Digiworld- Investing in our Digital Future

Panel: “Investment and digital infrastructure”

Carlos López Blanco
Telefónica S.A.
15.11.2017

Digitalization together with globalization are to radically change everything … and this time is serious

Enabling the rise of new business models disrupting traditional sectors

airbnb · NETFLIX · UBER · JUSTEAT · LendingClub · Spotify · WhatsApp · Alibaba.com · Baidu 百度 · flipkart.com · PayPal

Transforming the maps of global leading companies and value creation(1)

2000	2017
GE	Apple
Microsoft	Google
Exxon	Microsoft
citi	amazon
Walmart	facebook

Transforming the labor market

Jobs disappearing	38% of US jobs in risk of automatization by 2030*
New Jobs	Data Scientist, Big Data specialist, Community Manager,…
New Skills (Gap)	500.000 vacancies of ICT professionals in the EU by 2020

Transforming the way we interact

Seamless, real time interactions

Transforming concepts of human nature

Next generations will not need to worry about organ transplants: Organs cloning *(3D printing)*

Transforming how we move

Next generations will not need to worry about learning to drive. Autonomous and more secure driving

And everything means … everything

A challenge for all

(1) Top 5 world companies by market cap

The disruption leads to a new digital society in the 4th revolution era

Agricultural Society

4000 BC ~ 1763

Industrial Society

1764 ~1970

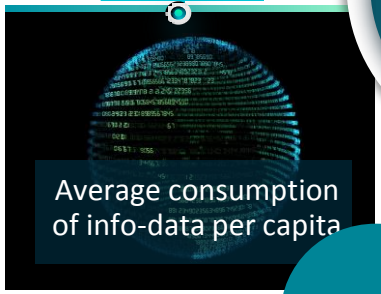
Internet Society

1971 ~ 2015

1st

Data Society

After 2015



2nd

It is a true revolution, where technology is only an enabler!

A new digital wave

Trends

1. Globalisation: The world is more internationally connected
2. Physical & digital world merging
3. A data society
4. Hyper-Connectivity

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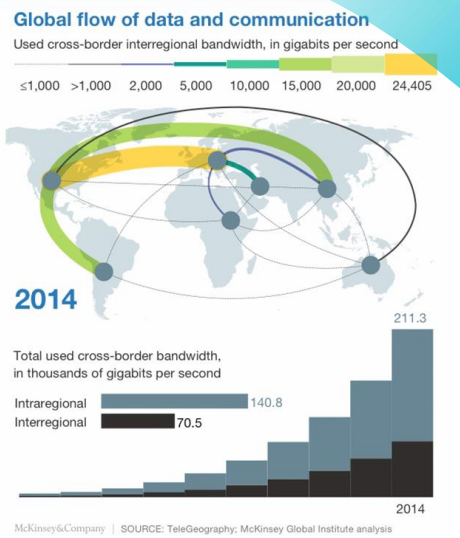
The world is more internationally connected than ever……

Increasing global flow of data ….

2005
4,7 Terabits/sg

45x
data flow 2005-2014

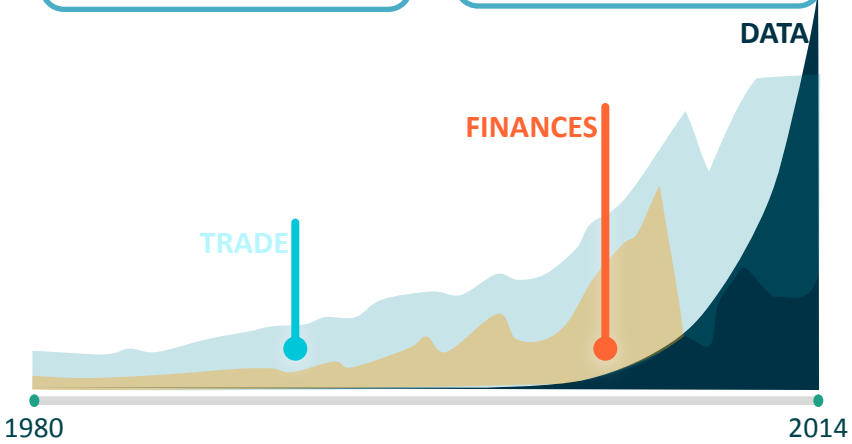
2014
211,3 Terabits/sg



… generating more value than the global goods trade

10%
increase in global GDP due to Global Trade (7,8 trillion USD)

2,8 Trillion USD
Increase in GDP due to international Data Flows

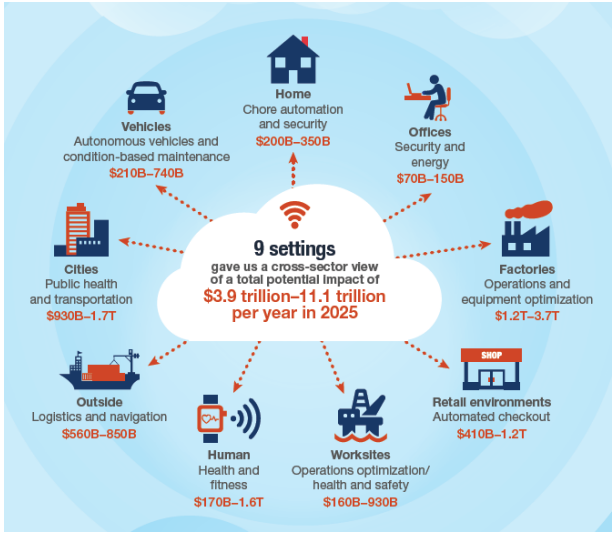


… leading to a hyper globalized era

Source: "Digital Globalization: The New Era of Global Flows" McKinsey (2016)

Physical & digital merging: Blurring boundaries- breaking barriers

Technologies enable merging of digital & physical world …



+ 3D printing

+ Machine Learning & AI

… markets have converged and competition has increased

M&A online companies

M&A Offline-Online companies

movistar

tuenti móvil

Online firms going offline

Offline firms going online

INDITEX 5,5%

Online Revenue/Total % (2015)

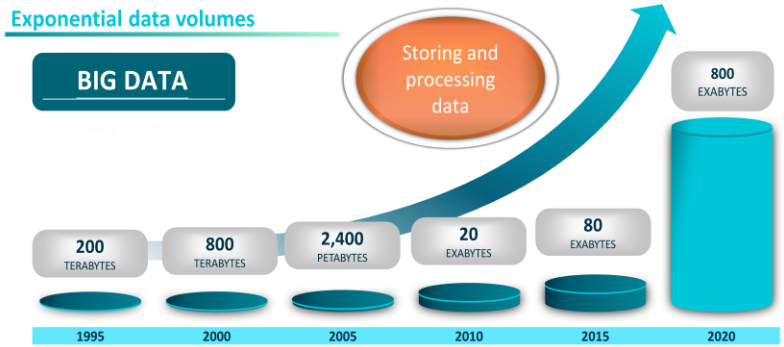
New competitors, new competition models: from price-based competition … to innovation based competition…

NETFLIX airbnb Alibaba Group UBER Spotify LendingClub amazon

McKinsey. THE INTERNET OF THINGS: MAPPING THE VALUE BEYOND THE HYPE. June 2015

Data will not only be stored, it will be processed to generate insights…

Exponential data volumes: we are living in an era defined and shaped by data



90% of the data in the world today has been created in the last 2 years

Source IBM

Marc Andreesen

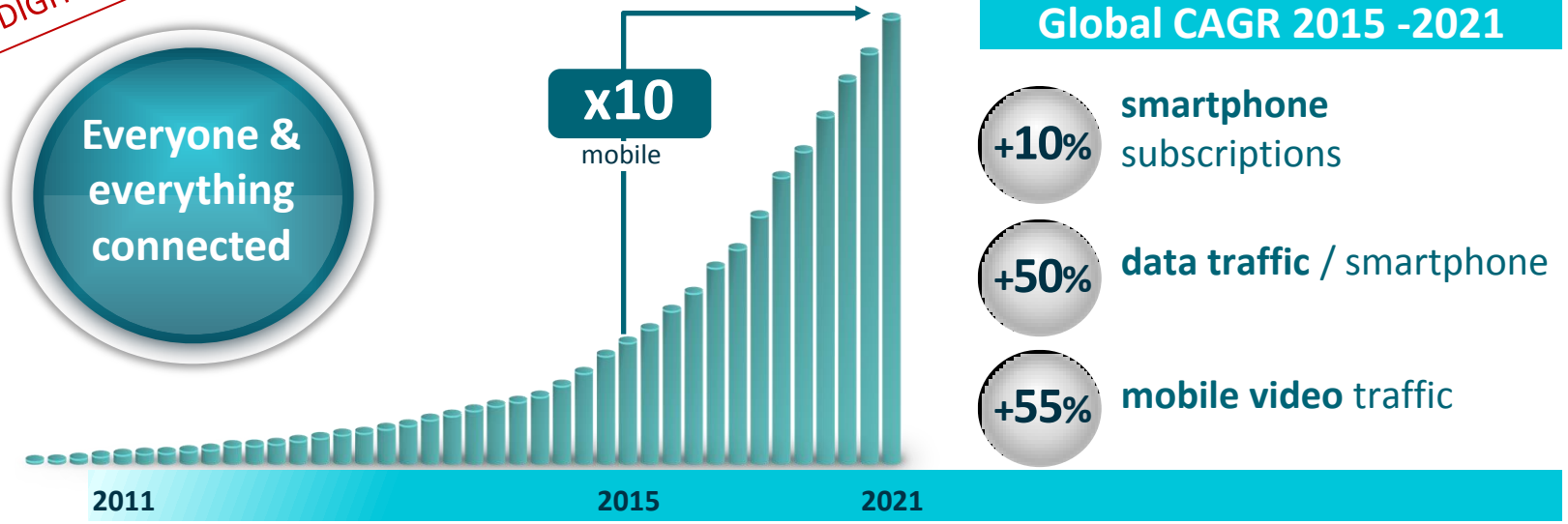
*"Six decades into the computer revolution, four decades since the invention of the microprocessor, and two decades into the rise of the modern Internet, all of the technology required to transform industries through **software** finally works and can **be widely delivered at global scale**."*

… in a world where "software is eating the world"

A digital revolution fostered by an exponential, ubiquitous and mobile

INFRASTRUCTURES: THE DIGITAL PATHWAY

Everyone & everything connected generating exponential data traffic



Global CAGR 2015 -2021

- **+10%** **smartphone** subscriptions
- **+50%** **data traffic** / smartphone
- **+55%** **mobile video** traffic

…internet, driving an hyper connected society, always on, in real time

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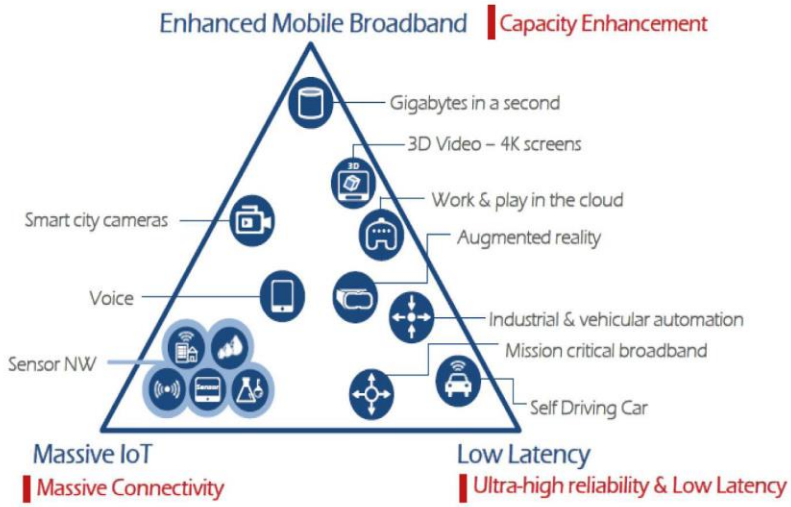
The Gigabit Society, the age of boundless connectivity and intelligent automation will be enabled by fibre & 5G infrastructures

Gigabit Society: Fibre for seamless “mobile” (including Wifi) high bandwidth

5G has the potential to be transformational



(Source: ETRI graphic, from ITU-R IMT 2020 requirements)

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What should be the policy to foster digital infrastructures? In the last decade, each region in the world has adopted different approaches…

Telecom Policy objectives

Market led regulatory approach

Prescriptive regulation

USA

- Push infrastructure & Financial returns

- Favours infrastructure competition
- Unbundling abandoned
- No unbundling of fibre

ASIA*

- Make broadband accessible for everyone

- Government subsidized deployments

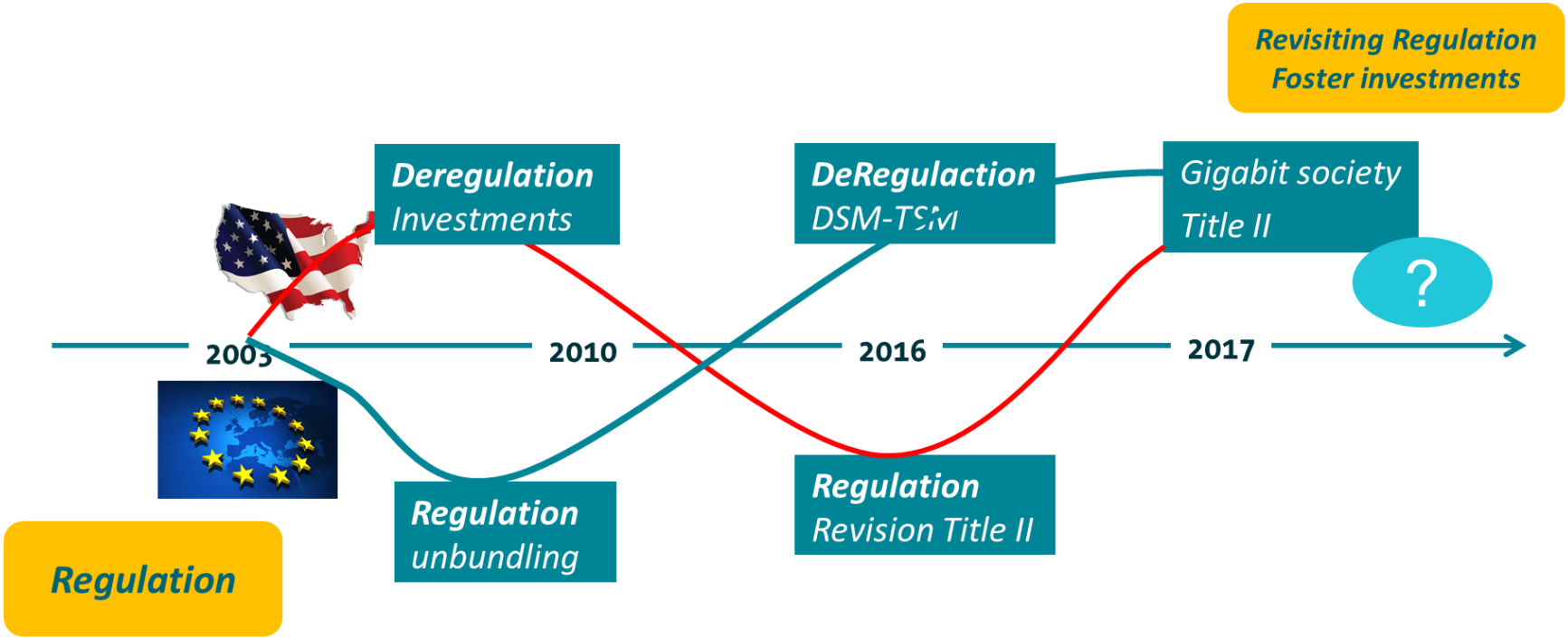
* China, Japan & Korea

EUROPE

- Priority on competition in services & prices

- High degree of network unbundling
- Favours some soil of fibre unbundling/access

Leading to different results on infrastructures and investments



Europe is lagging behind in LTE and NGN coverage & adoption rate, speeds and data consumption

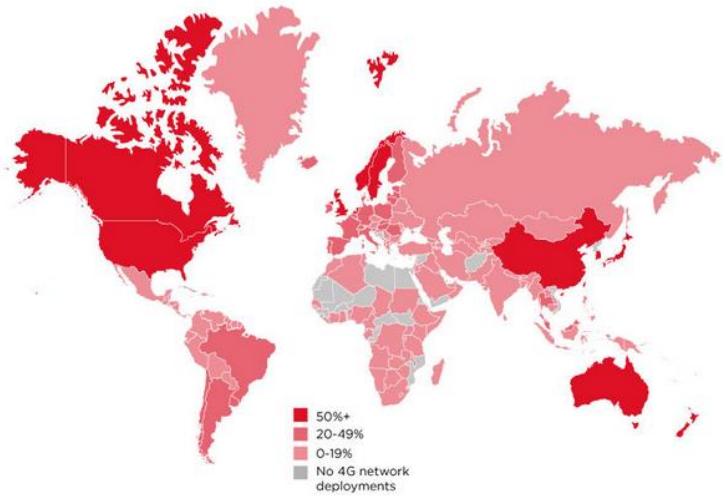


Figure 1: 4G-LTE adoption (percentage of connections), Q1 2017

Source: GSMA Intelligence

> ***Europe is weak on future-proof telecom infrastructure.***
>
> *If taken as whole, Europe has two Achilles' heels: the late adoption of wireless 4G technology and access to fixed NGA for fast and ultra-fast Internet.*
>
> *The US has full 4G coverage while, at the end of 2014, 4G Long-Term Evolution (LTE) mobile broadband was available only to 86% of EU households.*
>
> *Likewise, fast/ultrafast broadband coverage in the US is almost 90% while in the EU is 71% on average.*

EPSC EU Strategic Notes-
Connected Continent for a Future-Proof Europe
Issue 19- 25 July 2016

https://www.gsmaintelligence.com/research/2017/04/uneven-4g-adoption-has-implications-for-5g-outlook/618/

https://ec.europa.eu/epsc/sites/epsc/files/strategic_note_issue_19.pdf

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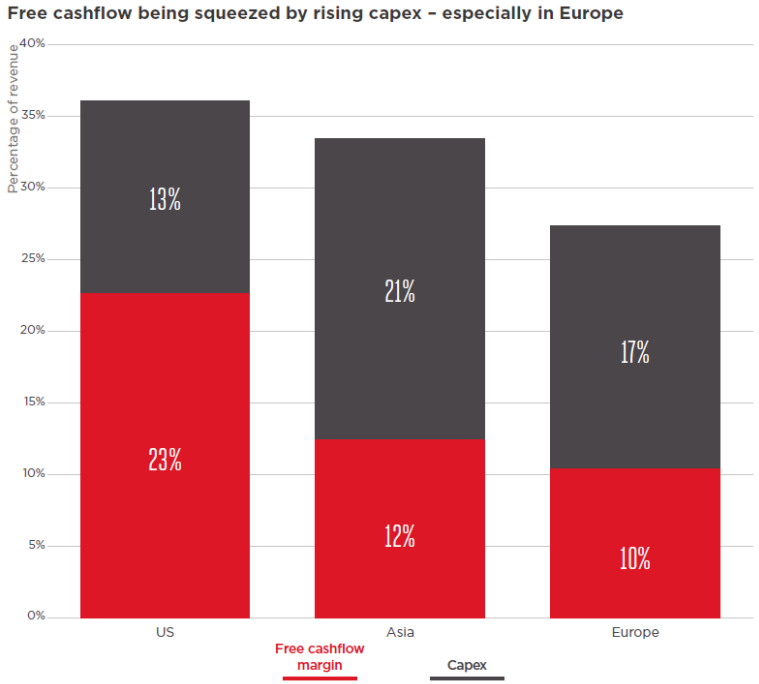
… and this digital gap is not caused by a lack of willingness of the European industry to invest



Asian and European operators are spending the majority of their operating income on CAPEX

> ***Free cashflow is being squeezed** by **low revenue growth and high capex***
>
> *Perversely, the US actually spends more capex per mobile subscriber, because ARPU levels are much higher ($50 vs $30 in Western Europe), leaving a higher free cashflow margin*
>
> GSMA- *Mobile Economy 2017*

Source: GSMA Global mobile trends- October 2016

Next generation infrastructures will need: (1) High investments

European Commission investments estimates for Gigabit Connectivity objectives (*)

EUROPEAN COMMISSION

Brussels, 14.9.2016
COM(2016) 587 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society

{SWD(2016) 300 final}

…representing **+ EUR 155 billion over and above** a simple continuation of the trend of current network investment and modernisation efforts of the connectivity providers

> *Europe expected to be 2-3 years behind the US in deployment of 5G: Financial struggles for service providers are high and data usage still low.*
>
> Morgan Stanley: Global Technology. Learning to Ride a 5G Cycle

(*) EC- Connectivity for a Competitive Digital Single Market Towards a European Gigabit Society. 2016

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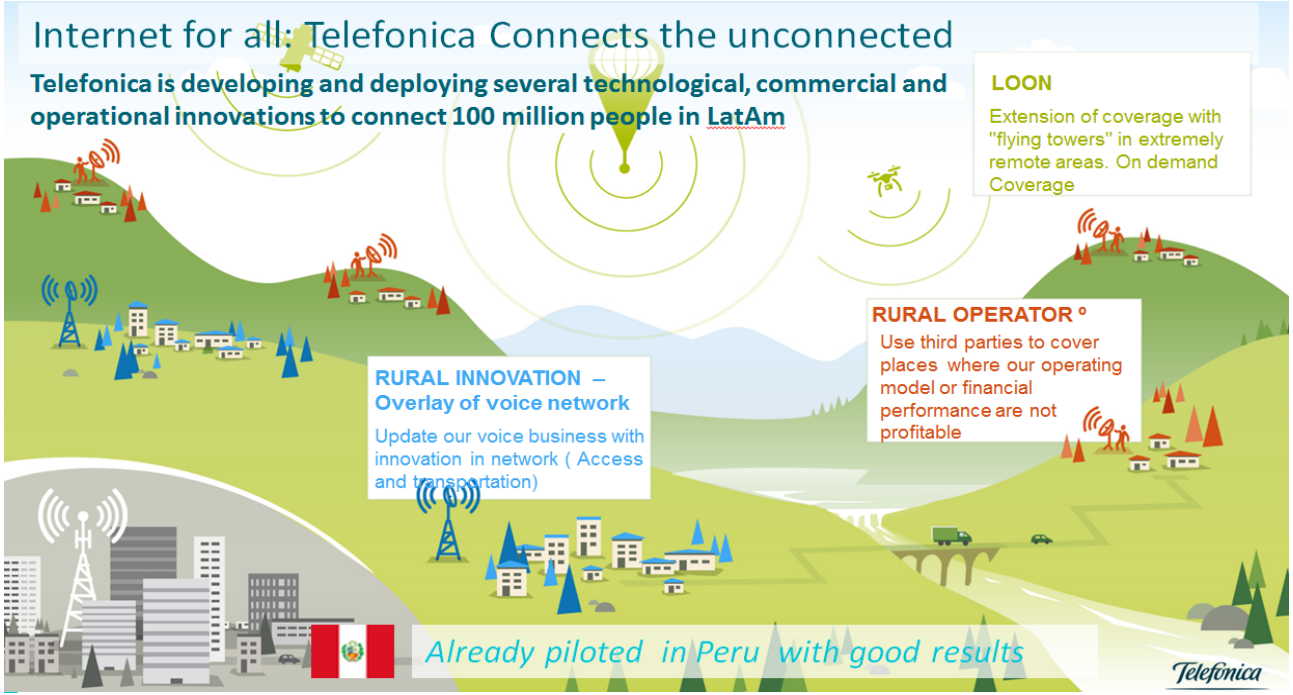
(2) Innovation & partnerships to further connect the unconnected



CO-INNOVATION

+

CO-INVESTMENT

https://www.telefonica.com/en/web/press-office/-/telefonica-and-project-loon-collaborate-to-provide-emergency-mobile-connectivity-to-flooded-areas-of-peru

https://www.telefonica.com/es/web/public-policy/blog/articulo/-/blogs/telefonica-y-facebook-se-alian-para-llevar-internet-a-zonas-rurales

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(3) New digital business models & sources of revenues

Investment in 4G did not generally lead to the higher ARPUs that were expected

> ***Operators see opportunity in many industry verticals***
>
> *The automotive sector, and the progress towards driverless cars, is a much discussed example of an industry that could benefit from 5G's superior capabilities.*
>
> *Manufacturing, healthcare, entertainment, financial services, utilities and other segments of the transport sector could all be targeted for growth opportunities in the 5G era*
>
> GSMA- : "The 5G era: Age of boundless connectivity and intelligent automation"

Picture source: Morgan Stanley- Learning to Ride a 5G Cycle. Oct. 2017

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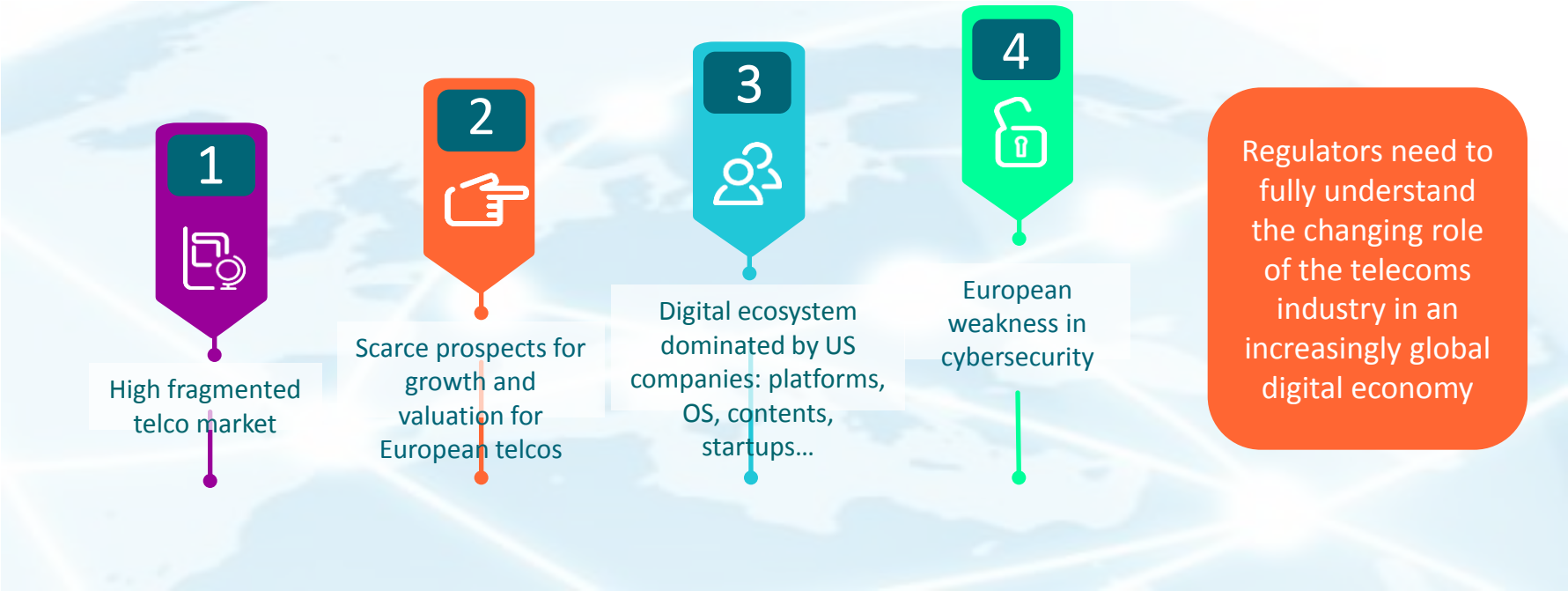
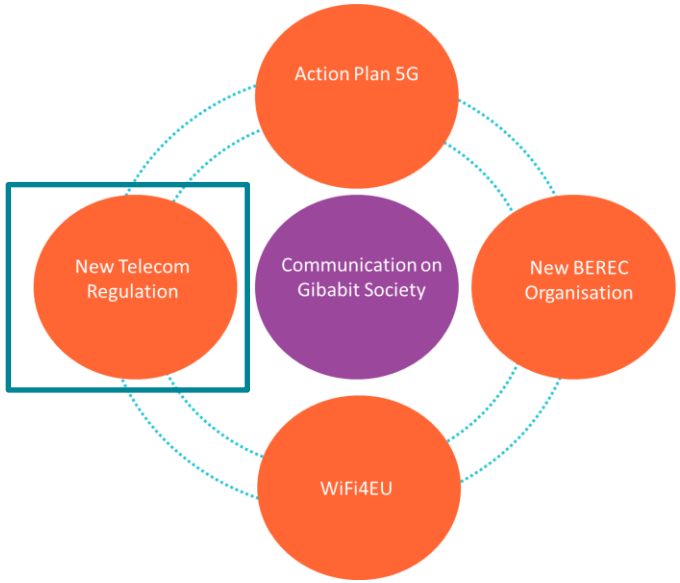
(4) A new policy for the future, to overcome Europe's weaknesses in the digital world



We endorse the vision for a European Gigabit Society and share its ambitious targets and initial objectives



Objectives for the new regulatory framework

Promoting high capacity network deployment and regulation modernization, so Europe can participate fully in the digital economy, through:

1. Innovation & Investment friendly area
2. Regulation simplification
3. Spectrum harmonization
4. Enabling efficient market structures
5. Level Playing Field

EU Communication on the Gigabit Society – Sept.2016

… but, what about delivery?

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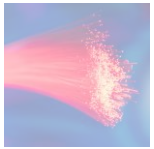
The proposed new EU framework is positive but falls short of addressing the issues constraining investments in networks

1 **Network Access**
More rules, not less!



Insufficient incentives for investment

Complex regulation, downplayed role of commercial agreements and co-investment and new rules including mobile or so-called oligopolistic situations under the scope: uncertainty. Not sufficient pricing flexibility for new network elements. And pricing of international retail calls!

2 **Spectrum**
Downplayed measures

Measures were on the right track but seem to be downplaying

Longer durations limited, pay when available on hold, harmonization on award conditions pending

3 **Universal Service**
From public budget to +scope

From modernising and general budget financing to increased scope & sectorial budget

Possible extended scope including businesses & mobile, availability & affordability while possible return to sectorial budget, that may not include ISS

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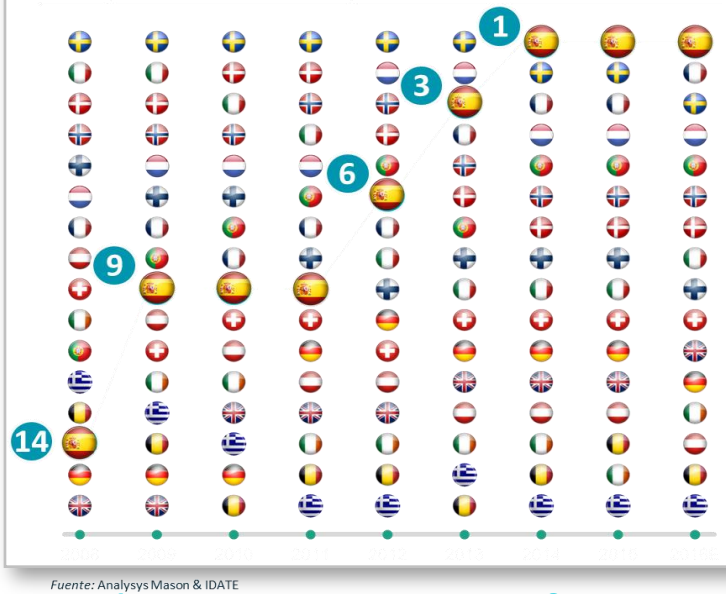
Successful policies applied at an early stage in Spain have shown a route to reach this widespread fibre infrastructure

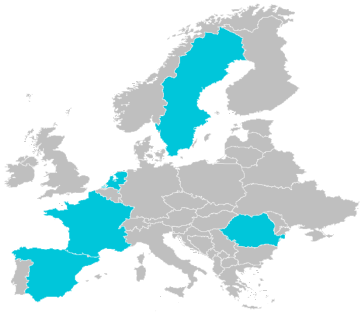


Fuente: Analysys Mason & IDATE

17,5 M >

France + Italy + Germany+ UK

Top 5 countries EU with > 1 M customers



- Large-scale investment in fibre
- Initial lower than EU fixed broadband uptake
- Fibre coinvestment agreements
- No pre-existing traditional analog cable (new cable)
- Level playing field network based competition with cable

In the worst years of economic crisis, Spain has managed to lead the deployment of ultrafast fibre in Europe

Successful policies applied at an early stage have shown a route to reach this widespread fibre infrastructure

Removing legal barriers & reducing deployment costs

Withdrawing outdated obligations

Regulation modernisation

e.g. removing "*Protection from loss of power*" obligations on landlines

Simplifying deployments

Simplification

e.g. easing permits & time limits, in-building access, transparency

Reducing deployment costs

Efficient market structures

e.g. access to utilities ducts, in-building high speed ready infrastructures

A market led pro-investment & pro cooperation& innovation regulation

Light touch regulation

Investment & innovation friendly area

e.g. unregulated wholesale bitstream > 30 Mb/s

Reasonable obligations

Efficient market structures

e.g. access to poles & ducts; coinvestment & shared access to in-building wiring (reasonable conditions)

Recover flexibility mechanisms in ACCESS to foster investments

Lessons learnt

1 Network Access & Retail pricing

- Recuperate regulatory **flexibility mechanisms** associated to **co-investment** in the original proposal, aimed at encouraging the deployment of fibre networks and expand them to other forms of cooperation such as commercial agreements
- Promote simplified fixed & mobile **permitting issues**
- Let the market embrace new models for infrastructure & sharing, favouring certainty, **avoiding preemptive over-regulation**, by the means of new rules on "**oligopolies**" (or joint-dominance concept) or the **extension of symmetric obligations** beyond the initial scope proposed by the Commision.
- Let competitive markets innovate and develop, with regulatory certainty, **avoiding: new obligations on mobile operators** as foreseen in the original proposal, **forward looking network mapping obligations**, **fixing cost oriented prices** for new network elements, or **pricing retail markets** (eg. International calls)

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Introduce sensible and harmonized SPECTRUM policy to foster 5G

Lessons learnt

2 Spectrum

- Look for spectrum **availability** and **harmonization** (greater consistency, general approach of harmonizing objectives and methodologies, predictability in licence conditions)
- Preserve original proposal **on duration of licenses** for periods of at least 25 years (increased licence duration)
- Rationalize spectrum conditions: **pay when available** & **avoid disproportionate obligations**

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Modernise UNIVERSAL SERVICE & keep public financing to limit burden

Lessons learnt

3 Universal Service

- **Remove outdated obligations** (payphones, directories …) No extension of obligations & scope
- Universal Service Obligations should not be extended to mobile networks, other undertakers (businesses) or services (**focus on basic services**)
- Universal Service Obligations should be **financed using public budget.** If sector specific funding remains deemed necessary all relevant players should contribute (also ISS providers)

This is just the start for addressing policy challenges in the digital world

Level Playing Field will be essential to make this a reality

- Same services, same rules
- Same services, same protection
- Same services, same rights
- Same services, same taxes

"level playing field", "forward-looking" and "light-touch" should be policy-making watchwords in the digital age

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