BIG DATA : BIG CULTURE

THE GROWING POWER OF THE DATA AND ITS OUTLOOK FOR THE ECONOMY OF CULTURE
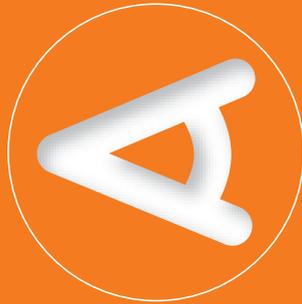
L'ATELIER
BNP PARIBAS GROUP

FORUM 2013
D'AVIGNON

INTRODUCTION

L'ATELIER IS A COMPANY SPECIALIZED IN TRACKING INNOVATION SINCE 1978

L'Atelier has an acknowledged expertise and an extended network within its international presence in Paris, San Francisco and Shanghai.

L'Atelier provides its set of connections, know-how in innovation, studies, consulting services, to innovative companies within different services: custom-built expertise, surveys, Business Tech tours...

A KEY PROVIDER OF MASS-MEDIA IN INNOVATION

L'Atelier communicates some of the key trends it founds through its communication channels : its website, www.atelier.net, and its weekly broadcast on BFM radio « l'Atelier numerique » (one of the most famous radio stations specialized in business news).

Among its various services, L'Atelier is tracking new technologies and their applications. In this way, the events of L'Atelier (workshops Tremplins and Themas / Tribunes conferences) are great opportunities to discover the latest innovations and to network with key players in IT.

OUR VARIOUS SERVICES

Tracking I Following Innovation
Professional newsletters, identification of innovative services, studies, benchmarking, feedback on latest IT Tradeshows...

Discovering I Tech tours
Organization of business Trips in the USA (San Francisco, Boston, New York...), in Asia (Shanghai, Beijing, Honk Kong, Tokyo, Osaka, Seoul...), in Europe, Middle East, Africa : for your own company or with different companies.

Understanding I Business studies
Market studies, surveys about innovation, benchmarking, business model analyses...

Moving I Consulting services
Strategies, Business Development, monitoring of IT projects, Financing, conferences, trainings.

ABOUT THE FORUM D'AVIGNON

The Forum d'Avignon is a think tank dedicated to culture, created in 2008, after the ratification of the UNESCO Convention on cultural diversity. From the outset, it aims to deepen and enhance the linkages between culture and economy, but also to reinforce their role in promoting social cohesion and attractiveness of regions. Its mission is to produce and disseminate innovative and pragmatic proposals, both nationally and internationally, from themes proposed by its Advisory board:
– financing and economic models;
– regional culture and attractiveness of the territories;
– culture and digital issues;
– culture and innovation.

A think tank and an international meeting for culture

The Forum d'Avignon holds a series of debates, working committees and panel discussions throughout the year. To its credit, a heritage of 25 exclusive studies developed by the think tank and various international consulting firms, Acts published by Gallimard, and constant mobilization on its website www.forum-avignon.org, a global network of artists, entrepreneurs, representatives of the creative and cultural industries, students from international universities, and more than twenty-five public and private partners. Its contribution is intended to stimulate public debate on topics or prospective societal issues, relayed in national and international forums.

The Forum d'Avignon's ideas and proposals are echoed during international meetings, resolutely international and cross-sectoral sectors which are support:
– at Essen (with the Forum Avignon-Ruhr, held on 27-28 June 2013),
– at Avignon (from 21 to 23 November 2013),
– and at Bilbao (with the Forum d'Avignon Bilbao, to be held on 5, 6 and 7 March 2014 as part of the Catalyse project, supported by the European Union Culture Programme).

Through the 2013-2015 editions, the Forum d'Avignon aims to contribute to the integration of culture into the heart of the politics, especially European. With strong proposals to influence the public debate around the 2014 European elections and join the international agendas (UN 2015, EU 2020 EU, WTO), so that culture is placed at the heart of European citizens's debates and ambitions.

Overview of the study
The growing power of Data and its impact on the economy of Culture

Data is **digitized information** that can be thought of, in general terms, as **information that is processed by computers**. In this document, **Data** represents this vast array of information as a whole, and by extension the class to which it belongs[1].

It includes both "raw" data, such as a web page, a photo, a video or a digitized song, and "refined" data, such as a matrix of numbers representing the links[2] between the profiles of members of a social network. The refined data has the potential to enrich the corpus of raw data; the growth of the whole is therefore *a priori* unlimited.

Because this Data is increasingly abundant, shared and underlined, it contains a hidden part of the meaning and the value of our industrial activities, just waiting to be discovered. Discovering it is the mission of the *Big Data* industry.

Big Data: changes in scale and paradigm shifts

For more than twenty years, the Internet has been at the root of paradigm shifts and changes of scale that have transformed the way that information, and especially information related to culture, is made available to the general public. "Access for everyone, to everything, in every form, all the time" has been one of the underlying paradigms of the Internet since the 1990s.

This promise, made by the most ambitious of the Internet pioneers to an audience that was, at the time, far from representative of "everyone" has led to changes of scale and paradigm shifts that are at the core of the *Big Data* industry, particularly the following underlying paradigm.

The "brute force" of information technology systems significantly enhances the effectiveness of human efforts to analyse information and to make the necessary decisions for the succesful provision of the most popular Internet services. This principle is illustrated symbolically by the way in which Google supplanted Yahoo! between the late 1990s and early 2000s.

In 2013, twenty years after the first attempts to automatically add value to all of the content published on the Web, **a handful of companies have been able to make use of the changes in scale and the paradigm shifts arising from Data proliferation** to create Internet services with global coverage, serving ecosystems of more than 500 million users[4].

The extraordinary success of these "Digital dragons" and their growing economic influence on culture-oriented industries is currently **provoking** three types of reactions. Firstly, the **fear of dominant positions**. Secondly, the **prospect of new growth opportunities** for companies that are inspired by their success. Finally, in our increasingly "digitized" economy, the **vision of a possible paradigm shift over time, moving progressively towards Data-driven management.**

In this sense, the *Big Data* phenomenon can currently be understood as **the growing power of Data in the economy of culture.**

1- These two terms, *data* and Data, are used as synonyms in the pages that follow
2- A numeric matrix (or table) makes it possible to represent data digitally using a graph, which is itself a mathematical modelling of links that may exist between digital data, either explicitly, for hyperlinks between web documents, or implicitly, theoretically or hypothetically, for correlations, analogies or semantic distances detected by quantitative analysis algorithms (statistics) or pattern recognition algorithms (artificial intelligence)
3- Data is inter-linked by explicit relationships (hypertext links) or hidden relationships (statistical correlations)
4- As of end-2012, there were more than one billion users each for Google and Facebook, more than 900 million for Microsoft, more than 700 million each for Yahoo! and Tencent QQ, more than 600 million each for Apple, Baidu and Amazon...

An emerging market, but one that is growing rapidly. An industry that is moving towards creating value from data

The global market for *Big Data* was estimated at **6.3 billion dollars in 2012**[5]. This is still a young market, but one with very strong growth, with revenues growing by an average of 40% per year, and which could reach 50 billion dollars by 2018[6].

Its influence on other business sectors is partly proportional to its size. The influence of *Big Data* for a sector such as the **recorded music industry** will probably be more visible **in five years, when the order of comparison between the sizes these two markets will be reversed**[7].

In 2012, between 2 and 5% of large and medium-sized companies worldwide had probably already initiated their first experiments with *Big Data*, compared to 17% and 30% in sample groups of very large companies and 90% for the top 500 U.S. companies. However, it is likely that there were only a few dozen truly large-scale *Big Data* projects worldwide in 2012[8].

Owning a *Big Data* infrastructure is truly vital today only for a very small number of companies worldwide. However, in the wake of the first wave of innovations designed to create the infrastructure to support the massive digitization of information, the **industry is now focusing on developing applications to derive value from *Data***. If these innovative efforts continue to be strongly supported by U.S. risk capital[9], the business revenues of certain companies will begin to take the lead in terms of growth and will drive a shift in investment towards software solutions for organisations of all sizes.

In 2013, the public sector, telecoms, the entertainment industries and the media are among the key players adopting the use of *Big Data*[10]. In the coming years, we should see a proliferation of "mixed" initiatives in the form of joint projects between these players, firstly to take advantage of the mobile infrastructures that are now probably the most natural way to transpose Internet behaviours to "physical" behaviours, and secondly to act as a counterweight, collectively, to the pressure being exerted on their sectors by the digital giants who are attempting to dominate their markets.

The risks of dominant positions

The success and influence of digital leaders in the economy of culture is a strong and lasting trend. **A handful of "dragons" already hold a recognised dominant position**. The automatic processing of vast quantities of digitized information has enabled them to change a number of rules of the game for the economy in general for their own benefit, particularly with respect to the economy of culture.

For example, the model developed by **Apple** has imposed a new *de facto* standard that defines the **new rules of the game for the advertising, marketing, distribution or dissemination, sale and "consumption" of online music**, on a global scale.

5- Source: *Transparency Market Research - «Big Data Market - Global Scenario, Trends, Industry Analysis, Size, Share and Forecast 2012 – 2018"*

6- The global market for *Big Data* was estimated at 100 million dollars in 2009. 2009 estimate and 2018 forecast: Deloitte

7- Revenues of the recorded music industry in 2012: 16.5 billion dollars, 34% of which is generated by the digital segment of the industry. Source: IFPI

8- Sources for the figures in this paragraph: Talend, Gartner Group and Deloitte

9- Between 2008 and 2012, U.S. venture capital invested more than 5 billion dollars in Big Data start-ups through more than 500 funding rounds (source: Dow Jones VentureSource). Between 2011 and 2012, these investments totalled 1.39 billion dollars (source: CB Insight / Orrick)

10- The *Early Followers*, compared to the digital pioneers who showed the way

More generally, **Google** holds a dominant position with regards to capturing the audience of Internet users looking for information on the web, and **Facebook** holds a dominant position in terms of capturing the audience of Internet users who want to communicate with their social network via the Web. **These two players**, with more than one billion users each, and who between them serve nearly 50% of the Internet audience, **have the opportunity not only to define the rules of the game for advertising, but also to change the rules of the game *ad libitum*.**

For example, the *Knowledge Graph* service, launched by Google in 2012, aims to answer questions from users directly, particularly questions of a cultural nature[11]. This is a paradigm shift that breaks the historical symbiosis between search engines and Internet content providers, as Google now no longer systematically drives users to websites, but may keep them "captive" on its own results page by providing answers to their questions directly. **The disruptive nature of the Internet no longer applies only to the non-digital economy.** Its unique position gives Google the ability to destabilize the business models of pure play Internet companies as well.

Big Data infrastructures give digital leaders the capacity to measure the behaviours and preferences of their users, collecting their "**votes**"[12] , which they ultimately use to legitimize the rules of the game that are being imposed, or that they themselves are imposing. Consequently[13], **the dominant**

players tend to mutually adopt the rules of the game that are imposed by the other players, as these rules appear to correspond to consumers' "preferences".
For example, Facebook recently launched a new advertising service in which it displays the names and pictures of users without asking for their permission in advance[14]. Having noted that Facebook users accepted the service, Google decided to adopt this logic as well, and it now operates an equivalent mechanism on its social network Google+. **Google and Facebook thus help each other to strengthen their respective positions compared to all other players**.

Finally, with its Android system, **Google determines the operating rules of the game for 57% of smartphones in use worldwide** (80% of smartphones sold in 2012)[15]. For now, Google's position in online searching and smartphones is going from strength to strength, and Facebook is still the fastest growing social network after Twitter[16].

The data infrastructures deployed by the Internet service giants represent a financial investment and an acquisition of skills that is out of reach for most companies. For players in the cultural arena, not only will it be impossible to catch up with these pioneers in the short to medium term, but the gap is now widening; **all culture-related industries must therefore prepare, in the coming years, to become the customers of these dragons or, for some companies, their followers** if they intend to carve out a position for themselves and to take advantage of the changes that will lead to the increasing use of Data in their operations.

11- The first questions that Google Knowledge Graph made it possible to answer directly were questions related to places, personalities, works of art, etc.
12- Symbolically, each click can be thought of as a vote (for a page, a document, or an advertisement). This "bold" vision can begin to make sense when it becomes possible to analyse a user's entire digital journey (all of the clicks and actions that take place online, on his or her mobile, via connected objects, etc.)
13- This approach, known as "test-and-learn", is presented by the digital leaders as a form of "democracy". However, it could also be seen as an "irresistible" marketing tool to encourage consumers to adopt the rules of the game en masse where they are unaware of the overall implications
14- The rule of the game adopted by Facebook is the opt-out (the user must state that he or she does not want their personal information used in Facebook ads), and not the opt-in, according to which Facebook must first ask users for their permission to use their public data in its advertising
15- Source: ABI Research, Q1 2013 and IDC, August 2013
16- Source: GlobalWebIndex, Q4 2012

2013: the new Data paradigms

During the first decade of the 21st century, **the most dramatic changes in scale** for the media and culture were related on the one hand to the **mobile Internet** and on the other to the **social web**[17]. For these two recent trends in the digital revolution, the number of users and the volumes of data used have grown exponentially, triggering **new paradigm shifts in the advertising, marketing, distribution, sale and "consumption" of cultural goods and services**. On the most popular online platforms, at every stage in the value chain, the **unity of time and space** and a **mass customisation of services** have been imposed. These have now become the *de facto* **standards for the consumption of music and videos on the Internet**.

Future paradigm shifts that will need to be taken into account in the coming years will be related to the **movement towards acceleration and generalisation and to the Big Data phenomenon.** This may be expressed, for example, by the fact that Internet **data** is becoming **more and more dynamic**[18], or by the fact that **in every industry, digitization is creating new opportunities** to link together information that was not previously connected (early **digital convergence between cultural services and services related to town planning, health, the environment, transportation, etc**).

These new paradigm shifts will drive their own **future changes of scale**, related to, for example, the **exponential growth in the number of connected objects** that will make it possible to change the **variety and frequency of information** taken into account to customise services. A person's geographic location, the local time, the weather, their pulse, their blood pressure and more can be collected continuously and in real time by connected objects to create a real-time service following the information about the environment, health and state of mind of its users...

Short and medium term opportunities: from *Data-Marketing* to *Data-Driven Management*[19]

For the economy of culture, short term opportunities for using Data are primarily related to Marketing. **Netflix**, which initiated a new cycle of **reinventing the video rental business based on Data** in 2006, and **Pandora**, which has been **automating radio creation and programming using Data** since 2005, illustrate that *Big Data* paradigms began to influence the economy of culture several years ago.

But these initiatives are not yet sufficiently advanced, nor sufficiently economically successful, to deduce that their processes will necessarily become the future standards in their respective sectors.

By contrast, in the video game industry, the way that **Zynga**[20] uses Data to **intimately link game design and business models**[21] can be thought of as an **emerging standard**, as the traditional players in the sector, such as Electronic Arts[22], have radically changed their development strategy based on this concept.

17- Essentially the social networks
18- Information is dynamic in the sense that its value is always calculated ¨on-demand¨, like a Twitter feed, or in the sense that the information is ephemeral, such as streaming audio or video
19- Data-Driven Management
20- Zynga is the global leader in connected gaming (see Farmville on Facebook, for example)
21- Business models
22- EA: Publisher of the video games Battlefield and FIFA 2012, whose model is transitioning from selling licences (a traditional business now in decline) to selling online services (a business currently in a growth phase)

The transformations induced by the **industrial use of Data** in developing **EA**'s plans probably affect **all of its processes**. For departments such as Communications, Marketing and Quality, R&D, Innovation and Finance, measurement and analysis of operational data have a significant influence on strategic decision-making. This is probably one of the most successful and ambitious examples of data-driven management in a company where Data was not a part of the company's original DNA.

These examples, of which there are currently only a small but rapidly increasing number, show that the industrial use of data, which was still a weak signal just a few years ago, is being replicated on a global scale, including in culture-specific and culture-related business sectors.

The long-term success of these initiatives is not necessarily guaranteed. In the case of EA, for example, the current trend is to gradually replace its traditional market, which was based on the sale of gaming licenses, with the new connected gaming market. While EA's total revenues are falling from one year to the next, its digital revenues are growing rapidly and should, if the trend proves successful in the longer term, leave the company well positioned for future growth through its online gaming platforms.

Big Data, Big Culture? Can Data catalyse the economic growth of Culture?

The example of the connected gaming industry does not mean that all players in the culture sector must invest in a *Big Data* infrastructure and drastically revise their growth model in the short or medium term.

Players in this market who do not have special technical skills can launch their initial experiments via partners or technology providers such as *cloud computing* service operators, mobile operators and, in general, with a range of companies, from digital start-ups to IT giants, which now offer *Big Data* services addressing all types of companies.

For industries in cultural sectors, linking with technology partners will not be enough in the long term unless it is accompanied by synergies with other partners in the cultural or connected ecosystems. Joining forces with sectors such as tourism and with public players in charge of regional development seems to us to be appropriate in the short term and necessary in the medium term in order to launch initiatives based on pooling Data, know-how and financial resources, the aim of which would be, at the very least, not to give the Data giants a free hand in defining the future rules of the game for the digitized cultural economy.

Drawing on related sectors, such as Tourism

There is a tenuous link between tourism and regional attractiveness, and by transitivity between tourism and culture. In France for example, cultural sites represent a large majority of the most attractive sites for tourists. Tourism is one of the sectors in which it is already possible to find practical initiatives for using Data to drive economic development.

In France for example, in late 2011, the tourism development agency, ***Atout France*, in collaboration with the start-up MFG Labs, conducted an experiment to estimate the tourist destinations that were most popular with foreign tourists, based on photo sharing on social networks**. The aim was to target the marketing of French tourism by segments of foreign tourists.

In the summer of 2012, the **Côte d'Azur Regional Tourism Committee** (CRT) and the telecommunications operator **Orange** conducted a pilot experiment intended, firstly, to **quantify and model the presence and movements of visitors** to the Côte d'Azur region using **data collected from their mobile phones**, and secondly to **extract the meaning hidden in the data to facilitate and industrialize decision making** in managing the tourism offer in the region.

Each year, nearly 77 million foreign tourists visit France. The "tourist audience" on French soil contains growth opportunities worthy of the digital economy. For example, the audience visiting from the BRICS countries is experiencing double-digit growth. Tourism in France affects about one million direct jobs and almost as many indirect jobs. In 2012, it generated consumption of nearly 138 billion euros[23], equivalent to 7% of GDP[24].

Given these figures and the natural proximity of the two sectors, it is legitimate for the cultural industries to draw on *Big Data* initiatives that have already been put in place for tourism, and to consider potential economic synergies based on a shared use of Data.

Data, catalyst for synergies between sectors

For a number of years, Disney has been working on a project called *My Magic Plus*, which aims to make life easier for its customers throughout their "points of contact" with the brand: in other words, from the time that they book their visit to one of its theme parks, throughout their visit, right up until the visitors return home. Using bracelets that use connected services to measure the activities of its customers during their stay in its theme parks, Disney has begun to manage the improvement of the "customer experience" and to industrialize the decision-making process, using *data* generated during the use of its services by customers.

Museums and national cultural heritage sites have marketing issues similar to those of theme parks, and, like the parks, act as "honey pots" for online travel companies such as Tripadvisor, whose services - which rely heavily on public Data from local and regional authorities and Data generated by their users[25] - are credible alternatives to the "normalising" services of the online search giants.

Lastly, like Yelp[26], which has offered a online mapping service since July 2013 for visualising a city's "hot spots" in relation to tourism- and culture-related keywords, Data start-ups cannot be ignored in an approach that must be innovative and at the forefront of trends in user behaviour if it wants to offer a viable alternative to the services offered by the digital dragons.

All of these players, together with the public authorities in charge of regional policies for commercial operations, are part of an

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23- Domestic tourism consumption
24- Key figures for tourism in 2012 - DGCIS http://www.dgcis.gouv.fr/etudes-et-statistiques/statistiques-tourisme/donnees-cles/chiffres-cles
25- Crowdsourcing data consists of getting users to generate raw data directly by engaging them in participatory, community and social mechanisms.
26- http://www.yelp.fr/

ecosystem in which the sharing and common use of usage data should be a source of economic synergies, and, to a certain extent, a moderating[27] influence against the Data giants who are moving rapidly into this new market for the commercial use of data, across the full spectrum of industries.

Smart Cities: the ideal ecosystem for a Big Data approach for culture

The essence of a *Smart City* project is pooling the infrastructure investments needed to balance and develop the city by optimising the synergies and returns on these investments among all of the stakeholders in the company. Because a *Smart City* replaces its development governance at the civil society, university and political level, rather than at the level of technology companies, it is the ideal structure for developing an ambitious *Big Data* project for the benefit of the economy of culture.

The *Smart Santander* project, launched in Spain three years ago, is now globally recognized as one of the most successful *Smart City* projects. It has made it possible to deploy a *Big Data* type of infrastructure with an adequate level of coverage[28] in order to start to use **Data-driven management** for new services related to health, energy, transportation, roads and more. Since 2013, the approach has been extended to local commerce, tourism and culture.

Other initiatives in San Francisco, Vancouver, Seattle, New York, London, Paris, Berlin, Tokyo, Seoul and Shanghai show that in *Smart City* projects, data sharing between different players promotes new forms of

economic and social value creation for an urban ecosystem which is a natural part of the culture-oriented industries.

This type of symbiosis between public and private sectors, between businesses of all sizes and the general public, local or foreign, should give or give back to the city and its region an appeal, a drive and possibly even a reason to exist that lies dormant "somewhere in their DNA", and which we hope they can rediscover, at least partially, by focusing on digital information through which they should naturally be able to express themselves.

Data, DNA and digital convergence

The digital revolution has entered a cycle of development in which the **deployment of technological infrastructures is no longer the main source of convergence between sectors** that have traditionally been "sealed off" from each other.

Now, Data is the vector for these types of convergence. Because it will become more and more abundant, shared and connected, economic players, both public and private, will be increasingly interested in the digital information generated by their activities in an attempt to better understand the value they bring to their ecosystem, or even their underlying purpose. Some mathematicians think that this can be revealed by updating hidden links between different sets of *data*, in the same way that the links between two DNA helices reveal a deeper level of the nature of living beings.

27- With the help of technical players such as telecommunications operators, for example
28- Nearly 20,000 sensors cover the city centre, connected to a centralised information system

The realisation of this vision, which we feel is inevitable in the long run, requires that we focus our efforts in two directions.

Each player must first "get to know themselves" by applying the best practices of **Data-driven management** to their own operations. To do this, it is no longer necessary to invest individually in Big Data infrastructure, as "off the shelf" services are already available to collect, analyse and enhance the *data* generated throughout a digital "customer journey".

On the other hand, all of the players in cultural industries must begin to collectively use part of their data[29], to extend this Data enhancement beyond their "silos".

Both processes must be undertaken at the same time, because they need each other. The two main obstacles to establishing Data-driven management are the lack of technical expertise and information governance in silos.

For example, an initiative like *We Are Data*, launched in 2013 by Ubisoft in London, Paris and Berlin, already enables the sharing, on a single platform, of information drawn from city and national services, banks, telecommunications operators, social networks, the general public, and more.

In a *Smart City* project, the actual data could be used to create **social games**[30] based on an online gaming platform[31], whose objective is to **emulate the collective commitment and ingenuity**[32] to **imagine and experiment with new distribution scenarios** for

cultural infrastructure, as well as **new uses, new business models**, or even to **identify new potential employees** that it would be useful to hire to participate in a potential real-life experiment based on scenarios that were voted for in the game.

Eventually a platform like this, based on the model of online social games, could be one of the elements of the *Big Data* approach established by *Smart Cites* to drive the development of their infrastructures and services.

The historic origins, theoretical analysis and practical use cases that could lead to this imaginary, but plausible, scenario, are described in detail in our study, "Big Data: Big Culture?" for the Forum d'Avignon 2013.

29- This does not require the sharing of competitive information; only public or semi-public data that could be of interest to partners or for related activities, which are not part of the entity's core business.
30- In the sense of social games (collective entertainment) and in the sense of games with a civic focus (Smart City project)
31- Such as that of Zynga and Electronic Arts, described in detail in the full study
32- based on the strategies implemented by the players, and the development scenarios that result