

## DIGITAL ECONOMY

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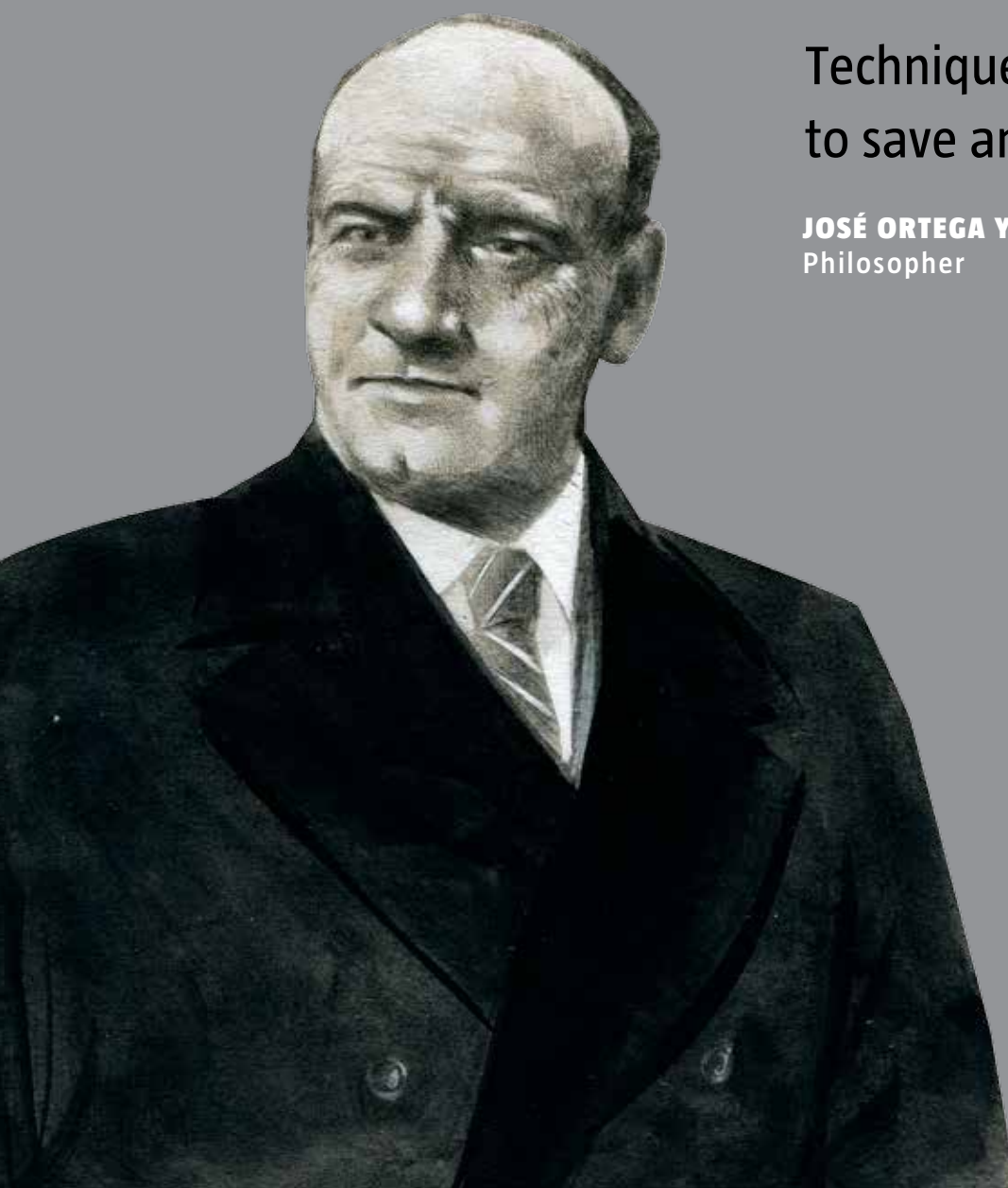
## MORE BROADBAND! MORE ICT!

Spain has gotten all “mobiled up.” But we still need to promote the rollout of ultra high-speed Internet and the intensive use of information and communications technology (ICT) in enterprises and society as a whole.



Technique is the effort  
to save an effort

**JOSÉ ORTEGA Y GASSET (1883–1955)**  
Philosopher



## The only way we can face the future

There are more mobile phones than people in Spain. Despite that, the digital gap persists. The younger and richer you are, the better your Internet access. Users aged between sixteen and thirty-four have the greatest demand for mobile broadband and the Internet of Things.



Ramón Muñoz

Reporter specializing in ICT, *El País*

When the liberalization of the telecommunications industry was approved in 1997, this was understood to mean talking on the telephone and little more. Almost three decades later, the sector has proliferated in terms of technology and economic importance, permeating the daily lives of the general public to such an extent that the mobile phone has become an even more essential item than the wallet, and is much more greatly missed if left at home than one's national ID document or house keys, according to surveys.

The leap in such technologies in recent years has been startling. In 1990, there were barely fifty thousand people with mobile phones when the first connection was made to the Internet in Spain via the pan-European "high-speed" IXI network, which worked at the dizzying velocity of 64 Kbps, a pace that these days wouldn't even allow us to open a single webpage in a day.

In 2015, there are more mobile phones than people in our country, land lines have become a secondary or dispensable device, and the Internet is present in three-quarters of

Spanish homes. If Spain meets the objectives proposed by the European Union in the so-called Digital Agenda for Europe for 2020, all of the country's residents will have access to connection speeds above 30 mbps, and 50 percent of homes will enjoy speeds exceeding 100 mbps.

In the business world, we have moved on from a situation in which the company Telefónica had a monopoly on the industry to an explosion in the number of operators, with very beneficial impacts for consumers in the form of plummeting prices. A three-minute phone call used to cost two euros (based on the exchange rate for pesetas), plus a monthly charge of fifteen euros and a seventy euros sign-up fee. Today, the average price of a mobile phone call is 7.1 cents per minute.

The business has also multiplied. The telecommunications sector is worth some €30 billion a year, and represents one of the main driving forces for R&D in the country. There are dozens of competitors, although we are currently undergoing a process of consolidation, which means that in practice three companies—Telefónica, Vodafone, and Orange—share 90 percent of the market.



Server room, Vodafone España

### An ecosystem experiencing exponential growth

Spain is practically the leader among the most important countries in the European Union in terms of smartphone uptake: some 81 percent of the country's total number of mobile phones are smartphones: that's 10 percentage points above average, according to the fifteenth edition of Fundación Telefónica's annual report "La Sociedad de la Información en España" (The Information Society in Spain).

But the mobile phone would not have had such enormous acceptance among the population if it were a mere telephone handset alone. Its unprecedented success stems from the fact that it can connect to the Internet. On a global level, mobile broadband represents 40 percent of total connections, and this figure is set to increase to almost 70 percent

of the total by 2020 thanks to 4G and LTE technologies, which permit increased connection speeds. The intensive use of mobile phones is responsible for mobile data traffic levels that have skyrocketed. According to Cisco, global data mobile traffic is going to increase at a compound annual growth rate of 57 percent until 2019 to reach 24,314 PB per month (and a single PB allows storage of thirteen years of HD-quality video). According to the latest report from the Organization for Economic Cooperation and Development (OECD), which brings together the world's thirty-four most advanced countries, Spain takes fourteenth place in terms of mobile Internet prevalence, with 73.3 subscribers per 100 inhabitants, although this figure is below average (78.2 percent), according to data up to June 2014. In terms of landline broadband, Spain sits in nineteenth

place with 26.9 subscriptions per 100 inhabitants, just below the OECD average of 27.4 percent. Switzerland, the Netherlands, and Denmark continue to lead the table with 43.7 percent, 40.8 percent and 40.6 percent, respectively.

### A powerful industry

The mobile industry is the cornerstone of the global economy. In 2014, it contributed \$3 billion to the world economy, equivalent to 3.8 percent of global GDP. It is estimated that this figure will rise to 4.2 percent by 2020. The sector directly employed 12.8 million people in the world in 2014, with another 11.8 million indirect employees, according to the report "The Mobile Economy 2015," presented by the GSMA at the Mobile World Congress in Barcelona. The so-called mobile ecosystem—which includes everything from de-

vices and applications to trade and access to services—generates €92 billion for the five largest economies in the EU (Germany, France, United Kingdom, Italy, and Spain) and provides half a million jobs, according to a study produced by the Boston Consulting Group.

In these five countries of the EU, adults spend €555 a year on the world of mobile technology—on telephones, tablets, data plans, applications, digital contents, and mobile commerce (m-commerce). This figure will more than double between now and 2017, with an annual growth rate of 25 percent in mobile Internet revenue to reach some €230 billion. In Spain, mobile Internet contributes €12 billion to GDP, a figure that will increase to €26 billion by 2017.

The main contribution to this growth comes from applications, contents, and services deriving from this ecosystem, and in the future growth will also be boosted by the swift expansion of purchasing and advertising via mobile devices.

In 2014, Spanish mobile operators boasted turnover in excess of €30 billion, according to data from the latest quarterly report issued by the Spanish National Markets and Competition Commission (Comisión Nacional de los Mercados y Competencia, CNMC).

### A competitive market

The Spanish telecommunications market is very competitive, but it is not immune to the process of market consolidation or concentration being witnessed all over Europe. In 2014, two large-scale operations of this type took place: the merger of Vodafone and ONO, and the acquisition of Jazztel by Orange. In this respect, the scenario has reverted almost to the point where it started with the liberalization of the industry when there were just three companies—Telefónica, Airtel, and Retevisión—sharing the profits. Today, Telefónica, Vodafone, and Orange account for almost 90 percent of the





The digital gap persists. The age and income bracket of users continue to be fundamental indicators in technology usage. The younger and richer you are, the better your Internet access

Users aged between sixteen and thirty-four have the highest demand for mobile broadband and the Internet: approximately seven out of every ten users in this age group have Internet on their mobile phones, compared to the figure for all users, which stands at 60 percent

home broadband and mobile phone business, although it is also worth remembering that the size of today's sector has little in common with that of the 1990s. The market closed last year with a base of 50.6 million mobile telephone lines and 12.94 million landline broadband lines, a ratio of twenty-seven lines per one hundred inhabitants. The biggest increase has been in fiber to the home (FTTH) lines, which exceeded 1.5 million at the end of 2014: almost triple the levels of just a few years before, with inter-annual growth of 154.1 percent. Hybrid fiber-coaxial (HFC) also saw 125,000 new lines, taking the total to 2.15 million. Landline telephone services remain stable at 19 million lines in total, giving a ratio of 40.5 lines per one hundred inhabitants. What is certain is that the level of market concentration has risen



Collserola communications tower, Barcelona

notably. In terms of landline broadband, Telefónica has a 44.3 percent share of the market, while Vodafone (plus ONO) take 21.4 percent, and Orange (plus Jazztel), 26.7 percent. In the case of ultra high-speed broadband (optic fiber and cable) the concentration is even greater. The three operators also account for 89 percent of the mobile telephone market. Telefónica continues to lead (31.7 percent of the total), but Vodafone (29.2 percent) and Orange (28.5 percent including the company's Simyo and Amena brands and Jazztel) are hard on its heels. There is significant competition in the prices of telecommunications services, which have been falling for the last seven years. Telecommunications companies have also seen diminishing revenues in line with these price cuts. In 2014, revenue fell 5.9 percent on the previous year

to a little over €30 billion, according to the CNMC. Operators have been watching their income fall since 2008. During the last six years, sales are down 32 percent, and operators face strong competition, strong investment, and new taxes, such as the tax on the radio-electric public domain, or contributions to the funding of RTVE since the elimination of advertising on the state-owned network. Movistar, Vodafone, and Orange want to ensure the loyalty of their customers by offering comprehensive packages of services including landline, mobile, Internet and television in order to concentrate their offer, since they cannot afford to provide huge discounts to customers who only want mobile or landline services. Underlying this movement is the need to compensate for dwindling revenues from traditional mobile

phone voice services with increasing revenue from broadband. Customers are only willing to pay more in order to meet the insatiable appetite for data consumption of services such as video, streaming, or Internet telephone services (voice over IP), which are likely to soar thanks to the emergence of instant messaging services such as WhatsApp. And that is where the success of packages comes in. At the end of 2014, the total number of customers with package deals exceeded 2013 levels by 2.4 million to reach 8 million customers.

### A digital world

At the start of 2015, the European Commission approved a new index classifying countries according to their different levels of digitalization in accordance with a series of statistics: penetration, speed and price of broadband; use of online services such as purchasing or news, use of electronic billing, cloud services, e-commerce, and online administration and health services. Spain takes twelfth place out of twenty-eight countries in the EU in this Digital Economy and Society Index (DESI), which is led by Nordic countries such as Denmark, Sweden, and Finland, along with Holland. Nevertheless, Spain excels in many aspects. It is the European country with the most mobile telephone users of independent instant messaging services such as WhatsApp, Line, or similar services. Some 51.5 percent of mobile users use these services on a daily basis, while 83 percent of smartphone owners use them at least once a week, levels that far exceed those of other countries such as Holland (67 percent), Germany (43 percent), Portugal (34 percent), the United Kingdom (30 percent), Belgium (20 percent), and France (15 percent), according to a CNMC report. Meanwhile, the Fundación Telefónica report reveals that there are 23 million active users of apps who carry out 3.8 million downloads a day.



Construction of the Amazonas 3 satellite from HISPASAT

Despite that, the digital gap persists. The age and income bracket of users continue to be fundamental indicators in technology usage. The younger and richer you are, the better your Internet access, according to the report "Perfil Sociodemográfico de los Internautas" (Socio-demographic Profile of Internet Users), published in 2014 by the Spanish Ministry of Industry. Users aged between sixteen and thirty-four have the highest demand for mobile broadband and the Internet of Things: approximately seven out of every ten users in this age group have Internet on their mobile phones, compared to the figure for all users, which stands at 60 percent. The relationship between household income and the use of the Internet is even more significant. Some 95.5 percent of people living in households with a net income above three thousand euros a month use the In-

ternet on a weekly basis, while this figure plummets to 49.5 percent in families with an average income of under nine hundred euros. With regard to the use daily web surfers make of the Internet, some 90.5 percent send or receive email, 90 percent search for information on goods and services, 83.7 percent read news and press online, some 74.4 percent interact on social networks, and 36.3 percent make phone calls or video calls online. There are other uses: 58.3 percent play or download games, films, and music; 52.6 percent upload their own contents to share; 42 percent listen to the radio over the Internet; 31.3 percent take part in online gaming; and 12.5 percent create websites or blogs. We live in a digital world. And we need companies that allow us to connect to the Internet and supply us with contents we can talk about.



## Javier Nadal Ariño

Telecommunications engineer

# Connectivity, the business fabric, and human and country capital

Apart from constituting a very important economic sector, ICTs are a fundamental factor in the development and growth of all other industries, and an essential tool that enjoys mass use among citizens and enterprises.

According to the Digital Economy and Society Index (DESI) published by the European Union, Spain occupies twelfth place on the European rankings, equalling our position for GDP per capita. So far so good? Well, that depends. If we browse through the thirty-three indicators that determine DESI rankings, we can see that while we have a lead position in e-administration, we flounder well below the European average on significant issues such as connectivity (in particular, landline broadband coverage) and the digital preparedness of our human capital. Meanwhile, the World Economic Forum's Networked Readiness Index (NRI), which attempts to measure the capacity of each country to integrate digital culture into its economy as a whole, ranks Spain just 34th of 148 countries. This is a worrying position to be in, especially if you take into account that eight of the countries that surpassed Spain in the ranking have a GDP per capita lower than that of Spain. Why are we in such a bad position? Apart from considering infrastructures, human capital, and usage, the NRI also introduces indicators related to the quality of political and regulatory bodies, and culture of innovation, since technology can only have positive and transforming effects if it is implemented in a territory endowed with an innovative attitude and social regulations that work in an adequate, fair, and efficient way. In our case, the most limiting factors are the skills of our human capital (fiftieth), a weak business and innovation environment (fifty-first), and an inadequate political and regulatory environment (forty-seventh). Spain needs to master new processes such as cloud

computing, the Internet of Things, e-commerce and big data, and the key elements required in the reinvention of even the most classic sectors of the economy. It also needs to have decent connectivity and a digital culture at its disposal, along with a propitious environment to foster the growth of an innovative, flexible, well-connected business fabric immersed in the technological trends of the moment.

The specific proposals presented below refer to five of these spheres: connectivity, the business fabric, human capital, talent management, and institutional quality.

### 1. Connectivity: The ubiquitous broadband

Connectivity is the sine qua non of the Internet. Spain currently lies in seventeenth place within the EU in connectivity. The creation of a plan to increase connectivity is, above all, a political and regulatory matter. The current situation is the result of having left the evolution of the country's networks for many years in the hands of a regulatory market that bases itself on the sole criteria of reducing prices. It is now necessary for the political sphere to set down the priorities for expansion and ensure that the regulations in force guarantee competition without disincentivizing investment, above all in optic fiber and cable.

This plan must encompass extraordinary public investment measures that are capable of providing rural areas and cities that have little competitive interest with a similar connectivity to large urban areas in order to prevent the increasing depopulation of the country's inland areas.

### 2. Growing the business fabric

In the countries of the OECD, the lion's share of innovation is developed by medium-sized enterprises (50 to 249 employees), meaning that 1 percent of the total number of companies are responsible for 20 percent of revenue in this sphere. In Spain medium-sized companies are also the most innovative, although they only account for 0.6 percent of the total.

Reviewing and simplifying the processes and requirements governing the startup, growth, and shutdown of enterprises in general—and in particular in the ICT sector—is an urgent measure since, as indicated by the OECD, the sector has boasted survival rates superior to those of other sectors, which it also surpassed in terms of employment growth between 2009 and 2012. The ICT industry also boasts productivity levels of over 60 percent.

### 3. Four measures to improve human capital

**STEM graduates.** Spain requires a drastic increase in the number of STEM graduates (in the academic disciplines of science, technology, engineering, and mathematics). This can be achieved by providing grants for job-guarantee schemes covering two or three years' work in biology R&D projects within enterprises or public bodies, or by awarding postgraduate grants for first-rate foreign universities. Such grants must be designed and awarded by the public sector and the large Spanish foundations that lead the field in these activities.

**University education and vocational training in the digital environment.** There is a demand for thousands of professionals with profiles not covered by the official systems, whose training is provided on the margins of those systems. Spain must increase the flexibility of the qualifications offered, tending to the needs of successful enterprises and attracting teachers from among professionals in the sector, on both national and international levels.

**Recycling.** Some 60 percent of workers in advanced countries state that their digital abilities are insufficient for them to change profession. This figure rises to 80 percent among those with lower levels of education. In Spain, one million of our unemployed are young people who did not finish their training during the precrisis bubble, along with another million aged forty-five and over with insufficient training. Intelligent recycling of this sector of the population would give them new employment opportunities, fomenting the digital transformation of the economy and our society as a whole.

**Taxonomy.** It is vital that we improve job classifications within our employment system. The differences between

the definitions of skills and professions, between jobseekers and the employment system's databases, hinders the identification of workers that actually possess the required skills.

### 4. Three ideas for creating knowledge and talent

**Mass data processing: Big data.** The vast quantity of data being generated all around us, and the capacity to process this data, has led to the "big data" phenomenon, which opens up a new field of knowledge already expected to generate millions of new jobs. The EU predicts that big data activity could account for almost 2 percent of GDP by 2020. Transforming this potential into value depends on two factors: the ability to ask the right questions, and making use of well-trained scientific teams to find the answers. Both objectives can be fulfilled with a national massive data processing program which would consist of posing specific questions to a variety of public, private, or mixed research teams.

**Objective: Patents.** A quarter of investment in R&D in countries of the OECD is made in the ICT sector. A third of OECD countries' patents are linked to ICT, and more than 25 percent of new ICT patents have applications to products or processes in other sectors. Spain needs to generate ICT patents in its strongest sectors, such as tourism, car manufacturing, agriculture and food, and the digital contents industry. Universities and public research centers can partner up with the private sector with this objective in mind, while the state can provide research funding with the condition of research generating patents as opposed to the publication of results.

**Networking.** We need to take advantage of the diaspora of Spanish scientists, researchers, entrepreneurs, technology experts, and ICT professionals scattered across the developed world in order to create an active network of contacts.

### 5. A loyal, legal, digital country

**E-governance.** Spain is recognized as a European leader in digital administration. This achievement is the fruit of efforts carried out over a long period of time, since the early experiences of the Spanish Tax Office right up to recent successes in the digital management of health records or electronic prescriptions. Future targets should include the administration of Spain's justice system, as well as making progress on smart cities, big data, and so on. In short, Spain should set global Digital Agenda objectives that are more ambitious than the current ones, forcing us to go much further in this sphere.

**POINT**



## COUNTERPOINT

## SMEs and the international dimension

Spain's economic competitiveness must be boosted through the development of ICTs, encouraging their use and exploitation by SMEs, and driving the Europization and internationalization of the sector with a single digital market within the EU.

Two strategies are proposed to promote competitiveness in the economy through the development of ICTs:

#### First strategy: Boosting the use and exploitation of ICTs in SMEs

The adoption rate of ICTs in Spain's small- and medium-sized enterprises is substantially lower than the EU averages. The penetration of the Internet, high-speed connections, and ICT equipment in general are lower in Spanish SMEs. Even more significant is the fact that Spanish enterprises (and individuals) show relatively low levels of activity in the use and creation of the software required in production processes, the use of cloud computing for complex tasks, or the volume of e-commerce transactions in enterprises (in particular in the case of exports). This isn't just the case of ICTs: in general, there is a deficit in SMEs in Spain when it comes to investment in technology, knowledge, R&D, and ICT-related patents.

During recent years, Spain has advanced considerably in connectivity, network coverage, and the affordability of telecommunications services, as well as in the use of ICT in the interactions between enterprises and citizens and public administrative bodies.

Nevertheless, there is evidence of important weaknesses, such as the relatively low level of digital training, which limits returns on ICT investment; the scarcity of ICT specialists; the scant use of Internet by individuals and enterprises, in particular when it comes to online purchases or banking operations; and insufficient use of the possibilities offered by ICT for export business.

Spain's Digital Agenda for 2013 identified problems in demand, skills and training. The focus should be placed on two lines of action:

1. ICTs should be further integrated into the university and education system in general, along with the options ICTs offer in a range of sectors, in all disciplines where they could have a use or impact (that is, almost all of them). It is not necessary to increase the number of IT engineers; rather, it is a question of extending ICT training in degrees such as journalism, economics, business administration, medicine, history, and so on.

2. There are barely any private initiatives in Spain to exploit and create value based on open data/big data. Much can be done at the government level to make sources of information and data available to citizens and enterprises, which can be re-exploited in private initiatives while still respecting the legal boundaries of privacy.

#### Second strategy: Europization and internationalization

The European Commission is discussing a proposal to achieve a truly integrated digital market (the Single Digital Market), with the identification of gaps in digital development within the EU. These policies, which will eventually be agreed on, will have an impact on Spain both in terms of the range of networks, services, and content on offer and, above all, on the deficiencies identified in the demand side.

That said, it is difficult to sell services on the EU level while in every country enterprises compete in different

conditions concerning copyright, payment, or transparency in contracts. A common EU framework is required offering standardized regulations on copyright, user rights, and transparency in contracts. Spain should support this initiative in the European Parliament, although it is still in its initial phases.

There are initiatives in the EU that propose less regulation of telecommunications markets, or even changes to the priorities in European telecommunications policy, with increased support for investment, long-term benefits and greater concentration. We must not forget that competition has also served to incentivize the rollout of networks. While the coverage of these networks is not as broad as in other parts of the world, this is partially due to flaws in efforts to free up the spectrum available to telecommunications.

Measures to standardize the spectrum or facilitate the rollout of landline networks proposed by the EU will lead to a broader development of new networks and allow a greater range of end-user services to be offered. In this way, economies of scale and competition can be achieved at the same time. While these measures have been adopted and incorporated into domestic legislation in Spain, their application has come up against some delays and barriers.

Over-the-top providers—agents offering services over the Internet but without control of the networks transmitting their services—are essential to the digital value chain. They are without a doubt the means of extracting greater profits from the consumer surplus and increased well-being. Relations with these agents and network owners will be of vital importance. The key is to create conditions allowing everyone to be a winner, although probably not in equal measures.

The most value added and innovation is produced at the level of apps, content and services in general offered online. This drives the demand for connections and network traffic, whether landline or mobile, at very

Íñigo  
Herguera

Professor of Economic Analysis  
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high levels of growth, in turn placing pressure on network operators to increase their investments. In order to ensure that the digital economy is able to develop, it is necessary to define some principles that will prevent innovation and the offer of new services being limited by the physical network access of end customers, a possible bottleneck deriving from a lack of competition or attempts to exclude certain elements from the market. In other words, some rules are required on what is commonly termed network neutrality. Today, network neutrality is treated in a wide variety of ways in the countries of the European Union. A common set of standards must be established on the European level.

Often, over-the-top providers are not subject to national or European legislation, even though they frequently offer services very similar to those provided by traditional operators: voice, messaging, content, etc. The aim is not to restrict their activity through legislation but to set more standardized rules of play for all agents offering users similar services.

One of the aspects that most concerns European users is the privacy of their data during transactions or during communications. This trust issue is even more acute in Spain. Security and privacy call for a common EU framework in order to provide clarity to users and promote transborder exchanges, which are currently infrequent. There are individuals and enterprises that do not have access to networks providing a high-speed connection because they live in rural or sparsely populated areas. It is unlikely that new generation networks will reach such areas over the short term. One of the objectives of the European Digital Agenda is to offer all citizens coverage from new generation networks by 2020, including fourth-generation mobile connections via LTE. It is essential to plan public (or public-private intervention) to incentivize the rollout of such services in these areas—in particular in towns with ten thousand inhabitants or less—in order to avoid digital exclusion.

TALK ABOUT  
THE FUTURELuis Miguel Gilpérez  
President of Telefónica Spain**How can we promote the intensive use of ICTs in our society?**

Apps are key. In the personal sphere, apps are increasingly focused on entertainment, leisure, and fulfilling our needs. In the business world, we need to find solutions that can help companies be more efficient, dynamic, and profitable. Telefónica is involved in both worlds and works in various aspects of ICT, such as apps and the development of new services. Nevertheless, there is a basic element—infrastructure—without which none of this would be possible. We are talking about 4G technology for mobile telecommunications and fiber optic connectivity.

**We have not been left behind despite the crisis.**

One might say that Spain is a telecommunications paradise, given that anyone in Spain can get mobile coverage. Half of the population has access to some kind of connection offering speeds of 300 mbps, which in the rest of the world only happens in places like Seoul. Telefónica is at the cutting edge of communications development in Europe, as well as being the primary investor and innovator in the sector. Setting the standard to follow is one aspect of being a market leader, and Telefónica is beginning to set the standard in the sector.

**Is there sufficient competition in Spain in this sphere?**

It's true that there are only three operators that build net-

works, but these operators are leaders in their areas and each focuses on their own niche. It would be a very good thing for there to be more than three operators with investment capacity. European regulations allow for the creation of initiatives employing third-party networks. In a market as competitive as Spain's, regulations should prioritize investment above other parameters. This is Telefónica's philosophy: investment, network development, services, and technology that provide users with the services they demand. We have to rethink the European model and encourage investment. And that will inevitably lead to fewer players in the European market.

**What are the challenges for a digital single market in the European Union?**

Without the best telecommunications it is impossible to have more profitable, sustainable, and efficient companies. A European digital single market means encouraging investment and network development. It is said that in 2020 we should be connecting at 30 mbps but this is already outdated. Now we should be thinking way beyond that, heading toward 100 to 300 mbps. This would build a more efficient and sustainable industry in Europe.

**Telefónica has repatriated some of the services that it had moved abroad.**

We have repatriated all of our call centers. The quality that we can offer here is greater than what we can deliver from Latin America due to our knowledge of Spain and its geographical proximity. But the move also has another purpose: we want to keep driving and encouraging Spain's development by creating jobs. We have approximately ten thousand employees working on all services twenty-four hours a day, seven days a week. We have recruited five thousand highly qualified staff to build networks, having focused on the sphere of fiber optics during the crisis. And more than one thousand young people have joined our talent programs. This demonstrates a real commitment to the country and its people.

**“We have to encourage investment. And that will inevitably lead to fewer players in the European market”**

Francisco Román  
President of Vodafone Spain**What are the next big steps to take in ICT development?**

The situation in Spain is no different than that of the majority of other countries. We are experiencing a surge in technology that the human race has never seen before. At this moment in time, a series of technologies are being exploited that have an impact on each and every person in the world. They also affect each and every business. Machine-to-machine communication has enormous potential. In order to take full advantage of this technology, we need to have at our disposal a sufficiently powerful broadband infrastructure, both in mobile and fiber optic telecommunications.

**In Spain we are returning to a situation where there are three large competitors again...**

Logically, we are going through a consolidation process. It is the result of a convergence of the products and services offered by both mobile and landline segments. For years, both sectors have existed relatively independently of each other. The mobile world has flourished separately from the landline market, and it has also been the battleground for

**“There are more than 150 operators in Europe, compared to four in the United States and three or four in China”**

**Is public support required to achieve this?**

This sector relies on initiative and private investment. During the years of the crisis, some €28 billion have been invested in networks, despite the pressure exerted by falling prices. In relation to public-private collaboration, the government should help to create an environment that fosters investment and innovation. The government should make sure the right conditions exist—we can take care of investment in the market.

The supreme asset in this partnership is an end product at a very low price, since it is assumed that the outputs of this industry provide inputs for all other industries. There is no reason to dispute this theory. But what happens is that this encourages a great deal of competition in the form of a large number of competitors, albeit small in size, and this fragments the market. This is a European problem: there are more than 150 operators in Europe, compared to four in the United States and three or four in China. And we are talking about an industry that requires economies of scale. So it is easy to see how this atomization weakens the continent's companies. Spain is not free from this problem. What is needed is a regulatory framework that acknowledges that competition means having strong competitors capable of achieving economies of scale, in turn achieving a better balance between investment, innovation, and the end price. Price should not be the main focus.

market liberalization. That is where we new competitors have come in to challenge the monopoly of the past. Given the current offer of services, there is now a need for convergence which has motivated these significant moves toward consolidation. This was our objective when we decided to invest €7.2 billion in acquiring better fiber optics to complement the best 4G mobile network. It's a positive move. Nevertheless, there is still a set of small competitors, many of whom have taken refuge in the regulatory system and whose offer mainly involves price reductions. The sector is subject to many different pressures and requires a big investment. We have to make sure that our country can attract investment.

**Is Internet access in Spain more expensive than in the rest of Europe?**

No, it isn't. It is true that all sorts of comparisons can be made. But this is the only large sector where prices have consistently fallen over time. During the crisis, price cuts have been spectacular. Mobile costs have fallen some 60 to 70 percent over the last two years.





TALK ABOUT  
THE FUTURE

## Elena Pisonero

President of Hispasat

**How can we promote the use of ICTs? What is the priority?**

Plummeting prices caused by successive innovations facilitate access to the web. Compared to other countries in Europe, Spain is above average and we have to make progress. The idea is to be able to facilitate access in remote areas. Then there is the possibility of generating services related to ICTs. What needs to be done? There's the issue of training human resources: we are lacking when it comes to digital skills. Training and education are fundamental. Moreover, we now maintain the same relations as we always have in a virtual environment, developing services using the web to connect people and companies. We still have a long way to go in these two spheres. The other aspect—the European aspect—which is fundamental for Spain, is that we need to be able to participate in a European digital market of five hundred million users in which we would take on a new and different dimension.

**Are we capable of producing a European Google?**

There is a huge difference in focus. In the United States, one can do anything that isn't actually prohibited, and some people even do things that are prohibited and end up changing the panorama. In Europe, where the regulatory system has a very clear weight, we can only do what is permitted. This ultimately restricts companies' capacity to undertake risky projects. We have such an excess of regulations that it is easier for a Spaniard to create a Google in the United States than in Europe.

It isn't that we're not capable of doing it. But we have to see where the trade-offs would be, the balance between security, privacy, confidentiality, and development. The idea of a digital single

**“Spain needs to be able to participate in a European digital market of 500 million users in which we would take on a new and different dimension”**

market proposed by the European Commission is an ambitious challenge, but it will be necessary to eradicate certain regulations from the top down. If not, it will be very difficult to implement.

**Substantial investment on the part of the Pentagon lies behind the iPhone, for example.**

Through its investment in basic industry in all of these research processes with a view to leading the field, the United States is generating a substantial number of patents and processes that are clearly disseminated in these environments. I would cite the example of France, which took a strategic decision within Europe. Having had a marginal role in the modern world wars after Napoleon, France took a clear decision with regard to the defense industry. That and the space industry have generated a whole plethora of inventions. I would persevere with an initiative that is currently bearing fruit: providing a physical location for influential innovation centers in our country or in Europe as a market. This is happening in Barcelona and it can happen in Madrid with the Google center.

**What does Hispasat contribute?**

Hispasat is a public initiative from twenty-five years back that has worked to have a presence in the world. A set of elements were chosen that allowed us to position ourselves when coming out of the shadows. We opted for AVE, the high-speed rail. It was—and continues to be—a key aspect of modernity. And we also opted not so much to enter the space race as for Spain to have a satellite system of its own that would also encompass defense coverage. That was important. Although the satellites are manufactured abroad, whether in the United States or France, they do incorporate Spanish processes and technologies. Now emerging economies are starting to do something that we did twenty-five years ago. Space activity now takes place more in the commercial and communications spheres, and we facilitate and provide the network for these ICTs.

## Francisco Ruiz Antón

Head of Public Policy and Government Relations at GOOGLE Spain &amp; Portugal

**How does Google see Spain?**

Spain is a very important market for Google. In fact, Google has decided to bring its fourth Campus for entrepreneurs to Madrid, following in the footsteps of London, Tel Aviv, and Seoul. Perhaps this country has depended too much on service sectors, construction, and tourism. The more we diversify the Spanish production model, the better protected our economy will be in the future so that we can avoid a repeat of recent events.

**What do we need to change in order to take advantage of the opportunities offered by the digital world?**

In 2013, Mr. Barroso, then president of the European Commission, said that in 2020 there would be two hundred thousand jobs in the sphere of the digital economy in Europe, which we would not be able to cover due to a lack of professionals with the right profiles and abilities. If we want to change the production model and take advantage of the growth of the digital economy, part

Spain has a very big advantage in that the Internet is tending more toward the mobile format. In fact, we are the European country with the highest prevalence of mobile phones: 108 telephones per 100 inhabitants. During the last few months, for the first time more Google searches are being carried out worldwide via mobile than on desktop computers or laptops. That is why digital skills must be promoted among the population. At Google we are developing the “Activate” project with twenty-one Spanish public universities to encourage these digital skills among young Spaniards, a population where unemployment

**“Some European economic sectors that missed the digital boat are trying to win in their offices a war that they are not winning in the markets”**

of the population has to have these capacities. Our regulatory system should facilitate this work. Nevertheless, traditional economic forces tend to try to maintain the status quo by promoting protectionism, and it is clear that some European economic sectors that missed the digital boat are trying to win in their offices a war they are not winning in the markets.

**Do you worry that the European digital single market will become an instrument of protectionism?**

If it is properly exploited, European GDP could grow by two percentage points, and more than four hundred thousand jobs could be created. But we are also concerned about risks, since we can see that there are forces within the EU that consider it necessary to promote protectionism in the digital sphere in order to ensure that Europe can catch up with the United States, with non-European Internet companies subject to stricter regulations than European ones.

**What are the next steps that Spain should take in the sphere of connectivity?**

rates stand at over 50 percent. In less than a year and a half, more than 297,000 people have signed up and more than 53,000 certificates have been awarded. We are not the only company to do something like this. It is also very interesting that these initiatives can be public-private or private-public.

**Why is Spain one of the few countries that does not have Google News?**

Some publishers have convinced the government to issue a law that makes it possible to extract money from Google. We have had to close in Spain because we are not going to pay for that. It's a question of principles. Now it is clear that this is not good for Google, or the advertisers, or users—or even the publishers, since they have lost traffic, in particular in the case of the smaller companies. The image this gives off abroad, which isn't true to life because Spain is not a digital unfriendly country, has been very negative for the Spanish brand.

## THE BUSINESS PERSPECTIVE

## IN THE DIGITAL ECONOMY

Spanish society makes “intensive use of ICTs and we shouldn’t worry about businesses using them because they worry enough about it already,” **Carlos Muñoz, CEO of GFI España**, points out. “It is public authorities that are really behind in the use of ICTs. Just as the Corte Inglés department stores have to compete with Amazon and invest a great deal in this sphere, government authorities should do the same—even though they don’t stand to lose customers.”

**Alejandro Beltrán, Partner and Director-General of McKinsey & Company for Spain and Portugal**, agrees. His opinion is that “vast investment is required at the national level to digitalize administrative processes and improve the user experience, reducing requirements to the bare minimum and offering a multichannel experience. Technology should be leveraged to the benefit of businesses and individuals, generating significantly improved efficiency for the country as a whole along the way.”

But this view is not shared by **José Manuel Petisco, Director-General of CISCO**. He highlights that “studies indicate that in the coming years four out of every ten companies will disappear or become irrelevant because they were not capable of undertaking a digital transformation. Spain’s position on the World Economic Forum’s Networked Readiness Index at number thirty-four doesn’t match either our size or our economy. Individuals make very good use of ICTs but companies don’t, and this is because we are a country of small and micro-enterprises.”

## DIGITALIZED DIRECTORS

“Training management teams, bringing customers into the future,

and instilling the digital mindset are key to our progress toward digitalization,” says **Javier Latasa, Director-General of Vass Consulting**. “The level of digitalization of an enterprise or country depends more on culture than on technology. There are small companies that really know how to position themselves in the digital world because their management team has incorporated this element into their culture, just as there are very big companies that are not well placed in the sphere even though they have more means and technologies at their disposal.” He adds, “I do not know of any country that is in a better position than Spain in this sphere. Our banks, our telecommunications company, and our large companies in general have an extraordinarily high level of technology and digitalization.”

In this respect, **Elena Gómez del Pozuelo, President of Adigital, Womenalia, and BebedeParis**, believes that “given that Spain can offer good weather, people, healthcare, and transport, if we knew how to take advantage of this opportunity we could transform this country into the world’s digital paradise. So the government has a duty to encourage and facilitate the creation of startups, investment in such companies, and talent attraction. Digitalization is happening slowly in Spain because CEOs do not have the right training, and businesses depend on and start with their management teams. In the most digitalized countries, around 50 or 60 percent of CEOs of companies listed on the stock exchange have Twitter. But on the Ibex 35 index there are only three CEOs that have Twitter.”

**Enrique Jiménez, CEO of Digital Group**, indicates that “investment in the range of Internet uses in Spain reaches around 25 percent, compared to around 50 percent in the United Kingdom.” Nevertheless,

“Spain is perceived to be a force to be reckoned with in digital marketing in countries such as Portugal or the majority of Latin American countries, which represents a great opportunity for us to enter these markets.”

**Meinrad Spenger, CEO of MásMóvil**, considers that “in the context we are living in, and given huge advances in the range of Internet technologies, Internet access should be a right.” He continues, “it doesn’t make sense for Spain to have three mobile networks in which all operators invest in fiber-optic technologies in the same regions when the accumulated investment of the three main operators could have served to create a single operator that would reach all areas of the national territory. The regulator should get involved in this matter in order to better ensure the efficiency of investments and the services provided to users.”

In this sector, constant reference is made to the regulator. “The framework clearly has room for improvement. The regulation of the telecommunications market is a compromise between each individual company’s desire to do business and the will of the regulator, and no one should receive preferential treatment within the takeover market,” says **Carlos Guri, Director-General of Simyo**.

“There are countries that are leading the change toward digitalization, such as the United States,” observes **Mónica Martínez, President of GMV**. “We are following their lead, but we have to move more quickly. We have to fully immerse ourselves in the digital world, encouraging society to do the same and embracing all of these innovative technological concepts, working to have more digitalized businesses by offering tax incentives and education related to the digital transformation.”

## THE EUROPEAN DIMENSION, THE GLOBAL DIMENSION

There has to be a European dimension and framework. “If we are to move toward an integrated telecommunications market in Europe, the EU should present such a move as a real opportunity for companies,” **Guri** points out. “There should be European spectrum auctions and European entities should be allowed to act in a market big enough to compete at the international level.”

“The telecommunications market is already global, and increasingly so, but it continues to be a multi-local market, meaning that operators work in various countries but not on a global scale,” explains **Jorge Pérez Martínez, Director of Economía Digital**. “We still have to consolidate operators at the European level. The

European telecommunications sector will not stop experiencing hard times until we have a single telecommunications market, consolidating the sector to leave some three or four pan-European operators.”

And then there is the question of the size of telecommunications companies. According to **Roger Vilà, General Manager for Southern Europe of NTT**, “the telecommunications sector must become dual. On the one hand, in order to be able to compete at the global level, we need to see a certain level of concentration, large companies capable of carrying out significant investments and reaching competitive levels of efficiency. On the other hand, it is possible to compete by offering new things, different things, new business models. In this sense, smaller companies are very important actors in the digital era,

so of course there is space for them too. A correct implementation of the digital agenda is becoming increasingly important, as is the promotion of intensive use of ICTs in education and support for small enterprises.”

**Jorge Pérez** believes that “it is all about the digital economy. But there are different stages within the digitalization process. The challenge for us now is to achieve a digital transformation of all of the economy’s components, from small butchers to large multinational companies.” He adds that “Spain is in a privileged position to carry out the digital transformation because since the euro is at rock-bottom and domestic demand is recovering very slowly, businesses have had to look further afield to earn their profits and the solution to this is the digital economy.”

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