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Business model and development

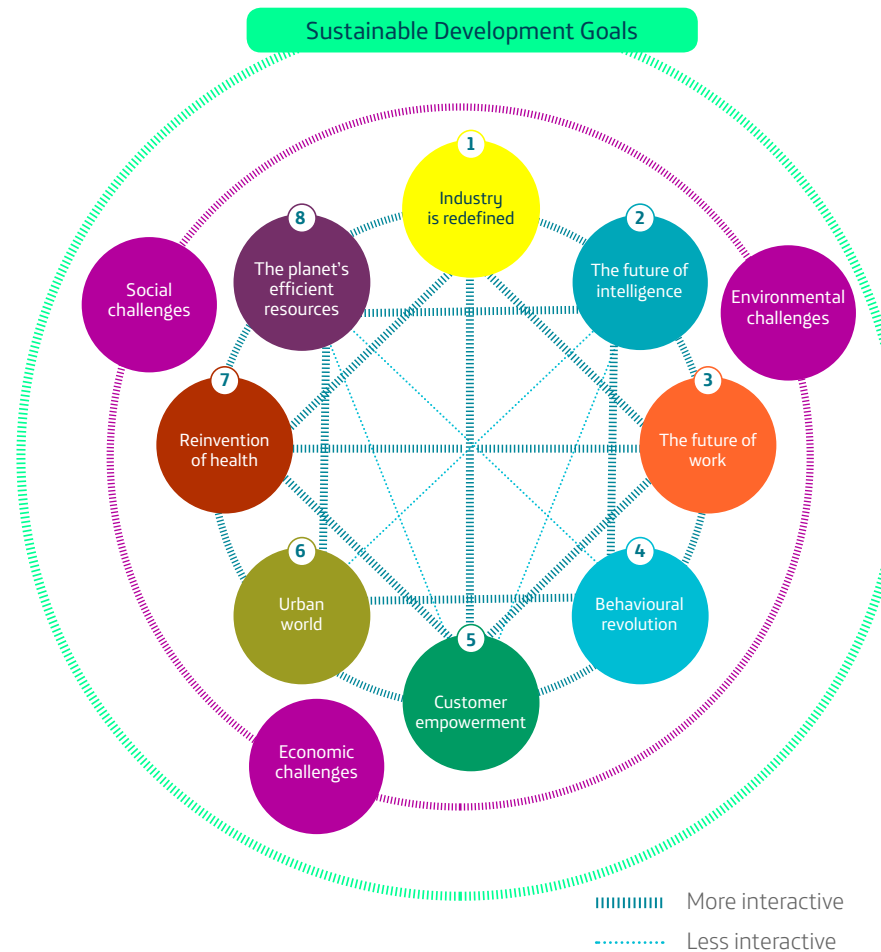
- Trends, opportunities and strategy
- Network deployment
- Digital transformation
- Innovation

Trends, opportunities and strategy

We are currently experiencing a digital revolution which is conditioning the social and economic development of the world and profoundly transforming our way of life, from how we relate to and inform each other to how we work or access services. Similarly, in the coming decades, coinciding with this revolution, humanity will have to face up to global social and environmental challenges, such as demographic growth and urban development, a scarcity of resources and water, and climate change. Within this scenario, technology and innovation will play a key role in increasing efficiency, improving our quality of life and addressing the growing challenges facing humanity.

As a provider of connectivity and innovative services, we also form part of the above revolution, playing a fundamental role in the changes in the countries in which we operate.

According to the EY consulting firm, in its report titled "The upside of disruption", we can find 8 large megatrends brought about by the increasing impact of technology, globalisation and demographic change. Thus, phenomena such as urban development, population ageing, the rise of the millennial population, Big Data and robotics interact with each other and mark the future of the economy, industry, the planet and its people.



1. Industry is redefined:

The traditional diversity of companies is being broken by the appearance of new competitors from other industries, including some unrelated to the sector.

2. The future of intelligence:

Connectivity, the intelligent use of Big Data and its application in artificial intelligence is opening up new ways of decision-making and interacting.

3. The future of work:

The world of work is being reinvented, due to the impact of technology and globalisation.

4. Behavioural revolution:

Behavioural economics will become a growing resource for businesses.

5. Customer empowerment:

Customers are becoming increasingly aware of their commercial value and expect to be understood and attracted in all their complexity.

6. Urban world:

Innovation is becoming fundamental in the new cities, thanks to new sustainable solutions.

7. Reinvention of health:

The demographic, globalising and technological changes are giving rise to Health 2.0, a model in which patients, instead of being passive recipients of care, are becoming an active and personalised element, with more information and control over the decisions regarding their health.

8. The planet's efficient resources:

The transformation of resources is already challenging the business models and reducing the use of coal in the global energy mix, generating a fourth industrial revolution in terms of resource use.



As part of this new scenario, the United Nations launched its Sustainable Development Goals - 17 goals which seek to reduce the impact of phenomena such as climate change and economic inequality, and encourage innovation and sustainable consumption.

TELEFÓNICA'S STRATEGY AND BUSINESS MODEL

Our industry is a facilitator of profound changes in the economy, chiefly linked to the irruption of artificial intelligence. The connectivity of all our devices is resulting in an explosion of data which, together with the power of cloud computing, is becoming a driving force for product and service innovation and the customer experience.

The explosion of data, the speed and ubiquity of connectivity and the improvements made

to computing efficiency are the main facilitators of this change. The rate of the growth in data, brought about, among other reasons, by the rise in the Internet of Things, is doubling every two years. All the above represents an unprecedented leap in the history of artificial intelligence and, therefore, in innovation.

This new technological paradigm is having a significant impact on the economy, reflected in improved productivity, to the extent that the new applications of technology could trigger a new cycle of growth, as well as improving profitability and capital returns. All this is largely due to innovations in areas such as energy efficiency, smart cities and process automation. New competitive advantages will entail changes in the competitiveness of sectors and lead to the emergence of new competitors in industries such as health, farming, energy,

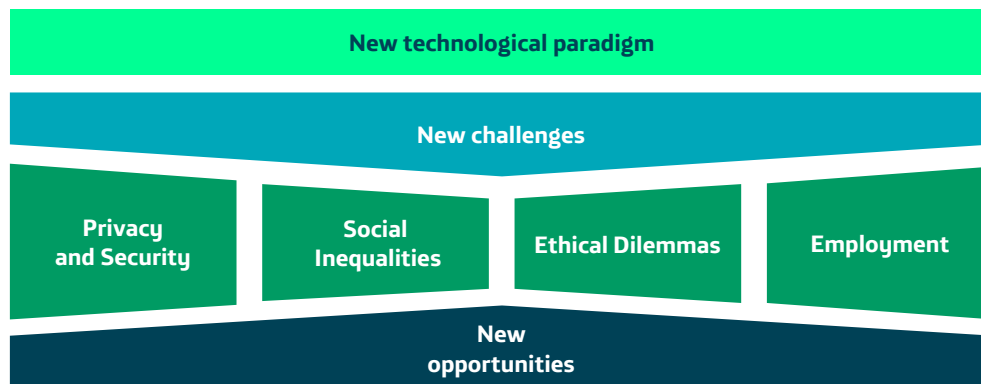


Our industry is a *facilitator of profound changes* in the economy, chiefly linked to the irruption of artificial intelligence.

finance and so on. Finally, a new cycle of innovation arising from artificial intelligence will emerge, providing new transversal services to increase innovation and value in all industries.

This new revolution is also creating new social and sustainability challenges, which we must be ready to face. These challenges include the privacy and security of our customers' data, social inequalities arising from new technological skills, among both individuals and countries, ethical dilemmas generated by new technologies such as self-driving cars, data use and the future of employment with robotisation.

We believe that these challenges may also represent an opportunity to make a more sustainable digital society, if we do so in accordance with our values. We want to give our customers the opportunity to choose the products and services which will help them to improve their lives in an integrated, transparent and committed way. Our goal is to put technology at the service of people, giving customers control over their digital lives. In relation to the inequality which may be generated by the new technologies, we want to promote and ensure access to them, giving our customers, and society in general, the opportunity to choose the most advanced technology and the most innovative services in a secure and high-quality fashion.





The intelligent use of data can yield important benefits for society. We can apply the data economy to pandemics and crime, improve efficiency in sectors such as transport and emergency services in the event of disasters, face up to major challenges such as the management of large cities and natural resources, and even improve administration of governments by means of statistics and analyses.

Finally, in relation to employment, we seek to transform our way of working and the skills and aptitudes of our employees by means of collaborative work, labour flexibility and career development.

We want to become a real-time, automated and convergent company, thanks to the digitisation of our production processes. To achieve this, the transformation of the

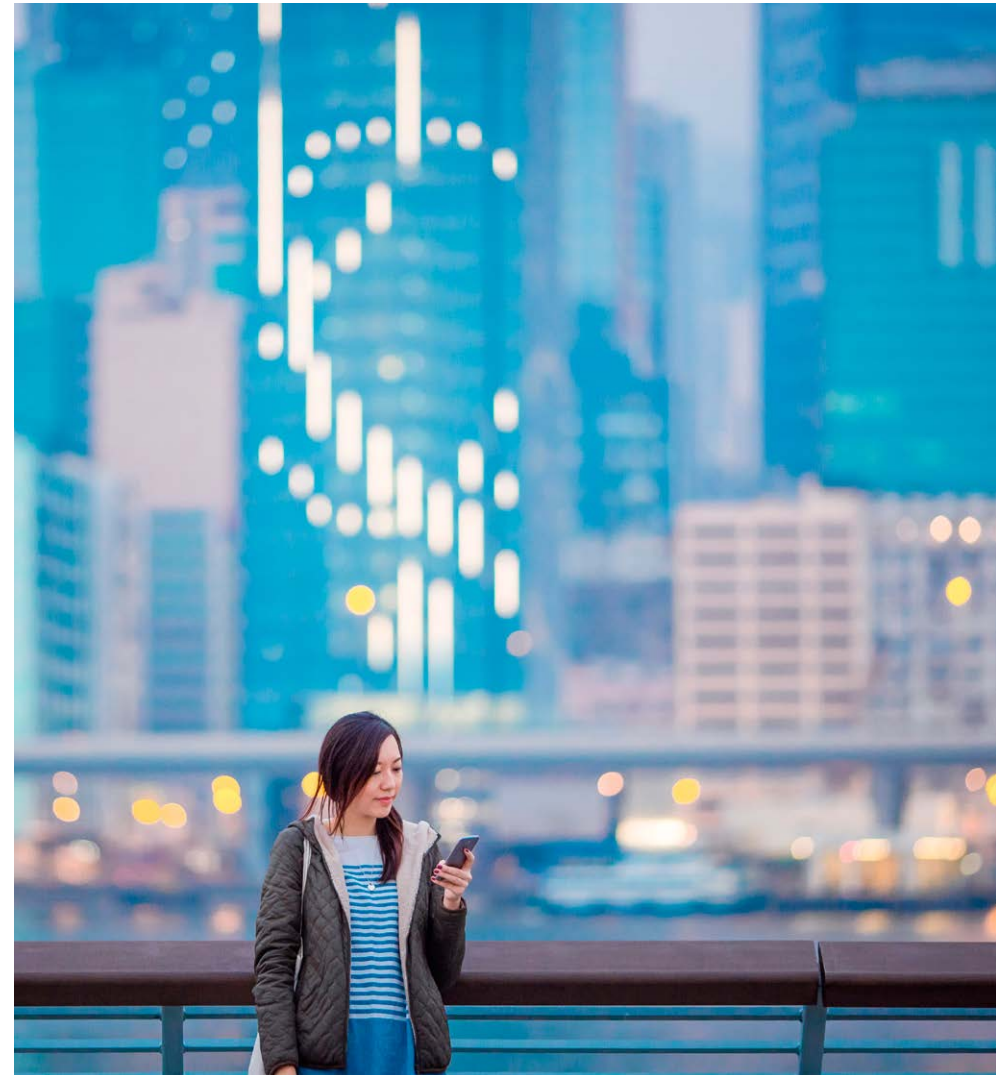
above and the policies and systems form a cornerstone and an essential element for our future. Every business element needs to be digital, fully automating the internal operations and improving the customer experience.

Our objective is also to be an increasingly sustainable company, committed to the objectives and goals set by the United Nations, given that our business and strategy have a profound impact on our contribution to them. Thus, although our main activity has a clear impact on Goal 9, which is focused on industry, innovation and infrastructures, we also contribute, in one way or another, to the other 16 goals, mainly education (4), economic growth (8), sustainable cities (11) and action for climate change (13).

FURTHER INFORMATION 

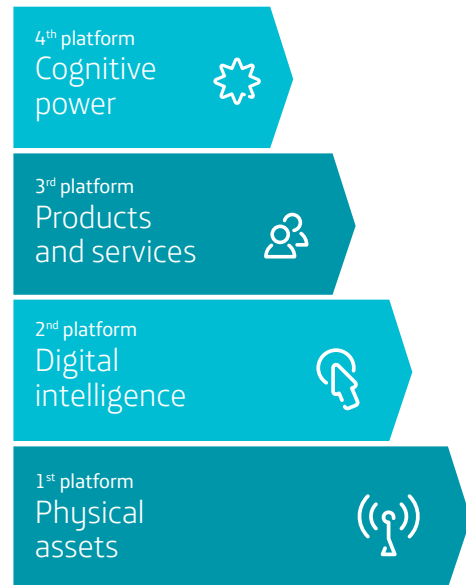


— We offer our customers the chance to choose the products and services which *will help them to improve their lives*





At Telefónica we are building a data-based company so as to be at the forefront of this new revolution. To achieve this, we are improving each of our assets and combining them in a coherent collective at the service of our customers, which is organised into four platforms:



1ST PLATFORM: NETWORK AND PHYSICAL ASSETS

The first platform is made up of all our physical assets, which generate a large amount of data in real time. It includes networks and base stations, stores and customer teams. This platform makes us relevant and accounts for most of our investment.

At Telefónica we believe that connectivity provides us with a differential advantage in the face of the continuous growth of data traffic. For this reason, we are making a significant effort to lead the deployment of high-speed fixed and mobile broadband accesses in the markets in which we operate. In the same way, we are enhancing optimised connectivity in accordance with the needs of companies as a key element in our value proposition. In a complementary manner, we are refocusing our physical stores in order to provide a better customer experience with software-based services.

FURTHER INFORMATION



2ND PLATFORM: IT SYSTEMS

The second platform consists of our support systems and commercial systems, linking the data generated by the first platform with the business component. It encourages end-to-end digitisation and allows connection with the other platforms, enabling us as a real-time, automated and customer-oriented company.

For us, software is playing an increasingly important role in connectivity solutions. It is a key element for meeting the needs of our customers, including features such as virtualisation and cloud services. We are also committed to the simplification and homogenisation of the Company's technological infrastructures, as an enabler of new growth opportunities.

In addition, we are promoting the digitisation of our channels and interaction with our customers, based on new multi-channel capabilities, including self-service tools and non-voice channels such as chatbots.

FURTHER INFORMATION





3RD PLATFORM: END SERVICES FOR OUR CUSTOMERS

The third platform refers to the products and services we make available to our customers, and which make up a distinctive, personalised and simple offer which capitalises on the capillarity of our physical assets and systems.

We have adopted video as a key element in our proposal in order to increase the value of connectivity, combining our own offers and agreements with third parties. In the business segment this role is played by the cloud, combining our own assets with those of other agents. We are committed to innovation, focusing on a specific set of digital services (new video formats, music, cloud, games and security) and investing in startups in order to acquire digital capabilities beyond connectivity.

FURTHER INFORMATION 



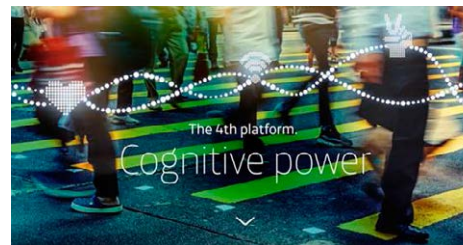
4TH PLATFORM: COGNITIVE INTELLIGENCE BASED ON BIG DATA

We believe that data will be the enabler of a new company, incorporating cognitive capacities as the basis for a new relationship model with our customers.

Our fourth platform is the ecosystem which connects data, devices, networks and people. Designed as the pillar upon which our relationship of trust with our customers is based, it gathers internal and external data and allows secure connections between Telefónica and third-party services which are relevant to our users.

We want to return the data to customers to improve their user experience and to allow them, in a simple and personalised manner, to interact with our products and services, thereby managing their digital lives. In addition, we want to help companies in their transformation towards data-driven businesses. We will provide them with an easy way of collecting, understanding and transforming data into better decisions, enabling them to translate the increased knowledge of their customers into new opportunities.

FURTHER INFORMATION 



Our goal is to become a real-time, automated and convergent company thanks to the *digitisation of our production processes*



Network deployment_

Connectivity is one of the main driving forces of digital transformation. We want no one to be left out, and for everyone to have access to the benefits of digital life and the economic development resulting from the new technologies.

Our customers want to be permanently connected, anywhere and from any device, with the highest quality and the very best

Since 2012 we have invested **38,000 million euros** in the development of our fixed and mobile networks

experience. In order to meet this demand, we use our physical assets to build the networks of the future, enabling us to make a distinctive offer.

Organised under our first platform, the Network assets are becoming a key source of customer knowledge. These data allow us to prioritise the deployment of our networks in accordance with customer needs.

OUR CONNECTIVITY

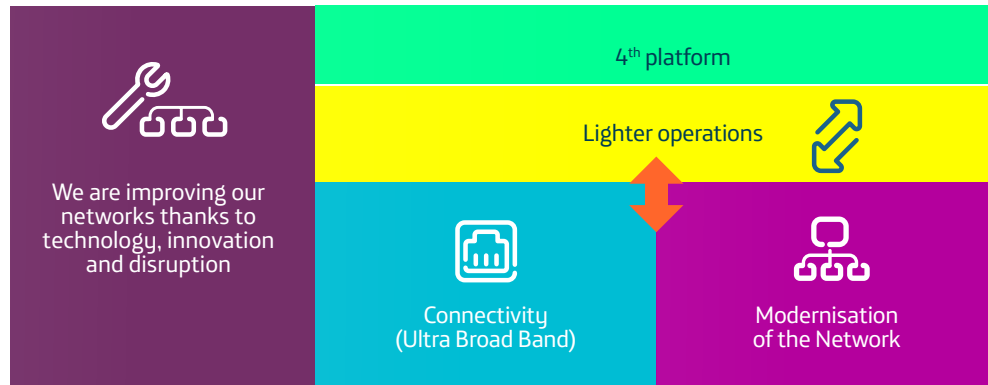
Connectivity forms the basis of our business, even more so in an age that has seen an exponential increase in applications, services and terminals, and in which investment in infrastructures is key to giving more and more homes the opportunity to access the digital world.

Our systems add smart ways of administering the assets and help us to become a real-time, efficient and convergent company.

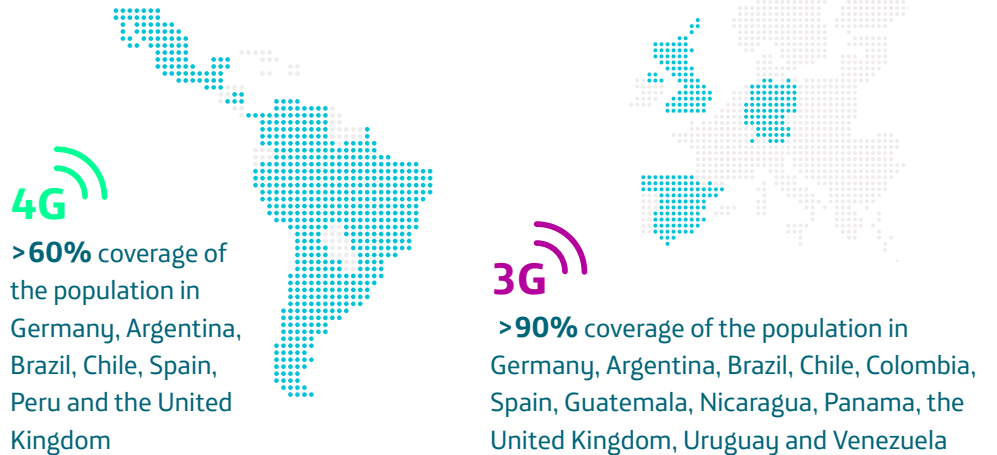
Our customers want and expect the maximum access speed, the greatest capacity for information transmission, 24-hour availability and flexibility of access from any device, anywhere. For this reason, since 2012 we have invested 38,000 million euros in the development of our fixed and mobile networks. In addition, we are continuing to work on improving capacity and coverage, enabling us

to record exponential growth in traffic, which has increased by 49% over the past year.

During 2016 we invested almost 9,000 million euros, mainly directed to the deployment of ultra-fast and state-of-the-art networks.



MAP OF 3G/4G MOBILE COVERAGE GREATER THAN 80% OF THE POPULATION IN THE COUNTRIES IN WHICH TELEFÓNICA OPERATES





MOBILE NETWORKS

In our mobile networks we have achieved historic levels of 4G coverage in the regions in which we operate, recording 96% in Spain, 95% in the United Kingdom, 79% in Germany, 60% in Brazil and 49% in Latin America. In 2016 accesses totalled 350 million, of which 147.2 million corresponded to smartphones, representing an increase of 17% in comparison to 2015, with an overall penetration of 57%. Our LTE customers totalled 66.3 million (1.8 times more than the previous year). In addition, we have begun our journey towards the new 5G networks, working in international forums which are defining the access and architecture of these new ultra high-speed networks.

LABORATORY OF EXCELLENCE 5G - 5TONIC

We have created, together with IMDEA Networks, the first 5G laboratory of excellence in Spain: 5TONIC. Its objective is to create an open ecosystem of innovation and research in which industry and the academic world can work together. The laboratory addresses the research process from an eminently practical standpoint by means of feasibility tests, analysing all the technological aspects and the complexity of the different solutions.

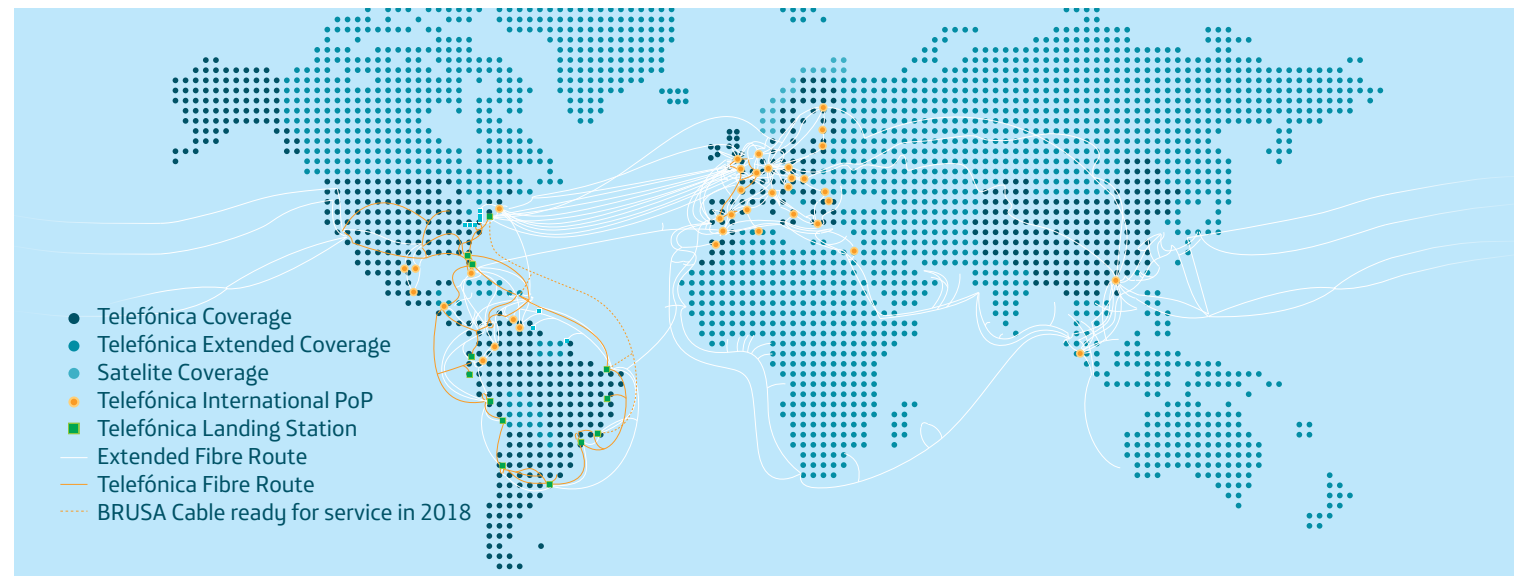
BEST PRACTICES

DEPLOYMENT OF VOLTE TECHNOLOGY IN LATIN AMERICA

During 2016 we began the deployment of VoLTE technology in Colombia, Argentina and Peru. This Network service allows us to make high-definition (HD) voice calls and simultaneously maintain a data connection at the speed of the 4G LTE Network, which improves the user experience. We have become one of the first operators in Latin America to provide this solution to our customers.

The benefits for users include call connections which are four seconds faster, the possibility of using the Internet in 4G while making a voice call, greater voice clarity and being able to make high-definition video calls without the need to open an application.

In 2016, the number of accesses totalled *350 million*





FIXED NETWORKS

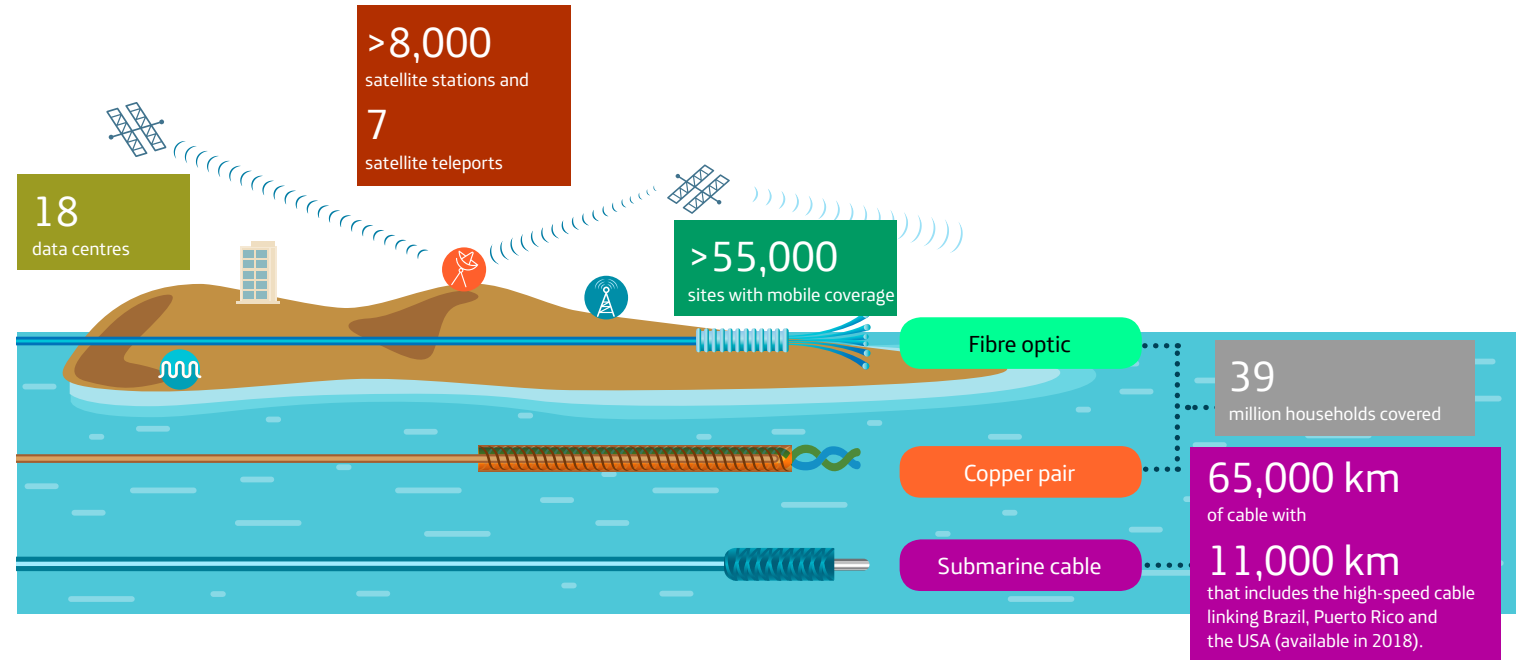
During the last year we reached 39 million households with fibre and cable networks in Spain, Brazil and Latin America, and 9.2 million fibre + VDSL customers. In addition, our fibre optic and cable customers increased by 24% compared with 2015, accounting for 43% of total fixed broadband accesses. As for pay TV services, we recorded 8.3 million accesses over the past year.

Telxius

We should highlight the creation, in 2016, of Telxius, a Group subsidiary which brings together some of our main physical assets, and has become one of the leading providers of telecommunications infrastructure services in Europe and America. Its main objective is to increase the number of services provided to other operators and to participate more actively in the existing growth opportunities in the sector, including the possibility of incorporating third-party assets.

Business Solutions

Our Business Solutions division provides international telecommunications services in more than 170 countries to fixed and mobile operators, ISPs and content providers. Thus, we have more than 8,000 satellite stations and 18 data centres (including the largest data centre in Europe to have TIER IV Gold certification). For further information, see the chapters on 'Environment'.



MILESTONES IN 2016

Increase LTE coverage in Spain to over 85% (compared with 75% in December 2015).



Expand LTE coverage in Brazil to 60% (compared with 46.6% in December 2015), reaching 352 cities.



Reinforce our commitment to digital inclusion, focusing our investment on improving access to high-speed Internet services and adapting our offer to the needs of our customers.



CHALLENGES FOR 2017

To strengthen FTTH coverage in Brazil, reaching 18.8 million households, and expanding LTE coverage to 80% of the population.

To increase 4G coverage in Europe to 90%.

Extension of VoLTE technology deployment in Latin America and Europe.



Digital transformation_

Our systems add smart ways of administering our physical infrastructure and help us, by digitising the whole value chain, to become a real-time, automated and convergent company. We are a company driven by data, using them to enrich and simplify the lives of users and improve business efficiency.

We thus build customised products and services for our customers, ranging from connectivity services to video, security systems, cloud storage and the Internet of Things.

DIGITISATION

The digitisation of our systems, which makes up what we call the second platform, is fundamental if we wish to become a competitive company in the current markets, managing the interactions of our products and services with our customers. We thereby promote a comprehensive transformation of the business and capitalise on technology as a key facilitator. We are transforming

our processes and systems in a profound, structural and standardised manner.

During 2016 we managed to make 49% of our processes digital. In this way, we can improve the experience of our customers and the administration of our products, obtaining operational benefits. Our users can enjoy an omni-directional experience, switching seamlessly from one service channel to another. We promote the online channel and self-management in a personalised manner, enabling our customers to purchase and change products and services and solve problems autonomously.

This digitisation allows flexible portfolio management and leads to an offer in which we can integrate third parties in a faster and more straightforward manner.

This transformation simplifies and automates operations, improving processes such as invoicing, provisioning and service guarantees.

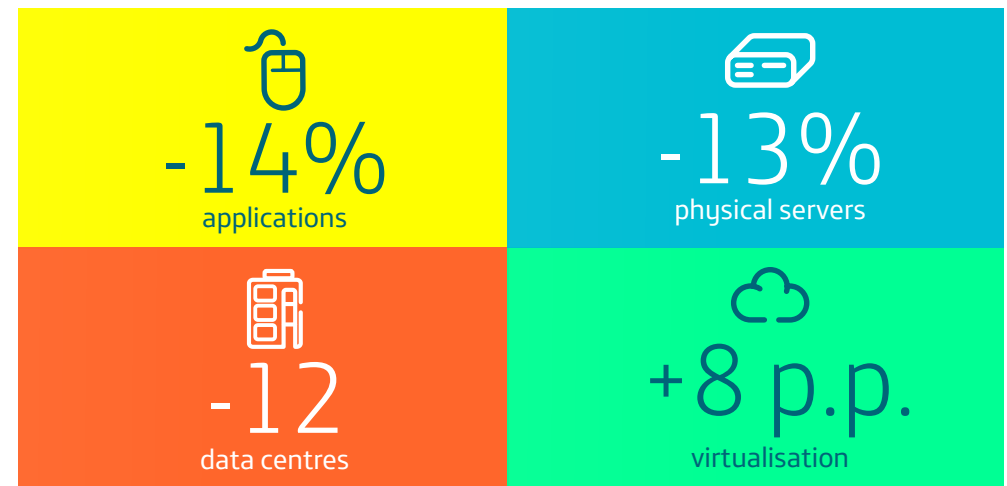
We thus reduce back-office needs and decrease errors. Thanks to more efficient data management, we can make more effective and streamlined decisions. In this sense, 59% of our customers have already migrated to the Online Charging System (OCS), thereby benefiting from accurate account information and consumptions in real time.

Thus, in the 2014-2016 period, our simplification has meant an increase of 8 percentage points

in terms of virtualisation, owing to a 14% reduction in the applications we use, 13% fewer physical servers and 12 fewer data centres.

SYSTEM SIMPLIFICATION

(2014-2016)





DIGITAL SOLUTIONS:

Life is a collection of scenarios. Integrating devices and services, providing a simple digital connection, enriches and simplifies our daily lives. These solutions drive digital transformation, creating a more natural hyper-connected world, in which the Internet of Things is a living, natural and evolving fabric.

As a result of the above, our customers demand an integrated offer which goes beyond connectivity and includes communications, devices, video and digital services. Thus, under what we call our third platform, our digital services have grown by 14%, driven, among other factors, by the cloud, the data economy, security and IoT services.

Many of these services help us to address social and environmental challenges such as energy efficiency solutions, fleet management, and sensorisation and measurement systems. For further information, see the chapter on 'EcoSmart services'.



Personal



Communication is the basis of human interaction. Thanks to technology, our bodies and the things around us can “talk”, taking us to a new dimension.

Home



Technology and connectivity are transforming our homes and the way in which we communicate and carry out our daily lives.

Cities



Cities are becoming centres of economic and social influence. The digital revolution is creating a hyper-connected and collaborative society, transforming life and allowing environmental sustainability.

Industry



Thanks to the digital transformation, companies are improving their flexibility, increasing their speed of production and efficiency and developing new processes, business models and products.

We live in a digital society in which everything is hyper-connected, and it is essential to *guarantee the security and privacy* of solutions for our customers

In a technological world based on connectivity, security is essential in our digital lives. Nowadays, the threats are becoming increasingly frequent and sophisticated, affecting organisations and individuals and putting their economy, reputation, privacy and trust in jeopardy. To face this we have Eleven Paths, a specialised business unit which has the objective of endowing our services and products with. For further information, see the chapter on 'Digital Trust'.



FURTHER INFORMATION Visit the Eleven Paths website

FURTHER INFORMATION



BIG DATA AND COGNITIVE INTELLIGENCE

Connectivity is a concept which goes far beyond purely technical matters. We want to be a data-driven company. Therefore, by means of the use of cognitive power, the data from the three previous platforms are converted into knowledge by our fourth platform. Cognitive intelligence allows us to understand our customers better and establish a more natural and easier connection, generating a new relationship of trust with them on the basis of transparency and the control of their data.

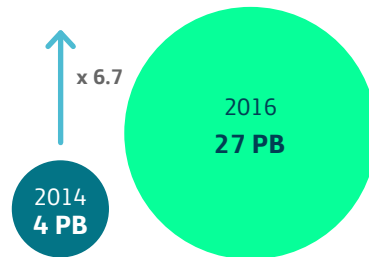


In 2016 we launched LUCA, a new unit specialising in Big Data, the objective of which is to boost the digital transformation of our customers. We would like other organisations - both public and private - to evolve through management of their own data. In this way, LUCA enables organisations to accelerate their journey to Big Data by means of data engineering and business insights, based on data from more than 350 million accesses to our communications Network throughout the world, which enables us to offer highly

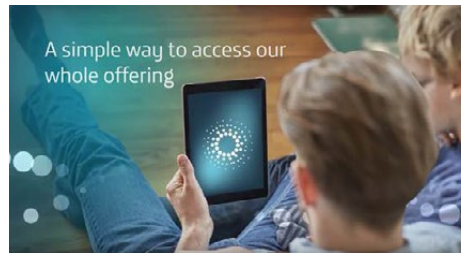
valuable information to both our private and corporate customers in sectors such as tourism, distribution and financial services.

FIND OUT MORE:

BIG DATA STORAGE



FURTHER INFORMATION



Simplify



Enrich



Empower



Discover

Our commitment to revolutionising the way our customers relate to us materialises under the name of AURA. Thanks to this initiative, users will enrich, as well as simplify, access to numerous use cases, via different media and using natural interaction (voice, text, etc.) with our products and services. This new form of interaction will allow us to build a path of trust, facilitating the opportunity to complement their digital experience with the discovery of new ways of putting their data to work.

AURA will provide transparency in data management, as it will allow users to know what we store; they will be able to decide which data they wish to eliminate from their digital lives with us and, in addition, we can offer new

services based on those generated on our platforms. With AURA the customer is in charge and is the person who decides what is to be done with his or her data.

To implement this new customer relationship model, AURA relies on cognitive technology which, thanks to its state-of-the-art computing capabilities, is able to implement the power of reasoning of artificial intelligence solutions. Thus, it allows generation of a personalised response that takes into account the context in which the user expresses his or her need and offers very short response times.

Innovation_

Innovation is the fundamental tool that enables us to be a key player in the digital revolution and to encourage solutions which are capable of addressing the big challenges and the sustainable development of our business.

HOW DO WE ENCOURAGE INNOVATION?



Through our internal capabilities and the creation of open ecosystems we encourage all phases of innovation, from its initial stages until the investment and acquisition of companies and solutions.

MANAGEMENT FOCUS

WHY IS IT A KEY ISSUE?



Our ability to develop sustainable solutions allows us to offer products and services that are new, unique and increasingly innovative, to our customers.

WHERE IS THE IMPACT?



Innovation has an impact in all areas of our business, from the research and development departments, to the commercial and business units which seek to become more effective through innovation.

TELEFÓNICA'S OBJECTIVE



We want to promote the generation of new business opportunities to devise solutions that build a more sustainable world, and at the same time create a competitive advantage and unique products.

Indicators	2015	2016
R&D&I investment (Millions of euros)	6,582	6,568
Patent portfolio	545	577

SUSTAINABLE DEVELOPMENT GOALS

8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



11 SUSTAINABLE CITIES AND COMMUNITIES





We are committed to technological innovation as a fundamental tool to become one of the main players in the new digital universe, with the capacity to help create a more sustainable world and, in turn, obtain competitive advantages and unique products.

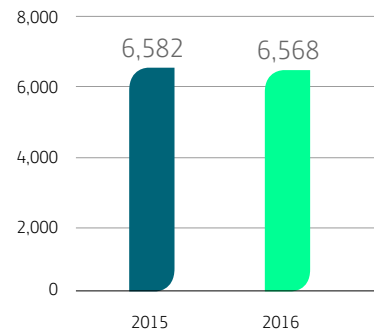
Through the introduction of new technologies and developing business solutions and processes, we aim to become a more effective, efficient and customer-oriented Group.

We base our innovation strategy on the balance between two work streams:

- ▶ Promotion of our internal research, development and innovation (R&D&I) capabilities, for which we have developed our own innovation model. This allows us to promote the application of technical research in developing commercial products and services using the knowledge gained in research centres, technological institutes and universities, among other sources.
- ▶ Promotion of the creation of open innovation ecosystems, in which the Open Future initiative stands out as a global programme designed to connect entrepreneurs, start-ups, investors, venture capital funds and public and

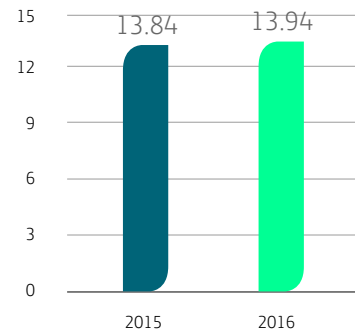
R&D&I INVESTMENT

Millions of euros



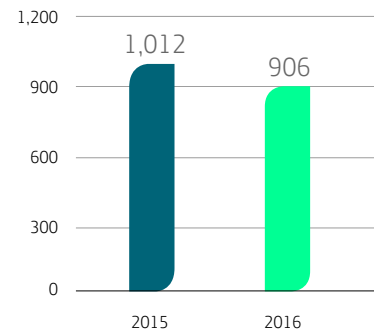
R&D&I INVESTMENT / INCOME

%



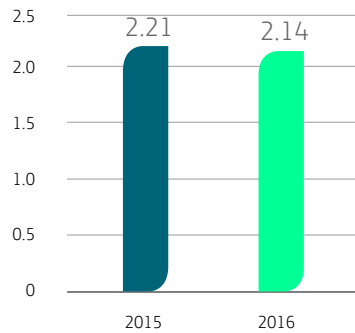
R&D INVESTMENT

Millions of euros



R&D INVESTMENT / INCOME

%



Note: The 2015 figures consolidate the GVT and DTS results from 1 May 2015 and consider, from the first quarter 2015, the Telefónica UK operations as discontinued operations. However, the results of 2014 are not like for like and include the contribution from Telefónica UK but do not include GVT or DTS. Therefore, these figures are not comparable.

private organisations around the world which promote innovation in collaboration with other agents.

In parallel with these two models, Telefónica seeks to promote the development of sustainable solutions that generate a positive impact on the economic, social and technological progress of all the regions in which we operate.

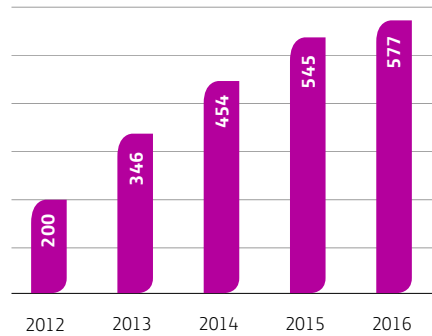
R&D IN FIGURES

This year, a total of 6,568 million euros have been spent on R&D&I. Also worthy of note is that, for another year running, we are the world's fourth largest Telco Company investor in innovation, and the second in Europe, according to the 2016 EU Industrial R&D Investment Scoreboard report by the European Commission.

We are the World's fourth largest *Telco* investor in innovation and *the second* largest in Europe



PORTFOLIO OF REGISTERED PATENTS



During 2016, Telefónica registered 27 new patent applications: 3 through the American office (USPTO), 2 through the Chilean office (INAPI) and 22 through the Spanish Patent and Trademark Office (Spanish acronym: OEPM), 7 of which were international applications (PCT) and 15 were European. Moreover, 1 utility model was registered in Spain, also through the OEPM.

INTERNAL INNOVATION




We firmly believe that the competitive advantage that innovation offers cannot be based solely on acquired technology. For this reason, we consider it a core strategy to promote internal innovation, research and development activities, with the aim of achieving this differentiation and advancing the fundamental work areas which guarantee the sustainability of our business.

Our internal innovation policy focuses on contributing solutions that guarantee Telefónica's commitment to developing a responsible business under the criteria of economic, social and environmental sustainability.

One of our main tools for managing internal innovation are our centres of technological excellence. We have centres in the United States, Israel, the United Kingdom, Chile and Spain (Barcelona, Granada, Huesca, Madrid and Valladolid).

More than 79 Spanish and foreign universities and research centres have helped us to create one of the most important innovation networks in the field of new technologies. We also cooperate with other European operators and institutions.

We run our internal innovation on the basis of these main core areas:

- INNOVATION IN NETWORKS AND COMMUNICATIONS** 
- INNOVATION IN PRODUCTS, SERVICES AND BIG DATA** 
- APPLIED AND EXPERIMENTAL DISRUPTIVE INNOVATION** 

INNOVATION IN NETWORKS AND COMMUNICATIONS



The main objective of this innovation stream is to achieve more flexible and adaptable networks that are capable of providing support to the changing needs of the digital world while improving efficiency on a global level. To do this, we propose new technological solutions, in addition to coordinating and working with the industry and contributing to international standardisation.

Of particular note in 2016 are the projects we have carried out in the new networks designed for the management devices of IoT (Internet of Things), such as NB-IoT (Narrow Band) or LTE-M, as well as those designed to meet connectivity requirements and battery power consumption of the new sensors, used in a wide range of current solutions, such as water, light or telemetry sensors.

BEST PRACTICES

ONLIFE NETWORK

This is an initiative which explores the benefits of implementing solutions in the cloud, within the limits of our Network infrastructure.

Currently there is a growing demand to obtain a low lag time in communication, increasingly more accurate localisation and personalised experiences for our consumers and businesses. Connectivity of vehicles, autonomous robots or augmented reality are some of the services that require network solutions with a reduced lag time and high computational potential in order to be able to

emulate real-life properly and thus facilitate interaction with humans.

To make these services possible, we have launched an innovation line focused on the concept of the "Onlife Network" that is developing, through cutting-edge technological solutions such as Network virtualisation or "Software Defined Networking", mini data centres located in their own Network infrastructure, with the aim of positioning ourselves as close as possible to the end users.



**INNOVATION IN PRODUCTS,
SERVICES AND BIG DATA**



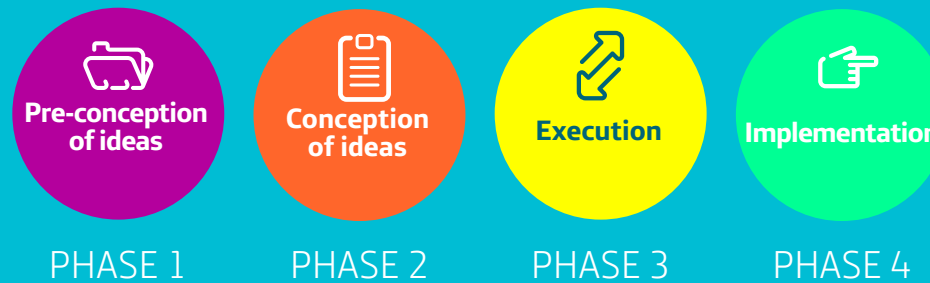
Beyond the new network capabilities and the new communications services, we work in the development of new solutions for the future in areas such as security, video and television distribution and multimedia content, services for the digital home, advanced solutions for agriculture or mining, new tools for the management of communications or content in the cloud. In addition, one of our principal lines of research is giving value to data (Big Data) in all aspects of our work.

These projects, among others, were undertaken based on our objective to quickly identify emerging technologies that may have a significant impact on our business, and to test these technologies in pilot projects related to new services, applications and prototype platforms.

To do this, a central ingredient in this way of working is the use of the Lean Startup methodology. In fact, we have been world pioneers in its application in a big corporation with the creation of the Lean Elephants methodology, which has generated business cases in the prestigious Universities of Berkeley and Harvard. This model divides the design process into 4 phases that are worked on to

WE DIVIDE OUR PROCESSES INTO 4 PHASES

to ensure the implementation of future new businesses with a greater chance of success.



create a commercial solution with an internal startup model, which then has to pass through each of the different phases before a new solution can be launched on the market.

In addition, we emphasize the search for innovative ideas among our employees through calls for innovation. These allow us to improve processes and create new solutions. In line with this, we have created a global framework of in-house enterprise called "in_prendedores" (in_trpreneurs), which integrates all the assets the Group has dedicated to innovation in order

to make them available to all those workers who are able to show they have a potential idea. In this way, Company resources will be made available to them and they will be able to devote part of their time to developing their own initiative internally.



BEST PRACTICES

TOKBOX

TokBox is a Telefónica Group company that develops and operates OpenTok, a global cloud platform which integrates live video, voice, messaging, and screen-sharing experiences on websites and mobile applications.

The platform, which is scalable and customisable, allows companies to develop all types of video communications, from a chat between two people to an emission involving a large number of sources. All this allows us to offer services such as virtual medical consultations and live diagnostics, interactive educational tutorials, or to facilitate activities such as remote teams and customer services workers.





APPLIED AND EXPERIMENTAL DISRUPTIVE INNOVATION



With a view to the future, we have innovation teams whose mission is to investigate the future possibilities of technology as well as to meet the challenges of social, environmental and economic issues that are emerging, to convert them into business opportunities that will enable us to ensure our long-term sustainability.

In this sense, we have created Telefónica Alpha, a new subsidiary focused on product innovation and the development of disruptive technologies. This area seeks to take this innovation into the long-term future production of new technologies. Thus, we are concentrating on areas such as voice recognition, tactile and visual communications, with a focus on technological products that are at an embryonic stage and still have a long way to go in their maturation process before they can finally be launched to the market.

Within this type of innovation we are also exploring the possibilities of cognitive intelligence. Thus, AURA, a solution that redefines our interaction with customers has been born. For further information, see the chapter on 'Digital Transformation'.

OPEN FUTURE: OPEN INNOVATION

We group all our activities, initiatives and projects in the field of open innovation together under the Telefónica Open Future unit, a global and open programme that has the aim of connecting entrepreneurs, startups, investors and public and private organisations from all over the world.

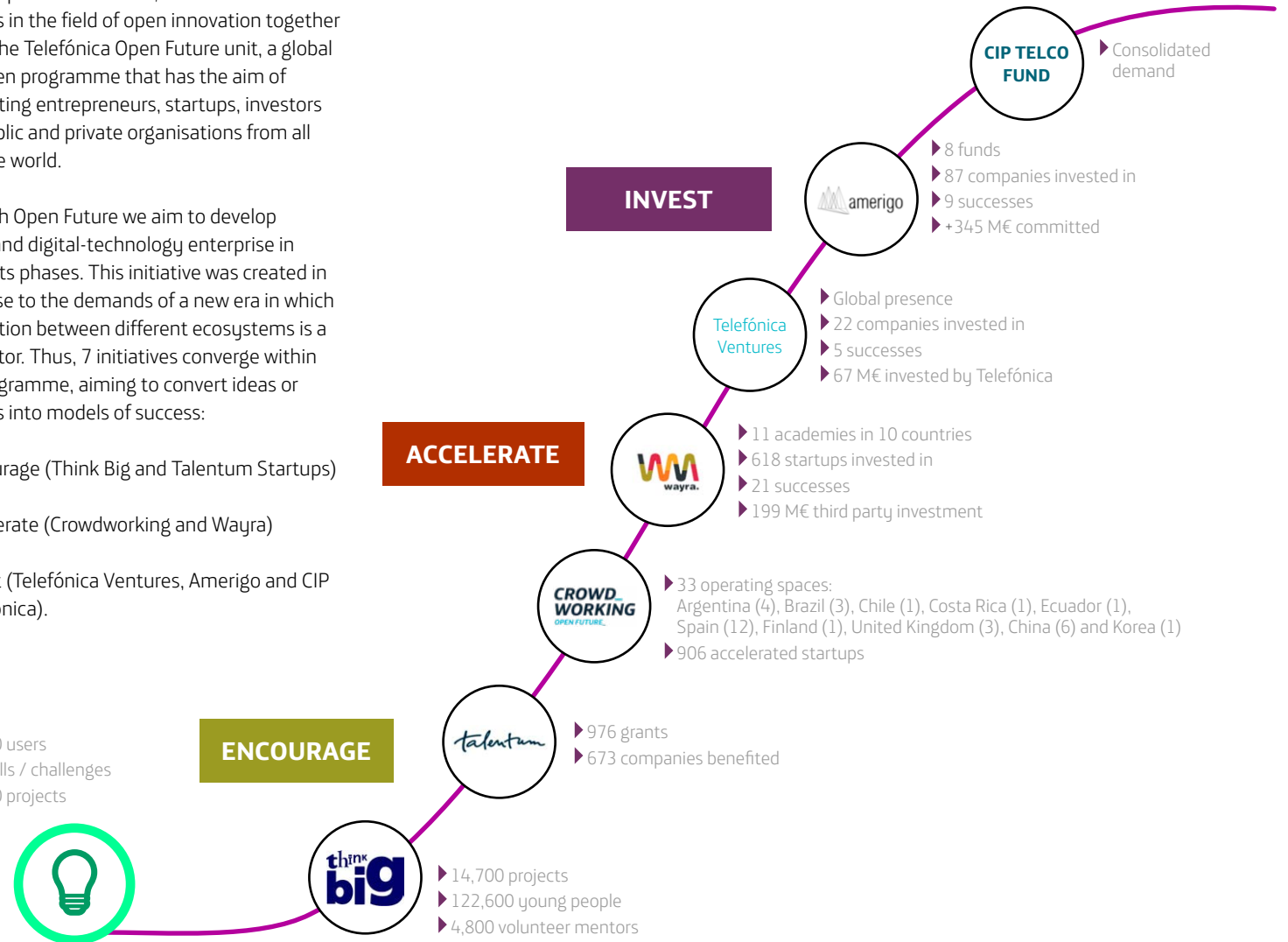
Through Open Future we aim to develop talent and digital-technology enterprise in any of its phases. This initiative was created in response to the demands of a new era in which connection between different ecosystems is a key factor. Thus, 7 initiatives converge within the programme, aiming to convert ideas or projects into models of success:

- ▶ Encourage (Think Big and Talentum Startups)
- ▶ Accelerate (Crowdworking and Wayra)
- ▶ Invest (Telefónica Ventures, Amerigo and CIP Telefónica).

- ▶ 49,900 users
- ▶ 153 calls / challenges
- ▶ 18,000 projects

OPEN FUTURE VALUE CHAIN

Data accumulated December 2016





By means of tools like Think Big, Talentum, the Crowdfunding spaces, Wayra, Telefónica Ventures, the venture capital funds of Amerigo and CIP, we can invest in people, ideas and viable projects based on technology, at any stage of their growth. We do this openly and in connection with public and private organisations.

Our open and transformative nature is one of the main features of Telefónica Open Future, the initiatives of which enjoy the collaboration and participation of public and private organisations, universities, co-investors and other stakeholders in the telecommunications sector and other industries.

With a team of 90 people present in 17 countries in Latin America, Europe and Asia, and a global network of more than 85 partners, from the beginning of the programme and until December 2016, we have received and analysed 50,000 projects and 18,000 entrepreneurs, who are developing their projects, connected through our digital tool. We have also helped to accelerate more than 1,500 startups in our academies and Crowdfunding spaces and invested in more than 700 startups.

So, thanks to Open Future, Telefónica ended the year as one of the main investors in Spain in the area of open innovation, and positioned

At *Telefónica Open Future* we believe that business talent responds to the demands of a *new era* in the field of *innovation*

itself as one of the major Venture Capital investment funds in Europe and Latin America.

In 2016 we promoted the rotation of our portfolio. Some of the successes to be highlighted are Ticketbits and Trip4Real from Amerigo, Busportal, BuzzMove, Clever and CinePapaya from Wayra.

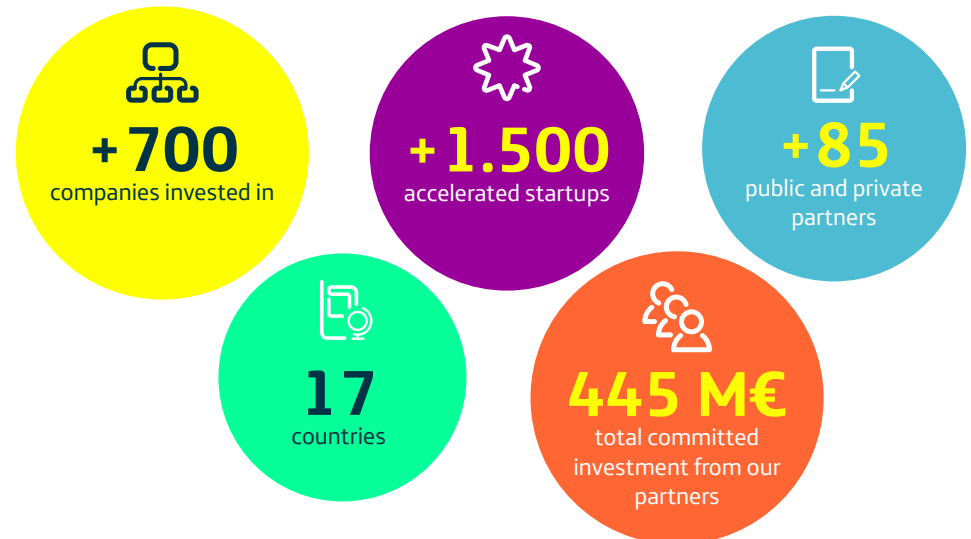
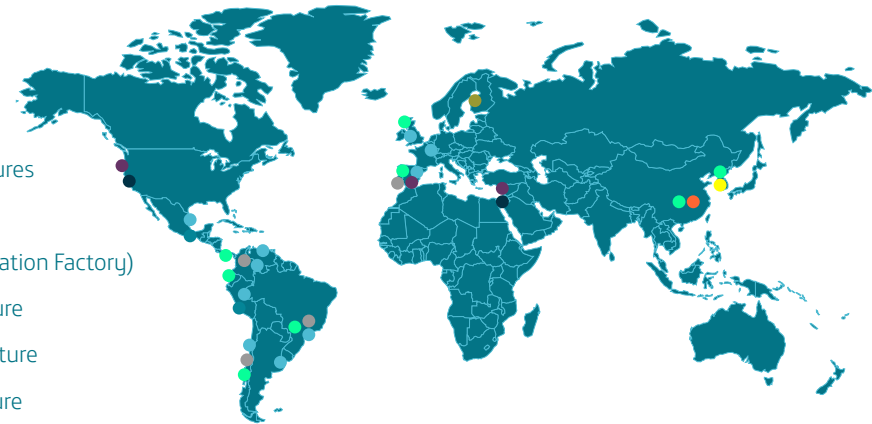
Some of the new startups, invested in through the Amerigo funds, presented promising expectations, such as in the case of Job&Talent (88 M€), Carto (81 M€), LogTrust (Valued at: 40 M€) and Iguama (Valued at: 22.5 M€). In addition, we have ratings that exceed 150 M€ as, for example, in the case of Wallapop (384 M€).

TELEFÓNICA OPEN FUTURE IS A UNIQUE OPEN INNOVATION NETWORK

We encourage global talent by transforming innovative ideas into successful companies

Programme initiatives

- ▶ Crowdfunding
- ▶ Wayra
- ▶ Telefónica Ventures
- ▶ Amerigo
- ▶ CIP (Open Innovation Factory)
- ▶ China Open Future
- ▶ Finland Open Future
- ▶ Korea Open Future





Some of the companies that Telefónica Ventures participates in are considered success cases due to the revenue or savings implied for the Telefónica Group. Among those that stand out are:

ASSIA: Solutions provider for operators of broadband services all over the world. ASSIA solutions allow operators to increase revenues, increase customer satisfaction, improve operational efficiencies and deliver new multimedia content to households with broadband. Since participation started, ASSIA has contributed to more than 53 M€ in savings for the Telefónica Group.

BOKU: The most important mobile payment service platform in the world. Participation in Boku has resulted in 20 M€ of net revenue for the Telefónica Group.

BEST PRACTICES

QUANTENNA

Quantenna, a startup owned by Telefónica Ventures and available for sale after its IPO in October 2016, has a value of more than 600 M€, which implies a latent capital gain of 4X.



MILESTONES IN 2016

Continue leading in R&D investment in Spain, as a driving force for the creation of value and progress in the sector and in society.  **100% Achieved**

Be a leading investor and accelerator in new technological companies in Spain and Latin America.  **100% Achieved**

CHALLENGES FOR 2017

To lead in R&D investment in Spain and remain among the top 5 Telcos in global R&D investment.

To continue being a leading investor in technology companies in Spain and Latin America.

The commercial launch of AURA in some of the countries in which we operate.

To strengthen the in-house enterprise and spirit of innovation among employees through the in_prendedores programme.

