporary art worldwide. With its innovative "veil-and-vault" concept, the 120,000-square-foot, $140 million building will feature two floors of gallery space to showcase The Broad's comprehensive collections and will be the headquarters of The Broad Art Foundation's worldwide lending library.

As The Broad is being built we are not only interested in the physical space but also in

digital space and thus we are active in all the areas outlined above.

Website

The Broad has launched a new website on Drupal 7 and moved to a new Collection Management system called Embark. The design for the site was developed to be responsive (to dynamically scale for ease of use on the desktop as well as a multitude of mobile and tablet devices used to access the site. We are also working to deploy a public collection interface that syncs with our collection management. The Broad uses cloud based hosting services and cloud based backup with geographic diversity.

Mobile App

In addition to our mobile website we are planning a mobile app system for the iPhone and Android platforms that is location and contextually aware. Imagine an app that knows where you are and acts accordingly:

At home it offers you:

- museum hours
- page to reserve timed tickets, buy event tickets, and buy tickets to other venues, parking and fine dinning
- saved content in your reading/listening/viewing queue
- nearby attractions
- neighborhood dining options

In front of the museum it offers you:

- museum hours
- your ticket (or an option to reserve timed tickets, buy event tickets, and buy tickets to other venues, parking and fine dining)
- a tour planning feature
- nearby attractions
- neighborhood dining options

In the lobby it offers you:

- Indoor map
- your ticket (or an option to buy tickets)
- the indoor architecture tour
- an audio tour of the collection pieces in the lobby
- upcoming events including a tour of the storage area

In the gallery it offers you:

- Indoor map
- your ticket (or an option to buy tickets)
- audio stops from various tours related to the artworks nearest to you

- the ability to send high resolution images to social media
- access to related art works that may be in storage or online
- related content to add to your reading/listening/viewing queue

in your car it offers you:

- Broad for the road.. long format audio pod cast to listen to in the car

The Broad is also creating a thoughtful plan for mobile ticketing point of sale to improve guest service.

Guests will meet a Broad guest services staff near the entrance to the museum. This staff person will check to see if the guest is pre-registered for a free timed ticket and if not provide them with the next available ticket and also provide them with parking validation, tickets for events and other local venues, special deals as well as timed tickets for dinning in our partner restaurant. An additional check via ticket scan will be made upon final entry to the gallery.

Flexibility of customer checkout and line busting are key benefits this plan, allowing guest services staff to better help guests have a smooth and fulfilling visit by highlighting local offerings, or sharing deals on the spot.

Communications and Marketing

The Broad is a digital first environment. Email, email newsletters, social media and distributed content (like artist lecture videos) are the preferred form of outreach. Digital advertisements take precedent over print and broadcast.

Data generated by actions of the visitor would be used to offer the visitor auto segmented messaging.

Work is underway to tie our email list generation to a cloud based Customer Relationship Management system (CRM) called Salesforce which in turn would be tied to the ticketing and mobile systems. Data generated by actions of the visitor would be used to offer the visitor auto segmented, relevant and timely marketing messaging and offer the staff a holistic view of the visitor's engagement. For example when someone buys an advance ticket through the ticketing system, their info is then sent to the CRM which would trigger an email to be sent from the email system as reminder about the event… the email is tracked for opening and that info is stored in the CRM.

The Network

A state-of-the-art wired and wireless networking system has been installed in the museum. Every location including outdoors will have a wireless coverage. Our voice over IP phone system supports both traditional phones, desktop

clients and mobile app access to incoming and outgoing calls and voice mail. Web content for tour applications are locally cached to limit download times.

Significantly, the museum has run a high speed fiber network to The University of Southern California and has joined the Los Nettos Regional Network. Our gigabit speed network to Los Nettos provides high speed internet access via their dual 10GB public internet connection as well as connections networks such as the state regional network CalREN (California Research and Education Network) to which the vast majority of the state's K-20 educational institutions are connected, and institutions and industry research networks such as Internet2, high-speed networks in Mexico and the Association of Pacific Rim Universities Networks.

Security and Visitor management

Our security system with over 125 indoor and outdoor cameras also takes advantage of the advanced network and transmits and stores digital video and audio on digital video recorders (DVR) providing real time detection and documentation. Our DVRs allow video searches by motion, time, date and camera include video analytics software which enable motion detection, "virtual alarms on objects" and even the detection of abandoned bags in the museum via "lack of motion detection". Storage systems automatically compresses video based on the desired quality of playback and the desired length of storage. The system automatically clears old video to make room for the newest video on a first in-first out schedule. Secure remote access is available over the internet. Additional sensors record events like breaking glass, key card access, open doors, panic buttons, motion and thermal imaging. Special systems will track entry and exit motion using thermal imaging and give us accurate real time counts of visitor attendance by gallery and staff in the museum.

Digital Asset Management

Digital Asset Management Systems (DAMS) include computer software and hardware systems that aid in the management tasks and decisions surrounding the ingestion, annotation, cataloguing, storage, retrieval and distribution of digital assets like digital photographs, videos and other digital media. Once deployed our system will integrate with collection management, web based collection access, mobile platforms, learning platforms, digital signage, e-paper systems and DAM marketing and communication workflow needs.

Learning Management Systems

The Broad is developing an online Learning Management System (LMS) training tool for gallery guides and front-of-house staff. Our goal is to build a robust, core training environment that will support training at least 100 individuals with diverse background and experiences in service, hospitality, contemporary art, and museum education to be the front line staff of the museum. As we ramp up to open the museum the first stage of the LMS rollout would be to

require applicants to complete an initial training module and complete online tests as well as to upload a video of themselves talking about an artwork that they learned about. Applicants that are successful with this are reviewed and then if further selected would be invited to have onsite interviews. Once hired staff would be required to complete several additional training modules before they are ready to go into the galleries.

The online Broad Training System will be built around a tiered approach which motivates staff to

1. enhance and broaden a set of professional skills
2. acquire deeper art knowledge, and
3. Increase their ability to self-manage.

Incentives for progression through this tiered system include:

- increases in compensation
- promotion to a higher tier
- earning badges or some form non-tangible recognition
- ability to give tours

Progression through each tier of the system will ensure Broad gallery staff are practiced, knowledgeable, and able to engage visitors and using their personal tablet they can provide more than information about the art and architecture. They can provide the same services as lobby staff including providing tickets to a lecture about an artist that the visitor has taken an interest in, tickets to local institution or being able to add points to their loyalty card. This is more than normal museum gallery staff, it's like the museum version of a concierge service at a 5-start hotel. Training will meet institutional needs for staffing and visitor relations. It will also provide staff with motivation and opportunities to refine understanding and experience in museum education, audience engagement, and team management.

Using their personal tablets, employees can provide information and offer more services to people during their visit.

Training modules will include but are not limited to Customer service, Engagement, Emergency/Crisis management, how people learn, teamwork as well as specific art knowledge about the collection.

The Broad sees a number of opportunities for collaboration with contemporary art organizations and education and culture-focused organizations nationally, including MCA Chicago, Google Cultural Institute, Coursera, Khan Academy as well as other potential partnerships.

E-paper labels

The Broad in partnership with the Museum of Contemporary Art at Chicago and other museums is exploring the use of E-paper labels in the galleries and the potential for engagement that is possible with dynamic wall text…∫ be it for a special children's treasure hunt tour, large text

for tour with visually impaired guests, dynamically displaying tweets, temporary content, an artist intervention or some use yet to be defined. With the recent release of new E-paper technology that claims 300 dpi resolution with the similar low power of existing E-paper systems. We are exploring first the ability for art museums to create E-paper wall labels that do not look particularly technology based, i.e. they cannot easily be noticed when used with regular print labels. This involves industrial design and testing of the graphic quality of the screen. Next we will explore the systems we need to drive multiple screens in a museum environment and how to tie the screens back to the collection information system and then finally explore the ability to allow visitor interaction with the labels via a smartphone or other interface.

Loyalty systems and Gamification

In 2012, the Dallas Museum of Art (DMA) launched an effort to transparently and continuously monitor the long-term engagement of visitors with the museum. Dubbed DMA Friends, the approach emphasizes the repeat participation of visitors with the museum's collections and programs, offering customized rewards in return for frequent engagement.[5] The Broad, like many other free museums including the DMA, is interested in the data that can be collected and how it can assist in making information available to repeat visitors in a contextual way as well as reinforcing engagement and learning. We are exploring the creation of a simple loyalty system as part of our app deployment which would generate points for repeat visitation, event attendance, partner visitation and cultural engagement overall.

Digital signage

The Broad is also exploring digital signage opportunities for Digital Signage in its lobby where its curved walls would take particular advantage of new curved LCD technology as well as in outdoor areas near the museum.

Conclusion

When The Broad opens in 2015 it will exhibit many contemporary artworks by living artists. As a collection it has a simple legacy of being one of the most prominent collections of postwar and contemporary art in the world and as a pioneering lending library of contemporary artworks since 1984, dedicated to increasing access to contemporary art for audiences worldwide, the foundation has made more than 8,000 loans to over 500 museums and galleries around the world.

With this new 120,000 square feet (11,100 square meter) museum featuring 50,000 square feet (4650 square meters) of pubic galleries opening in 2015, The Broad has the opportunity to create a new legacy as a contemporary art museum that connects with its global community and focuses its energies to provide what that community needs, on their terms and to efficiently making public access to its collections onsite, through loans and online pervasively available. What more could John Cotton Dana ask for?

Notes

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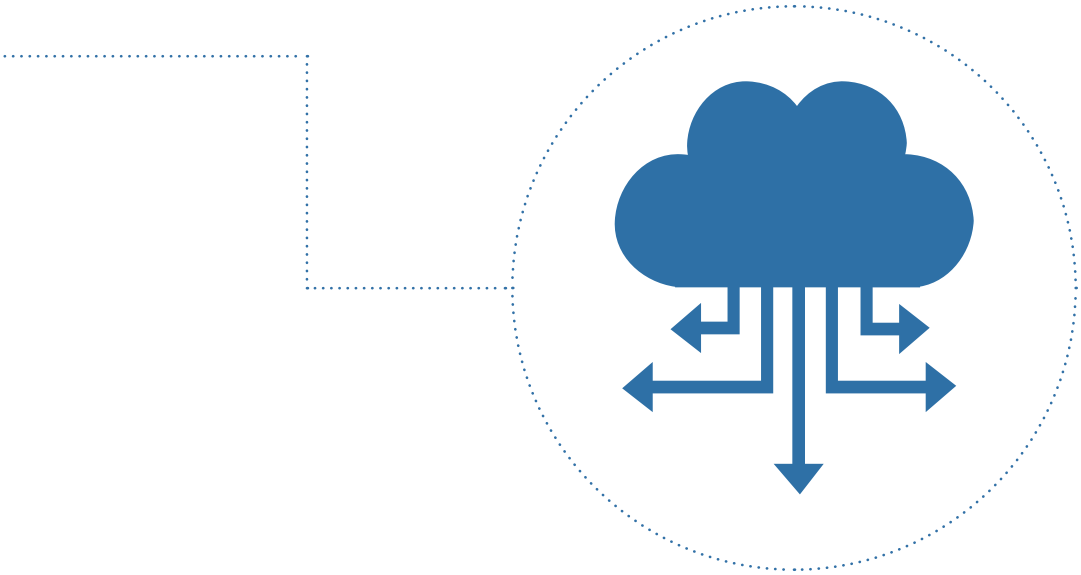

Focus 2015.
Museums and New Technologies

AC/E Digital Culture Annual Report 2015

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She has worked for museums and contemporary art centres such as MACRO di Roma, Centro José Guerrero and CAC Málaga, performing conservation, cataloguing and publicity and communication tasks. She currently writes for #LABlog, a collaborative blog of LABoral, Centro de Arte y Creación Industrial, which reflects on art and technology.

She is the author of specialist publications in these fields, such as the museum design project *MACCI: proyecto para un museo en Guadix (Granada)*, and in collaboration with institutions and companies of the sector such as the *Mueva Museología* magazine and *Live Speaking*.

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Holds a postgraduate qualification in Theory of Literature and Comparative Literature and a diploma in Slavic Studies from the Universidad Complutense in Madrid. His training and professional career in publishing have been oriented to the new media, from online publishing and promotion to content analysis. He has worked in promoting, press and content for Internet portals (SGAE, Punto de Lectura) and as a reader, copy editor and desk editor for publishers such as Suma de Letras, Plaza y Janés, Machado Libros and Iniciarte (Junta de Andalucía), among others. From 2005 to 2009 he was editorial director at Velecío Editores. Since 2007 he has collaborated on more than 20 studies, market research reports and analyses of trends in the culture sector (museums, art galleries, libraries, bookshops, etc.).

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1. Introduction

Whereas only a couple of years ago the study *Los museos en la era digital*[1] (Museums in the digital age) indicated a low usage of third-generation technology during the phase of visiting the physical premises of institutions, barely two years on the adoption of such technology is now a very widespread reality in all kinds of museum institutions. Throughout the process of compiling this section of the AC/E Annual Report, we have detected that a broad spectrum of museums use all kinds of mobile applications, QR codes, touchscreens, sensorial technology, geolocation and augmented reality, among other technology, to develop new services that allow them to enrich the discovery process in their exhibitions and activities, as well as interconnections between visitors.

This broadening of the scope for action is driven chiefly by a change of mentality in the team of professionals in charge of managing museums. It is necessary to realise that innovation can be an advantage as it is enriching, makes the museum a more social and dynamic place, and organises tasks in a cross-cutting way and with the help of professionals who, while not belonging to the field of study and content of the museum, can offer very useful know-how when it comes to introducing technology to the institution.

So-called "new technology" is fully integrated into our society. We relate to it as part of our daily life. It is a fact that smartphones, computers – even devices known as wearables – broaden the ways in which we communicate, select information and socialise. We have therefore now entered a next phase that marks a break away from what we have been observing, analysing and experiencing in recent years. We might call this technology "third generation", although some types are familiar to us due to their experimental use in other sectors or because they are the evolution or instrumentalisation of earlier ones.

Museums have been addressing this challenge for years. Whereas fear that the virtual dimension would deter citizens from paying actual visits to museums was initially a concern, it has now been proven that, very much on the contrary, not only does it attract people to the actual museum but also that these are two realities that coexist, complement each other, and share the same objectives – two realities that exist concurrently in contemporary society which the museum, as its agent, must occupy.

Technology is proving to be a fantastic tool for meeting the needs of regular visitors to museums and, naturally, for broadening museum audiences. One of the main objectives of museums is (or should be) to cater to as many people as possible. New websites, the social media, the digitisation of documents, crowdfunding and many other digital strategies that are being adopted have allowed museums to venture beyond their own walls as never before, making them accessible to anyone with an Internet connection, wherever they are. The possibilities of communicating, and of promoting and disseminating the heritage museums house are multiplied. And so are the possibilities of engaging and constructing content and experiences with the user as well.

Nowadays people who are interested in museums not only want to stroll around their galleries, passively being there and seeing. They are calling for active involvement in constructing the stories the museum generates, for being a part of what is happening, as the museum is part of their own reality and identity. Technology provides an excellent means of personalising a museum visit, making it immersive and shared. Through its use institutions achieve a more social museum.

Many of the following technologies we will be looking at have become integrated thanks to mobile supports, and it is therefore increasingly common for some of the implementations and applications of many of them to be designed in relation to others. Nowadays it is smartphones and tablets that dictate the use of these technologies. Cameras, microphones, light sensors, GPS, accelerometers, etc. that are integrated into mobiles make possible a wider use of augmented reality, 3D, NFC (Near Field Communication) technology or QR codes, among so many, that are going to provide visitors to a broad range of cultural institutions with a new experience.

It is common for the institutions with the most financial and human resources to spearhead experimentation and initiatives, but we will highlight the work of museums with lower budgets which have launched technological and digital projects with very good results.

The aim of this study is to detect the most innovative technologies that institutions are currently using, in addition to analysing a few which, despite having been around for years, are being used creatively and dynamically, renewing concepts and attitudes in the tasks of professionals and the institution.

We set out to explain how they function, stressing the benefits they can bring museums. We will provide examples of good practice that can be used as examples and as a guide for institutions that are considering introducing these technologies. To observe trends in technology and how they can be adopted in the museum sphere is another of our aims.

2. Web technology

The Internet has been gaining ground since the 1990s as a place in which to find any kind of information, be it social, political, recreational or cultural. The transition from web 1.0 to web 2.0 has provided added value, causing users to cease to be mere consumers of information and become creators. It marks a shift from one-way use to social use, appealing to collective intelligence and the joint creation of quality content.

Museums have accordingly had to adapt to the new ways of doing things that have arisen from 2.0, and have achieved very good results: in boosting the dissemination of their programmes and content, or in reaching millions of users anywhere in the world with just a click. These new tools have forced institutions to adopt strategies and projects that give a say to the users with whom they now engage not only physically but also digitally.

The success of museums' websites and their presence in networks, blogs and other media largely depend on the variety of initiatives launched, a suitable presence of museums on different platforms, a change in mentality brought by speaking to the user on a one-to-one basis in a context that is real but not physical, offering what your digital audience is asking for and generating dialogue.

2.1. Websites

Museums' websites have undergone significant developments with the transition to 2.0 – from the days when we could find basic information on opening hours and location to today's examples which, in addition to this practical information, offer a large number of possibilities that enrich our visit to the institution and even allow us to carry on sharing and taking part in activities after the visit.

As a result of this transformation, websites are created as destinations in themselves, places in which to collaborate and create content jointly, access related information, make comments, download images and catalogues, view museum and library holdings, and pay virtual visits to exhibitions, among many other things. All this brings the institution to life beyond its walls, chiefly during the pre- and post-visit phases.

We have considered various concepts when analysing museums' websites:

- Usability; i.e. content should be clearly presented so that anyone who visits the website is capable of finding what interests them fast.
- Quality of content.
- 2.0 tools such as blogs, video channels, social networks and different means of allowing anyone interested to take part.

We should not be surprised that the most important museums in the world such as Tate and the MoMA are spearheading the renewal of websites. They are pioneers in implementing novel initiatives and tend to be an example for the rest of the institutions to follow.[2]

Tate was one of the first institutions to take an interest in how the Internet could contribute valuably to dissemination and contact with its visitors. As a result of this work, its site, which brings together all the Tate museums, provides blogs, downloadable apps that are mainly free, video channels, educational resources and countless content, as well as basic information. Everything is simply designed and easy to use.

MoMA's website has an impeccable, dynamic design. It covers both institutions and everything that goes on in them. It has a multimedia channel of exhibition "tutorials" and blogs and enjoys a strong presence on the social media. It also features free applications for iPhone, iPad and Android, in addition to mini-sites designed for temporary exhibitions.

December 2014 saw the launch of OBJECT:-PHOTO,[3] a mini-site devoted exclusively to the institution's magnificent collection of photography. It is an interactive website where users customise their search, comparison and high-resolution viewing criteria, and also provides specific and very thorough information on many of the works. It currently features 341 online works from the first half of the twentieth century that were acquired by MoMA from the collector Thomas Walther in 2001.

DMA Friends, Dallas Museum of Art was one of the winning platforms at the Museums and the Web 2014 meeting. Interesting not only for its open code design that allows other museums who so wish to adapt it to their needs, this platform is building audience loyalty through its clear and easy to use design. It calls on visitors to take part in its various museum programmes, for which those who collaborate receive perks (discounts, gifts, etc.). The museum is thus succeeding in monitoring virtual visitors' conduct, which the institution's professionals can use to better adapt their next offerings of activities.

The website of the **Rijksmuseum** is one of the most attractive and complete. It is easy to use, with a design that is enticing from the first visit, and images of the works are its main feature. All

the images are high resolution and allow each piece to be admired in detail. Users can create their own gallery, share it and download the images under Creative Commons licences. These licences signify major progress, as it means that the images can be used legally. Many museums have not yet been able to take this step, either for legal reasons or for fear of how the images might be used.

With high-quality content and accessible basic information, the museum also enjoys a presence on social networks, has digitised its catalogues and allows its apps to be downloaded free of charge.

The **Walker Art Center** redesigned its website in 2011, marking a turnaround in what a museum's approach to the Internet should be. It is characterised by a design with an editorial focus which might initially seem crowded, though it is easy to navigate it efficiently.

This centre's website not only promotes its own content, but also provides related information from other institutions and sites such as magazines and blogs. It is a website that generates dialogue on contemporary art, and is a landmark in its field, independently of the actual visit.[4]

The website of the **Van Gogh Museum** in Amsterdam was redesigned in 2014 and recently re-launched. The project was awarded to the winning bid in a public tender.

The team had a clear concept: to design a site that would reflect the museum's mission and make content accessible to all kinds of audiences, so as to ensure the maximum dissemination of the work of the artist in order to inspire and enrich.

Website of the Van Gogh Museum

The design is similar to that of the Rijksmuseum's website, based on determining which tasks are the most important and should therefore feature on the home page: planning the visit and inspiring through information and interactive stories about the painter.

The *meet* section engages visitors with special stories about the work and life of Van Gogh. Each story has been specially written and designed for the website and provides new approaches to the work of the artist and his contemporaries.

The different tabs provide clear and concise information designed to meet the needs of first-time visitors as well as useful information for users who are already familiar with the museum and are looking for specific content. This required a major effort from the team to ensure that the site's structure is accessible and attractive to all kinds of audiences.

The new website of the **American Museum** in the United Kingdom has been designed by **Thirty8 Digital**. Its design is clear and unclut-

tered and it can be browsed intuitively following the same logic as WordPress. Its content system has been created using standard WordPress technology.

The personalised calendar of events is fully incorporated into the whole experience, making it easy to handle. It includes a virtual gallery with excellent photographs and informative texts, to which further objects from the collection will gradually be added. The site is also adapted to mobile devices and makes the most of the related advantages.

In relation to museum websites, we find other portals with tools that are very useful to both museums and users.

A good example is the **People Art Factory**[5] web platform, in itself a tool for building exhibitions in a virtual environment using 3D images. Museums, galleries or anyone interested can use it to curate their own exhibition, simulating a real environment, and can share it with whoever they wish. It is thus an ideal tool for creating and disseminating virtual visits.

As it is easy to handle, there is no need for particularly specialised knowledge; all that is necessary is to draw a small plan with the room sizes or use a template that can be personalised as to size, arrangement of the works, colour of the walls, textures, information panels, etc., to simulate a space that actually exists or is only imagined.

In 2006 the US educator Salman Khan created the not-for-profit educational platform Khan Academy. It provides many resources and digital educational tools (its YouTube channel has more than 4,000 videos[6]) that can be used by education professionals, parents and students freely and creatively. Its mission is to help create free education available to anyone anywhere in the world.

This platform can naturally be used by educators in museums all over the world, who can take advantage of its resources in educational projects applied to the institution. The **MET**[7] in New York is already collaborating with Khan Academy.

Europeana[8] is a European platform developed using public funds of the European Union. Its aim is to assemble collections, documents and digital archives of European cultural institutions in order to become the major digital library of European heritage. The platform was started up in 2008 and currently has more than 29 million documents and a community of more than 2,300 institutions.

The purpose of Europeana is to provide access to European cultural heritage. Therefore, all its content has a Creative Commons Public Domain licence, meaning that it can be used without restrictions.

It stems from the need to create a community that makes possible scientific and technological development based on heritage content, sharing knowledge and content among professionals, and facilitating users' access.

One of its missions is to progressively perfect digital software tools, facilitating their use and encouraging workflows between participants, who grow in pace with the project.

Europeana is an excellent portal that facilitates the use of online heritage content management tools and supports the co-creation of knowledge among sector professionals, collaboration and collective cultural projects based on digital technology.

In Spain we have very good examples of webs 2.0 that follow in the footsteps of the above-mentioned institutions, albeit with their own unique qualities.

The website of **MNCARS (Museo Nacional Centro de Arte Reina Sofía),** whose design is similar at first sight to that of the Walker Art Center, also offers visitors countless features: digitised holdings (more than 9,000 works) and publications that include files on all the temporary exhibitions since its opening as an art museum in 1986, educational resources, multimedia, preparation of visits, a catalogue of publications and an online library. Emphasis has been placed on providing relational and transversal content that is easy to understand and ensuring a comprehensive and complete vision of each piece of content.

The museum's radio is very interesting. It can be accessed through the website and is a novel experience that few museums in the world provide. In Spain the Macba also has one.

In November 2014, the Reina Sofía's website received the Dominios.es award, shared with the RAE's website, for best art website.

The website of the **Museo del Prado** contains quality information, is easy to use, and makes available very interesting information: catalogues and an online gallery featuring more than 8,000 high-resolution images that will be progressively enlarged until all the holdings are digitised, educational resources, PradoMedia (videos), presence on the media, apps, and even suggestions for itineraries for the actual visit depending on how long visitors have.

Its simple design makes for smooth browsing and allows any information of interest to be found quickly. The home page is divided into three parts: the menu on the left, prominent news such as current exhibitions in the centre, and useful information for visitors on the right.

It could be said that the websites of the Museo del Prado and the Museo Thyssen-Bornemisza share the same philosophy with respect to content design and layout.

The **Museo Thyssen-Bornemizsa** offers a website where any user (whether an expert or art lover) will find resources of interest. The design is sober, ensuring optimal content viewing.

The menu, located on the left, provides clear access to all content, so that the user does not get lost when seeking information: digitised images of the collection, virtual visit, documentation and related studies, audiovisual resources, and even a specific section for apps, which is a great success as the institution has a variety of marvellous applications. In the centre of the page we find prominent news on the museum, and on the right practical information. Unlike the Museo del Prado website, it has a section featuring useful information about the exhibition currently showing.

The menu takes us to the EducaThyssen mini-site. It is developed with the same logic as the home page, reflecting the large number of projects clearly and simply and providing educational resources of high quality.

The website of **Acción Cultural Española** recently incorporated virtual visits[9] to two exhibitions, *Fotos y libros. España 1905-1977 / Photobooks. Spain 1905–1977*[10] at MNCARS and *El rostro de las letras* (The face of literature)[11] at Sala Alcalá 31. These visits are particularly interesting as they are pioneers in Spain in the use of Tour Play and GBV (Google Business View) formats applied to culture. To put this project into practice, AC/E has collaborated with **Identity**, the only European company certified by Google to distribute their GBV product.

The website of the **Museu Picasso** in Barcelona is one of the best web 2.0 examples. In 2010 it received a Museums and the Web social media award for the skilful integration of the various networks into the same section of the web ("Conecta") and the successful 2.0 content and relationship development on each of the networks where it enjoys a presence.

Since 2009, when the blog was started up, it has progressively joined the various networks and has added more cross-cutting and interrelated content.

The **Museu Nacional d'Art de Catalunya** has a very attractive website with a dynamic and intuitive design that makes for very interesting browsing. It has digitised holdings, a blog, educational resources and a multimedia channel, among other features.

A salient feature of this website is its statement of social and environmental commitment that can be found in the "ABOUT" section, together with other internal documents that are available for viewing (for example, the museum's mission). Also noteworthy is its commitment to open data. The objectives are stated very clearly in its strategy for 2017, published in July 2013:

> *The new project considers an interactive, multimedia website, with multiple options for customising, to make the collection accessible to visitors before, during or after the visit, as well as to exclusively virtual end-users. Priority will be given to the creation of new visual and video content, special care will be taken over rules of accessibility and search engine optimisation.*

2.2. Social networks and blogs

Two of the web 2.0 resources most widely used by museums are the social networks and blogs. In addition to an excellent tool for dialogue with visitors, they are magnificently suited to disseminating content and broadening virtual and actual audiences.

To use these tools it is necessary to have a very clear idea of the purpose of each institution, devise a communications project and establish strategies with sound objectives as the first step. The second step is to identify the institution's assets, recognise the available resources and decide which platforms are appropriate. The third step would be to align the objectives with the available resources. This requires qualified personnel who work with the rest of the depart-

ments across the institution. Setting up a profile or blog and not using it properly will only convey a poor image of the cultural institution and will achieve precisely the opposite effect.

The social media most widely used by the institutions and by users in general are Facebook and Twitter, followed by Flickr, YouTube, Vimeo, Foursquare and Instagram. Their main objective is to share content and create a community. Museums that have succeeded in making good use of them have a community of followers/collaborators that support them, provide value, and want to be listened to and take part.

It is essential to establish a comprehensive strategy that generates real value in terms of emotion and knowledge. Institutions must have a familiar-sounding voice and start up dialogue fluently through initiatives that encourage participation. Of course it is necessary to be prepared to receive criticism and know how to manage it appropriately. Users not only consume and give their opinions; they are also capable of providing the institution with quality content.

Another primary aim of blogs is to disseminate the institution's content informatively, although these blogs are becoming increasingly receptive to collaboration with external professionals and even users themselves. Through the comments section, anyone interested can contribute by giving their opinion or providing pieces written by them or by third parties. Creating dialogue and knowledge are thus performed jointly, establishing a familiar and empathetic relationship.

Although the social media can be used before, during (by tweeting visits) and after the visit, blogs tend to be used before or afterwards, as their content is more specific. Both tools can likewise be an end in themselves, being used independently of the actual visit to the museum.

It is common for major international museums to set up several profiles on social media, chiefly Twitter, to be able to provide a customised and specific response, organising audiences according to their specific interests. Following this strategy, in Spain we find the different profiles of the CCCB: education, LAB, Kosmopólis, music, press and debates.

The **MoMA** has about nine functioning profiles, if we count those of MoMA PS1. They include several for special events and education as well as MoMA Live, devoted exclusively for tweeting events in real time.

A project that has been started up by this institution and attests to its networking mentality is ART140 (@artonefourty). From this account followers are directly asked what artworks make them feel; this establishes a conversation and helps the museum understand what motivates its community. It also has its own website.[12]

This year the museum has set up an Instagram profile to acquaint followers with the daily work of its curators, showing a friendly and familiar side of one of the most important museums in the world.

Tate is following the same trend and has set up profiles for its videos Tate Shots, Tate Shop, which promote its products, and Tate Kids, aimed at "play, share, learn".

As an example of transparency, the website features the digital strategy established for the period from 2013 to 2015.[13] The objectives include enhancing people's enjoyment and understanding of art, encouraging reflection and participation and providing easy access to information. According to its managers, the social media have changed Tate's communication and marketing focus. They attest to the museum's interest in using the social media and blogs to enrich the experience of the community that supports it and of visitors, and it is prepared to make the most of all the opportunities these new platforms offer, giving each department a say, and establishing dialogue and direct communication with the user.

According to a study by Statilizer Social Media Analytics in 2012,[14] the **Louvre** boasts the best Facebook page results of the European museums, followed by Tate and the Prado, though, as the study points out, most museums follow a very similar Facebook strategy. It is therefore easy for the museum with the largest number of fans (the Louvre has more than a million and a half) to achieve the best site performance figures.

The **Andy Warhol Museum** in Pittsburgh stands out for its network initiatives. Running a museum on Warhol is in itself a challenge, as the artist has become a brand image that attracts audiences very significantly.

The communication department believes it is essential for anyone anywhere in the world to feel they are part of this museum's community. The museum has had a Facebook page since 2008, but it was not until Joshua Jeffery took over as director of digital engagement in 2010 that profiles were set up on other networks such as Twitter and Google+ and Vine, and proper feedback with the community began to be established.

A few of the initiatives carried out are #WarholQuote, which disseminates quotes by the artist, and #SoundSeries, which promotes monthly events on music and sound. The museum strives to reply to all comments made on the networks as, according to its management, if the museum represents the figure of Warhol, what could be more Warholian than giving everyone their "fifteen minutes of fame?"

The **Horniman Museum** in London won an award at the recent Museums and the Web conference this year for its Tumblr project *Collection People Stories*.[15]

The aim is to share the most fascinating objects in the collection (some 80,000 very varied objects), as the museum was then revising its anthropology collection. This profile, created in September 2012, is reaping excellent results. It has more than 22,000 followers from 130 countries who interact actively, even asking questions so interesting that they generate new posts for answering them. This profile is designed to convey enthusiasm and curiosity about the collections by inviting the community to share the emotions the pieces elicit from them.

We should draw attention to the major work performed by the **Met** on the social media, as it was recently named the most influential museum on Twitter by a study carried out by the Spanish company La Magnética.[16] The museum's management stress that this distinction has been made

possible by the integration of its network strategy, based on constant commitment to audiences, with worldwide initiatives such as #AskACurator, #MuseumLove and #MuseumMemories.

Several noteworthy actions have been carried out over the past year.

The **Mauritshuis** in The Hague has performed one of the most original and fun social networking actions to promote its reopening. Two days before reopening its doors, through its Facebook profile it invited anyone interested in doing to submit a photograph of a private, domestic setting where they had placed a replica of Vermeer's *Girl with a Pearl Earring*. This imaginative action took advantage of the work's worldwide fame in a creative way and succeeded in conveying the message that "The museum is open again and you can find this work here".

But the most interesting aspect, without a doubt, is the prize awarded to the winner. A reproduction of the domestic setting featured in the winning photograph was built in the museum itself, only this time the original *Girl with a Pearl Earring* hung on the wall. The winner could thus enjoy the original work in her own private space but inside the museum.[17]

A European-wide initiative is **#MuseumWeek**. This project, which ran for a week from 24 to 30 March 2014, is intended to bring museums and their professionals closer to their community by making them open to real-time participation to answer the questions and enquiries of Internet users. Each of the days was devoted to a specific theme, such as #MuseumMemories or #MuseumSelfies, and an emotional connection was established with followers, who were invited to share photographs and other content.

The precedent of this initiative is #AskACurator, which was also included as a theme for 28 March. Although it is an ambitious and structured action, it turned out to have certain shortfalls and areas where there was room for improvement. It was exhausting to devote a whole week to museums on Twitter – not only for the institutions but for the community, which found that its TL was being monopolised by these institutions. Even so, this activity achieved significant participation among both users and institutions (more than 40,000 tweeters and some 600 institutions) and, for communication purposes, it would be worth revising it and correcting the flaws detected with a view to future editions.[18]

Invasioni Digitali is an Italian initiative started up in 2013 with the aim of making museums' wealth of heritage available to the whole community through digital platforms and open data, and making it more social and participatory. It sets out to educate and raise the awareness of Italian institutions in the use of web technology and the social media in order to carry out innovative co-creation and cultural dissemination projects jointly.

Its website features an interesting manifesto that expresses the need to share, digitise and build with everyone a new management and knowledge of art and heritage. Anyone can carry out an "invasion": they need only propose a day, a time and an institution and launch it, making arrangements with the museum in question for it to provide the necessary support. Invasions can consist of guided tours and meetings with

instagramers, to name but a few examples. The requisite is they must have repercussions on the social networks and therefore must use the hashtag to compile and share all the information produced when the invasion is over.

The next event is scheduled from 24 April to 3 May 2015. This is therefore a grassroots project that is underpinned by the wish to enjoy museums and to secure their involvement.[19]

Also in Italy, specifically Rome, the **Galleria Nazionale d'Arte Moderna** has launched an action that uses selfies to attract younger audiences and disseminate its collection: #Selfiedautore.

Photographs taken in the gallery were shared on its Facebook profile, where fans could vote for them by clicking the "like" button. A panel of experts chose the best five photographs, which were required to be creative and original. The prizes were awarded at a ceremony held at the museum on 8 February 2015. A video has been produced with the best 50 to show on the museum's channels.

The gallery also began 2015 with another action linked to the emotions its works elicit in Internet users. They idea is to encourage more creative and participatory involvement in its networks, getting the public to enjoy heritage.

On the international scene, especially in English-speaking countries though they have now been adopted by most institutions for informative purposes, blogs are a tool that has been standard practice for several years. They have proven to be an excellent aid for disseminating collections, activities, exhibitions and even studies and research on related themes, and for getting the community to participate, thereby encouraging the co-creation of content, discussion and debate.

All kinds of museums have adopted the use of blogs: science, history, art, etc.

One of the most significant and highly valued is undoubtedly the **Museum 2.0** blog.[20] The author Nina Simon is executive director of the Santa Cruz Museum of Art & History (California). She is specialised in designing and investigating initiatives for making museums more participatory and social places. Proof of this is her book *The Participatory Museum*,[21] which has enjoyed great success among sector professionals and has been a source of inspiration for projects in their own museums.

The **Met** in New York is one of the museums with the most blogs that are accessed from the home page of the website.[22] With a total of ten different blogs, the museum disseminates, shares and co-creates high-quality content. These blogs are written by professionals from the museum, "guest bloggers", artists and students in residence or teenagers who report their impressions on art and the institution itself.

The "Digital Underground" blog is very relevant to this study. In it the people in charge of the digital media department tell of their initiatives and activities and invite readers to ask questions and comment on the museum's digital strategies.

The blog of the **Brooklyn Museum**[23] is designed as a space for reflection and discussion and invites the whole community to take part by

submitting comments. Written by the workers, it states that the opinions expressed in it are strictly personal. It is focused on conveying the technological experiments carried out in the museum, and is therefore a transparency effort. We can read about initiatives that have been successful and others that have not but can be improved with the contribution of everyone.

That of the **Science Museum**[24] in London was set up in April 2011. The idea is to tell people, about everything that goes on in the museum – exhibitions, collections, research, news, activities, etc. – through its employees and guest bloggers.

The platform encourages the community to take part by posting comments. Posts are classified into various appealing themes such as robots, artists in residence, and news about science or punk science.

Also in the scientific field, the **American Museum of Natural History**[25] has a very complete blog that brings together informative articles on science, articles specialised in education, podcasts, and even a questions and answers section.

It is common in Spain for museums to be present on the various social networks. Nowadays there are many significant examples of good practice. This is not only true of more representative institutions such as national museums; smaller museums with tighter budgets are also making an effort worthy of mention in this connection. The key to success on the social media lies in familiarity with this tool, planning actions and being willing to enter into conversation more than in the budget allocated to this activity.

"Engagement is an indicator that reveals to us followers' degree of commitment and loyalty to the page, and it is measured as the relationship between the size of the community and weighted level of interaction."[26] According to two studies by Socialwin, one on museums and social networks carried out in 2013, and the more recent one on cultural centres conducted last October,[27] the Spanish institutions with the highest social media engagement are Museo del Prado, MNCARS, Museo Thyssen, Museo Guggenheim, Matadero Madrid and Alhóndiga Bilbao. It is surprising and representative to find that the Museo del Romanticismo, a small museum with a much more limited budget than the abovementioned institutions, has the highest Facebook engagement rate. This merely corroborates how important good ideas and a change of mentality are, as well as having a qualified team.

The researcher Myriam Soteras has analysed the Facebook activity and engagement of Spanish museums,[28] drawing the following conclusions: the museums with the highest volume of action receive the highest volume of reaction; museums that respond to users' reactions receive more participation; users who react once do so more times; museums which publish content that asks questions are more likely to receive a greater reaction volume; and the percentage of positive reactions is greater than that of negative reactions.

These institutions have launched various initiatives with impressive results, inviting audiences to take part by submitting their opinions, photographs, content, etc.

The **Museo del Prado** started up the #AlDetalle initiative on Facebook in 2012 and on Twitter

in 2013. Taking the form of a game, it consisted of displaying a detail of a work on these profiles and inviting followers to guess which work it was from. What is more, every so on Internet users were given clues for searching for the work in the online gallery that can be found on the museum's website.

The managers of the museum's social media stated that the purpose of this initiative is "to foster and guarantee public access [to the works] and facilitate their study by researchers. To promote knowledge and dissemination of the works and of the identity of the historic heritage in the museum's care, helping develop educational programmes and cultural dissemination activities".[29]

The **Museo del Romanticismo** has carried out many initiatives from its social media profiles. Its virtual community has grown significantly since it set up its profiles in 2010, and actual visits to the museum's premises have likewise increased. Its originality, proximity and commitment to its community have earned recognition for its work from professionals and Internet users. With accounts on different networks – Facebook, Twitter, Flickr, Instagram, Foursquare, YouTube and the more novel Spotify – it has diversified its actions, adapting them to the characteristics of each network and accordingly offering both Internet users and actual visitors an enriching visit by making known its extensive and highly varied collection.

Some of the initiatives worth stressing are #UnDía, which shows the functioning of a few of the museum's departments, #GastroXIX related to the piece of the month in October 2013 – the dining-room service – and #tuitdelectura on Oscar Wilde's *Portrait of Dorian Grey*.

The **Fundación Lázaro Galdiano** is also very active on the social media. An example of its initiatives is #365motivosparavisitarnos, with which the museum's Community Managers share the highlights of the collection with audiences, encouraging them to comment and share their favourite works.[30]

The **Museo Cerralbo** has devised initiatives that have been very well received, such as #EncuentroSecreto, carried out last September. Internet users accessed the website and filled in a form. The next step was to publish a tweet with the hashtag #SoyCerralbiano. Those who were selected attended a concert by the Quiroga string quartet on the museum's premises and received mementoes. During the concert, tweeters were able to share the experience with their followers.[31]

With the Facebook initiative #Museoenlunes, the institution provides information via this social network on the work carried out there the day it is closed to the public. #ElMadriddelMarqués, another Facebook initiative, seeks to make known Madrid businesses that were already running during the marquis's day and remain alive in some way or another. It has been very well received by the public and shopkeepers and ties have been established with residents of the neighbourhood and with the city. #Conlosbrazosabiertos, which runs simultaneously on Facebook, Twitter and Pinterest, aims to put a face to the museum's staff, conveying the human element that is so necessary in virtual space. Employees show their favourite piece and invite the public to visit the museum to see it.

To show the collections, the museum has set up a profile on Pinterest, as well as #MC_reto, a game of clues in which Twitter users are challenged to discover the work in question. Lastly, they also have an Instagram profile that is used to disseminate activities and works.

The cultural division of the **Fundación Mapfre** is another major example of good networking. It boosts dialogue with members of the foundation's community by approaching them in a familiar way, endeavouring to make every follower feel special.

To celebrate its 10,000 followers on Twitter, in July 2014 it launched #10milporqués inviting them to post a tweet with this hashtag stating why art is part of their lives. This initiative resulted in a small e-book[32] compiling all the tweets and a letter of gratitude from the foundation's director. Participants also enjoyed a private visit to the galleries and a draw was held for 10 catalogues signed by the artist Vanessa Winship.

#10milporqués initiative. Fundación Mapfre.

The Fundación Mapfre is also a pioneer in holding private viewings of its galleries for bloggers and influencers. During these visits, which take place every time a new exhibition opens, guests are invited to tweet content and photographs of the exhibition and are given a catalogue.

At the **Museo Thyssen**, the artistic director Guillermo Solana has carried out several experiments from his own Twitter profile that have had a major impact on his followers and those of the museum. One of them is #Thysse140, which was launched in May 2013 and surveyed art history through works in the Museo Thyssen's collection, making them known to followers.[33]

But it is not only art museums that are setting an example in the social media. The **Museo de la Evolución Humana** (Museum of human evolution) has shown great originality in its handling of three profiles: that of the museum, that of Miguelón and that of Lucy, prehistoric characters who interact with followers in an amusing, light-hearted and informative way.

The **Museu Picasso**[34] in Barcelona was one of the first in the country to start up a blog in May 2009, setting a precedent for other Spanish museums. It is managed in three languages (Catalan, Spanish and English) and is housed on the Wordpress platform.

The content strategy is devised globally for all 2.0 actions. It is an informative blog that disseminates the museum's activity. It is also a collective blog in which museum professionals take part together with external professionals invited to share their articles and students doing work experience at the institution.

Along the same lines as the Museu Picasso, the **Museu Nacional d'Art de Catalunya** recently started up its own blog.[35] It has already published more than 30 posts in three languages (Catalan, Spanish and English). The blog not only focuses on the museum's activity but also addresses subjects such as exhibition design, cultural marketing, technology applied to museums and culture, among others. It is a collective blog in which museum professionals and guest bloggers take part.

A particularly interesting initiative is that of the **CCCB (Centre de Cultura Contemporània de Barcelona)**. Its website does not have just one blog but two: VEUS CCCB and CCBLAB. This allows it to create more specific content making these blogs very interesting both to the general public and to professionals in each field.[36]

In the CCCBLAB blog the authors are the museum's workers and external professionals with career paths related to the content of the blog. This content is under a Creative Commons licence and can therefore be shared freely, remixed and enriched with collective knowledge. In 2013, CCCBLAB's blog was awarded the prize for the best blog in Catalonia in recognition of the work of the team that manages it.

A very interesting initiative is the blog entitled VEUS CCCB es TU VOZ. Started up in April 2011, it invites anyone interested in the institution's proposals to submit their texts, which must meet certain requirements and are then published by the museum's workers.

Lastly, in April 2013 **LABoral Centro de Arte y Creación Industrial** began a collaborative blog, LABlog,[37] exclusively for external professionals. It is a pioneering experience in Spain that is enjoying considerable success. The eight bloggers, with different profiles ranging from museum layout design to curatorship and artistic creation, deal with the institution's activity from a fresh and different perspective to that of its employees. LABoral also has a specific FABlab Asturias blog that disseminates the different activities and proposals carried out by the FABlab.

2.3. Digitisation of content

The digitisation of book content and images is a topical issue for all museums that are using web technology. The main purpose of museums having an Internet presence is to reach a global audience that could be located anywhere in the world (it does not matter how far from the actual installations). Therefore, the only way of accessing the objects in collections is through photographs, and the way of obtaining true and reliable information is through documents generated on collections.

This is a major opportunity for museums to create opportunities for expanded knowledge, remixes and generation of new content, using collective intelligence and co-creation. That anyone should be able to access information, transform and share it is undoubtedly a priority for any cultural entity.

We thus find different problems that must be solved in coming years, and which a few museums are already addressing by managing to share their content with the virtual community that supports

them, making the museum and more social and participatory place in the virtual space too.

The main issue is that this clashes head-on with copyright laws. A few institutions have already set about allowing access and the free download of high-resolution images and documents using free licences such as Creative Commons.

Another challenge posed by free access to museum content is generating platforms suitable for easily classifying, ordering and managing not only the institution's documents and images but also those generated from them by the community.

These two points require a change of paradigm in museum management. The institution needs this change in order for its image to shift from that of an institution that preserves, amasses and disseminates knowledge to one that also shares and creates it jointly with society.

Museums benefit from this in several ways: they gain a good repository of images and documents that, in addition to being shared, can be used for the institution's cataloguing and conservation work. They increase the number of visits to our website and social media; supply content for education and social empowerment; and gather statistics on our community that can be used to provide better activities and content.

The benefits for citizens are also very considerable: availability of high-quality, reliable and verified images and documents; the chance to contribute jointly with museums to creating culture, going from being passive to active users – from consumers to "prosumers".

A few international examples are the **Getty Foundation**, the **MoMA**, the **MET** and the **Guggenheim**. They have all uploaded many of their catalogues, magazines and studies for free download or online viewing. The advantages of practices of this type have also been assessed by organisations of another kind, such as art fairs and biennials. **Manifesta Bienal** recently uploaded to its website all its catalogues and magazines to be freely accessed and downloaded.

On the subject of images, the work of the **Rijksmuseum** is outstanding. Photographs of the works in the collection are available for free download (more than 125,000 images) and it has set up a space on its website for users to post their remixes or share them on their networks.

In May 2014, the **Met** announced that it would make available to users more than 400,000 high-resolution images to be downloaded directly from the website and used freely, provided that it is not for commercial purposes. The initiative has been called *Open Access for Scholarly Content*. These images will be recognised by the OASC icon that accompanies them in the virtual gallery.

For its part, the **Getty Foundation** has made available to society more than 87,000 images from its museum and archive free of charge and without restriction, encouraging them to be used and the results shared with the community.

In January 2015, the **Smithsonian Institution** launched its *Open F|S* project involving the digitisation of more than 40,000 images from its collections to be freely downloaded for non-commercial purposes. Works from different

periods and places in the world, some of them never exhibited, have been included in this initial phase of the project.

In December 2014, **Tate** uploaded 6,000 pieces from its archives for online viewing,[38] and expects to have digitised all its archive entries by the summer of 2015. The institution's archive contains more than a million objects including notebooks, diaries, images, sketches and others by world famous artists, and it is therefore of particular interest to researchers, and to lovers of artists' biographies.

Lacma, Los Angeles County Museum of Art, has some 80,000 online images from its collection, which combine free and restricted access and are ordered by curatorial terms ("American art"). What is more, it is possible to carry out chronological searches or searches by objects on show in the institution at the time of viewing.

The **Museum of New Zealand** recently made 30,000 images available to the public, 14,000 of them under a Creative Commons licence with restrictions for commercial use and the 17,000 remaining images for any use as they are not protected by copyright.

The British **Imperial War Museums** are a very interesting case, as they have put more than 60,000 files online, including photographs, audios, videos and documents.

The **New Mexico Digital Collection** brings together in a single search portal photographs, audios, maps, books and all the digitised holdings of libraries, museums and cultural centres all over the state. Searches are easily made by choosing the type of file (for example photography) and selecting the collection you are interested in exploring.

Website New Mexico Digital Collections

The **Vatican Library** is using the state-of-the-art resources to digitise its documents. Up until now it had uploaded 500 manuscripts and 600 incunabula stored with FITS, a programme developed by NASA. It has now entered into an association with the Japanese technology firm NTT Data to digitise a further 3,000 manuscripts until 2018. These archives will be available in high resolution using NTT's Amlad technology, which allows very high quality viewing on various kinds of devices.

The **Wellcome Collection** in London, which belongs to the Wellcome Trust, has uploaded

many photographs from its collections to start up the *Mindcraft* initiative.[39] This game also provides videos and interactive activities. These "digital stories" are aimed at introducing the user to this highly varied and atypical collection that combines medicine, life, and art of the past, present and future in an original manner and are a far cry from content designed for researchers. What is more, *Mindcraft* allows images to be downloaded under a Creative Commons licence, opting for free access and use of this cultural content.

Without a doubt, a pioneering initiative in this area is **Google Art Project**. It began in 2011, by putting online 1,061 works from seventeen museums and offering virtual visits to institutions that are part of the project. Today it has more than 40,000 high-resolution images (7,000 megapixels) from more than 200 institutions all over the world. During its short lifetime, it has evolved by relating documents to the images and offering users the possibility of creating their own gallery and sharing it on their social media.

In Spain institutions are increasingly digitising their content, albeit somewhat warily. Some of them are already using free licences that allow the use of images and documents with no further restrictions than avoidance of their commercial use, such as Acción Cultural Española, the Macba in Barcelona and the Museum Cemento Rézola in Guipúzcoa.

As stated above, one of the pioneering institutions in making catalogues available online to be downloaded under a Creative Commons licence[40] has been **Acción Cultural Española.** Indeed, the first digitised catalogues date back to 2011, and more than a hundred works are available from its website for non-commercial use. To download them, all users have to do is fill in a short form. The search is simple and easy and the results can be displayed by title (in alphabetical or reverse alphabetical order) or by year (in ascending or descending order).

In 2014 the **Fundación Juan March** made available online all its catalogue published since 1973 by all three centres: Madrid, Cuenca and Palma de Mallorca. They bring together more than 27,000 pages, texts by more than 400 authors and 18,000 works by some 1,400 artists. The browser makes it possible to carry out interconnected searches of all the documents or specifically in each catalogue, as well as to filter searches by author, work, title or relevance. The documents are protected by copyright but can be used for non-commercial purposes, citing the authorship, or, in the case of images, without altering the watermark.

The **Museo del Prado** has a digital gallery of more than 8,000 images which is used as a virtual tour. It proposes different itineraries and features a tutorial for users on how to make the most of their time. The tutorial provides various resources such as audio guides, sign guides and links to multimedia content stored in PradoMedia. The idea is to continue until the whole of the huge collection is digitised. These images are protected by copyright, and permission to use them must be requested from the museum.

The **IVAM** was one of the first institutions to make its catalogues available online. Searches are carried out by title of the work, specifying the classification established on the website: a total

of 22 including architecture, avant-garde and IVAM documents.

The **Fundación Lázaro Galdeano,** with the collaboration of the Ministry of Education, Culture and Sport, has digitised its medieval manuscripts, which are of outstanding heritage value. Prominent among them are the bible that belonged to the Duke of Sessa and the House of Astorga and *De Virginitate de San Ildefonso*, the oldest codex in the collection. The aim is to facilitate researchers' and scholars' access to these documents without endangering their conservation. They can be searched by mentions of responsibility, title, date or materials. The images, which are high quality, can be enlarged by zoom. There is a text introducing the collection and a catalogue entry for each work.

3. Technology associated with the actual visit

Museums today more than ever are places of learning, spaces in which to share and enjoy unique experiences. Institutions are changing their mindset and their aims include using technology to make the museum a more social and experiential place, meet visitors' needs and entice them into returning. Therefore innovation in both content and technology can provide them with a major advantage.

Institutions are endeavouring to incorporate technological devices into the dissemination of their content in order to create experiential environments that live up to the expectations of today's visitors. One of the keys lies in getting to know our audiences and their requirements, in order to adapt our offering. The fact is that today we all use various technological devices in our daily lives and museums must come to terms with this and incorporate them as effectively and appropriately as possible, aligning their mission with the public's requirements.

The idea is not to replace a visit to the museum's premises. Far from the initial fear that many museums admitted to harbouring, nowadays it has been proven that these technologies can turn the visit into a surprising experience.

Institutions make available to us a series of tools that we can use with our smartphone or tablet, or else we can simply use the devices available in the galleries or hire them from the reception desk. Naturally this is not compulsory. Visitors can choose whether to use them or, on the contrary, carry on with the visit in the traditional manner. It is an extra service designed to make us more interactive and provide us with a greater amount of information and resources to customise our experience and make technology work for our enjoyment.

Ever since smartphones and tablets came on sale and began to be part of our lives, apps (applications) have been and continue to be developed

exponentially in order to increase their functions and make them more attractive and useful. That is why museum apps focus our attention on the points we will list below, analysing them in combination with other initiatives that are developed by these technologies used in other media and contexts which – in this case dispensing with our terminal – are employed as educational tools to enhance our enjoyment and provide us with a thorough knowledge of heritage without endangering the conservation of the institutions' collections.

Apps are computer programmes that are installed on our smartphone or similar device and are especially designed for each operating system; they are available from virtual stores. Some applications are free and others have a cost. The price is usually a token amount compared to the huge possibilities the application offers.

The two leading operating systems on the market are Android (more common in our country) and iOS, which is developed for Apple terminals.

The existence of various systems makes it necessary for institutions interested in launching a mobile application to be very familiar with the characteristics of their audiences so that the chosen app can be downloaded by the largest possible number of visitors. As stated, it is common for museums in Spain to choose Android, as it is the most widely used operating system in the country, but they are being increasingly launched in iOS too in order to cater to a very high proportion of the potential audience.

Mobile technology has changed how we relate to museum content, and therefore anyone with a terminal can be regarded as a potential audience. The key factor in the use of applications is to boost interaction, customisation (as devices are personal, intimate) and participation. Users are no longer a passive audience. They engage with the works and content creatively, selecting and producing stories. Therefore, the success of an app in the museum necessarily requires knowledge of its audiences, their needs in relation to the institution's mission, and the ability to provide a visit enriched with experiences and learning.

Many apps make museums more accessible to people with disabilities (such as the one recently implemented by the Museo de Arqueología Nacional, the first multimedia guide fully accessible to people with and without sensory impairment in a Spanish museum[41]) and therefore democratise cultural enjoyment.

This section will provide representative examples of these offerings, explaining what they consist of and how they enhance interaction during the visit.

3.1 Screens

One of the first artefacts to be adopted by museums and exhibition centres to offer visitors a different experience that complements the works and guided tours is undoubtedly screens. Then came mobile screens – first of PDAs then of smartphones – but before that it was museums which supplied this technological device

that is by no means obsolete thanks to its ability to evolve and adapt and provide a means of boosting interactivity with visitors.

From the outset the purpose of screens has been to show the "multimedia museum" side that institutions of this kind and similar ones have sought to develop by incorporating new technologies, apart from audio guides and the subsequent development of mobile applications with a similar focus that now belong to a technological stage prior to the one we will be analysing here – which we have called "third generation".

The first screens were used chiefly as an educational resource (both to provide accompanying information on the exhibitions and from an educational approach aimed at school visits) or more as entertainment. Their possibilities range from historical recreations in the manner of documentaries to multimedia resources that allow visitors, through tactile technology, to sort, explore, play, seek and add information to the exhibition they are visiting. All these examples will be familiar to any regular visitor to the museums that were the earliest to incorporate this technological device. Science and history museums in particular were early adopters.

A paradigmatic example of the adoption of interactive screens in museums is the use given to them by the **Indianapolis Museum of Art** through the *ETX*[42] project between 2002 and 2003. With three screens, two on the wall and one on an oval table, up to three visitors could take part simultaneously in its interactive proposal from any side of the table. The screens gather browsing information in order to improve and anticipate searches and the relationship between works. When a visitor selects a work that interests them from the collection, the screen changes to highlight the connections between this work and other pieces in the collection, as well as to provide further details about the work and allow the visitor to view its spatial location in the museum galleries. This type of search information has also been useful to the museum in connection with re-siting works in different rooms.

ETX, Indianapolis Museum of Art.

The **Churchill Museum**, which is part of the British Imperial War Museums, has a screen resembling a large table that measures fifteen metres long. It consists of a timeline that allows visitors to trace the events in the life of the important English statesman year by year as well as in their historical context and in relation to other important contemporary events and people, from his birth to his state funeral. It provides access in full detail to more than 4,000 digital files that visitors can open: documents,

photographs, fragments of documentaries and even hidden animation.[43]

Interactive timeline, Churchill Museum

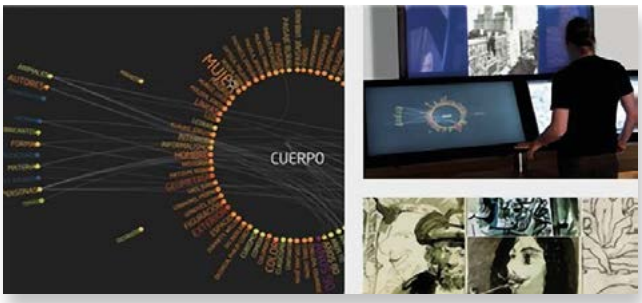
David Small[44] is a specialist in mounting exhibitions based on all kinds of screens. Prominent among his many projects is his *Illuminated Manuscript* created for the **Documenta 11** exhibition (2002) in Kassel (Germany). This manuscript consists of a book with blank pages on a bookrest onto which the text was projected from above. Visitors could thus turn the pages as well as combine and manipulate the text on each page. A later version of this illuminated manuscript was produced for the permanent exhibition of the **Nobel Peace Centre in Oslo**, Norway, when it opened in 2004.

These are just a few examples of what, in a sense, was a pioneering use of screens in museums, apart from the usual informative use generally found in many exhibitions. They date from the beginning of the twenty-first century. Since then, the use of interactive screens has evolved considerably, though the approach is often very similar to the above cases.

An interesting present-day example is the **Espacio Fundación Telefónica** (Madrid), which has developed a tool called Cultural Surface.[45] It allows users to explore the foundation's collection of more than 1,000 works through semantic and even sensory browsing. For this purpose the works that make up the collection were catalogued and labelled, and visitors can now access the digitised holdings of the works and objects that make up the artistic, historical and technological heritage of the Fundación Telefónica.

The method consists of several touchscreens through which users can filter their searches and establish links between the pieces. The results of their selection can be viewed on another monitor.

The screens also include interactive games that use sensors to explore the foundation's sculptures, as well as to examine the collection of portraits through facial recognition software (a technology we will deal with further on) that recognises our features and relates them to a series of sculptures. Another function invites visitors to browse and find a digital interpretation of the artworks they like the most based on proximity.

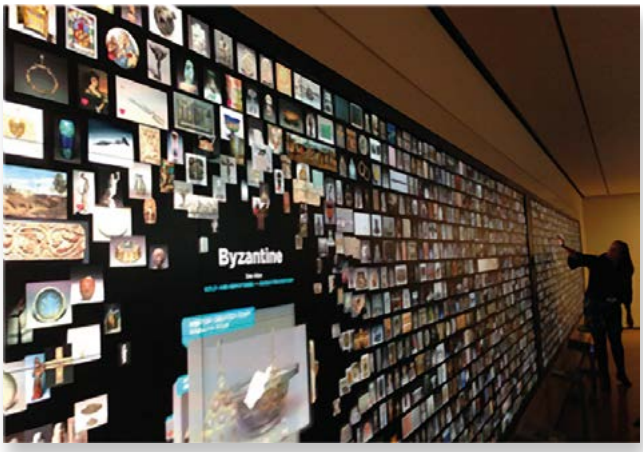


Cultural Surface. (Image from *El País*)

Still in Spain, the **Museo Guggenheim in Bilbao** designed a multimedia room called "orientation room": Zero Espazioa15.[46] This highly dynamic and interactive space for visitors is a meeting place between visitor and institution. It provides visitors with the keys they need to enjoy a unique experience in the museum and get the most out of their visit: printable routes, agenda of activities, audio-visual material on the Guggenheim building and project, multimedia games and digital catalogues, among other features.

Also in Bilbao, the **Museo Marítimo de la Ría** has created a multitouch interactive panel[47] as a benchmark resource that allows the Bilbao estuary (Ría) to be enjoyed virtually in an appealing and innovative way. The content is centred on the estuary's maritime history as a link between past and present society.

A highly representative example from another country is Gallery One[48] at the **Cleveland Museum of Art**. It basically invites visitors to take an active part in their visits through exploration and creativity using the largest touchscreen in the United States that shows images of more than 4,100 objects from the museum's world-famous permanent collection. It consists of different initiatives for all age groups in which art and technology are combined to enhance users' understanding of the works and artists on show.



Gallery One

Using this type of screen with tactile technology can provide detailed knowledge of the different works of art, thereby encouraging their interpretation to be explored and examined in depth.

A project in Dubai has developed 21 interactive digital media installations, including various touchscreens and touch tables, for a **Science and Technology Museum** in Saudi Arabia.[49] The interactive audio-visual productions show various aspects of the technical and scientific progress made in the Muslim world from AD 700 to 1700 in the fields of mathematics, medicine, botany, chemistry, astronomy, art and architecture.

This museum's most striking feature is a five-metre-long multitouch table that allows several users to interact simultaneously with a timeline displaying Islam's various contributions to science and technology. Spanning a period of one

thousand years, this multitouch timeline includes more than 300 historical events related to discoveries and important achievements for civilisation.

When they approach the installation, visitors to the museum first have access to an overall view of the key events in this culture, which are represented as markers and a title. In order to filter the huge amount of information, the interface then allows users to access windows that open and close by selecting periods from the Islamic or Gregorian calendar on either side of the table. When a particular event is selected, a window opens showing images, animations and texts related to the event. The language can be changed from English to Arabic simply by sliding a finger over the content, as the interface functions with intuitive gestures such as drag and slide.

Another possibility is to explore the geometry of Islamic art using another touch table that invites users to design their own Arabesque patterns from established elements. The application includes the option of creating patterns measuring one square metre that are displayed in the background of the touch table using two data projectors.

An example of the use of multimedia tools in an exhibition is the show designed by the **Pont du Gard** archaeological museum[50] in the south of France. The exhibition, based on a thematic concept, takes viewers back to the days of ancient Rome through multimedia screens and other similar tools that accompany the objects of the collection. The screens show virtual reconstructions and original archaeological remains that were designated as World Heritage in 1985.

Throughout the museum, multimedia technologies recreate accurately the original appearance of the objects and architecture, displaying these images alongside the original finds.

The exhibition begins with a multiscreen installation that tells the history of the city of Nimes since Roman times, as well as audios and illustrations based on scenes of the daily life of the former inhabitants of the area. And a large illuminated map shows the location of the main aqueducts in the Roman Empire.

It is worth mentioning a project currently in the pipeline and not yet implemented in any museum. It has been created at **Bristol University** by Bristol Interaction and Graphics[51] and takes the use of screens one step further, as it is in fact a projection through mirrors with which visitors can interact. They are semi-transparent "intelligent mirrors" that allow virtual objects to be "touched" to make them turn in the air.[52] It is halfway between virtual recreation and the 3D technology that we will examine in due course.

By following hand movements, mirrors use augmented reality (AR), a technology that will also be examined further on, to enable visitors to make the virtual objects turn and to discover more information about them, as if they were actually holding them.

The **Cooper Hewitt Design Museum** (Smithsonian) reopened in December 2014 following an overhaul that lasted three years and cost 91 million dollars. The museum now has 60% more space in new rooms. A prominent feature is its "immersion room",[53] where visitors can explore the collection digitally using tables with

touchscreens that provide information and high-resolution photographs. What is more, while each person selects the images that appeal to them the most, they are projected on the walls of the room, accompanied by related audios.

At the reception desk, each visitor receives a pen with a USB memory, a short-range radio and a tactile device that can be used to write and draw on huge interactive tables. The museum's new design is intended to offer an amazing experience through new technology that provides more in-depth knowledge of the institution's holdings.

In 2014 the **Palácio Nacional de Queluz** (Portugal) started up the new museum project of the Don Quixote Room – the room in the palace where Peter IV, King of Portugal and first emperor of Brazil, was born and died – to commemorate the 180th anniversary of his death. This museum design and layout project includes digital media both in situ and on the website.

Located inside the building are various interactive signage points in several languages. A tactile device provides access to a 360º image of the Don Quixote Room, where we can find interesting information on the heritage the room contains. There is also a microsite that features images, documents and emblematic artworks and examines the biography of Peter IV. This microsite can be accessed inside the premises through an interactive device, as well as from an autonomous site.[54]

The project also includes a virtual presence, and the palace collections have accordingly been uploaded to Google Art Project, establishing links between the pieces and bringing to light works that are unknown or difficult to view, including a section on guest works, documents and catalogue viewing.

The firm **siete|media**[55] has created very interesting examples in different Mexican museums.

The **Palacio de Bellas Artes** in Mexico City houses and exhibits a very important collection of murals. In 2014, siete|media designed museum displays based on touchscreens that show the biographies of the country's most important muralists, describe in detail each of the murals inside the palace and provide photographs in large format that enable users to analyse the main details of each work.

It also offers the possibility of interacting with the exhibition on show at the time of our visit to the palace installations, plus a timeline providing information on the history of the construction of the Palacio de Bellas Artes, with additional information in the form of texts and photographs. To adapt to mural format, two 70" touchscreens provide a detailed view of the selected information.

Interactive installation. Palacio de Bellas Artes, Mexico City

The experience is evaluated in order to adapt it to the needs of visitors and the institution based on the results of the research.

For the **Museo de la Ciudad de México**, the Mexican company has designed an initial version of an *interactive digital map library*.[56] It is an installation that tells the history and development of Mexico City through its maps. It is created from maps belonging to the Archivo Histórico Federal and the museum's own collections, which were first digitised. It is a timeline that spans more than five centuries of the city's history (1524–1929), stressing the milestones that have shaped its character.

Visitors interact with the map using sensors that detect hand movements, allowing them to move around the chosen map, enlarging it to observe details, or reducing it as required. Each image can be isolated and more specific information related directly to the map and the context in which it was made can be obtained. Its main purpose is to build an educational and informative tool that allows all visitors to enjoy the experience of viewing a historical map without endangering the conservation of the original.

The exhibition *Mayas, Revelación de un Tiempo sin Fin* (The Maya, revelation of an endless time) was held at the **Palacio Nacional de la Ciudad de México** from December 2013 to April 2014, organised by the Mexican Instituto Nacional de Antropología. It featured a total of 479 pieces that spanned a long period of history, from 2,500 BC to the present day. They were arranged by theme in order to show the richness and the full range of aspects of Mayan culture. As well as the aesthetic value of the pieces, the exhibition showed the ways of life, political, social, religious organisation and even the characteristic world view of this culture.

With the support of professionals of the INAH, siete|media developed five different interactive installations that contextualised the pieces on show in the exhibition without detracting from their importance. The first was a timeline explaining the development of the Maya from 2,500 BC to AD 1,550. The second was a map showing the extension of the "Maya Nation". The third installation consisted of a series of four interactive models that featured the cities of Copán, Pakal, Palenque and Chichén Itzá, to scale. For the fourth, the Stele of the Señor de Machaquilá was taken as a reference for addressing the theme of Mayan glyphs. The last interactive installation was designed to gather useful information on visitors' opinions. This system allowed the INAH to analyse the results and take them into account for future exhibitions.[57]

Mission Gaia is an immersive and interactive experience that can be enjoyed at the **Montreal Science Center** and opened in 2008 as part of the permanent exhibition. It consists of touchscreens and various devices that require visitors to interact. It is a game centred on sustainable development issues, in which visitors can take part alone or in groups, and is designed to make us reflect on the natural disasters that occurred during the twentieth century, providing solutions for a city such as Montreal, and in its last phase for the planet in general. Its aim is to serve as an educational tool to raise awareness of the urgent need to take action on environmental issues.

The company that has carried out the technological development is **Tram Média**, which worked on it for three years in collaboration with scientists in different fields.

The game tables are fitted with flat and interactive LCD screens. There are 21 game tables altogether as well as a large circular screen slightly inclined on its axis to evoke the earth's inclination, which projects images and sound effects in relation to what occurs on the game tables. The 360º screen measures 16 metres in diameter, and required twelve projectors that show images at a distance of more than 50m, achieving a high-quality immersive effect.[58]

The **Museum of Tomorrow** will open in Rio de Janeiro (Brazil) in 2015. The building is based on a sustainable design by Santiago Calatrava. It is intended to be a benchmark scientific centre for studying the environment. The exhibition is based on two themes: sustainability (how can we live?) and coexistence (how do we want to live?). Audio-visual media, interactive installations and games will be used for this purpose. According to its directors, the aim is for it to be a museum with a unique exhibition display that uses the latest devices. They wish to invite visitors to become immersed in experiences based on science, art, reason, emotion, language, technology, culture and society as themes that are interconnected in real life.

Yet to be opened, this institution is promising with respect to the latest technology for enhancing visitor experience.[59]

In 2012, the **Museu Picasso** in Barcelona opened the exhibition *Picasso 1936. Huellas de una Exposición* (Picasso 1936. Traces of an exhibition), an original and novel show featuring no original works. The aim was to show, by analysing existing documentation, the ideological, conceptual and social significance of the Picasso exhibition held in 1936 in the cities of Madrid, Barcelona and Bilbao.

For this purpose the museum enlisted a multidisciplinary team that brought together the curator Silvia Domènech with personnel from the museum and professionals from the world of technology and interactive museum display design.

Two interactive tables were created using touchscreens to explain the conceptual content in an easy manner and to ensure smooth browsing: Picasso's relationship with the agents involved in staging the 1936 exhibition and the relationship that was established between them.

The work was carried out in two parts. First the curator and a programmer chose the agents, categories and type of relationships to be established between them as a basis for structuring the content. At this point they began to compile all the digitised information using a database with online access. The second part of the work involved devising dynamic software for viewing the information.

Another of the devices manufactured for this show was a table which, when cards were inserted, generated video mapping projections that represented exhibition documents such as letters, press cuttings, photographs and others. Visitors were thus able to interact with the information and content in an entertaining and educational manner, with no need for the original works.[60]

3.2 QR codes

QR codes are already very familiar to most smartphone users. The main applications of codes of this kind have been to identify a particular article, document management and, above all, marketing campaigns. Owing to the amount of information they can transmit, they have subsequently been used to access other contents in very different ways.

In case it is still not clear to anyone what a QR code is, it is a label similar to a barcode that can be read by mobile devices and contains some sort of information about the item or product to which it is attached. QR codes use four standardised encoding modes: numeric, alphanumeric, binary and kanji.

Example of a QR code in a museum

This device has been implemented since very early on by museums and cultural institutions, as borne out by the high proportion of museums that report using QR codes: 42% in Spanish museums (May 2013 stats[61]) and, for example, 63% in the United Kingdom (October 2013 stats[62]). It should also be stressed that Spain is the country with the second highest use, after the United States, of QR codes to complete information or seek experiences of all kinds, both as promotion/advertising and in the cultural sector, such as some of the examples we will be taking a look at.[63]

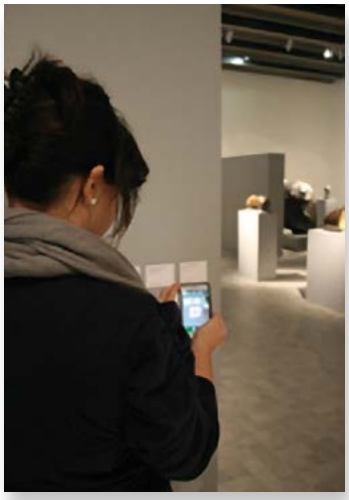
The flexibility of QR codes offers visitors to cultural institutions the chance to access information on exhibitions instantaneously as well as to take part actively in various games or activities. Visitors can furthermore interact and leave comments that are displayed on the museum's website. They can also reply to what other visitors write, thereby creating a forum for debate. This approach is designed to connect museums' visitors with each other and is conducive to community building.

As we shall see, devices of this kind offer many possibilities, sometimes also in relation to other technologies such as augmented reality and 3D images and also gamification approaches. Therefore, due to the speed with which cultural institutions are adopting digital labels of this kind, we have a host of examples to choose from. Nevertheless, we will point out a few that we consider representative of their various possible usages.

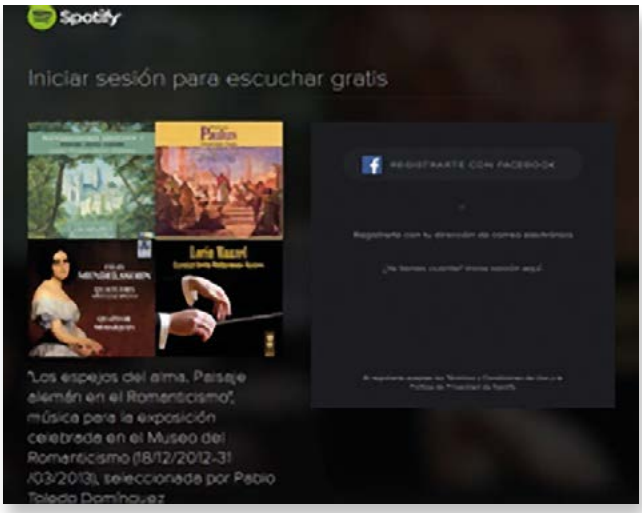
One of the pioneers in setting up this device was the **Museo del Libro Fadrique de Basilea**, in Burgos. Thanks to a network of BiDi Codes[64] located around the museum, users can access additional information in Spanish, English and sign language. They are also used to expand on the historical and artistic content of some of the most important pieces owned by this museum. Therefore, simply by using their mobile telephones, visitors can download and view extra

information free of charge and also listen to the desired content provided that the devices have a camera and Wi-Fi connection.

The **IAACC Pablo Serrano** in Zaragoza have incorporated what they call the *Sounds of the Collection* into QR codes.[65] These are four sound files on various key aspects of the exhibition *Pablo Serrano: 1905-1985. La colección* (Pablo Serrano: 1905–1985. The collection) displayed in two museum rooms. These sound files acquaint visitors with some of the particular features of a number of Serrano's works and anecdotes on his life in relation to art.



Another original example found in Spain's network of museums is taken from the **Museo del Romanticismo**, specifically the exhibition *Los espejos del alma* (Mirrors of the soul). The novel feature of the use of QR codes was that they did not merely supply additional information about the works or museum pieces as a complement to a multimedia guide, as is usually the case, but provided access – and still do, even though the exhibition is over – to a Spotify playlist[66] featuring a number of German musical pieces from the period examined in the exhibition.



This device was used as a tool for providing visitors with an experience that went beyond the works on show and contextualised a specific cultural period with other expressions of art.

Another usage for QR codes was devised by the **Royal Ontario Museum** (ROM) in its mobile application ScopifyROM. This app, together with QR codes, helps visitors find their bearings in the museum and learn much more about what they see there. According to its creators,[67] the design of the application is focused on

getting any visitor to the museum to act as if they were a digital curator.

The method consists in providing a series of digital tools that give users the opportunity to learn a little more about each of the objects on show aside from what they can discover simply by looking at an artwork and its brief description.

There is also hidden content, such as the possibility of seeing a skeleton through X-rays; or a type of periscopic view that enables users to see higher objects from different viewpoints, such as dinosaur bones.

Another original use for QR codes apart from providing addition information about particular works of art in the collection was devised by the **Smithsonian** in connection with an exhibition on Neanderthal man. When visitors lined up the QR code with their smartphone, they were directed to a website called Meanderthal.[68]

After taking a selfie, users could access the website to discover, by means of superimposed images, the appearance they would have had in the Neanderthal period – i.e. between 50,000 and 130,000 BC. The resulting image could be shared on the social media or by email.

The Virginia Museum of Fine Arts devised a very creative campaign using QR codes and augmented reality. To promote the exhibition *Picasso: Masterpieces from the Musée National Picasso, Paris*, they used a portrait of the Spanish painter made out of QR codes.[69]

When users scanned the image or promotional poster made out of codes with their phones, they were redirected to a website featuring part of the exhibition (15 selected works) and an invitation to buy tickets. Also as part of the campaign, a Facebook page was set up with information on the geographical coordinates of several cities where fans could also experiment with other Picasso works through augmented reality.

Also worthy of mention is the project by the young Olga Plets who, together with another two colleagues, has designed a mobile application called **CloudGuide**. It allows regular museum visitors to access a directory of all those museums' content that has previously been incorporated. The app uses a content and user management platform. Museums can upload their own multimedia guides, making them available to visitors. When visitors arrive at an institution, all they need to do is download the application through a QR code and start enjoying the visit: tours, access to all multimedia content, creating a gallery of favourite works, sharing them on social networks, accessing useful information and even purchasing tickets and objects from the shop.

This global application is supported by a **Google** executive and **Ecosystem Ventures**, an investment fund based in Silicon Valley.

3.3. Geolocation

As we have seen in some examples, geolocation technology is embedded in other types of technology, as we pointed out before examining each of them. Services of this kind are already part of most people's daily lives. Wi-Fi networks together with GPS, maps and tracking and locating methods are the basic elements used in geolocation.

Apart from the ordinary everyday use for which geolocation applications are often developed, some institutions are using it in both exteriors and interiors, either to guide people along a historical route, for example, or to interact with digital screens inside the spaces, though contrary to what might be assumed from how often it is used in other sectors, it is not so common in museums.

In general, many of the projects that apply this technology in museums and exhibitions are focused on the guides that accompany the whole visit.

For example, **the Art Institute of Chicago** has created a mobile application with internal GPS[70] that guides visitors along fifty different customised tours of all the museum spaces and works. This is made possible by the museum's open Wi-Fi network. The application allows visitors to discover unknown corners of the museum and gain deeper knowledge of the works on show. The aim is to boost accessibility and interaction between museum and visitors.

The Spanish company **TF Interactiva**, which is specialised in developing apps, digital publishing and multimedia editing, has brought out the **Official Guide to the Alhambra in Granada.**[71] This application, available for iPhones and Android smartphones, can be used during the visit or simply to obtain further information

about the monument. Developed in two languages (so far Spanish and English, though there are plans to include French, Italian and German) with a clear and attractive design, it provides users with all the information found in the print guidebook as far as content is concerned. It also features more than 200 images, interactive maps, pre-established routes, customised routes and useful information such as on opening times and tickets and the possibility of including the user's own notes.

This guide makes it possible to explore content in three different ways: through a list, through a map of the monument or using a real image; we can locate each piece of content quickly, orient ourselves and make notes to which related information can be added.

However, it should be stressed that apart from specific applications of which many different examples could be cited, geolocation services can be used by visitors simply with GPS embedded in smartphones. Such is the case of *Areago, un paseo sonoro por Igartubeiti* (Areago, a sound tour of Igartubeiti).[72] This innovative heritage project combines the use of geolocation with the heritage resources of the **Caserío Museo Igartubeiti**. It consists of an audio guide system which, through the use of mobiles, makes it possible to explore open spaces acoustically through stories created specifically for and in the Caserío Museo Igartubeiti.

The Wikimedia Foundation has developed a new service, Nearby,[73] to operate with its mobile version. Despite being designed with the experience of mobile navigation in mind, it also runs on the Wikipedia desktop version. What this site does, together with the user's mobile, is recommend Wikipedia articles based on the person's location.

Wikipedia's community of editors has gathered a large amount of location data associated with the millions of articles it contains; with Nearby they have made this information readily available. The idea is also for users to help complete the articles, and therefore Nearby first shows articles on nearby places that are missing images, inviting users to add a photograph.

Another curious example that does not need a specific mobile application is the service developed by the **Boston Museum of Science** in association with **ByteLight,** a manufacturer of LED light bulbs.[74]

Visitors can browse and explore the museum using an indoor positioning system based on LED lighting. In other words, LED light bulbs send specific information (signals invisible to the human eye) about visitors' location inside the

museum by interacting with the cameras on their mobile devices or those provided by the museum. Visitors can thus establish their location and seek different interactive points, obtain links or go on a self-guided tour using information based on their exact position and in real time.

Google Cultural Institute has launched a platform for offering museums the possibility of creating their own apps simply but powerfully – naturally, using Google's technological tools such as Street View (geolocation) or YouTube, significantly reducing the cost to institutions of offering services of this kind.

Eleven museums from different parts of the world (Italy, France, Netherlands and Nigeria) such as the Musee Curie, the Palazzo Madama or the Rijksmuseum van Oudheden have joined the platform for the development of this pilot project. The applications resulting from this initiative are available free of charge from Google Play Store.[75] Registration forms are available to museums wishing to take part.

3.4 Beacons

The next step up from geolocation with respect to technology is beacons. They are a low-energy consuming technology consisting of sensors that use Bluetooth, which are incorporated into physical objects and can detect the active presence of visitors to any type of cultural institution (museums, libraries, bookshops, theatres, art galleries, etc.) thanks to a specific mobile app. This application provides up-to-date information at all times depending on the distance the person is from the beacons strategically positioned on the premises.[76]

Image: anatomy of a beacon

The fact is that, by acting as sensors, the ability to determine accurately a person's location in a space provides cultural organisations with a new opportunity to encourage interaction between visitor and space. Up until now other interaction systems based on geolocation had been discarded because of their high cost. However, beacon-based systems are proving to be highly effective and less costly.

Although these systems are a very recent development and there are still not many practical examples in the cultural sector, their use is becoming widespread, such as in physical shops

selling clothing, music, technology and other products. As it is a cheap technology based on proximity and is non-invasive, any institution can use it to broaden its range of services and offer users a new experience on the actual premises.

From both an informative (providing further explanations and curious information about an artwork, location of the works by rooms, interactive maps and games, for example) and commercial point of view (being able to buy tickets, find out about offers, order a book, buy the catalogue on an artist on show, contact the store or other stores, etc.), beacons can offer visitors to or users of any cultural space a lot for very little. What is more, beacons also allow users to interact socially with each other, and can therefore help institutions build the increasingly desirable communities of their own, apart from commercial brands.

It can therefore be said that the advent of physical web technology of this kind, facial recognition, beacons, recommendation systems based on real satisfaction and interactive applications, among other novelties, can provide cultural organisations with an impressive range of possibilities for enriching users' experience, as well as allowing them to glean very significant information on visitors' habits, on the rooms or works they stop to view for the longest, and on what information users value most highly, among other things.

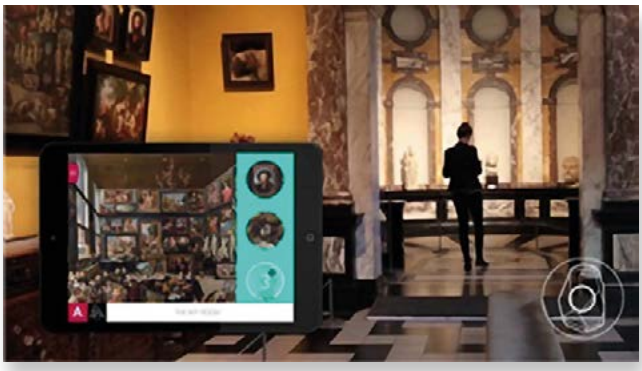
The **National Museum Wales**[77] is reportedly the first national museum in the world to introduce beacons (in this case Apple iBeacons[78]). Some 25 iBeacons with varied digital content were placed around the museum to provide visitors with a new experience: different points of view and stories to broaden the information on the museum's collections.

The **Groninger Museum** was the first museum in the Netherlands to use this technology to transmit interactive content on physical objects shown in an exhibition held in March 2014, *De Collectie*,[79] to smartphones and tablets. Beacons furthermore provided the museum with information on users' interaction with physical objects in real time, as well as a detailed analysis of visitors' movements inside the museum, enabling it to compile statistics on audiences' interests and opinions. Visitors who did not bring their own device[80] could hire a tablet from the museum in order to access the digital information provided by the beacons during their visit.

Each exhibition room was installed with three beacons which, via tablet or smartphones, provided information on the works in the collection, including photos, contextual information on the period of the artists featured in the exhibition, and audios and videos.

Another foremost example is the **Rubens House**[81] in Antwerp. In this case, iBeacons provide visitors with contextual information depending on their exact location in the museum, allowing them to progressively discover the

works around them with stories related to the paintings, X-ray images of the works, a virtual map-guide, etc. – all kinds of information based on GPS technology on the museum exhibits, together with information on educational content or even interactive games.



Video image at Vimeo: http://vimeo.com/84760383

As they are small wireless devices, beacons can be installed inside the physical space without appearing unsightly. In other words, the technology does not interfere with the spatial arrangement or flow of visitors.

The **National Geographic Museum** in Washington has also installed beacons at different points on the ceiling of its premises for the exhibition *A New Age of Exploration: National Geographic at 125*.[82] On entering the exhibition visitors are provided with an iPhone that includes a National Geographic app with full information on the exhibition.

When visitors enter a new room or section of the exhibition, the iPhone vibrates, indicating that new content is available on the screen. Each new piece of content is highlighted depending on the user's spatial location. The idea is for visitors to be able to obtain more information on the painting, sculpture or magazine cover in front of them.

A foremost example in our country is the **Museo del Prado** and its *Second Canvas* project. This application is designed to enable users to examine paintings in greater depth by showing the layers that underlie the painting's surface. Thanks to this app, developed in conjunction with **Madpixel**, paintings can be viewed in the highest definition and as closely as possible, as well as through infrared and X-ray vision. In other words, users can observe the moments prior to the creation of a masterpiece and the changes and corrections made to it.

In the implementation designed for the Museo del Prado,[83] users can zoom in on images of the paintings (Velázquez's *Las Meninas*, Bosch's *Garden of Earthly Delights* and Dürer's *Self-Portrait*, among others) in gigapixels to view details that are imperceptible to the naked eye. It also allows them to cut out an eye-catching detail of a painting and share it directly on their social media, or tweet it using a particular hashtag. Lastly, the beacons located strategically in the museum's galleries provide a broader range of customisation, real-time and highly interactive options during the visit to the museum.

As part of its digital strategy plan, the **Museu Nacional d'art de Catalunya**[84] has installed approximately 15 iBeacons in its rooms. This allows visitors to access contextual and complementary multimedia information on a particular selection of works, without requiring an Internet connection (as there is no Wi-Fi service in the permanent collection).

An antecedent to beacons in our country can be found in the 2012 exhibition *Coordenadas na Arte Galega Contemporánea* (Coordinates of contemporary Galician art) held at the **Centro Social de NovaCaixa Galicia**. The technology company **Wireless Galicia** started up the project for this exhibition and is a pioneer in this type of technology in the Galicia region.

This exhibition offered visitors with smartphones the possibility of accessing complementary information in three different ways: by decoding the QR code embedded in the poster; with NFC technology, by holding their mobile over the label to redirect them to the website containing the information; or by using Ibeaken technology whereby they could type the code supplied by the poster into the browser of their mobile to access a whole catalogue of content associated with the work.[85]

The **National Science Centre in New Delhi** made the news in October 2014 when it launched an app using beacons for visually impaired people. The application, called Roshni (meaning light in Hindi), was created by the MIT (Massachusetts Institute of Technology).

The application is easy to use. When visitors arrive at the museum, they use it to choose their preferred route. It provides content through an audio description of each work, similar to today's audio guides but also including specific indications on each space to orient them inside the room and help them move freely: how many steps away a work is, where the lift is, what direction to turn, etc. The beacons located around the museum's rooms detect visitors and accordingly help them reach their chosen destination.

The results are very encouraging, as visually impaired people are visiting the museum much more autonomously and independently.

The **Neon Muzeum** in Warsaw has also started to use beacons. The application offers audio tours with explanations by the museum's professionals: location of specific works with interactive maps, archive images, customisation of the application with a range of colours characteristic of noble gases and full practical information on opening hours, tickets, etc. This application was developed by **Human Tech Art**.

In June 2014, the **Philips Museum** in Eindhoven brought out an amusing and educational game to be played by family groups using beacons. *Mission Eureka* offers an interactive tour of the museum in groups of four people at most from age eight and upwards. With *Mission Eureka* users can discover how LEDs and X-rays work, solve puzzles and enjoy a great many activities that enrich the visit, making it more enjoyable for the whole family. The museum supplies visitors with the tablets needed to play this game.[86]

This type of technology is also used to raise awareness of the more complex realities of our world. The United Nations Mine Action Service (UNMAS) and Critical Mass opened an exhibition that year at the **New Museum in New York**, making the Sweeper application available to visitors.[87]

This app based on the use of iBeacons provides an immersive experience that allows visitors to experience the fear and disastrous consequences of these arms in hundreds of countries today through smartphones and audios and visual content reflecting the horror of mines.

An example of transparency is the **Brooklyn Museum** in its blog.[88] In a post dated October 2014, it tells of the experience of the tests carried out for iBeacons and the use of the ASK application. The aim was to obtain information on visitors' positioning in the museum rooms. The results were not very precise, but research is being continued with the aim of making this technology work for the museum and visitors.

3.5 Sensors and facial recognition

As we have seen, in addition to providing visitors to the museum with extra valuable digitised information, beacons can also supply cultural organisations with highly valuable information on users' habits to help them make future decisions with a view to organising events and exhibitions.

This type of monitoring was carried out some years ago using other types of technology, such as mats to detect the number of visitors, their age, the rooms they most visit and, more recently, a more advanced type of technology based on facial recognition. This sensory and/or affective technology – depending on the focus given to the information gathered – makes it possible to ascertain the reactions, tastes and even emotions of visitors to exhibitions in order to gather data for future improvements and also make customised recommendations.

Readers of this annual report may well remember the case of the so-called "magic carpets" used as tools to monitor visitors to museums and exhibitions. We may recall that this technology is used in the exhibitions staged by the **Promotion of Fine Art** department of the **Ministry of Education, Culture and Sport** in the new **Tabacalera** venue.

When these mats fitted with various sensors and placed under carpeting or doormats are trodden on, they count the number of people who enter a particular room or exhibition. They can also calculate from a person's weight whether they are an adult or child. This technology is based on an intelligent counting algorithm with an accuracy rate of more than 95%. The results are presented as immediate traffic statistics that are updated every three minutes and the system has the capability to carry out an analysis every fifteen minutes.

The data gathered by the sensor mat are sent to the application of the company that owns the technology, in this specific case **Eco-Compteur**,[89] and the results, trends, times with more or fewer visitors, reliable traffic date, data on variations in visitor flows, number of entries and exits per area, gauging the success of a temporary exhibition, are displayed on the website and peak visitor times are identified. All this is conducted discreetly, without installation or wires.

The **Musée du Louvre** and the **Musée D' Orsay** in Paris work with this same real-time monitoring technology, which is an essential tool for obtaining information on visitors to places where some kind of cultural event takes place.

The **Denver Museum of Nature & Science** is the most popular science museum in the Rocky Mountain region. In the past this popularity resulted in queues and people often having to wait a long time to get into the exhibition rooms. This was a concern for the museum, which sought a way of managing visitor traffic

to optimise waiting time. The challenges were: accurate counting of visitors entering and leaving the exhibition, real time counting of visitors in each room and providing staff with useful tools for extracting this data.

The technology firm **Alvarado**[90] met its needs by using 500 barrier-free counting lanes to count the number of visitors to the exhibition in real time. Data are transmitted to software called GateWatch, so that it can be displayed numerically on an LED screen. This software generates a series of reports with historic data, which help the museum assess visitor traffic flows with real data. GateWatch also allows this data to be combined with information gleaned from other systems to carry out analyses by introducing different variables, depending on the particular objective.

Other institutions such as the **ICA** in London, the **Baltic Centre for Contemporary Art**, the **Museum of Exeter** and the **National Gallery** in the United Kingdom have enlisted the support of **Axiomatic Technology**[91] to develop patron counting systems applied to their institutions in order to improve access to their premises.

Lastly, in 2011 the **Magritte Museum** in Brussels commissioned **IEE**[92] to install a real-time patron counting system for comprehensive monitoring and data analysis. The technology, based on 3D MLI sensors, achieves results that are 99% reliable and include an overall count as well as specific counts per room. It also provides additional information, such as average duration of the visit in each room.

Movement sensors have been used for the past few years in exhibition layout design. In this case, the purpose is not to monitor or count visitors (though the sensors could be designed to provide such data) but rather to activate various display devices that interact with visitors when they enter the room.

In 2012, the culture section of the **Fundación Mapfre** used this device in its exhibition *Universo de la moda. De la calle a las estrellas* (Fashion universe. From the street to the stars)[93]on the designs of the couturier Jean Paul Gaultier. This cleverly mounted show amazed visitors, with each room contextualised in a special and novel way.

The visit began, as an introduction, with Gaultier himself welcoming visitors. A movement sensor activated a video that projected the fashion designer's face onto a mannequin dressed in the designer's most characteristic clothing. The same technology was used throughout the exhibition to create the effect of the mannequins singing, talking to viewers and even surprising them by whistling to draw their attention.

Researchers at the **Centro de Visión por Computador of the UAB**, in collaboration with researchers at the Computer Vision Laboratory at Linköping University (Sweden) and the Norwegian Colour and Visual Computing Laboratory in Gjovik (Norway), recently developed a computer application that automatically recognises the maker and style of a pictorial work.

This application classifies the maker with 50% success and the style with 60% success; although far from 100%, these are actually quite high rates. The system does so by first analysing the work overall based on distinctive characteristics and then analysing the small details into which

the programme breaks down the image, such as colour and texture. The system is still in its experimental phase and has a database of 4,266 works by 91 makers, the most extensive to date for a recognition system.

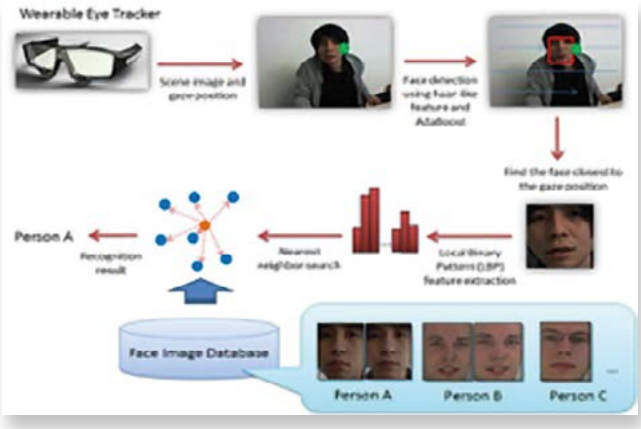
The VIDA awards on technology and art have been set up by the **Fundación Telefónica** to encourage artistic research in the field of new technologies and artificial intelligence. They completed their fifteenth year of existence in 2014. The winning works were displayed at the foundation's premises in Madrid from 12 March to 20 April. One of the most striking interactive installations created for the exhibition was a large mirror screen incorporating movement sensors, which replicated people's body movements in an amusing manner, converting them into artificial life. This installation was also placed in the Plaza de Callao in Madrid and passers-by were invited to take part in the experiment, which encouraged people to visit the exhibition.[94]

Stores and shopping centres all over the world are taking this one step further, as technology can turn everything that goes on inside a space into data that can be subsequently used to improve services, decide on sales strategies and find out more about customers, among other usages.

For example, the firm **ShopperTrak**[95] offers stores two types of services. One involves small devices placed at the entrance and exit of premises that allow managers to predict the number of visitors and accordingly ensure the right number of staff. The second service is essentially the same but at a more advanced level, as it allows visitors' steps to be monitored in order to learn about their behaviour when they shop inside the premises – a function that can be implemented in museums' stores or bookshops.

Sensors of this kind that monitor customer behaviour are also used in some institutions such as hospitals. Some technologies even allow customers to be monitored through their mobiles, via Wi-Fi – which is undoubtedly a very delicate issue – although as the article points out, these technology companies speak in terms of "non-identifiable personal information" and "privacy assured", and the monitoring is conducted anonymously and consists of gathering data such as sex or age.

The next stage takes facial recognition to a wider level, as in **Museum Guide 2.0**,[96] an automatic guide system for museum visitors. This system analyses visitors' eye movements (through glasses that incorporate Eye Track technology) so that when they look at an object or artwork, this technology delivers detailed information on what they are observing in different ways, including audio. This is made possible by the glasses' recognition of objects combined with an algorithm that analyses the focus of the visitor's gaze.



Eye Tracking (Museum Guide 2.0)

Examples of the implementation of facial recognition technology are starting to be seen in culture institutions. The fact is that many technology companies are carrying out research in this field. The interest lies in finding out in as great as possible detail users' emotional reactions to gain a better understanding and interpret their tastes and interests.

For example, the **Detector Shore**[97] facial recognition app developed by research scientists of the **Fraunhofer Technological Institute** in Germany can recognise the basic emotions of people who look through Google Glass thanks to facial recognition technology and can even tell the person's age almost exactly.

According to its creators, the application has a 94.3% accuracy rate in facial recognition of sex and emotions. This percentage indicates that it finds it surprisingly easy to ascertain whether somebody is pleased, happy, surprised, sad and so forth. To achieve such a high rate, the technology is supported by a database of more than 10,000 faces that provide a standard for the facial representation of emotions.

It is not difficult to find similar research projects, though they are rarer in cultural entities. Facial recognition technology can be used to monitor how to interact, as we have seen in the case of the **ISIS** group's experiment on virtual recreations, specifically that of the **Palacio de Pedro I**, in the Real Alcázar in Seville.

The **Deutsches Museum of Munich**,[98] one of the biggest science and technology museums in the world, launched an innovative initiative to demonstrate precisely the ability of current facial recognition technology to read moods, though more as a fun experience than as a tool for measuring. Visitors simply position their face in front of a camera and see it digitally displayed on a large screen with the results on their age and mood.

It is actually a digital game with a tool whose commercial application provides information to brands and advertising agents on the people who view their advertisements and how they react to them. In other words, its practical usage is also directed at measuring and analysing tastes and emotions.

The **Rijksmuseum** has launched the *Rijks Emoticons* project[99] in collaboration with four young students of Hyper Island, as part of the *Digital Data Strategy* programme. The aim of this initiative is to attract teenagers, as many studies report a decline in the number of visitors in this age range; it is therefore necessary to come up with projects that connect history with these people's everyday life – in which technology plays a major role. The idea is thus to entice them by designing a site using facial recognition technology as a link between teenagers and the art history housed in the rooms of the famous museum.

It works simply. All users have to do is visit the website and take a photograph of themselves, and the programme will establish connections with the museum's works using data such as age, sex or facial expression. The result will be the work that most resembles the photograph supplied by the user.

This project, devised as a game, establishes a perfect link between technology, teenagers and museum content and encourages these young

people to visit the premises to search for the work that resembles them, thereby providing an immersive, interactive and customised experience.

Applicarte[100] is an application devised for museums and developed with the assistance of the Spanish **Ministry of Industry, Energy and Tourism,** in collaboration with other public organisations and the technology company **Solid Gear**. In addition to allowing us to obtain further information, customise our visit or create our own picture gallery, it offers the novelty of incorporating image recognition technology so that when a photograph is taken of the desired work, it provides us with additional content on the work.

The **Cleveland Art Museum** has a similar project, also as part of Gallery One, which we mentioned earlier in connection with interactive screens. One of the exhibition installations called *Make a Face*[101] offers visitors the chance to explore the museum's portrait collection through facial recognition software. A webcam records their facial expressions and compares them to the works in the museum's collections.

Make a Face (Gallery One). Cleveland Art Museum

There are still only a few cases of the use of facial recognition to analyse the emotions and interests of visitors to cultural events, but we wish to comment on a curious and amusing experiment that is a mixture of play and gamification as a business model.

It is being run by the well-known entertainment and humour show *El club de la comedia* at the **Teatreneu in Barcelona**:[102] facial recognition technology is used to charge spectators for every time they laugh. The method consists of tablets equipped with this technology installed in the seat backs; the charge is from €0.30 per laugh to a maximum of €24 (in other words, a "pay-per-laugh" model). No entrance fee is charged.

3.6 Wearables

If there is any cutting-edge technology that is constantly spoken of and arouses even greater news interest than the Internet of Things, it is wearables – a type of technology that people can wear either on their bodies or in their clothing. The best-known case is probably Google Glass and, more recently, the latest smartwatches. It is a type of information technology which, as can be easily found, is not strictly new but, once again, the Internet and ability to transmit data have harnessed its full potential.

The famous Google Glass is currently only the tip of the iceberg of all kinds of technology that are being created to be worn. Some of these wearable devices are already known for their application in fields such as sport or health, but they are spreading to all levels and sectors, including the world of culture.

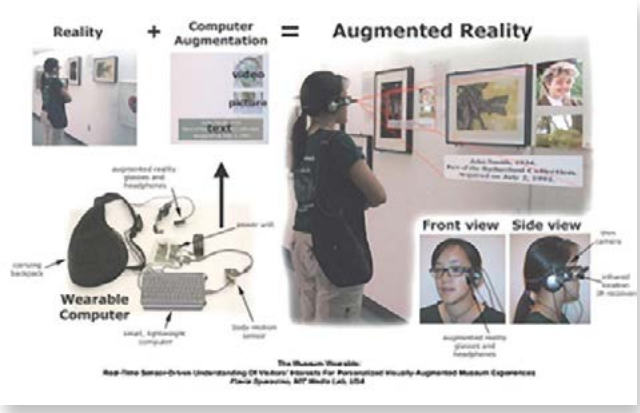
A report compiled by **GigaOM**[103] stated that by 2017 we could have reached the figure of 170 million devices of this kind, which could come in the form of watches, glasses, contact lenses, fabrics with embedded micro-technology, small screens, rings and wristbands, headphones, smartcards, wrist computers and even intelligent tattoos. Progress in studying batteries and sensors is taking this technology to levels that were unthinkable only a few years ago. The monitoring capability makes possible precise results and knowledge in fields such as health and sport: obtaining data on physical exhaustion, glucose levels and even preventing diseases. Work is already being carried out on intelligent clothing that detects emotions and moods.

The first applications in the culture sector range from glasses with subtitles and audio, which originate from the development of tools designed for people with hearing impairments, to sensors to be used in museums and exhibitions. Such is the case of a shirt that can read spectators' reactions to a film, interpreting what a particular character feels.

In the field of music, and in a not so distant future, when we attend a concert these technologies will detect our mood and sensorial changes (more cheerful, sadder, etc.) on listening to a certain type of music. All this will be recorded in order to recommend new music events to us based on our previous behaviour. We will also see this in the book sector: the sensations we have on walking past a display of novelties in a bookshop, what book covers we touch, what images attract us, what texts arouse a certain type of sensation, etc. – as in an exhibition.

These sensory situations provided by the latest technology are no longer science fiction – they are a reality that can offer us a great variety of new experiences while we enjoy different cultural attractions and events.

But, as we pointed out, wearables are not a completely new technology, not even for the culture sector. Back in 2002, **MIT Media Lab** was already exploring the possibilities of introducing this technology in museums.[104] It is technology applied to museums and defined precisely as a "museum wearable" that is a "real time storytelling device: it is a museum guide which in real time evaluates the visitor's preferences by observing his/her path and length of stops along the museum's exhibit space, and selects content from a large database of available movie clips, audio, and animations".



"The Museum Wearable"

This is very similar to everything we have seen on 3D, augmented reality and geolocation, although back then the first steps in this field were rather awkward, as visitors had to wear small portable computers, sensors, and equally awkward glasses

in line with research on virtual reality, still a far cry from the Google Glass model.

As we can see, the research phases leading to Google Glass, although a paradigm of the putting into practice of "wearable" in culture institutions, are a development of what had already been envisaged. This is proven by the words of Babak Parviz, the person in charge of the Google Glass project and a former expert in bionanotechnology at Washington University, who stated that the aim of what was still Google Project Glass was to create a device that allowed people to connect with others through images and videos; a device with which to see the world through their eyes that enabled them to share this point of view, and to create a technology whereby people have instant access to the information.[105]

One of the first companies to devote part of its efforts to providing Google Glass applications for museums was **GuidiGO**,[106] which a few months ago announced its association with museums all over the world to provide virtual tours optimised for Google Glass.

Google Glass in museums with GuidiGo

With this app, museum visitors wearing Google Glass can begin their visit and the application, which uses image recognition to automatically identify the works of art and other objects on display, will rapidly provide all the relevant information about what the user is looking at. It also geolocates visitors and can guide them around the museum's rooms and exterior, as well as suggesting a route using interactive maps.

In Spain technology firms are developing specific apps for using Google Glass in museums. The pilot project being developed by the **Museo de Bellas Artes de Asturias** together with the Asturian companies **Malvado Sound Lab S.L., NeoSenTec and Fernando Milla** made the national news in October 2014. Over a two-month period, this device can be used to visit the institution's installations and enjoy an experience that combines the benefits of technology and art.

The application, called GuiARt,[107] has used iBeacons to be able to dispense with Wi-Fi connections inside the museum. Thirty-five beacons have been installed for this purpose that offer good positioning results. GuiARt provides users with a large amount of multimedia content, augmented reality and 3D technology. It allows them to take photos and record videos, comment, recommend and share the whole experience on their social networks.

Another approach involving the use of Google Glass was announced by the **Museo Egizio in Turin**,[108] an institution that will be the first in the whole world to experiment with Google-Glass4Lis, a Google Glass application that provides deaf visitors with a customised

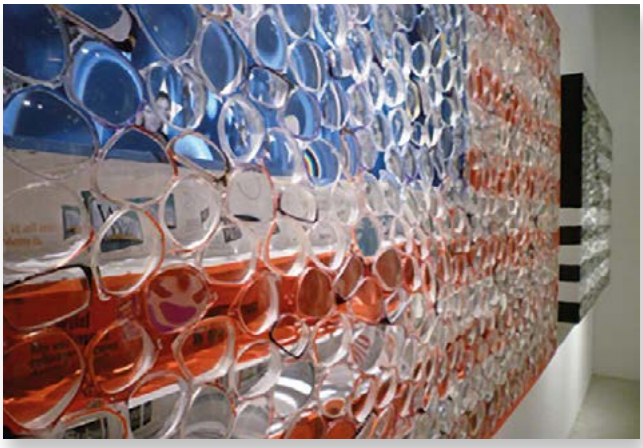
guidebook in sign language through an automatic translation platform with a virtual avatar projected onto the surface of the famous glasses.

When they use the Google Glass touchscreen, visitors can access information on the statue translated into sign language. Using a voice command, it is also possible to stop or start the translation, take photos, record a video and share it on the social media. It is an application for wearable technology that makes deaf people proactive visitors.

As an example of "low cost" wearables, the **Google Lab Project of Google Cultural Institute** has brought out some cardboard glasses called Cardboards[109] that enable users to enjoy augmented reality. By downloading the Cardboard application we can find out about other compatible applications that allow us to use our glasses, which only cost a few euros. This initiative is very good news for museums, as it means that with a relatively low budget they will be able to offer users an experience that is enhanced with augmented reality.

There is an artist who already bears in mind museum visitors' experience when creating his works. This is David Datuna, whose *Portrait of America* (2013), the first in a series of ten, can be seen in the **National Portrait Gallery** in Washington, belonging to the **Smithsonian Institution**.

The installation consists of a large US flag covered in hundreds of conventional glasses lenses. When the viewer stands in front of the work wearing Google Glass,[110] the installation delivers further images and interactive videos related to prominent people in American history, such as George Washington, John F. Kennedy, Martin Luther King, Michael Jackson and Lady Gaga, among others, and salient cultural events in the early and contemporary history of the United States. The result is the combination of fragments of collective experience exhibited in different layers and defining much of American culture in a large multimedia universe.



Portrait of America (2013)

As we can see, practically everything that has been developed in connection with wearable technology in museums has been focused on the possibilities of Google Glass. Nevertheless, it will be necessary to look out for new devices

with a similar focus to the multinational giant, such as the Neurocam or Baidu Eye.

The Neurocam,[111] developed by the University of Keio in Japan and designed in the shape of a headband, reads the user's brainwaves and is able to detect what the brain recognises as interesting on an interest scale of 0 to 100. From level 60 upwards it starts to record on the smartphone connected to the sensor-camera, converting images into five-second Gif files.

Its creators are still carrying out research based on this model to achieve an emotional interface that is available on all kinds of devices and connects further thoughts, feelings and sensations which can be shared with other people. It would undoubtedly be very interesting for museum visitors wearing these glasses to be able to share their emotions on observing different artworks.

Baidu Eye ,developed by the search engine and Asian giant **Baidu,**[112] is focused specifically on museum use. The prototype consists of a small camera, a laser pointer and a headset. The device responds to voice commands and can also be controlled by a button on the headset. Unlike Google Glass, Baidu Eye is not fitted with glass. The information on what the user is seeing can also be received on a smartphone or tablet.

Baidu Eye prototype

At its presentation the company stated that it was particularly interested in the prototype being used in museums to identify and provide information on artworks. For this purpose it intends to seek alliances with museums initially and work with curators to provide digital information to visitors through these devices, instead of the traditional audio guides.

Lastly, a type of wearable that is potentially designed for performing arts audiences but can be used for similar practices such as museum audiences is Lightwave.[113] It is a smart wristband designed to gather data in real time on spectators and/or audiences, including temperature, movements and audio levels, in order to relay this data to the artists.

By viewing real-time audience data, the artists or organisers of the cultural event obtain real knowledge of the audience's experience of a performance thanks to this feedback. According to the company, the aim is "to visualise the human experience" in order to improve the relationship between artist and audience, and to foster engagement between them during performances. In this case the audience ceases to be a passive recipient and becomes active and interconnected, and new emotional bonds can be established between artists and audience.

3.7. 3D and augmented reality (AR) technologies

One of the up-and-coming technologies that can be seen in various museums and similar institutions relates to "three dimensions" or 3D. This resource is often combined with other technolo-

gies such as that of the QR codes examined earlier and with augmented reality, as we will see in a few specific examples dealt with in the next paragraph. Indeed, it is proving to be one of the most widely used technologies of which more and increasingly innovative examples have recently emerged.

Many people believe that 3D technology will transform how we behave and engage with works of art and objects in heritage collections – i.e. in aspects of development, reproduction and research, as well as in creating new and innovative visitor experiences for any cultural organisation with collections or content to be offered, both to users and for educational purposes.

Indeed, the latest **Horizon Report 2014**[114] on key trends in emerging technologies likely to have an impact on higher education predicts that 3D technology will be one of the most important to take into account, and reckons that it will be widely adopted in education in the next two to three years.

One of the most striking examples of the use of this technology to produce replicas of valuable art and heritage objects was put into practice in Egypt, in connection with the **tomb of Tutankhamun**. The combination of digital photography, scanning and 3D printers made it possible to reproduce with highest precision the murals on the walls of the pharaoh's funerary chamber with the idea of protecting the original from the erosion caused by the passage of time and tourism (1,000 visitors daily in a space measuring barely 60 square metres).

This so-called "facsimile" version reproduces all the cracks and particular features of the walls' surfaces, as well as the colours and details of the murals. The main difference with respect to the original chamber is that the replica adds information on the place, the holding of events and activities related to the pharaoh, his life and the discovery of the chamber, among other things, and causes no risk of deterioration.

Image of the "facsimile" pharaoh's chamber
(Source: *Daily Mail*)

The Spanish company **Factum Arte** has implemented this project. Since 2001 it has developed technologies for cataloguing and preserving historic and artistic heritage all over the world. Based in Madrid and with offices in other major European cities, it has worked with some of the world's leading museums such as the Prado, the Louvre and the British Museum. Its facsimiles are unique and have a specific purpose, and quality is therefore a priority. For this purpose they develop scanners, software and printing systems specifically for each project.

The spectacular result of these projects has been made possible by an interdisciplinary team of more than forty people working

shoulder-to-shoulder with architects, engineers, historians, sculptors, computer developers and other professionals.

Another 3D project related to the same civilisation was carried out by University College London for the **Petrie Museum of Egyptian Archaeology** in the same city. The project[115] involved recreating a whole series of objects from the museum in a visual timeline so that visitors can interact with them online, observe them and handle them in the same way that a researcher or curator does. Thanks to 3D exploration technology, web users can thus move the objects virtually, turn them and examine them at length using a zoom function that allows them to see details that they would not be able to in the museum.[116]

If we consider that museums' holdings are protected behind glass cases – as is only logical – this way of recreating unique pieces and allowing users to study them as if they had the real object in front of them affords 3D technology a very high experiential value. This approach encourages visitors to the museum, even if online, to take part and become more involved in what they want to see or learn about, as it goes much further than merely supplying information and allowing holdings to be viewed from a distance.

From an educational perspective, learning can be boosted, just as being able to see the objects from all angles and in full detail can arouse greater interest among students and researchers. Such is the case of the **British Museum**, in association with **Samsung**,[117] which created several educational activities based on 2D and 3D technology also in relation to the pieces from ancient Egypt in the museum's collections.

One of them, called *Talk like an Egyptian*[118], invited children to put themselves in the place of various Egyptian people featured in the collection together with 2D computer programmes and microphones to bring them to life. Also using 3D, they recreated figures and pieces from the collection, especially amulets, which were later printed, and the children were invited to design their own amulets that could also be printed in 3D.

In mid-November 2014, the British Museum went one step further by putting fourteen pieces from its collection online, mostly from Ancient Egypt, in freely downloadable 3D format under a Creative Commons licence. This means that anyone can print their own 3D models of sculptures such as the *Head of Zeus*, the seated figure of *Amenhotep III* and the god *Horus* in the form of a falcon, or else use images freely for

any project, for example a videogame. It offers a host of ways of disseminating the museum's collections and interacting with them.

This project has been made possible by the museum's collaboration with the technology firm **Sketchfab**.[119] It was set up using WebGL-JavaScript API, which makes it possible for any browser to view and interact with 3D models and also download and print them.

Ending with Egypt, the US company **Dassault Systèmes**, together with **Harvard University and the Boston Museum of Fine Arts**, has developed the *Giza3D* project which basically allows the Giza plateau to be visited virtually through its website.[120] The extensive collection of photographs, diaries, drawings and documents on Giza in the last ten years has helped reconstruct the necropolis as accurately as possible. All these files have been duly digitised and also uploaded to the project's website.

Projects of this kind are a further development of what has been called "virtual recreation", which is used above all to reconstruct ancient buildings or archaeological remains. Current 3D technology is a logical and much more effective evolution of these early virtual representations that were already being developed, especially in the last twenty years of the twentieth century.

As in the abovementioned example of the Gaza plateau, members of the CSIC are currently working at the Escuela de Estudios Árabes in Granada[121] on the **Palacio de Pedro I** in the **Real Alcázar of Seville**. They have also worked on other projects on the Alcázar and on the culture of Muslim Spain in general.[122]

A similar case, albeit funded privately, is *Ad Legionem*,[123] a 3D reconstruction promoted by **Revives.es**, which brings to light the Roman archaeological site with the same name: a civilian population centre linked to the Roman camp from which the city of León emerged.

In fact, the focus on reproducing or recreating spaces, historical objects and works of art is proving to be one of the most widely used, especially in relation to the historical and cultural heritage of several countries. **Microsoft** recently joined forces with a not-for-profit organisation, CyArk,[124] to create a digital file of the most famous historic sites in the world. This alliance is intended to compile a record of mankind's treasures and prevent them from possible natural disasters or manmade actions such as war or terrorism.

Some of its finished projects are the Mount Rushmore National Memorial in the United States, Ancient Thebes and the Necropolis of Ramses II in Egypt, Chichén Itzá, the ancient centre of pilgrimage and the Mayan site of Yucatán in Mexico, and Pompeii, the ancient Roman city. The technology used can capture 1.3 million 3D data points per second to create 3D models of cities and monuments.

Another of the applications of 3D technology is the physical and not just virtual collections of museums. One of the first institutions to embrace this application was the **Smithsonian**, with the assistance of **Autodesk**, a leading developer of 3D design software.

As part of the programme for digitising the collections of this important US institution, a

large variety of historical objects from its impressive collection (consisting of 137 million objects, no less) have begun to be printed and are furthermore available for download, following registration, from the website[125] set up especially for this initiative.

Although a few other museums had already experimented with 3D reproductions of a few sculptures, this has been the first institution to devote a site to them and to grant users the possibility of downloading and printing the reproductions. What is more, this programme will make it possible to bring to light 99% of the institution's works in this particular case compared to the 1% that are on show in the various galleries of the museums that make up the Smithsonian.

In this case too there are benefits from using 3D technology to preserve the historical and artistic works in the collection, as researchers can work with the reproductions for their studies and for teaching just as well as with the original pieces, but with no danger of harming any of these objects.

Similar work has been carried out at the **Metropolitan Museum** in New York or rather through a private initiative with its collaboration. An art professor, together with artists keen on the 3D technology provided by **MakerBot**[126] – who are specialists in this field – such as their app 123D Catch,[127] decided to photograph and then scan in 3D some of the representative works (which can be photographed, as rooms have been set up especially for this purpose, though in others this use is restricted, depending on the works) belonging to the New York museum with the idea of users themselves then taking the initiative.

Result of 3D printing of MET sculptures

The idea is not just to access the original works but also to encourage the creativity of visitors and other artists, allowing them to experiment and make mashups of several sculptures (its website features an example of how the sculptures of *Leda and the Swan* and *Marsyas* have been merged into a sort of new mythological figure in the manner of Ovid's metamorphoses) that can then be downloaded from a website set up for the purpose.[128]

The **Historic Royal Palaces** of Britain have followed in its footsteps, making the crown of Henry VIII[129] available for free download and 3D printing. It allows teachers and pupils to work in the classroom with affordable reproductions of artistic and historical objects.

Another British museum that has made use of 3D technology, in this case as the basis for an exhibition, is the **Science Museum in London**. This small exhibition entitled *3D: Printing the Future*[130] features 600 printed objects on indus-

try, medicine and the human body, medications, and a huge human lung, *Pneuma 2*. There is also the possibility of making miniature 3D models of visitors.

This museum had also previously worked with 3D technology through the *Me in 3D* initiative,[131] which scanned visitors' faces. The result (which could be used by science for research into cosmetic and facial surgery in general with users' prior signed consent) could also be reproduced in various materials.

There is a small museum in the equally small Romanian town of Pecica, whose singularity, in addition to the striking architecture of its creator, Claudiu Ionescu,[132] lies in the fact that it is based exclusively on 3D and other emerging digital technologies. It is a small **Digital Museum** (barely 125 square metres) of other museums, as people can visit and explore the exhibitions and collections of other museums in the rest of the world through these technologies.

It is a small space for an art centre that can virtually host many major exhibitions at once. The museum thus goes from being a centre to a platform in which the focus is on experience and the interpretation of visitors to the museum.

The museum bases these experiences on digital 3D projections on large high-resolution touchscreens on which the objects and works from other well-known museums are displayed. One of its advantages is that exhibitions can be changed or rearranged almost instantly without involving high costs. This makes it very easy for the museum to show different types of art and regularly enlarge its content for a minimal cost compared to that of staging an exhibition in the traditional manner.

3D technology is very commonly used in the new applications launched by museums and institutions of the sector. The **Rijksmuseum** in Amsterdam has an application that offers a host of possibilities for enriching the visit. Its eighty rooms display masterpieces of art history dating from the Middle Ages to the present day. Its multimedia tour allows visitors to choose from different types of tours: free and customised, or one of the recommended itineraries featuring information that is supplied at various points along the way.

The app is intended as a magic window that reveals details and stories about the collection and the building. It also offers families the possibility of playing a game, each member with their own terminal. The game, designed for a minimum of two people and a maximum of four, is a classic treasure hunt through the museum's galleries to unravel eight hidden secrets. Participants are given different tasks to complete, either individually or together as a group. We can also create our own *Rijksstudio* by choosing our favourite works, which are stored on the museum's website, and can be modified later or downloaded as we wish. Geolocation and 3D technologies as well as high-resolution images have been used in this application.

One of the most ambitious projects related to real construction using 3D printing is that of a Dutch firm of architects who have set themselves the goal of constructing the first 3D building printed in full size in Amsterdam: *3D Print Canal House*.[133] To do so they are using a 3.5 metre-high printer especially designed for the purpose. According to their website, they will first print the whole façade and master floor and progressively add the rest of the building over the following months and years.

The first floors and the façades of the house will be printed from polypropylene, but the architects also hope to use bioplastics and recycled plastics. The walls will then be filled in with concrete in order to insulate and reinforce the building. The whole process of printing and assembling the house is scheduled to be completed in three years. This particular 3D house is going to be built in a developing area by one of the canals north of the city. The idea is that, once completed, it can be used to host events, as well as being a tourist attraction.

Each room is devoted to a specific research subject, such as the "kitchen", where researchers will explore 3D printing using potato starch; the "policy room" where they will display how to obtain permits for printed structures of this kind; and the "recycle room" where plastic elements used, such as bottles, will be shredded into printing material for the gigantic printer. It is a prototype converted into an exhibition and practical research that can pave the way for future 3D exhibitions to be enjoyed by everyone.

Augmented reality is a technology that first emerged in the 1990s, though it has become much more popular and accessible thanks to mobile technology. Since the outset, augmented reality has been closely related to what has been called "virtual reality", like some of the examples of reproduction of spaces examined above in connection with 3D technology; in fact, the differences between the two technologies are often subtle.

Nevertheless, we can draw a distinction between projects for recreating spaces in 3D and more up-to-date interactive solutions and applications designed for mobile devices that bring to light augmented reality, as what augmented reality does in these cases is add virtual information to a real scene (hence the "augmented").

Therefore, if we wished to distinguish 3D projects from those of augmented reality from a current perspective, we might say that examples of augmented reality include a bigger interactive component owing above all to the latest mobile technology and cameras it incorporates, where virtual reality and physical reality coexist, generating a joint three-dimensional object or space. Nevertheless, from the perspective of

technological development we are talking about 3D in both cases.

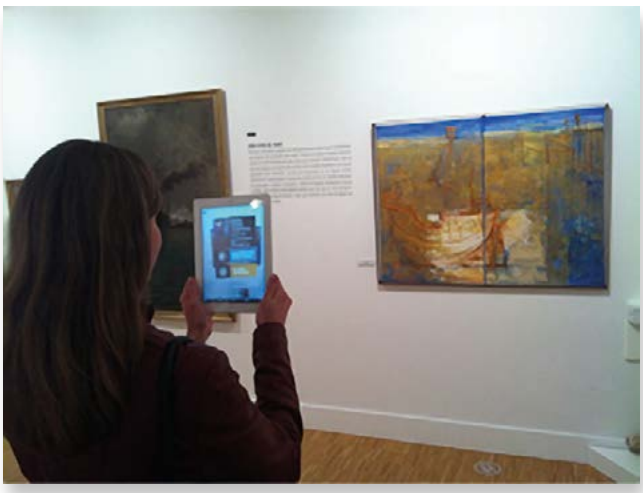
The fact is that augmented reality is developing in different areas and sectors and cultural organisations are not unaware of its potential. Such is its development capacity that there is a forum, the International Symposium on Mixed and Augmented Reality (ISMAR),[134] exclusively for discussing the many possibilities of its implementation.

As in the case of 3D technology, augmented reality is proving to be a very useful tool for research and education on heritage. For example, back in 2007, the abovementioned ISIS research group (Ingeniería de Sistemas Integrados[135]) of the department of Electronic Technology of the School of Telecommunications Engineers of Malaga University, began designing a map of Andalusia at the request of the **Andalusian tourist board**, so that users can interact. They began to incorporate facial recognition into the project to recognise movements intuitively, so that all users have to do is move their heads to interact with space.

A later example is the **Espacio Fundación Telefónica** with the ArsVirtual project,[136] which is very similar to what **Microsoft** did with CyArk, as examined above. The website shows the main monuments of Spain, Latin America and Morocco through virtual reality.

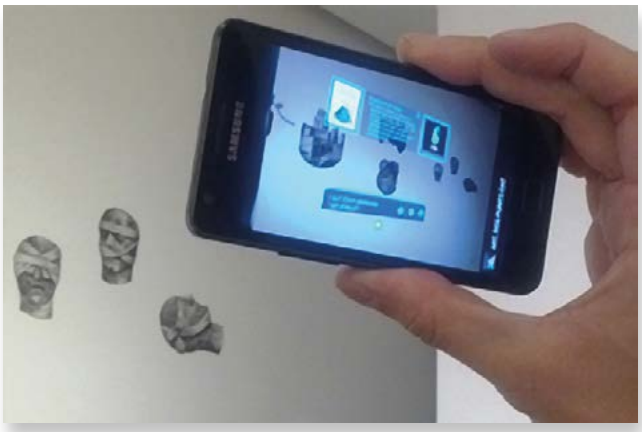
A similar project is *iTacitus*,[137] though it takes interactivity one step further. *iTacitus* is a European research project funded by the **Sixth Framework Programme for information society technologies**. The project began in September 2006 and ended in July 2009. *iTacitus* developed an interactive itinerary planning tool that used contextual filtering based on users' location, interests and history to ascertain what kind of augmented information to supply to potential visitors' mobile devices.

For more advanced features of what distinguishes augmented reality from virtual reality or 3D technology, we would have to examine more modern examples. For example, *Mar de Fons* (Ocean swell)[138] was an exhibition at **Ca l'Arenas**, the art centre of the **Museo de Mataró**, and one of the pioneering shows in Spain in allowing visitors to consult further information on the painting on display using any mobile device thanks to image recognition with augmented reality which, in this case, also linked up with Wikipedia articles. In addition to viewing the works and additional information, visitors could interact with the works by using their mobile telephones. The app made it possible for works to be directly recognised, combining virtual elements onto a real context.



Mar de fons exhibition

A year later, in 2013, the **Museu d'Art Contemporani de Barcelona** (MACBA) and **CaixaForum** took the use of augmented reality one step further when they set up a project that involved debating on similarities and differences between modernity and avant-garde: *Art, dos punts / Art, Two Points*.[139] The exhibition contrasted works and documents from the past with creations and works in more modern-day languages.



Exhibition *Art, dos punts*

The exhibition was based on an interactive perspective; for example, visitors having a photo taken at the entrance and another at the exit, answering questions or offering thoughts on the website and, also, using augmented reality technology through a mobile app created for the exhibition. Pieces and works could be viewed in both museums along with audios, videos, images, quotations and other kinds of content that provided another view of the works on show, all with an adaptive design so that they could be enjoyed from any mobile device.

More recently, the **Centro Cultural Galileo** presented the *Planeta Bellver* (Planet Bellver) exhibition that brought together for the first time a selection of the most significant self-portraits by the painter Fernando Bellver.

The exhibition featured a total of more than seventy pieces executed by the Madrid artist during his travels through different countries.[140] It incorporated elements of augmented reality that took visitors on a virtual tour of the settings all over the world which Bellver has visited and captured in his works.

A more educational and fun project has been created with the **Junta de Andalucía** through **IDEA agency**: *El Castillo Rojo*,[141] an audio guide that provides information on the history of the Alhambra interactively. The project, developed by **Granavisión**, is designed to arouse children's interest in the Alhambra in an attractive and dynamic manner through games, 3D illustrations and augmented reality.

In this case, augmented reality brings to life (virtual) King Boabdil, Queen Morayma, the soldier Yusuf and King Charles V in 3D; these characters guide the children throughout their tour of the Alhambra and its grounds, telling them about experiences, stories and legends from their own reality. What is more, at the end of the tour, at the Granavisión Welcome Visitor Centre by the Alhambra, users can have their photo taken together with the various characters, who pose for the shot.

A **British Museum** project similar to the 3D vision of Egypt discussed earlier, also in association with **Samsung**, features an app for interacting with the Greek works and culture in its rooms using augmented reality. In this case the

app, called A Gift for Athena,[142] allows children to take part in a learning game that involves searching for various pieces of history located in the museum, as if completing a challenge – matching outlines to classical statues, doing puzzles or solving riddles, etc. The museum hopes to be able to print the results and objects in 3D in the future.

This museum is an example of the use of technologies for an educational purpose. The activities organised in collaboration with the Samsung Digital Discovery Centre include workshops that are not just for children but also for families and teenagers. The idea is to familiarise citizens with the use of the latest technologies applied to culture, leisure and learning.

As a result of the effort and collaboration with Samsung, on 13 November 2014 the British Museum won the ME Award[143] for the best Augmented Reality Campaign.

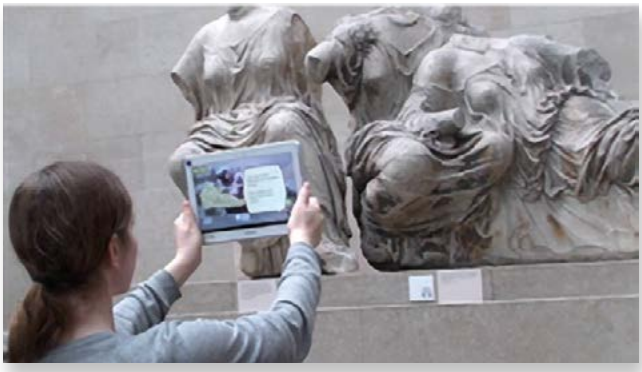


Image from the video A Gift for Athena: http://vimeo.com/95501915

Another interesting project, of the many that already exist outside the museum world, is the mobile application Geostoryteller,[144] which basically allows stories about actual places to be created through augmented reality and geolocation. The first app, called German Traces NYC (created in collaboration with the **Goethe-Institut** of New York), has been designed for students to explore German cultural heritage in New York City.

The application makes use of documents, photographs and multimedia stories to bring to life this particular aspect of the city's history. When a student arrives at an actual place, he or she can see historical photos in layers alongside current images or recreations that are visible through the telephone's camera, as well as videos on this site in particular.

Also in connection with storytelling, it is worth mentioning the *Chess*[145] project funded by the **European Union**. This initiative is devoted to interdisciplinary research for personalisation and adaptability, digital storytelling, methods of interaction and participation together with methods of digital narrative, focusing on new technologies. It deals above all with the fields of education and museum design.

The **Acropolis Museum in Athens** and the **Cité de l'Espace** (a science museum in Toulouse) are experimenting with this type of customised storytelling together with augmented reality in order to improve visitors' experience. All visitors have to do is download an app and fill in a profile; they are then guided around the museum where they discover, in a customised way, hidden layers of relevant information on exhibitions during visits.

They are also developing collective projects – i.e. for groups of people who share a particular

profile, which is compiled from their own description. *Chess* technology gathers all the data to make visiting museums' exhibitions a more customised experience tailed to the likes and habits of each visitor.

Chess project at the Acropolis Museum in Athens

We will now analyse a few museum apps that use 3D technologies and augmented reality in a creative and educational way that encourages interaction.

The **Cleveland Museum of Art's** *ArtLens* app[146] provides the institution with an ideal educational tool for engaging with its audiences. The many features of this app include different guided tours of the museum's premises and tailoring the route to our needs and expectations; it also points out particular works or content around us that we may find interesting. What is more, visitors with iPads can interact with *Gallery One* (the interactive installation we mentioned earlier in the section on "touchscreens"), storing their favourite works and creating their own gallery.

For this purpose, the app combines augmented reality technology and geolocation, resulting in an immersive experience.

But this application not only delivers a service to visitors; it also provides the institution with very interesting data on which work is the most viewed, which exhibition, and for how long. All this information is then used by professionals to provide a better response to visitors' needs.

The **Stedelijk Museum** in Amsterdam has started up ARtours, an application that makes it possible to enjoy different guided tours that provide a large amount of multimedia content: audios, videos, photos, texts and augmented reality experiences.

This Stedelijk Museum project began in 2010, when the museum building was temporarily closed for alterations. For the museum's team, the experiments with multimedia technology and augmented reality provide innovative ways of sharing content on the collection and of fostering a new means of communication and dialogue with the public. The project gave rise to a series of initiatives in collaboration with artists such as Jan Rothuizen, Sander Veenhof and Willem de Ridder, showing that augmented reality can be a very useful tool for communication and artistic creation.

ARtours consists of a total of six different tours that range from those that concentrate on the beginnings of the collections, its first exhibitions and the content that has made the museum a patron of the graphic arts, to the most interesting: Timo de Rijk's *Urban Design Tour* and Jan Rothuizen's tour *This is Not a Church*.

The tour designed by Timo de Rijk, who lectures in Design, Culture and Society at the Delft University of Technology and at Leiden University, takes visitors beyond the museum's walls out into the city of Amsterdam, allowing them to enjoy the design of urban furniture. The route goes from the central station to the museum's doors, and can be explored in both directions.

Jan Rothuizen is an artist known for his hand-drawn maps; in 2010 he created a tour using augmented reality, inspired by his childhood memories (instead of going to church on Sundays, Rothuizen's mother would take him to the museum) and his emotions after spending a night in the museum.[147]

This museum has also developed a novel app[148] that takes visitors on tours tailored to match their moods; these can be shared and used by other visitors.

The application offers tours tailored to moods such as sadness, fear, love and happiness and includes free headphones for enjoying them. Users thus discover works that are new to them and to which they have been led not by aesthetic or chronological concerns but by feelings or sensations. Young members of the museum's staff can help visitors create their own route after choosing a mood, and impressions can be shared in audio form with the next users of the app.

At the DLD conference in Munich in 2014, technical experts of the **Metaio** firm presented their augmented reality project in collaboration with the **Bavarian National Museum.**[149] The idea was to create a valuable cultural experience using this technology, but with a balance between physical and virtual content.

For this purpose they selected five pieces on show in the museum, adding virtual content. This content was designed to be viewed on the sides of the piece so that at no point would the visitor lose sight of the work itself. By adding 3D indicators and graphics with semi-transparent backgrounds, they hit on a simple and discreet way of viewing virtual content. To the chosen pieces – mostly sculptures – they added multimedia content such as 3D photographs, mapping, sketches of the works, audios and explanatory texts.

The Japanese artists Kei Shiratori, Takeshi Mukai and Younghyo Bak have developed an application that creates real-time virtual animations using very well-known artworks, through a 3D model and augmented reality. This application was launched at the exhibition in **ATTIC**, Sapporo, in 2012, where audiences were able to experience it first-hand. Several means of expression, such as paintings, illustrated novels, CDs and LPs come to life through the smartphone screen.

Since then several artists, in collaboration with *ARART*,[150] have produced works designed to be enjoyed on our electronic devices. This innovative app encourages participation and play with artworks in a surprising way.

In October 2014 the **V&A Museum** in London launched a game called *Strawberry Thief*.[151] It was devised by Sophia George, a videogame designer who enjoyed a residency at the museum from October 2013 to March 2014.

She carried out research on the museum's collection, finally taking her inspiration from the textile pieces by the well-known British designer and poet William Morris, located in the museum's galleries. The game encourages users' creativity, allowing them to learn more about the works by creating their own drawings, adding colour and interacting with them through an iPad screen. The magnificent graphics and content of the videogame are enhanced by the soundtrack created by Neil Cullen of the Royal Scottish National Orchestra (RSNO).

The **Museo de la Evolución Humana** (Burgos) is a national example of the skilful and educational incorporation of new technologies.

In 2014, it launched several experiments using various technologies such as AR, 3D and geolocation jointly through applications for smartphones or tablets. One of them is interactive postcards. In this case, a specific application was not needed to be able to enjoy the interactive content, as the Layar application makes this possible. Postcards are distributed to the people who attend the explanations given daily during the institution's exhibitions.

All visitors need to do is to scan the image of the *Feathered Neanderthal* featured in the exhibition *Cambio de Imagen. Una Nueva Visión de los Neandertales* (Change of image. A new vision of the Neanderthals) to be able to see the video in which Juan Luis Arsuaga, scientific director of the museum, explains the exhibition in detail. It also allows them to access another type of basic, useful information, such as buying tickets, and to access their social networks. This experiment stems from collaboration between the museum and the Asociación Cultural Ocupación Poética.

The MEH also provides a series of educational and technological activities requiring different touch terminals that can be found in the rooms of the museum. To develop them, the museum has collaborated with the firm **ArteHistoria Proyectos Digitales** with the support of the Ministry of Development of the regional government of Castile and León. Altogether there are eight activities, aimed at different age groups. For the youngest visitors two characters have been designed, a girl and a boy accompanied by a pet: a baby mammoth. The mammoth provides clues to how the game is going. If it looks bored, the user is not doing the activity properly; on the contrary, if it is playful and happy, this means that the user is doing well and gets to see a video related to the content of the game.

Also in 2014 – on this occasion in collaboration with **Teseo** and the University of Burgos and with the support of the **Ministry of Education, Culture and Sport** – an application for tablets has been developed which includes various options for enjoying the visit to the museum, combining interactivity, scientific and educational content and leisure. The tablets are available for hire from the museum's reception desk.

In 2014, the **Museo de América** in Madrid, which is organisationally responsible to the Ministry of Education, Culture and Sport, developed an immersive videogame in collaboration with the **UCM Museum I+D+C**, **Proyecto MOMU**, a systems engineering group of the **Universidad Javeriana in Cali**, **Medialab Prado** and **Bournemouth University** in the United Kingdom.

With the *Aventura en la Pirámide Chimú* (Adventure in the Chimú pyramid)[152] we can become archaeologists when we visit the museum's premises and explore the Chimú and Tlingit culture of Peru. The initiative combines technologies such as augmented reality, which will provide a complete immersive experience using a helmet that is a replica of Tlingit culture (from 2015), avatars that function using movement sensors and 3D, for which free software has been used.

Pensar con las manos (Think with your hands)[153] was an exhibition that opened at the **Sala Josep Renau at the Faculty of Fine Arts of the Universitat Politècnica de Valencia** in 2013.

In order to enhance the visit and provide information on pieces and makers, **Unit edición experimental interactiva**, a group made up of researchers from the Faculty of Fine Arts and the School of Computer Engineering of the Universitat Politècnica de Valencia, with the collaboration of the graphic communication company **La Imprenta CG**, developed an application for mobiles and tablets called Los Cuadernos.

The project was tested at this exhibition and later with the interactive book *Abierto todo el día*, allowing visitors and readers to find out about the creative universe of Pep Carrió and Isidro Ferrer. The application uses superb augmented reality, 2D and 3D animation resources, videos and other multimedia content.

In the day conferences on Aplicaciones para la Promoción del Patrimonio (Applications for promoting heritage) held in Girona from 1 to 3 October 2014, several pilot projects were presented that skilfully combine different technologies including 3D and augmented reality.

For the **Museu Arqueológico de Catalunya**, the **Fundación i2CAT**, a not-for-profit technological centre that promotes R&D&I activities in the field of information technologies and communication and the Internet of the future, in collaboration with the department of Architectural Graphic Expression of the UPC (Universitat Politècnica de Catalunya) and experts in Greco-Roman culture, has developed a pilot application called Empúries+,[154] based chiefly on augmented reality. This app offers an immersive experience by placing the user in a real time and movement 3D environment to be able to admire the Empúries as it was originally: the museum objects can be enjoyed in 3D in their original context or as 3D reconstructions geolocated in the site.

Another interesting pilot project was created for the ancient city of Jbeil (Byblos) in Lebanon and was developed by the **American University of Beirut** in collaboration with the city council. Despite being designated a World Heritage Site by UNESCO, this archaeological site is unappealing to visitors owing to the scant number of surviving remains. The application[155] combines 3D digitisation, modelling and reconstruction of heritage objects and elements and augmented reality, which can be viewed not only on smartphones but also on wearables such as Google Glass.

Crononautas (Time travellers)[156] is the new educational application presented by the **Museo Thyssen-Bornemisza** in 2014 in collaboration with the **Fundación BBVA**. The content

developed by the educational department offers users 48 different routes around the museum's premises in order to find the time machine that Enrique Gaspar imagined in 1887 and christened with the name *Anacronópete*.

The application is intended for children aged around ten years old, whom it converts into time travellers who live their own adventure, having to make decisions and complete challenges. The result of each choice provides them with access to various types of augmented reality content leading to greater knowledge of the works and their context, or allows them to progress in their adventure. The combination of augmented reality and the narrative force of the story are the two strengths of this application, which is designed for smartphones and tablets and available for iOS and Android, and can be used during both real and virtual visits.

The collaboration of **Sony Computer Entertainment España**, **ESNE** (Escuela Universitaria de Diseño, Innovación y Tecnología in Madrid), the **OZ Lane Games Collective** studio and the Museo Thyssen-Bornemisza has given rise to the videogame *Nubla*.[157] This videogame attests to this museum's commitment to using technology to develop educational projects that disseminate the institution's content in an entertaining, cross-cutting and integrating manner that is open to new audiences.

The videogame is inspired by the works in the Museo Thyssen-Bornemisza and proposes an adventure that begins in its rooms, where an imaginary character accompanies us on our challenges and missions in a fantasy world called Nubla. As well as a game, it is an interesting educational project that brings together art, technology and new forms of storytelling to produce a creative reinterpretation of the museum's works. Settings, people and mechanics are inspired by works and art styles, bringing the art world closer to users in an entertaining and playful manner.

Nubla became available for download in PS4, PS3 and PS Vita through the PlayStation Store in January 2015.

Lastly, one of the new apps recently launched by the Museo Thyssen-Bornemisza concerns the portrait of *Giovanna Tornabuoni*[158] by the Renaissance painter Ghirlandaio. The app allows visitors to learn about its history and artistic technique by providing X-ray, infrared and ultraviolet views of the work. It also features a number of animations (more than fifteen) that explain the details of the portrait's composition and symbols. Videos, images and factsheets complete the information provided by this app in an entertaining way, making it attractive to various types of audiences.

Some applications, despite sharing the same objectives, do not use AR or 3D but other technologies with similar results and are popular with users. The following paragraphs will mention a few significant cases.

A good example is Unique Visitors,[159] a social application in which users can create and share itineraries for visiting museums' collections. It is a joint and collaborative effort between the **Museu Nacional d'Art de Catalunya** (MNAC) and the **Fundación Joan Miró**. Created in Catalonia, it received awards at the Apps&Cul-

tura 2013 contest from the Institut de Cultura of Barcelona for the most innovative concept and the app most voted on by the public. It was also presented by Ana Luisa Basso at Museum Next 2014, with very good reviews.

Browsing with this application makes it possible to view itineraries created by other users or by experts. It provides additional information on each work in the form of texts or multimedia content.

This application is based on users' confidence in the recommendations of other users or friends. It might be said that it functions by "word of mouth", which is one of the most effective means of disseminating content and attracting new audiences. The fact that users can create their own itineraries significantly enriches the possibilities of the visit by providing a host of visions, concepts and subjects, encouraging more visits. With Unique Visitors the user ceases to be a passive recipient and begins to produce content, going from consumer to prosumer.

A company that is developing European-wide augmented reality applications generally focused on heritage, tourism and museums is **44 Screens.**[160] This French company based in several European countries, among them Spain, has developed applications for the **Mobile World Centre in Barcelona** and the **Museo de las Ciencias in Valencia**, putting the latest AR innovations at the service of culture.

4. Labs

Labs stem from the (not so new) currents of thought that propose rethinking museums as spaces for learning and community building, for combining this with the use of technologies, and for creating an open museum in which to experiment and build shared, expanded knowledge, providing the tools and fostering critical judgement.

Labs, or museum laboratories, are educational, experimental and technological spaces designed to make knowledge and equipment available for running programmes in the field of technology in connection with museum concerns. They are a meeting point for new technologies, innovation, culture and collaboration involving all the agents: artists, museum professionals, visitors, technical staff, scientists and so forth.

Labs are places for doing and experimenting where learning does not take place solely by transmitting concepts but is based chiefly on practice, reflection and building knowledge with critical judgement.

Special mention should be made of the Fab Labs. This concept was founded in 2000, when the **Center for Bits and Atoms** (CBA) of the **Massachusetts Institute of Technology** (MIT) received funding from the National Science Foundation (NSF) to acquire the tools to build "almost anything". Its actions and research were then focused on empowering society through the use of technology and its development.

Since then a worldwide network of Fab Labs has been set up; some are housed in museums such as the **Museum of Science and Industry** in Chicago or the **Museo Metropolitano** in Lima. In Spain we have the example of the **fabLAB Asturias**, which is based in the **LABoral Centro de Arte y Creación Industrial** and develops projects that are open to its community.

Labs thus provide museums with an excellent opportunity for research, establishing links with the community, technological development and the application of cultural innovation that generates shared knowledge from which everyone benefits.

This section will take a look at some significant examples of these spaces and the different ways of combining museum, technology, experimentation and knowledge.

In 2006, the **Louvre,** in collaboration with **Dai Nippon Printing Co. Ltd.** (DNP), decided to set in motion a new project devoted to research and dialogue with the public in order to open up new channels in the emotional relationship that is established between art and visitors: the DNP Museum Lab.[161] Various multimedia tools were used for this purpose to provide wider viewpoints from which to examine how people relate to artworks. The first phase of the project lasted three years.

The DNP Museum Lab is an experimental space in which the Louvre exhibits works and makes available to visitors resources for understanding and enjoying them, using different technological devices. Exhibitions are renewed every six months.

Research revolves around three themes:

- See: offering keys that allow visitors to develop their skills at viewing artworks.
- Understand: exploring the most appropriate methods of transmitting the content of works and helping visitors understand their full complexity.
- Experience: offering visitors the possibility of experiencing an artwork and making them autonomous so that they can apply the knowledge gained with any artwork.

The keyword in this project is *mediation*, taken to mean the full range of tools and resources that should be used to forge a strong link between the visitor and the artwork: exhibitions, catalogues, curatorial work, lectures, guided tours, workshops and interactive installations. The DNP Lab Museum invites visitors to experiment with the idea of an "artwork encounter", taking the time needed and using all the resources made available to them.

In view of the success of the project, the second phase was launched in 2010, extending the initiatives to different museum departments. It was due to be completed in 2014.

The aim of the **Media Lab of the MET** is to explore how technology affects the museum experience for staff and visitors, which museums, as major containers of cultural expressions, have the duty to be familiar with and develop.

Its work is focused on two areas: the digital tools that democratise the production of content, and the current tendency to collaborate and distribute shared knowledge.

For this purpose, it is interested in sharing information freely so that people become involved through the use of digital tools. The education department develops programmes for all age groups and types of audiences. The chief aim is to encourage discussion on the relationship between art and technology, and the media, by promoting do-it-yourself, sharing software with free licences and expecting audiences, both online and in situ, to take part and give their opinions.

An example of the activities carried out at the Media Lab is Laura Chen's intern project.[162] Using technological tools made available to her by the Lab, she devised a creative tour inspired by the museum's architecture, inventing a fantasy world in which artworks defy the laws of physics. She used images of pieces in the galleries of Greek and Roman art and images of the physical premises scanned in 3D to create a virtual-reality tour that can be enjoyed on the computer screen or by using the virtual reality Oculus Rift headset.

In July 2012 the **Science Museum in London**, in association with **Google**, launched the *Web Lab* project.[163] It was designed to allow anyone with an Internet connection to take part in the experiments at the museum. It consisted of five physical installations with which users could interact through the Internet: *Universal Orchestra, Data Tracer, Sketchbots, Teleporter and Lab Tag Explorer*.[164]

The project set out to experiment with the web technology used by Google and with the Science Museum's own content, and made it possible to collaborate with other users from anywhere in the world in real time. For example, with the *Universal Orchestra* installation, robotic instruments could be activated from the Web to compose music collectively.

This innovative initiative has brought major benefits for both the public and the institution: it has not only made the museum better known but allowed anyone anywhere in the world to take part and experiment thanks to new technologies; as a result, it has attracted new audiences to the museum as well as to science and technological innovation. The *Web Lab* is currently closed but the source code has been put online for people to create their own *Web Lab* based on this experiment.

The **New Museum** in New York has also joined in the trend for combining art and technology. Accordingly, in 2013 it set up its Incubator[165] as a laboratory for art, design and technology.

The Incubator is basically a coworking space designed to encourage collaboration and innovative ideas that stem from the combination of different disciplines by sharing resources and providing tools, as well as creating networks for exchanging knowledge. It also offers help and advice to museum professionals, programmes of lectures and courses and financial assistance through scholarships and grants from private organisations. The idea is to set up a creative community made up of artists, creators, technical experts, engineers and entrepreneurs, also bringing audiences into the picture.

The not-for-profit platform attests to the museum's commitment to technology and support for new talent. To set it up financial support

was received from New York City Council and the state, and private capital was put up by the Deutsche Bank.

The space allocated to the Incubator spans more than 11,000 square feet and includes 60 desks, areas for events and lectures, a kitchen, social areas, 3D printers, high-speed Internet and apartments for artists in residence.

Only up-and-coming professionals who work at the intersection of art, design and technology can be part of the project and can form groups of up to four people. A requisite is that they must be US citizens.

The *Tinkering Studio*[166] at **Exploratorium** in San Francisco is an educational laboratory aimed at younger visitors. It is a place for immersion, action and exploration of the institution's scientific concepts and content. In addition to transmitting and experimenting with science, it sets out to construct pieces and create projects, and it is visitors who select the tools and create things according to their aesthetic taste.

Visitors establish direct relationships with the artists or explore the artistic, scientific or educational phenomena they find the most interesting. The Exploratorium makes available to them a large number of materials, tools and technology for experimenting and creating.

The Tinkering Studio is made up of a multidisciplinary team of artists, scientists, technologists and cultural mediators. The research carried out on art, science and technology is designed to be displayed in the centre in the form of exhibits, or to be used as educational activities that can carry on being developed with the help of visitors.

Tinkering Studio

Its core philosophy is that knowledge is not only transmitted from teacher to pupil, but that the pupil also builds it actively through experimentation. This theory has been shaped along the following lines: a reflective approach to materials, tools and technologies; encouragement of collaboration, inspiration and creativity; fostering interaction between participants and with museum content in order to establish distributed knowledge.

It is possible to take part in this initiative through research residencies, workshops or fieldwork projects on art, science and technology. There is a particular emphasis on documentation and dissemination of theories and learning methods.

The **Lacma**[167] also has its own art + technology laboratory,[168] which has been running for approximately a year. It is inspired by its own artistic programme and by the initiative

launched back in 1967 and 1971, which was aimed at establishing networks of artists and technology companies in southern California. Its mission is to support artistic experimentation that uses emerging technology. The laboratory offers financial assistance and the use of resources and makes the museum's facilities available to artists for developing projects and prototypes.

In order to take part, it is necessary to submit a proposal which, if selected, can be developed for one year in different forms. Some of the themes of the proposals selected to date are the aerospace industry, astrophysics, augmented reality and robotics, all in relation to art. The results of the residencies are presented to the public in lectures, courses and exhibitions.

As well as receiving institutional funding, this project is supported by technology companies such as **Google**, **Accenture**, **Daqri** and **Space**.

ARTLAB+,[169] run by **Hirshhorn Museum**, received the Smithsonian's award for innovation and education in 2014. Its mission is to get teenagers between thirteen and nineteen to experiment and learn about art and technology. For this purpose they work directly with artists and educators, fostering the construction of their own creative community. The idea is to encourage critical thinking in education to turn young people into committed citizens, building their skills so that they lead the next generations of the most innovative sectors of society.

Teenagers who sign up at an *ARTLAB+*[170] are taught decision-making skills and choose their own activities and projects on video, photography, music, videogames or graphic design.

Taking the museum's own exhibitions as a point of departure, they are advised and guided by a team of artists and museum professionals. They can design their own events, join the museum's production teams or work on their own project in the workshops.

This initiative receives financial support from the **Keith Haring Foundation**, the **Goldberg Foundation** and the **Smithsonian's** programme of grants for young people.

As stated in the introduction, a few museums have set up Fab Labs on their premises, in accordance with the philosophy established by the **MIT** as part of the existing international network of these labs.

In the United Kingdom, the **Ironbridge Gorge Museum** opened its first Fab Lab[171] in 2013. This museum, located in the birthplace of the country's industrial revolution, is at the forefront of design and industrial production. Keeping this spirit alive, it has become the first museum in the United Kingdom to house a Fab Lab.

Its Fab Lab offers the community a state-of-the-art fabrication laboratory with digital production facilities.

It is equipped with 2D and 3D printers, a laser cutter, prototyping machines, an Internet connection and all kinds of advanced resources and materials. It has also set up a network for collaborating and exchanging knowledge with the global Fab Lab network to which it belongs. The museum professionals had the advice and support of the Fab Lab Manchester in setting up this space.

There are two ways of using it: by joining the Fab Lab Club, choosing the type of membership – with varying prices – that best suits your needs, or, if you need to use it for something specific, you can pay per session and for the materials. This ensures that the Fab Lab is open to the whole community and covers its running expenses.

Another museum that has shown an interest in the advantages of setting up a Fab Lab on its premises, in this case in Latin America, is the **Museo Metropolitano in Lima** (Peru). It is part of the international Fab Lab network[172] and is based on the principle of educational work underpinned by "do-it-yourself" as well as "sharing with others".

As requisites for using this space, users must undertake to use the machinery in a responsible manner so as not to cause harm to themselves or others; they must leave the premises clean for other users, ensure and help with maintenance and repairs of the equipment, and report possible incidents. The lab may be used for commercial purposes provided this does not enter into conflict with public use, and users undertake to share their success with the community to which they belong and which gave impetus to the development of their project.

In Spain, **LABoral Centro de Arte y Creación Industrial** is the only museum with a Fab Lab, the fabLAB Asturias.[173] It is used by various agents, such as artists in residence in the institution, the education department and anyone belonging to the community.

Equipped with all the machinery needed to produce user prototypes, this lab has made a name for itself through its educational use associated with the museum's programme. It is part of AuLAB, a project run by the education department and designed to provide the necessary tools for allowing pupils to learn through experimentation and the use of technology. Participants do not only learn the concepts but also to make decisions and build their own prototypes, and are encouraged to develop critical thought so that technology and art become part of their lives.

AuLAB uses the Fab Lab in its initiatives *Aprender a través del diseño* (Learn through design), where pupils fabricate a digitally designed artefact, and *Introducción a la programación* (Introduction to programming), where participants come into contact with the basic concepts and functioning of digital technology so that they become not only consumers but also learn about the processes.

In October 2013, Lucía Arias and Susanna Tesconi, who are responsible for the project, were invited to Stanford University (USA), which is hailed as one of the key institutions in educational research, to give a talk at the experts' forum FabLearn on the experience of the programme for preventing early school leaving carried out at LABoral. The project involved pupils from twelve Asturian schools during the 2012–13 school year, with encouraging results.

In addition, in June 2014 the managers of AuLAB presented their design and digital fabrication programme at FabLearn Europe. The event was organised jointly by the universities of Aarhus in Denmark, Stanford (USA) and Bremen (Germany).

The following examples illustrate the advantages of using Fab Labs for educational projects at museums.

The **Museo Interactivo de la Música in Malaga**,[174] designed from the outset as a smartmuseum that already provides visitors with wearable smart wristbands to customise their visit, has joined ENoLL (European Network of Living Labs). It is committed to involving and empowering visitors and citizens in all innovative processes carried out at the museum in the field of music.

The Mimma Lab is designed as a multipurpose and interdisciplinary space for projects and experiments that combine concepts such as new museum trends and those characteristic of a music museum. It is intended to become a meeting place for citizens and creators, artists, educators and entrepreneurs where new technologies, creation, culture and innovative ideas converge and are introduced to the public, and professionals and companies can test their prototypes in a real environment. Its core philosophy is co-creation and distributed knowledge.

A magnificent example of a laboratory in a cultural institution is CCCB LAB, a department of the **Centre de Cultura Contemporània in Barcelona** devoted to research, transformation and innovation in the field of culture. Its initiatives and proposals are put into practice at the CCCB. The team views innovation as the duty of institutions and it has played an essential role at the centre since it opened in 1994.

One of its areas of work studies digital technologies and the cultural changes they spur. Its projects and studies stem from the emergence of new methodologies of work, types and formats, production and distribution of knowledge.

It also creates and manages projects that create their own feedback and are progressively growing as a result of the research and activities it schedules. Some of them are *open science, expanded education, audiences* and *virtual environments*.

CCCB Lab

The centre's website features a blog[175] (discussed in a previous section) for publishing thoughts and reports on the various projects; the idea is to share what has been learned and to learn from others. It has set up a support network with which it shares achievements and experiences, which is not only virtual but also internal and cross-cutting. Creating a community of shared knowledge is one of the motivations that provides value and widens the dissemination and debate on content.

In Spain we have a few examples of public institutions designed as laboratories in themselves. The main example is **Medialab-Prado.**[176] Attached to the department of Arts, Sport and Tourism of Madrid City Council, it was started up in 2000.

This citizens' laboratory is designed to produce, explore and disseminate cultural projects derived from experimentation and collaborative learning based on digital culture. To implement them, it has created an open platform that allows citizens to be part of the processes, shaping or altering them, and has built an active network of users who support these collaborative projects, classifying the different user profiles by interests (artistic, scientific, technical) and level of knowledge of the matter.

Medialab-Prado structures its lines of work around different main themes: creative uses of electronics and programming, research and reflection on network culture, interdisciplinary discussion on the commons, and sound and audio-visual creation.

Medialab is a living space that offers courses, lectures, workshops, seminars and debates and furthermore provides a workplace where the cultural mediators who manage them report, advise and bring users together to implement collaborative work.

Medialab has established itself as a reference in the study and dissemination of cultural innovation by promoting access to knowledge through the use of free and copyleft licenses, and is fully integrated into its community. It also makes use of distributed knowledge networks.

Another example can be found in Castile and León, namely **LAVA** (Laboratorio para las Artes de Valladolid), a space organisationally responsible to the city's council and open to the artistic community. Its premises are available for projects and encourage creative freedom, as the space allows this. It consists of three rooms (White Room, Black Room and Room 221) and the Concha Velasco theatre. The professionals who manage LAVA provide technical assistance to the artists, helping them promote proposals and seek funding.

Its main objectives are to bring together the various agents of the most innovative contemporary creation and citizens, encouraging the latter to participate through various initiatives such as exhibitions, workshops, courses, concerts and plays. It is a centre designed to bring together ideas and resources and is based on the cross-cutting nature of the disciplines that make it up.

One of the projects it is currently developing in relation to new technologies is bit:LAV,[177] which began at the end of 2014. This laboratory is devoted to research and the creation of digital art and was devised as a virtual and physical platform for works in progress in the field of digital creation and art. It is a space for meeting, discussion, dissemination and experimentation.

The aim is to encourage and support artists and projects put together through open and interdisciplinary cooperation that result in interdisciplinary works which are shown at the LAVA itself and/or at the venues with which it is coordinated. The laboratory makes available to

users audio-visual materials such as projectors, microphones and video recorders; electronic material (Arduino plates, sensors and actuators); and other development tools.

Being part of the national and international social and cultural networks and having a positive impact on the exchange of knowledge and projects is another of LAVA's aims.

5. Crowdfunding, crowdsourcing and crowdcurating

This study shows that one of the priorities of today's museums is to involve the public in their activities and functioning, and for technology to greatly help achieve this participation. This change in mentality is leading us to shift away from a concept of the museum as sole source of knowledge to the idea of the museum as a place for collective discourse in which our voice matters and complements that of the institution.

Technology is a tool that provides an excellent vehicle for disseminating and exchanging content. Not only that of the museum but also that of users.

In the English-speaking world, it is common to find practices such as patronage in cultural institutions. People who can contribute to improving the functioning or enriching the holdings of these institutions take part by giving money or works and thus share with society part of the wealth they have accumulated and that belongs to them morally.

Based on this idea, many museums have set in motion crowdfunding or collective patronage campaigns to meet needs that surpass the limits of their budgets. The advantage of these initiatives is that not only do they allow the project to be carried forward by achieving sufficient funding, but also enhance its social value by involving the community in an institutional project. Anyone who gives a sum – which does not have to be large – can feel they have contributed to improving their heritage, that they are part of a community that embodies cultural values and that they collectively activate mechanisms for safeguarding these values. In addition to this, the institution rewards users' contributions with perks such as guided tours, free tickets, catalogues, etc.

But there is more to these collective initiatives stemming from new museum mentalities. In addition to crowdfunding projects, we also find crowdsourcing and crowdcurating. "Crowd"

projects, insofar as they are designed for a large community that surpasses the boundaries of the local, cannot be disassociated from technology. Web platforms used for this purpose ensure that projects reach anywhere in the world, democratising participation, extending the support network and increasing the chances of success exponentially. The platforms that are most widely used for crowdfunding are Indiegogo in the United States, Art Fund – which specialises in artistic micropatronage – in the United Kingdom, and Verkami and Goteo in Spain. Some museums prefer to set up specific sites or include these projects on their own websites, managing them directly. This is chiefly the case with crowdsourcing and crowdcurating.

Crowdsourcing refers to putting together projects to which the community contributes work and knowledge, but not money. Museums have used crowdsourcing to carry out research and information-gathering projects or simply to obtain new ideas that enhance a particular action.

We can take crowdcurating to mean initiatives in which museum institutions request collaboration from their network of users to "curate" content or exhibitions. Submitting a photograph, a theme or a concept that later materialises into an exhibition, either online or in the museum's institution, involves users, converts them into producers as well as consumers, broadens viewpoints and distributes tasks among the community.

Sometimes the terms crowdsourcing and crowdcurating are mixed up or used for the same purpose, as the difference in meaning is fairly subtle. Both normally involve asking the public to supply content. The difference lies in the use to which the content is put, as crowdcurating is usually much more specific: exhibitions.

These practices have become widespread over the past few years, with a large number of success stories, chiefly in the English-speaking countries. Examples in other countries are also increasing, revealing the major benefits of this new museum which makes its content global and whose community is no longer local but includes people from all over the world.

Museums listen to and wish to hear from their audiences and want them to take part in their running. What is more, users themselves are calling for involvement in cultural management with individual contributions that generate collective value.

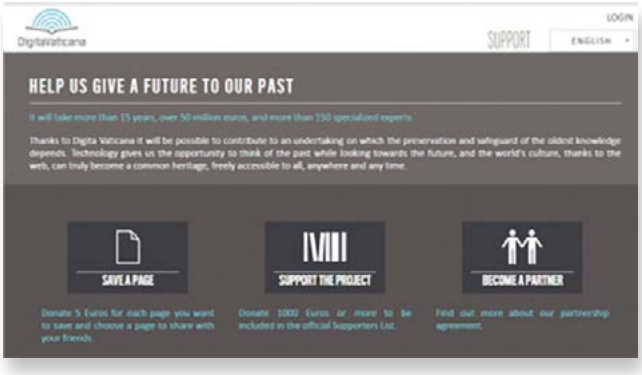
5.1.Crowdfunding

One of the best known calls for crowdfunding was made by the **Nikola Tesla Museum** in 2012, through the Indiegogo platform. The aim was to raise 850,000 dollars to buy the former laboratory of the scientist Nikola Tesla. The campaign was a huge success. It raised 1.4 million dollars, and received a matching grant from New York State, on condition that the museum remained there.

In the end enough money was raised to buy the laboratory, though it was insufficient to turn it into a museum with all the desired facilities. Therefore, in 2014[178] a new campaign was staged for funding the final part of the project.

The perks for donors were highly ingenious and could include their name, a poem or a work of art of their own. Donors who contributed 125 dollars or more could have their ideas engraved on the bricks from which the new premises will be built.

The value of the treasures in the care of the **Vatican** is undeniable. A crowdfunding campaign has been launched in conjunction with the project for the digitisation of documents discussed in point 1 and in order to be able to develop it. The process is very costly and long-term. More than 76,000 documents are in need of digitisation and they have planned to raise the required sum in fifteen years. The amount, 50 million euros, covers the cost of the work of 150 specialists. However, they have decided to create their own website[179] instead of using existing sites.



To complement the crowdfunding campaign, in June 2014 the Vatican staged a fundraising event that offered patrons a magnificent reward: an exclusive guided tour of the areas out of bounds to the general public (the library, including the place where manuscripts are stored, and the laboratories). The tour also featured dinner in the Sistine hall.

The **Bowes Museum**[180] in the United Kingdom is using the ArtFund platform to raise funds to restore a fifteenth-century Flemish altarpiece, revealing the hidden paintings. The aim is to incorporate the altarpiece into the exhibition of the magnificent carvings the museum owns from this period and to create a mechanism that opens and closes the altarpiece so that viewers can see the paintings on its outer panels.

The museum also wishes to allocate part of the money to research into how the altarpiece was originally displayed, its makers, who commissioned it and, finally, why in 1859 the founders of the collection, John and Josephine Bowes, regarded it as a significant piece in the collection they were then assembling. They achieved 100% funding with 196 patrons.

Another good example is the campaign launched by the **Museo Civico di Palazzo Madama** in 2013, which was presented as a success story at the Museum Next conference in 2014. The initiative was designed to raise funds to acquire 42 pieces of Meissen porcelain worth 80,000 euros. The campaign was a great success and raised 96,200 euros in just two months. In this case, the initiative was launched from the museum's own website.[181]

There are several keys to its success. One is the slogan, simple but effective, which involves the patrons in the undertaking, making them protagonists: "Acquire a piece of history with us". Another factor is that there was no need to give much money – contributions started from 2 euros and collaborators received a reward in accordance with their contributions. The best perks were given to those who donated the

most money: a free pass for the museum for a whole year. This succeeded in building visitor loyalty and making people feel closely linked to the project. Lastly, the initiative shows that the Palazzo has a genuine network of people who get involved and share interests. This is ultimately the key to the success of any project of this kind.

The crowdfunding campaign that has had the most repercussions since 2013 is undoubtedly the one launched by the **Louvre** for the restoration of the *Winged Victory of Samothrace* and the monumental staircase on which it is displayed. A specific website[182] was set up to raise the million euros needed to restore and consolidate this masterpiece of universal art. In order for the restorers to be able to perform their work, it was necessary to dismantle the statue, which consists of 23 marble blocks, and carry out analyses to determine the condition of the piece in great detail.

The aim of the slogan "we're all patrons" was to make everyone feel part of the project, however small their contribution. Naturally, given the nature of the institution and the work in question, the expected sum was raised and the restoration work was carried out. In the summer of 2014 the *Winged Victory of Samothrace* was placed on display again for the enjoyment of visitors and, of course, those who contributed to the crowdfunding.

The opening of the staircase is scheduled for the spring of 2015, once work to clean and restore the walls, floors and banisters is complete.

This is the fourth initiative undertaken by the museum to raise funds via the Internet. The first campaign was carried out in 2010 for the purchase of Lucas Cranach's painting *The Three Graces*. Since then, in view of the success achieved, the museum has launched an annual campaign for the purchase or restoration of works that enrich and add to the holdings of this internally famed institution.

To cover part of the cost of the exhibition *Yoga: The Art of Transformation*, the **Freer and Sackler Galleries** (the National Museums of Asian Art at the **Smithsonian Institution**) launched a crowdfunding campaign[183] that raised 170,000 dollars. This initiative was carried out in 2013 and a total of 600 donors collaborated.

The 34-day campaign entitled "Together We're One" began on 29 May and ended on 1 July, and aimed to raise 125,000 dollars. After surpassing the target and reaching the figure of 129,000, donations continued to be accepted until the autumn of 2014.

With the funds raised the museum was able to cover the exhibition expenses, including the shipping of more than 130 works from all over the world, and to stage activities such as lectures, concerts, workshops and yoga classes that took place in its rooms. The money also covered the production of a catalogue, with an online digital version that could be downloaded free of charge.

The donors were rewarded by having their names included on a digital plaque that was displayed in the museum's lobby during the run and can still be viewed online. They also received preview access to the digital catalogue.

Micropatronage has also made it possible to create a physical museum. The **Morbid Anatomy Museum**[184] is a new not-for-profit institution

spanning 4,200 square feet devoted to artefacts, histories and ideas on death and its cultural representations. It originates from a successful blog started up in 2007 by Joanna Ebenstein, an artist and historian with an interest in the bizarre.

Ebenstein and a few partners began to catalogue strange relics, old toys, medical curiosities and other uncommon articles of interest to morbid and pathological anatomy. After that they began to organise conferences and hold workshops, succeeding in building up a community of both followers and artists and collectors. Ebenstein started up a campaign through Kickstarter to raise the 60,000 dollars needed for a three-four building to house a small museum. It raised 76,013 dollars. It is an example of how it is possible to go from the Net to a physical space thanks to crowdfunding, as in the aforementioned case of the Nikola Tesla museum.

Other museums have followed suit, such as the **Amsterdam Museum**, which raised more than 51,349 euros to restore *The Arrival of Napoleon* executed by Matthieu van Bree in 1813;[185] and the **Ashmolean Museum** in Oxford, with the campaign to acquire the *Portrait of Mademoiselle Claus* by the Impressionist painter Edouard Manet, which raised 10.13 million euros thanks to the contributions of more than 1,000 people.[186]

In Spain we do not yet have many examples of the use of crowdfunding in museums, though a few institutions are venturing into this area, albeit timidly.

In 2013 the **Museu del Ferrocarril de Catalunya** (Catalonia railway museum) launched a crowdfunding campaign[187] on Verkami to restore the steam locomotive of Mataró, which had been in the workshops of the **Associació per a la Reconstrucció i Posta en Servei de Material Ferroviari Històric**, an association devoted to restoring historical trains, since 2012. The restoration paid for collectively was intended to enhance the value of a unique asset and involve the community in preserving a heritage that is part of collective identity.

To contribute to the restoration of the locomotive, the national railway operator RENFE made an initial contribution of 41,000 euros. The idea had been to raise the remaining 31,000 euros through the micropatronage campaign, but much to everyone's surprise 35,000 euros were raised due to the fact that the project was presented as the recovery of a heritage that belonged to everyone and which everyone had the duty to preserve and safeguard for future generations.

Similarly, in order to encourage people to take part, individuals, companies or organisations that contributed to this project were entitled to tax relief under the scheme provided for in Title II of Law 49/2002.

Contributions could range from 15 to 5,000 euros and the perks included free tickets to the museum, discounts on the AVE high-speed train and a special mention in the patrons section on the museum's website.

In 2013 Barcelona Council launched its first campaign of this kind[188] for the restoration of the frescos of the *Chapel of Saint Michael in the Monastery of Pedralves*. These paintings are

a world reference for studying and enjoying medieval painting, and preserving them in their full splendour was both a necessity and a duty. They are a unique in that they introduced to the Iberian Peninsula the new form of artistic representation devised by Giotto and his followers in Quattrocento Italy.

The idea of this action was to involve people in preserving a unique heritage that belongs to society – heritage of and for everyone. The call for donations, launched through Verkami, ended in May 2013, by which time 30,875 euros had been raised – 5,000 more than requested.

The contributions ranged from 20 to 2,000 euros, and a total of 224 donors collaborated. They all received perks such as guided visits to the chapel, limited edition prints and personalised invitations to the preview after the chapel was restored.

Another success story is the **Museu Nacional d'art de Catalunya**'s appeal for donations in 2013, for the acquisition of Mariano Fortuny's drawing *The Prayer* from a private collector. The initiative was launched by the Friends of the MNAC Foundation.[189] In this case, contrary to usual practice, it was not done through Verkami. This time the management set up a space on the museum's own website and raised the 45,000 euros required with the help of 241 patrons. The contributions ranged from 10 to 3,000 euros.

We also find success stories in more modest projects. The **Museo Evaristo Valle** in Gijón turned to crowdfunding to raise the money needed to publish the catalogue of the exhibition *El Greco en la Pintura de Evaristo Valle* (El Greco in the painting of Evaristo Valle) that opened in November 2014 as part of the events held all over Spain to commemorate the fourth centenary of the Cretan painter's death.

The 80-page catalogue, with a run of a thousand copies, cost 5,000 euros. The institution's budget was unable to cover this, and the platform La Tahona Cultural[190] was therefore used to launch the successful micropatronage campaign that raised 5,200 euros. Contributions ranged from 10 to 1,000 euros and donors were rewarded with free tickets and even with sets of catalogues.

5.2. Crowdcurating

One of the first examples of a crowdcurated exhibition was *Click!*[191] staged by the **Brooklyn Museum** in 2008.

Click! was a photography exhibition that invited the whole museum's audience (both the online community and the general public) to take part in the curatorial process. This exhibition was aimed at experimenting with the premise that a crowd can be just as wise at putting together and evaluating artistic content as a trained expert.

The process was divided into three parts. The first was an open appeal for people to submit photographs on the subject of *Changing Faces of Brooklyn* via the Internet, adding a small comment on the photograph. The second step was to set up an online public forum to select the pieces for the exhibition. The last step was the opening of the exhibition on 27 June 2008 at the museum.

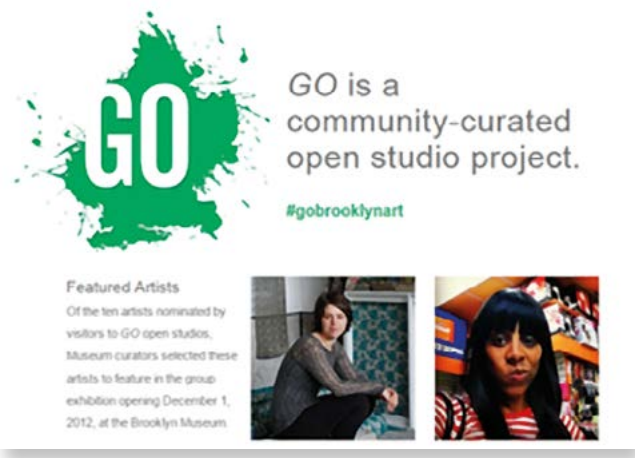
The success of this exhibition led the museum to undertake similar projects: *Split Second* in 2011 and *Go* in 2012–13.

Split Second[192] also took shape in three parts, with the virtual community in charge of choosing the content. In the first part participants were asked to choose a painting from the museum's collection devoted to India. The choice was made through a series of images generated at random while they were timed. In the following phase participants were asked to write a small text to accompany the image in their own words. Lastly, users evaluated a proposed work and accompanied it with an explanatory text; this phase was also timed.

The idea was to obtain information on how people react to various works of art depending on the information they receive about them.

The result of this experiment was an installation that opened at the museum on 13 June 2011. It featured a selection of paintings accompanied by the most controversial responses, in addition to the graphs compiled from assessing the information. The installation allowed visitors to view a few works that are rarely on display owing to their delicate state of conservation.

Finally, *Go* was a project curated by the community, designed to encourage exchange between artists, society and the museum, though in this case virtual tools were of lesser importance. For this purpose, 1,708 artists opened their studios to the public for two days in September 2012. Afterwards, the ten artists who received the most votes progressed to the next phase, in which the museum's curators made a second selection and a group exhibition was held at the museum featuring the work of the five remaining artists. It opened on 1 December 2012. The whole process was documented on a website[193] set up especially for the exhibition.



In 2014 the **Frye Museum** in Seattle staged a crowdcurating experiment for the online community: #SocialMedium.[194] For two weeks in August the museum put 232 paintings from its collection online through its different platforms and users could vote for them simply by clicking on "like". The works received a total of 17,601 votes from 4,468 users all over the world, and none of the paintings had no "likes". The work that received the most votes was Scheuerer's *Peacock* (1907), which soon went viral on Tumblr with 3,525 "likes".

The work with the second highest number of votes, 210, was Franz von Stuck's *Die Sunde*, which is hailed by experts as one of the most important works in the Frye's collection.

The exhibition occupied several rooms in the institution, and each chosen work was displayed

together with the number of votes and some of the comments generated in the web environment. The museum added an introductory text and technical information.

With this initiative the museum's experts found out more about their Internet community, involving it and establishing links and rapport. The exhibition remained open until 4 January 2015 with a specific microsite.

In the summer of 2010 the **Walker Art Center** in Minneapolis, invited its community to view the 183 images of the collection of works on paper in the digital gallery. A web survey was held in which users decided if the proposed works should be part of the exhibition entitled *50/50: Audience and Experts Curate the Paper Collection*.[195] The chief curator Darsie Alexander brought an expert touch to the exhibition with her selection.

In the end the show, which ran from December 2010 to July 2011, featured 200 works, and was an experiment that established links with the community and made it possible to explore the collection of works on paper under novel parameters.

One of the aims of the project was to reflect on this initiative. The idea was to consider what kind of dynamics are at play in relations between public and experts, and between curatorial practice and collective taste.

The **Gibbes Museum** in Charleston, South Carolina, staged the exhibition *People's Choice: A Community Curated Exhibition*[196] from 3 May to 15 September 2013. The aim was to involve members of the community by inviting them to vote on the proposed works via the museum's website. Users answered a number of questions such as: why is art important in your life? What is your first memory of art? Why are museums important to you? The answers to these questions allowed the institution to learn more about its audience and to disseminate its holdings in an original manner.

The public voted during March 2013. Participants could choose their favourite works from a virtual gallery of 140 pieces from the permanent collection, including paintings, sculptures and photographs. They were also invited to share a few words on the chosen pieces.

The museum put together an exhibition featuring the most voted for works, which remained open until 3 September that year.

In Spain, the **Museo del Traje** (Costume museum) launched an appeal for the crowdcurating of #YoExpongoMT[197] in 2014. The aim was to involve the museum's virtual community in the exhibition *España de moda* (Spain in fashion) organised as part of the initiatives to mark the museum's tenth anniversary.

This project was carried out in collaboration with the museum's curator Juan Gutiérrez through the social media. The museum asked users about outfits to be shown in the exhibition. For each thematic section – there were a total of six – people had to choose between three outfits. The winner was the one with the most votes. This was done by counting the number of "likes" on Facebook, and favourites and "retweets" on Twitter. It was a dynamic means

of involving the public in curatorial matters and of making the museum's holdings known to the virtual community.

These projects are a way of capturing audiences – not only virtual but also in the physical environment – who are attracted by initiatives of this kind that invite them to take part and visit the result on the museum's premises.

Pantalla Gobal[198] (Global screen) is a project begun in 2012 and inspired by the book with the same name by Gilles Lipovetsky and Jean Serroy. It proposes an exhibition format that combines virtual and physical. It is an open, developmental and shared project devised by the **CCCB of Barcelona**.

The virtual platform created for this project requires the involvement of the public in the different stages of the exhibition process: *incubation*, in which you can create your own work and submit it so that it becomes part of the exhibition, choosing a theme or screen (history screen, advertising screen, political screen, etc.); *exhibition*, which combines different venues and formats (Centro de las Artes in Monterrey, Mexico, Museo de San Telmo in San Sebastián, the CCCB in Barcelona, on the site or through a mobile application) and is based on the idea of integrating all the screens – cinema, mobile, television, computer, videogames and the Internet – into a single continuous screen measuring more than 150 metres; and finally, the *post-exhibition* phase, creating a collaborative archive devoted to reflecting on the changes the audio-visual medium is experiencing. This latter phase can also be considered that of crowdsourcing.

Another good example of collective curatorship in the digital environment is *La exposición expandida* (The expanded exhibition). This project was launched by four art bloggers – Montaña Hurtado, Nati Grund, Pilar Diaz and Agueda B. Esteban – in 2011. In it they brought together any art blog wishing to curate a "room" (blog entry) on the subject chosen for this first edition: the city. Each week a blog opened an exhibition room, and bloggers were given the liberty to submit their views on the proposed subject. The initiative had its own platform[199] on which all the shared information (organisers, curators, blogs) was organised and from which it was directed to the different rooms.

The *Exposición Expandida* was a complete success both in participation and in experts' critiques. It opened 28 rooms (i.e. 28 blogs with 28 curators) between 17 October 2011 and 22 April 2012.

5.3. Crowdsourcing

Back in 2007, **Tate** designed an exhibition in which it invited the public to take part for the first time. In this case, participation did not involve choosing themes or works. People were asked to submit their own photographs.

The show *How We Are: Photographing Britain*[200] brought together major works and major photographers to carry out a historical survey of photography in the United Kingdom, from its beginnings to the present day. It also drew on documentary photographs and family albums, postcards and medical photographs. It included different formats and gave prominence to people

who had been underestimated throughout history and were reinstated in this exhibition. The community was therefore invited to contribute by sharing photographs on the museum's Flickr profile.

How We Are: Photographing Britain can be considered one of the first examples of crowdsourcing through the digital environment in a museum.

Since then, collaborative initiatives based on the digital environment have multiplied owing to the social, communicative and research benefits they provide.

In 2014 the **National Archives of the United Kingdom**, in collaboration with the **Imperial War Museums** and the **Zooniverse** online project, launched an initiative that called for the involvement of the community. It consisted in digitising the diaries of British soldiers in the First World War and putting them online to be viewed freely. These diaries reveal tactics, feelings, opinions and a huge variety of documents such as maps, drawings, reports and personal writings, etc.

The initiative will be continued and is intended to extend to more than a million pages laden with useful information of great historic value, which is already being put online, classified by date, unit and operation. The idea is to progressively fine-tune this initial classification with the help of citizens. The initiative called *Be Part of History*[201] will use collective collaboration to expand on the significant data contained in these documents, which are classified bibliographically into different categories.

This project uses web technology to involve citizens in studying and labelling the diaries, offering them a useful and comfortable way of working on the documents digitally. It also provides an online tutorial, a forum for discussion and an expert who will answer users' queries virtually.

Since 2011 the **Amsterdam Museum** has developed several web experiments based on storytelling in which the community and the museum collect and tell stories jointly. One of them is *Geheugen Van Oost*,[202] which was well received and successful. Volunteers were enlisted to collect and submit stories to the website. The community grew rapidly, as did the number of volunteers willing to contribute.

The development of websites based on storytelling is a learning process. This became evident in the site designed for the *Buurtwinkels* exhibition. The community got off to a slow start and the museum had to make an effort to establish fluent communications to encourage participation and give users time to familiarise themselves with the site.

The museum attempted to encourage participation, however small, with a Facebook comment or "fav" on Twitter. This attitude is the key to the success of its online initiatives built on participation and co-creation.

What's on the menu[203] is a project launched in 2011 by **New York Public Library** in which the online community was urged to transcribe the information contained in its collection of menus, which features more than 45,000 examples from the nineteenth century to the present

day. This information, which is frequently consulted by enthusiasts, historians and novelists, was difficult to find unless it was catalogued according to standards that were impossible to meet merely with digitisation. The initiative has proved successful, with more than a million transcriptions made by users.

The first crowdsourcing-based exhibition held in Italy was staged by the **Museo del Tessuto**, in Prato, from December 2012 to May 2013. The show *Vintage – l'irresistibile fascino del vissuto*[204] revolved around the concept of vintage in fashion. For this purpose the community was asked to submit photographs of vintage articles through the website (whether a dress, a handbag or shoes), to be voted on by the community. Each photograph was uploaded to the site and shared on the social media. The more the votes, the bigger the space and significance given to the photograph in the actual exhibition, which was located in an area of the museum chosen for the purpose.

There were also prizes for taking part in this exhibition. Two winners were selected each month. In April, a month before the exhibition ended, the two overall winners were awarded prizes, consisting of a lomography camera. What is more, the photograph of the best vintage look received a voucher for 500 euros to be spent on products from the A.N.G.E.L.O. Vintage shop.

In 2010 the **Guggenheim Museum,** together with **YouTube** and **HP**, launched *YouTube Play, A Biennial of Creative Video* with the intention of discovering talents among the online global community, fostering creativity and promoting this artistic discipline.

All the museum's followers were called upon to create their own video and submit it. A jury consisting of prominent people from the world of art, design and cinema selected 25 videos from the more than 23,000 submitted, which were presented simultaneously on 21 October 2010 in New York, Berlin, Bilbao and Venice. The works were also uploaded to the channel created for this purpose on the YouTube platform,[205] becoming available to any viewer anywhere in the world.

The aim of this unprecedented project was to discover, support and share creative work that uses video as a means of expression, attesting to the Guggenheim's commitment to new technologies. Participants were encouraged to focus on originality and experimentation in media and concepts. Training was not required and anyone with an idea was welcome. To help with technical issues of sound, image and editing, a tutorial was made available to participants on YouTube Play.

The requirements were simple: original videos no more than two years old with a maximum length of ten minutes and only one per participant.

It was an undeniable success and attested to the benefits that collaboration and collective co-creation can bring the institution and the community, as it forged links and boosted the loyalty of the public.

Once again the **Guggenheim** – this time that of **Bilbao** – used crowdsourcing for one of its initiatives. The project used photographs taken by visitors, enthusiasts or citizens to create a large photograph collage in the institution's premises.

This collage, consisting of more than 600 photographs selected from among the more than 1,000 received and measuring 5 x 2.5 metros, was given the same title as the exhibition then running, *Una Visión Más Amplia / A Bigger Picture*[206] by the artist David Hockney. It was displayed on the Gran Vía in Bilbao from 20 July to 20 August 2012 and was intended to emulate Hockney's famous photography collages – which the artist calls joiners – that recreate certain settings by superimposing photographs taken from different perspectives.

The artists Alfredo Zubiaur and Mireya Martín selected and composed the installation after Hockney, based on photographs received through the social media – which therefore came from all over the world, as participation spread globally through these networks.

In return, on 23 July a draw was held before a notary for three Sony Reader Wi-Fi PRS-T1 eBooks among all the social network users who had submitted their photographs. The winners were announced through the website and through the museum's Facebook, Flickr and Twitter profiles.

An interesting project that is using collaborative and open tools is **Montenoso**[207] in Vigo. The main purpose is to facilitate the building and survival of common knowledge and it has set up an online platform with resources such as expanded mapping, a semantic wiki, a blog with posts on philosophy or politics, and artistic installations.

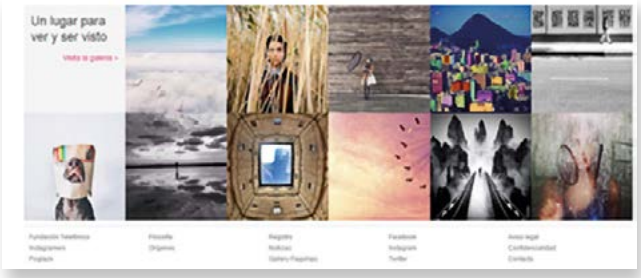
The latter, specifically the piece entitled *Xeografías do mancomún*, were part of the *Veraneantes* (Summer folk) exhibition held at the **MARCO**[208] in Vigo between October 2013 and June 2014. This group show focused on establishing a link with the art and the society of the area, enhancing appreciation of local culture. Montenoso's project sets out to materialise various stories built collectively following the visit to communities of neighbouring areas of Argozón, Ombre, Vilamateo-Torres, Guillade and Mouriscados in texts, games, audios and videos.

This Galician project received a Mention of Honour in the Digital Communities section of the prestigious Ars Prix Electronica 2014 (Austria) and was a finalist at the DocS.21 Documentary Digital Narrative Festival.

In April 2014 the **Fundación Teléfonica** opened the first Instagramers Gallery[209] in Europe. The various shows consist of photographs taken with smartphones and posted on the social network Instagram, and selected by a group of experts. The project was coordinated by Philippe González and Jorge Martínez, founders of the Instagramers Gallery, which opened its first premises in Miami in 2013.

The first show featured 500 photographs grouped into three thematic sections: the *Insta-*

gramers Gallery Team, 234 photographs on any theme and place, by more than 27 photographers from 18 countries; *Madrid seen by instagramers of Madrid*, more than 200 photographs intended as references to street and social art in the capital, updated monthly; and the *online version*, with more than 12,000 registered photographers and more than 11,000 followers.



Instagramers Gallery. Fundación Telefónica.

This young project is intended to promote non-professional photographers and mobile photography, which has become so common since the advent of smartphones. The idea is to forge closer links with the community of this social network, at the same time combining art and technology.

6. Artificial intelligence and robots

We have left until the end a technology that seems partly evident and partly the product of science fiction: the use of robots to perform various tasks in the museum environment. Although the most significant case is currently the project implemented at **Tate** in London, it is also an idea that museums have been working on for some time.

We have described it as evident because in other sectors there are already prototypes of holograms (airports, for example) in which virtual figures have replaced real people; and as science fiction because, without a doubt, we still identify the existence of robots with this literary and artistic genre, even though their presence is already a reality and it will not be long before they become common devices in everyday life with all kinds of functions.

Robots are currently being used in the museum sector chiefly as an educational resource, either as part of experiments and produced as prototypes in workshops for children and young people, or as a museum device. But these are not the best-known cases. As we have pointed out, the use of robots as exhibition guides is the most salient example.

The first case of the use of a robot to guide visits was the pilot projects run by the University of Bonn in 1997. The robot, called Rhino,[210,] was designed to guide visitors and was put into practice at the **Deutsches Museum** in Bonn. An advanced model, Minerva, was introduced the following year at the **National Museum of American History** of the Smithsonian Institution (Washington).

In both cases their function was to act as guides around the collections. The work was focused more on familiarising visitors with robots and demonstrating certain advances in robotics than on making use of their advantages in museums and cultural centres.

Prototype of Rhino at the Deutsches Musem in Bonn

Other **universities such as that of Saitama in Japan** have subsequently developed more intelligent models, as is only logical. In this case,[211] the robot can explain objects or paintings and is even capable of changing its behaviour in response to the reactions of a human being, as it can detect head movements and facial gestures through a laser sensor and a 360 degree camera.

In 2014 the **National Museum of Emerging Science and Innovation of Tokyo** (Miraikan) opened a permanent exhibition entitled *Android: What is Human?*[212] According to the museum, visitors to this exhibition can see the most advanced humanoid robots in the world, which also carry out museum management tasks.

This exhibition, a combination of science and technology, sets out to show that research into humanoid robots involves investigating humans, examining what emotion, awareness and thought are. Although the exhibition features three androids, Kodomoroid and Otonaroid attract visitors' attention the most, as they have a human appearance.

Kodomoroid has the appearance of a child and its main function is to read news – which it can do in various languages and with different voices. Otonaroid, which has the appearance of a young woman, plays the part of "robot science communicator", and interaction is therefore possible. Telenoid, the third robot, which does not have a humanoid appearance, was designed with the minimum requirements for humanlike communication.

All three robots are remote control operated, but Otonaroid and Telenoid also respond to visitors' instructions.

In September 2014 FROG[213] (Fun Robot Outdoor Guide) was presented at the **Real Alcázar in Seville** and is a very special guide. This robot is capable of explaining – for the time being in English, Dutch and Spanish – the history of the eleventh-century Sevillian palace using augmented reality technology. It is designed to act as a typical guide, interacting with the visitor, and as it is equipped with a facial recognition system it can tell if the visitor is bored and accordingly switch to a different tone or change subject.

FROG is the result of a European Union-funded international research project on social robotics in which the Escuela Politécnica Superior of the Universidad Pablo Olavide in Seville takes part. The Alcázar in Seville has collaborated with the project by making available a space for testing this device.

Kasparov and Chesster[214] are the two robots that joined the team of the **National Museum of Australia** in 2013. Their work consists in providing access to virtual tours that visitors can

direct from their computer. The visits with these robots allow users to control their visits to the exhibition rooms via the panoramic camera on each robot, zooming and panning to look where they like, at what they find most interesting; digital content is provided about the objects on display, images and videos available exclusively to virtual visitors; finally, the robot responds to questions on the exhibitions, all through the browser. They may therefore be considered antecedents to the project at Tate in 2014.

But the most revolutionary example is that of **Tate**, which made the news due to an event called *After Dark* consisting of an online guided night visit through its rooms conducted by a robot.[215]

For five nights people from all over the world could follow the online tour of the museum thanks to four robots equipped with lights, cameras and sensors designed to move through the rooms in the dark. A few lucky virtual visitors even had the opportunity to control the movements of the robots.

Night view with robots at Tate

The different uses that can be given to these machines in the museum environment include the example of Pablito,[216] the robot used by **MNCARS** in the restoration of its paintings.

Its purpose is to take photographs that help experts analyse the pieces to be restored, providing high-quality information. It is equipped with infrared and ultraviolet devices to capture images that show possible flaws, cracks, repainting or losses of paint, while remaining at a safe distance so as not to harm the work.

In addition, today there are hundreds of museums, mostly scientific, that use robots with various specific uses in their educational workshops. They are very useful for offering schoolchildren and young people technical and scientific knowledge based on experience and experimentation. The visitors learn about their functioning, programming and can even make their own prototypes.

Some of the institutions that use these devices for educational purposes are **LABoral Centro de Arte y Creación Industrial**, which holds workshops on drones; the **Ciudad de las Artes y las Ciencias,** which has held several workshops entitled *Desafío Robot* (Robot challenge); **London's Science Museum**, with its robot Safari, and the **Seattle Museum of Flight**, through its *Robot Garage* programme.

7. Conclusions of the study

Today's museums are not unfamiliar with technological advances and after several years of feeling mostly ill at ease or shy about taking on challenges to introduce technologies of this kind, today we scarcely find any institutions that have not incorporated changes in web technology, applications and interactive devices that offer greater immersion or enjoyment during the actual visit.

Admittedly, some of these initiatives need a large budget and are not feasible for many institutions. It is therefore very necessary to establish collaboration with technology companies and organisations from other fields to develop collaborative projects that provide different kinds of benefits in line with the aims of all the parties involved. In addition, funding can also be achieved through micropatronage platforms, promoting loyalty and establishing links between the museum and its audiences. This accentuates the social and common value of the initiatives.

As we have seen throughout this study, there are plenty of options, though this does not mean that each museum should embrace them all. It is necessary to carry out a prior study of our needs, possibilities and responsibilities and those of our community and resources in order to ensure the success of our technological initiatives, just as it is for any of the projects we undertake.

The novelty of these actions and initiatives makes them mostly a field in which much remains to be learned and explored. Therefore we must not be afraid of making mistakes – on the contrary, we must be clear when proposals fail to achieve the desired results, learn from the mistake, draw conclusions and share them humbly. In so doing we will pave the way for other museums and establish links based on experimentation and knowledge. Creating a community not only with the public but also between different institutions with similar objectives is a necessary step towards being part

of a sector that is increasingly interconnected and participatory.

In today's global world, collaboration, collective intelligence, everyone's involvement as interconnected citizens capable of contributing and consuming, providing value, selecting and managing information and knowledge is the major change of paradigm that is spurred by technology and must of course also be embraced by museums and similar institutions.

Nowadays each of us has a voice that is listened to; we all have the chance to be part of actions focused on our heritage, be it scientific, historical or artistic, as museums manage the common identity. Technology offers excellent possibilities for integrating the global community and for disseminating and co-creating knowledge and content. The examples we have examined highlight this reality.

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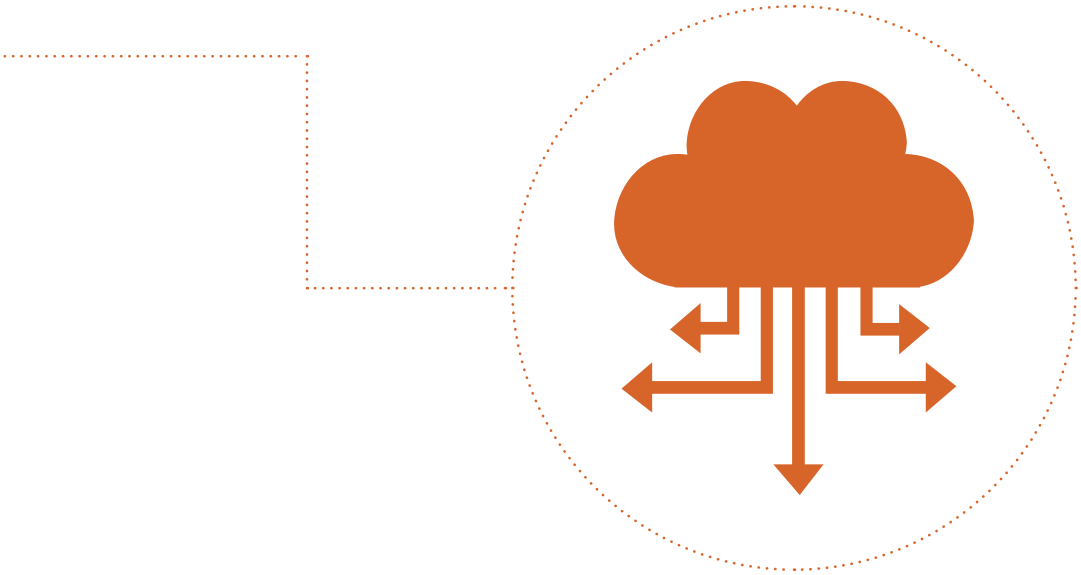

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ISBN: 978-84-15272-66-3
Depósito Legal: M-6923-2015

Acknowledgements

We would like to thank all the people and companies who volunteered to participate in this study by sending descriptions of their good digital practice in the museum sector in response to the invitation to do so made by AC/E through its Web site www.accioncultural.es from September to December 2014.

We would also like to thank all the organisations and people whose experiences are mentioned as examples of digital practice in the various sections of this study.

We would also welcome your comments and observations about this publication which you can send to raquel.mesa@accioncultural.es