

## **GAFAM, Media and Entertainment Groups and Big Data**

*GAFAM, groupes de médias et de divertissement et Big Data*

*GAFAM, grupos de medios y entretenimiento y Big Data*

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### **Abstract**

Information and communications technologies have facilitated the emergence of companies like Google, Amazon, Facebook, Apple or Microsoft (GAFAM), which constitute business ecosystems. They compete amongst themselves and also with classical communications and entertainment groups; not because they create content but because they have a role as content prescribers due to their role as *infomédiaires*. The big data originated by users enables them to know the profiles of these users and offer this knowledge to advertisers. At the same time, their capacity to manage big data makes unlimited growth possible, towards any activity that involves large quantities of data. On the contrary, the communications and entertainment groups are witnessing a decline in their offline market, while online advertising is tending to shift to the GAFAM.

### **Keywords**

GAFAM, Big Data, business model.

### **Résumé**

Google, Amazon, Facebook, Apple or Microsoft (les GAFAM), peuvent être caractérisés comme *business-ecosystems* que se font entre eux une concurrence ainsi qu'avec les groupes de communication « historiques » (non pas parce qu'ils créent du contenu mais en ce qu'ils sont des *infomédiaires*). Les utilisateurs sont à l'origine des *big data* que les GAFAM managent et traitent, car ils peuvent établir un profil fin des utilisateurs pouvant être vendu aux annonceurs. D'autre part la capacité de gérer une grande quantité des données permet aux GAFAM une croissance illimitée ;

par contre les groupes « historiques » de communication connaissent une réduction de leurs activités offline, ainsi qu'un glissement de la publicité *online* vers les GAFAM.

### **Mots-clés**

GAFAM, Big data, modèle d'affaires.

### **Resumen**

Las TICs han facilitado la emergencia de empresas como Google, Amazon, Facebook, Apple or Microsoft (GAFAM), que constituyen *business-ecosystems*. Los GAFAM compiten entre ellos así como con los grupos clásicos de comunicación; no porque creen contenidos sino por su papel de infomediarios. La gestión de los big data que originan sus usuarios, les permite determinar sus perfiles, de forma que pueden ofrecer este conocimiento a los anunciantes. La gestión de los big data les permite crecer, de manera infinita, ya que pueden entrar en cualquier actividad que implique el tratamiento de grandes cantidades de datos; a diferencia de los grupos clásicos de comunicación, que ven reducirse la publicidad online, en favour de los GAFA, a la vez que declinan las actividades offline.

### **Palabras clave**

GAFAM, Big Data, modelo de negocio.

### **Introduction**

Information and communications technologies have facilitated the emergence of companies like Google, Amazon, Facebook, Apple or Microsoft (hereafter referred to as the GAFAM companies), which constitute business ecosystems. These are companies that have a core business that is complemented by other, often apparently unrelated activities that are in fact closely linked through big data.

The term business ecosystem is used in the text. The concept "industrial ecosystem" was initially used in 1989 by Frosch and Gallopulos (1989), whose reflections were concerned with the consequences of technology for industry and society. **Moore defines the business ecosystem as "intentional communities of economic actors whose individual business activities share in some large measure the fate of the whole community"** (Moore, 1985). The importance of interactions in business ecosystems is also analysed by Iansiti and Levien (Iansiti and Levien, 2004).

The concept of business ecosystems is used by authors like Gómez Uranga et al (2014:177-189), who, inspired by biogenetics, incorporate epigenetics to interpret the dynamics of big Internet groups.

In the present text, GAFAM is used to name five companies that have common innovation in their DNA, are quasi-monopolistic in their core activity and exploit crowd economies). The term GAFA companies (Deighton, Kornfeld, 2013) is increasingly used to refer to four actors, and the term is expanded to include Microsoft. The war of all against all appears in this process of imitation insofar as each of the GAFAM companies wants to be present in the activities of the others (Mims 2013). Spencer (2015) compares the ecosystems of the GAFAM companies through their activities in music, films, TV shows, ebooks and applications.

The present text aims to study the nature of these companies in order to analyse their strategies. In this sense, special attention is paid to the organizational changes of these companies with respect to traditional communications groups.

Setting out from the fundamental characteristics of these companies, the text is organised around three basic areas of reflection on the GAFAM companies. In the first place, these companies are characterised within their respective markets, studying their similarities and differences. Next, the different business models are considered from the angle of the free vs. paid dilemma, which also characterises communications groups. In the third place, the use of big data and crowd funding is analysed as one of the differential and determining characteristics of the GAFAM companies with respect to communications groups and their capacity to generate new business fields around such user data. Finally, the main conclusions are set out, based on the lines of reflection presented.

### Characteristics of the GAFAM companies

Each of the GAFAM companies is the leader in the type of activity that characterises it: Google accounts for 90% of searches, Facebook has a 75% share of social media, Amazon has 6% of global online sales, Microsoft has 85% of operating systems worldwide and Apple has 45% of smartphone web traffic (Fabernobel 2013).

They have different business models and their forms of obtaining revenues also differ. Two models can be said to coexist: payment and free. While Facebook and Google obtain nearly all their revenues from advertising, such revenues are marginal in Amazon, Microsoft and Apple.

The GAFAM have notable stock market capitalisation. In the case of Facebook the stock market capitalisation is near 16 times the value of annual revenues. In Amazon this ratio is only 3,55; value that exceed the ratio of the Groups of communication and entertainment: the maximum -3- corresponds to Disney. The revenues figure per employee makes it possible to predict which profitabilities are important. However, until 2015, Amazon has had a negative profitability.

	Google	Apple	Facebook	Amazon	Microsoft
<b>Market cap</b>	685.730	810.000	443.700	483.000	559.000
<b>Sales</b>	90.272	216.000	28.000	136.000	85.320
<b>Revenues</b>	Advertising 88% Others 21%	Iphone 63% Services 11% Others 5% ipad 10% Mac 11%	Advertising 93% Other 7%	Products 72% Media 18% Cloud 9% Other 1%	Windows 9% Office 28% Server/Azure 22% Xbox 11% Advertising 7% Others 23%
<b>Revenues outside the US</b>	57%	70%	54%	38%	54%
<b>Employees</b>	72.000	116.000	18.770	341.000	114.000
<b>Market cap/Sales</b>	7,60	3,75	15,80	3,55	6,55
<b>Revenue per employee</b>	0,74	1,86	0,84	1,25	1,49
<b>R&amp;D/sales</b>	15%	3%	18.4%	9.7%	14%
<b>Net margin</b>	21%	21%	36%	22%	20%

**Table 1.** GAFAM. Some financial information. In million \$, units (employees) and % (RD/sales). 2016  
Source: MarketWatch, Financial Times, Bloomberg and Form 10-K. The market cap data are from 11-5-2017

Apple does not separately sell devices (hardware), software, content and applications, but instead sells the ecosystem as a set. The entrance is through the hardware (which has the software built in), but content and applications form part of the ecosystem,. Entering and leaving the ecosystem involve costs that extend beyond the first purchase (Borrow 2014). Once the client enters the ecosystem,

leaving the latter can entail considerable costs, since applications and content are not easily transferrable to other ecosystems.

The first consequence for the company is that it will be competing eco-systemically, that is, through the set of activities and not device vs. device, application vs. application. The ecosystem favours growth and innovation, since each advance in one of the components of that ecosystem entails the necessary adaptation of the rest of the elements. In that process of constant change innovations are generated that make the whole ecosystem move forward.

The ceaseless advance and growth of the ecosystem creates continuous sources of instability at the same time. Downloading applications into smartphones strengthens the ecosystem – for example Apple, or Google with Android – but at the same time introduces a new source of possible problems. This is because the applications developers are external and do not belong to the set of companies of the ecosystem.

The GAFAM companies allocate an extraordinary quantity of resources to innovation (Google and Facebook more than 15% of revenues). High percentages are allocated to innovation, but purchases must also be considered, as a significant part of them contributes to innovation. Acquisitions are one of the forms of obtaining innovations, and also of gaining exceptional human resources, since the owners, as well being excellent technicians (engineers, computer specialists), are also entrepreneurs. Acquisition thus implies taking on innovative talent. However, if only half of the registered acquisitions are considered to correspond to innovation, it is possible to estimate that Google's innovation effort could arrive to 25% of revenues, and Facebook to 30%.

The tremendous rhythms of innovation in which these companies are involved can become unbearable and difficult to maintain. Not only are new objects and services designed (watches, cars, glasses) but already existing devices are required to include ever greater innovations. Companies must combine innovation costs with profitability, which can result in the introduction of logics that are not always to the liking of consumers. The patent war that affects different telephone companies – in the United States above all – makes innovation itself difficult. Patents, a mechanism that in theory serves to shore up innovations, become a significant cost, given that it is necessary to contract lawyers to resolve the numerous cases in which they find themselves immersed. If one takes account of the fact that a smartphone is made up of 250,000 patents, it is easy to imagine the difficulty in respecting all of them.

The resources allocated to innovation by the GAFAM in 2015 were practically equivalent to those allocated to non-military related research by the Federal Government of the United States (Manjoo 2017). This necessarily poses ethical questions, because many innovations of great future significance, such as artificial intelligence, are being carried out by the GAFAM. This is going to mean that the developments of this technology are going to be carried out above all according to the goals of profitability of the companies that are developing them.

We have seen that companies innovate. A large part of innovation is marked or framed by the extreme competition existing amongst companies. However, since there is not just one path of innovation, when innovating companies face the dilemma of exploring new product and geographical markets and new technologies, or exploiting those they already have. This dilemma is known as ambidexterity (O'Reilly and Tushman, 2008) and is found at the base of the whole process of innovation. This choice is also shown in opposing pairs: efficiency vs. flexibility, low cost vs. differentiation, stability vs. adaptability and, a fundamental question, short-term vs. long-term profits.

### Eco-systemic competition in the GAFAM companies. All against all

The 10K Forms, and especially Item 1A – Risk Factors, which every company that trades on the stock market must deposit in the United States Securities and Exchange Commission, make it possible to show the breadth of competitors that each of the GAFAM companies considers.

If we consider the table of competitors, we can see that the other GAFAM companies appear almost explicitly as competitors. In Amazon’s identification of competitors, for example, it is easy to identify Google in point 3, just as point 5 can be seen to refer to Apple. In the case of Google, point 2 refers to Amazon and point 3 to Facebook. On Facebook’s list, point 1 refers to Google and points 2 and 3 to Apple and Amazon; in Apple’s case indirect reference is made to Facebook and Amazon.

Amazon	Google	Microsoft	Apple	Facebook
1. Physical-world retailers, publishers, (...) of our products. 2. Other online e-commerce and mobile e-commerce sites. 3. Media companies, web portals, comparison shopping websites, web search engines, and social networks. 4. Companies that provide e-commerce services, including website development, fulfillment, customer service, and payment processing; companies that provide information storage or computing services. 5. Companies that design, manufacture, market, or sell consumer electronics, telecommunication, and electronic devices.	1. General purpose search engines 2. Vertical search engines and e-commerce websites (Kayak, LinkedIn, Amazon, etc.) 3. “Social networks, such as Facebook and Twitter”. 4. Other forms of advertising, (television, radio, ... ) 5. Other online advertising platforms like Facebook, that compete for advertisers with AdWords 6. Providers of online products and services that provide answers, information, and services (GAFA)	1. Diversified global companies with significant R&D resources (GAFA) 2. <i>Platform-based ecosystems</i> : competing vertically-integrated model: (Google, Apple) 3. Marketplaces (sometimes refer. to as “stores”) with scale and significant installed bases on mobile devices (Google, Amazon, Apple). 4. Companies based on a growing variety of business models: license-based proprietary software model; free appl., online services and content, and make money by selling third-party advertising (Media, Google, Facebook); open source business model	1. Hardware 2. Digital electronic devices 3. Software (Microsoft, Google) 4. Online services and distribution of digital content and applications (Google, Facebook, Amazon)	1. Companies that replicate the range of communications and related capabilities Facebook provide, like Google + 2. Mobile applications (messaging, photo- and video-sharing) 3. Web and mobile-based information and entertainment products and services that are designed to engage people and capture time spent online and on mobile devices 4. Traditional, online, and mobile businesses providing media for marketers to reach their audiences

**Table 2.** GAFAM. Competitors according to Item 1A of the 10-K (Risk Factors)

**Note:** The texts are literal, as they appear in the 10-K reports 2014. Between brackets some examples appears, proposed by the author.

Amazon competes with all types of on and offline shops that offer similar products and devices and its field of competition thus includes companies outside the GAFAM companies. But if the GAFAM companies are considered as a whole, it can be seen that all of them enter into the activities of the rest, although with different intensities. This presence by all of them in nearly all activities raises the question of the reason for such conduct. The first explanation is the general one that all of them are aware that they are operating in a broader ecosystem made up of materials, networks and content (Fransman 2014).

Haucap and Heimeshoff (2014: 50) observe that “Google, Youtube, Facebook and Skype are typical examples for Internet firms who currently dominate their relevant markets and who leave only limited space for a relatively small competitive fringe”. The same can be said about the GAFAM

companies, although some qualification is required. In the first place, none of the GAFAM companies creates content – with the exception of Google’s Youtube – but these companies are aware of its importance; this can be expected to change. It would not be surprising if in the future the GAFAM companies took up the production of content – as Amazon has begun to do with Amazon Original Movies, which is already creating audiovisual products.

Besides competing amongst themselves, the GAFAM companies also compete with “traditional” communications groups. In Table 2 the traditional groups are clearly specified in Amazon’s point 3, Apple’s point 4, Facebook’s point 3 and Google’s point 4. From this table one can deduce that the competitors are not solely those that make similar products or offer similar services, but that forms of revenue, if they are identical, also constitute a field of competition. Insofar as two groups compete for advertising revenues they are competitors. Insofar as the GAFAM companies and the communications groups dispute the advertising market it can be said that they compete, but there is also a symbiotic relationship between them. The communications groups offer their content and brands and these acquire greater visibility and higher revenues if they are directed through Google, Amazon, Facebook and iTunes.

In August 2011 at the International Festival of Television in Edinburgh, Google’s president Eric Schmidt defended the role of the company against accusations levelled at it concerning copyright and using the content of others (MacTaggart lecture 2011). And the journalist J. Robinson made a good summary: “good content drives search, and search drives advertising. The more compelling the content there is online, the more money Google makes” (Robinson 2011). Thus, the relation with content owners is fundamental for the GAFAM companies; especially for Google and Facebook due to their model of funding based on advertising (which seems to have been inspired by the funding models of the media, especially mainstream radio and television, which are funded by advertising). If content is consumed on mobile devices like smartphones and tablets, then a presence in hardware, software and applications becomes necessary.

So far the GAFAM have not been creating content in the same way as traditional communications groups, and it is therefore not possible to apply the same laws that can regulate the communications groups. However, in only a few years their responsibility as “social editors” has been recognised. Helberger (2016) observes that Facebook is an editor since it “aggregates news, it closes deals with media publishers for Instant articles and even commissions content”; but Facebook is a social editor, above all because it organises the form in which users exchange opinions, while prescribing the importance of items through “trending topics” and “likes”, which influence content virality.

Online advertising does not permit communications groups to grow online, because online advertising is not lucrative. Even less so when the GAFAM have the capacity to provide profiles to advertisers. Jakulin notes that the GAFAM, besides their incomes from advertising and their free appropriation of content, have benefitted from the contradiction found between a global Internet and the existence of multiple jurisdictions. This enables copyright to be ignored and the GAFAM have taken advantage of this legislative fragmentation, e.g. by reducing tax payments on profits: “Web media companies earned this in large part by matching advertising with the content either taken from the media companies or created by unpaid volunteers, while only returning a tiny fraction of that money to those who created the content” (Jakulin: 4).

In 2015 Apple – with the News application – and Facebook – with Instant Articles – offered the possibility of consulting articles in several newspapers and websites. Google is also working to make a similar system operational. An increasing amount of time is spent on mobile devices and increased traffic means greater advertising revenues. For the GAFAM companies this means more attractive websites that can generate more advertising revenues. For content publishers such visibility within the volume of Internet traffic is essential. In the case of Facebook’s Instant Articles, the publishers keep 100% of the revenues from advertising if they have handled it, and 70% if it is Facebook that has

placed the advertising (Urbain 2015). **However, communications groups face a dilemma. We noted that companies that offer their content** so that they can be instantaneously consulted on Apple - *The New York Times*, *Vanity Fair* or *Vogue* - obtain revenues from advertising, which complements the revenues they receive on their websites. However, this activity has a negative effect on the consumption of content on their own websites. It hardly needs saying that in the case of content that is sold on paper, there is a fall in revenues proceeding from such sales.

## Business models

If we compare the tables of revenue models from ten years ago and those of today, we can see that there are new actors, and that while some had already started, they had not reached today's scale (the case of Amazon and Google). The models have not changed greatly and continue to be basically the same (freemium was beginning).

Activity	Revenue		
	Subscriptions/ Paid %	Advertising revenues %	Others %
Apps	95%	3	2
Internet access providers	95%	3	2
General TV	4%	96%	
Newspapers	35.5%	57,3%	7,2%
Disney	84%	16%	
Time Warner	84%	16%	
Comcast	94%	6%	
CNN	63%	30%	7%
News Corp	53%	47%	
Cable TV	59%	37%	4%
Youtube	4%	96%	
Google		85%	5%
Facebook		95%	5%
Apple	96%	4% (iAd)	
Amazon	99%	1%	
NYT	53%	42% (3/4 print)	5%
FT	63%	37%	
Huffington Post		100%	
CBS	32%	48%	30% (content & distribution lic.)
Microsoft	93%	7%	
Netflix	100%		

**Table 3.** Revenue models. 2015

**Source:** Statista and others.

If a relation is sought between the revenue models of the GAFAM companies and the communications groups, it can be seen that polarisation is a characteristic of the GAFAM companies.

Two (Google and Facebook) obtain more than 90% of their revenues from advertising, while Amazon, Microsoft and Apple obtain over 95% of revenues through payment.

Contrary to appearances, Table 3 shows that polarised and mixed models coexist. In subscriptions it is applications, Amazon, access providers and Microsoft that are noteworthy; while in funding through advertising it is mainstream TV, YouTube, Google, Facebook and new media like Huffington Post or BuzzFeed that are noteworthy. Mixed models are characteristic of many communications groups.

In the communications groups there is a predominance of the mixed model, with two layers: one layer is between 47% and 53% of revenues from publicity (CBS, Viacom, News Corp). This means that half of revenues will be obtained from advertising and the other half through payment and subscription. The other layer is between 16% and 26% (the rest), the majority of which obtains revenues through payment. The exception is Comcast, which only receives less than 6% from advertising.

With respect to online funding, we are still at a prior, exploratory stage, far from consolidation. This will occur when new forms of funding emerge, which will certainly be highly complex, such as those that portals are starting to introduce (revenues from advertising, selling services, membership contracts, ecommerce, sponsorship, etc.) Additionally, these forms of funding will differ according to different activities (different types of portal, content, video on demand, games, etc.) Such complexification of online funding models can also be expected to affect offline models, although it is impossible to foresee the direction such changes will take.

### Crowd economies?

The European Commission's report on taxation in the digital economy considers that the latter has three characteristics (European Commission 2015: 11-12): mobility, network effects and the importance of data. These three characteristics set the GAFAM companies apart from traditional communications groups, as the former better exploit these characteristics.

Companies can seek different types of economies. Through experience and innovation they can obtain cost reductions. The traditional types of economies considered so far are related to economies of scale (Baumol et al, 1982), although some authors consider these to exist in audio-visual production as well (Hopewell 2015), together with economies of scope (for example in acquisitions and with synergies) (Chatterjee 1986). Although at times they are confused with each other, synergies differ from economies of scope because they involve, or can involve, greater revenues, while economies of scope involve cost reductions. As Iversen notes: "*synergy is concerned with more than the cost of production (...). Where economies of scope deal with the reduced costs of joint production (i.e. resource sharing) vis à vis separate production, synergies are also about increasing revenue and reducing the need for investment*" (Iversen 1997). Following on from these considerations, it is worth reflecting on the type of economies that are characteristic of the GAFAM companies' ecosystems; in principle, the existence of economies of scale cannot be considered a characteristic. As in any other activity, economies of scope and synergies can be present, but what characterises them are crowd economies selected with big data.

The GAFAM are *infomédiaires* (Smyrniotis 2017: 74-78), and insofar as they situate themselves at intermediary points on the content value chain, they become prescribers. Now, the importance and power of the GAFAM is more far reaching, for two reasons.

With respect to data, the GAFAM obtain huge quantities of data generated by the Internet activity of users (Miguel 2016). This has led Fuchs and others to consider that in its provision of free services, what Google is really producing is not these services but a double commodification of users. "At the



first level, they are Internet prosumers who provide data for Google at no cost. At the second level, they are subjected to advertisements and are sold as an audience commodity” (Fuchs 2016:409). Using data from 2012, he estimates that the number of hours that Facebook users used was 98.79 billion unpaid hours. The number of hours worked by Facebook employees amount to much less at 9.8 billion.

Some acquisition movements can be studied as a vertical or horizontal integration, but many others cannot. Can *Self driven cars* in the cases of Google or Apple be seen as a vertical or horizontal strategic movement? That is why another concept is needed, such as that of ecosystem, until a better term is found. Google’s ecosystem is made up of all its activities; some are related vertically, others horizontally, and the rest could be conceived as erratic movements, which are difficult to interpret. Nonetheless, this coherence can be found through exploiting the data. “These companies have access to what we search for, what we post about, what we email, who we message, where we go, who we go with, who we call, what websites we view”(Tiku 2017:3).

One of the fundamental differences between the GAFAM and communications groups is that the former can grow without limit, on condition that they operate within activities that generate an enormous quantity of data. Disney or Time Warner can grow by acquiring companies with activities similar to those they are already engaged in, by growing in online activities that distribute certain content, or even by offering advertisers the possibility to places advertising in the different media and companies that make up each group. Conversely, each of the GAFAM can grow in activities that are similar or complementary to those they realize, and they can also do so in activities that might seem remote in principle, but w are based on big data, that is, data generation, storage and processing. They can produce self-driving cars, sensors applied to the Internet of things, healthcare, biomedicine, longevity, energy, pay systems, wearables, etc. This does not mean that profitability will be immediate, as shown by the enormous difficulties that characterize Waymo, a company belonging to Alphabet, which in 2017 is far from being profitable.

The inclusion of an activity within the system can generate crowd economies. Thus, Facebook in October bought Whatsapp and, according to Statista (2017), it grew by 200,000 users in one year. The more data it can cross-check the better, because as well as offering new services, it can carry out research aimed at determining the people’s characteristics and thus offer better services to advertisers.

The GAFAM companies, and telecommunications companies as well, occupy a privileged position due to their having a significant number of clients and transactions.

<b>Amazon</b>	270 M active customers.
<b>Apple</b>	800 M iTunes accounts (attached to credit cards) 5.200 M purchases on iTunes 70.000M downloads of apps
<b>Disney</b>	137M visitors per year at 11 parks
<b>Google</b>	49,000 searches per second 900M Gmail accounts Youtube has 1.000 M users
<b>Facebook</b>	1.500 M accounts In January 2015, Whatsapp had 700 million users who sent 30,000 million messages per day.
<b>Microsoft</b>	400 M of devices running in windows 10, and 1.200 M running on Microsoft office. 669.000 apps in Windows store. Skype 3.000 M of minute per day of call.

**Table 4.** Big Data. Number of accounts available to the groups (2015). M= million  
Source: Statista and others.

Big data can later be used to improve already existing products and services and to launch new ones. This daily and massive use of services could lead us to think of the existence of something we could call crowd economies (Evans & Forth 2015). Indeed, these data can be used by companies to launch new activities that apparently seem remote from the activities the companies are normally associated

with. Apple, for example, insofar as it has data on millions of people, can launch payment services through mobile phones in a very simple way as they are already registered clients. Just as they access an application through a code, they have access to payment via the mobile phone without having to do anything new, except entering the same code they use for the Apple ecosystem (iTunes, iCloud, applications, etc.)

The power of big data and their implications for privacy is changing the antitrust policy and could affect the GAFAM. The latter have in part grown as a consequence of the current antitrust policy, which continues to be based on the principles of the Chicago School and thus on an obsession with the impact that a particular purchase might have on prices. However, it is foreseeable that the problems arising from the collection and analysis of big data will start to be taken into consideration. In Germany Facebook was fined because “Facebook abused its dominance as a social network by forcing customers to agree to unfair terms about the way the company uses their data” (Tiku 2017:1). Recognition of big data comes from the defenders of the size of the GAFAM: “They’re not successful because they have a lot of data, they have a lot of data because they’re successful” (Tiku 2017:4).

## Conclusions

Innovation is essential for any company. And this is especially true for the GAFAM companies, which always expect the “Wow factor” to produce results. The greater the competition, the more pressure there is to innovate. To the extent that each of the GAFAM companies has a large number of competitors, there is greater pressure to innovate. It is impossible to maintain a fast rhythm that always takes account of a surprise factor. Study of how innovation is organised in each of the GAFAM companies should show the rest of the companies the path for managing human teams and how to design innovation. This is a difficult task, however, because secrecy is an essential characteristic.

Innovation that is carried out in one of the activities has a clear effect on the rest, within the same company and within the ICT ecosystem. Google’s glasses, the Google car or Apple’s iwatch generate new applications, which can give rise to new innovations. But these innovations can also mean that mobile telephony networks must widen their capacity to carry and manage voice traffic, data, etc. It is not for nothing that telecommunications companies are calling for remuneration for the substantial investments they must make to satisfy the growing demand resulting from this traffic and from traffic generated by the downloading and use of applications for mobile devices.

The GAFAM companies have based their growth and development on technologies originating inside the companies. Apple creates its own software and designs its hardware. Amazon designs software and the logistics for its warehouses and for other companies, etc. However, given the extreme rhythm of innovation and the opening of new fields of growth mentioned above, is it possible to generate all the necessary knowledge internally? In other words, will there be an increase in competition amongst the GAFAM companies or with external companies? And how will this increase affect the GAFAM companies?

Their global character and their everyday use also pose basic problems at the economic level (growth strategies, the existence of double markets, rhythms of innovation), as well as other questions such as patent wars, privacy, taxes, non-abuse of their power, etc. They have a global character, but regulation is not global. The USA and Europe separately monitor their conduct – questions of taxes on profits, anticompetitive behaviour. We talk of their global character, but the Asian market of the GAFAM companies is smaller, except for Facebook, which has 30% of its users in the Asia-Pacific zone, and Apple, whose iPhone sales are increasing. Entering the Asian market is not easy, but it constitutes a possible axis of growth. The opposite is also true: the Asian equivalents of the GAFAM companies

could grow in the Western markets. Big changes are not to be expected in the short-term, and both markets – Asian and Western – will continue to be separate.

We can conclude by saying that the GAFAM companies represent a convergence amongst sectors – computers, hardware, telecommunications and content (cultural industries). This is why the presence and interrelation of activities belonging to different sectors is greater than within the traditional communications groups, like Disney or Time Warner, which have been unable to make full use of the advantages of the digital world and the interconnection provided by Internet.

## Bibliography

Borrow, J. (2014). "Giant tech brands – which one has your loyalty?", Technology Researcher Technology, 15 December, At: <http://conversation.which.co.uk/technology/apple-android-amazon-microsoft-ecosystem/>

Chatterjee, S. (1986). Types of synergy and economic values: the impact of acquisitions on merging and rival firms. *Strategic Management Journal*, 7(2), 119-139.

Currah, A. (2007). "Hollywood, the Internet and the world: A geography of disruptive innovation". *Industry and Innovation*, 14(4), 359-384.

Deighton, J. and Kornfeld, L. (2013). "Amazon, Apple, Facebook and Google", Harvard Business School, case 9-513-060, 26 April.

European Commission (2014). Commission Expert Group on Taxation of the Digital Economy, Report, 28/5.

Evans, Ph. & Forth, P. (2015). "BORGES' MAP Navigating a World of Digital Disruption", The Boston Consulting Group. At: [http://digitaldisrupt.bcgperspectives.com/?utm\\_source=201505BORGES&utm\\_medium=Email&utm\\_campaign=Ealert](http://digitaldisrupt.bcgperspectives.com/?utm_source=201505BORGES&utm_medium=Email&utm_campaign=Ealert)

Fabernovel (2013). "GAFAnomics: New Economy, New Rules", Paris. At <http://www.fabernovel.com/>

Fransman, M. (2014). Models of Innovation in Global ICT Firms: The Emerging Global Innovation Ecosystems, European Commission Joint Research, Sevilla: Centre Institute for Prospective Technological Studies.

Frosch, R. A. and Gallopoulos N. E. (1989). "Strategies for Manufacturing". *Scientific American* 189 (3) 152

Fuchs, Ch. (2016) "Facebook", in B. J. Birkinbine et al, *Global Media Giants*, London: Routledge, p. 409

Gómez-Uranga, M., Miguel, J. C., & Zabala-Iturriagoitia, J. M. (2014). "Epigenetic Economic Dynamics: The evolution of big internet business ecosystems, evidence for patents", *Technovation*, 34(3), 177-189.

Haucap, J. & Heimeshoff, U. (2014). "Google, Facebook, Amazon, eBay: Is the Internet driving competition or market monopolization?", *International Economics and Economic Policy*, 11(1-2), 49-61.

Helberger, N. (2016). "Facebook is a new breed of editor: a social editor", London School of Economics, Media Policy Project Blog.

Hopewell, J. (2015). "Endemol Shine Iberia Looks to Economies of Scale, Synergies, Digital, Drama", *Variety*, 13-3. At <http://variety.com/2015/tv/global/endemol-shine-iberia-looks-to-economies-of-scale-synergies-digital-drama-1201452285/>

- Iansiti, M and Levien, R. (2004), *The keystone advantage: What the new dynamics of business ecosystems mean for strategy, innovation, and sustainability*, Boston, MA: Harvard Business School Press
- Iversen, M. (1997). "Concepts of synergy - Towards a clarification ", Department of Industrial Economics and Strategy, Copenhagen Business School, Nansensgade, Denmark. Working paper for the DRUID-seminar, January.
- Jakulin, A. (2017). What has Internet done to media? medium.com, 1-6. En <https://medium.com/@aleksj/what-has-internet-done-to-media-becbb610006b>
- Jupiter Media Metrix (2001). "Rapid Media Consolidation Dramatically Narrows Number of Companies Controlling Time Spent Online", Reports Jupiter Media Metrix, at <http://www.iwantmedia.com/resources/index.htm#data>.
- Jupiter Vision Report (2000). *European Media Companies face the Global Internet*, European Commerce&Marketing/Volume 3.
- MacTaggart lecture (2011), "Eric Schmidt's MacTaggart lecture", the Guardian, 26-8. At <http://www.theguardian.com/media/interactive/2011/aug/26/eric-schmidt-mactaggart-lecture-full-text>.
- Manjoo, F. (2017)."Google, Not the Government, Is Building the Future", NYT, 17-5. En [https://www.nytimes.com/2017/05/17/technology/personaltech/google-not-the-government-is-building-the-future.html?\\_r=0](https://www.nytimes.com/2017/05/17/technology/personaltech/google-not-the-government-is-building-the-future.html?_r=0)
- Matthies, A.; Andrew Stephenson, A. and Nick Tasker, N. (2015). "The Concept of Emergence in Systems Biology", At [www.stats.ox.ac.uk/\\_data/assets/pdf\\_file/0018/3906/Concept\\_of\\_Emergence.pdf](http://www.stats.ox.ac.uk/_data/assets/pdf_file/0018/3906/Concept_of_Emergence.pdf).
- Miguel, J. C., (2016). "Big data and Big GAFAM. Thoughts on the data economy", *Economia della cultura*, 4, pp. 507-525.
- Mims, Ch- (2013)."New cold war Apple, Google, Facebook and Amazon are all trying to turn into the same uber-company", qz, 9-5. At <http://qz.com/83243/amazon-apple-google-facebook-are-all-trying-to-turn-into-the-same-uber-company/>
- Moore, J. F, (1996). *The Death of Competition: Leadership & Strategy in the Age of Business Ecosystems*. New York: Harper Business,
- Moore, J. F., (2005), J. F., *Business ecosystems and the view from the firm*, *The Antitrust Bulletin*/Fall 2005. At <http://cyber.law.harvard.edu/blogs/gems/jim/MooreBusinessesecosystemsandth.pdf>.
- O'Reilly, C. A., & Tushman, M. L. (2008). "Ambidexterity as a dynamic capability: Resolving the innovator's dilemma". *Research in organizational behavior*, 28, 185-206.
- Robinson, J. (2011). "Google needs television industry' will be message at Edinburgh", *The Guardian*, 21-8. At <http://www.guardian.co.uk/media/2011/aug/21/google-needs-television-industry-edinburgh>.
- Smyrnaio, N. (2017). *Les GAFAM contre l'Internet. Une économie politique du numérique*, Bry-sur-Marne : INA Éditions.
- Spencer, G. (2015). "Mapping The Entertainment Ecosystems of Apple, Microsoft, Google & Amazon". At <https://www.macstories.net/news/mapping-the-entertainment-ecosystems-a-brief-revisit/>
- Statista (2017). "Number of monthly active WhatsApp users worldwide from April 2013 to January 2017". In <https://www.statista.com/statistics/260819/number-of-monthly-active-whatsapp-users>
- Tiku, N. (2017)," Digital Privacy Is Making Antitrust Exciting Again/", *wired*, 6-4. At <https://www.wired.com/2017/06/ntitrust-watchdogs-eye-big-techs-monopoly-data/>

Urbain, Th. (2015). "Informer, le nouvel enjeu des géants d'internet", 2-10-2015. At <http://www.msn.com/fr-ca/actualites/science-et-techno/informer-le-nouvel-enjeu-des-g%C3%A9ants-dinternet/ar-AAflgMg>.