Inspire Policy Making with Territorial Evidence

EU2017.EE

Shaping the Future of the EU in the Digital Age

6 Dec 2017, ESPON Seminar Transforming territorial thinking through digitalisation

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State of digital in the European Union

- **Digital everywhere**

- **Digital is Big business, Big policy, Big Forums**

- **US, China and GAFA dominate the digital world**

- **Digital in all policies**

TECHNOLOGY NEWS | Sat Jun 10, 2017 | 3:53pm EDT
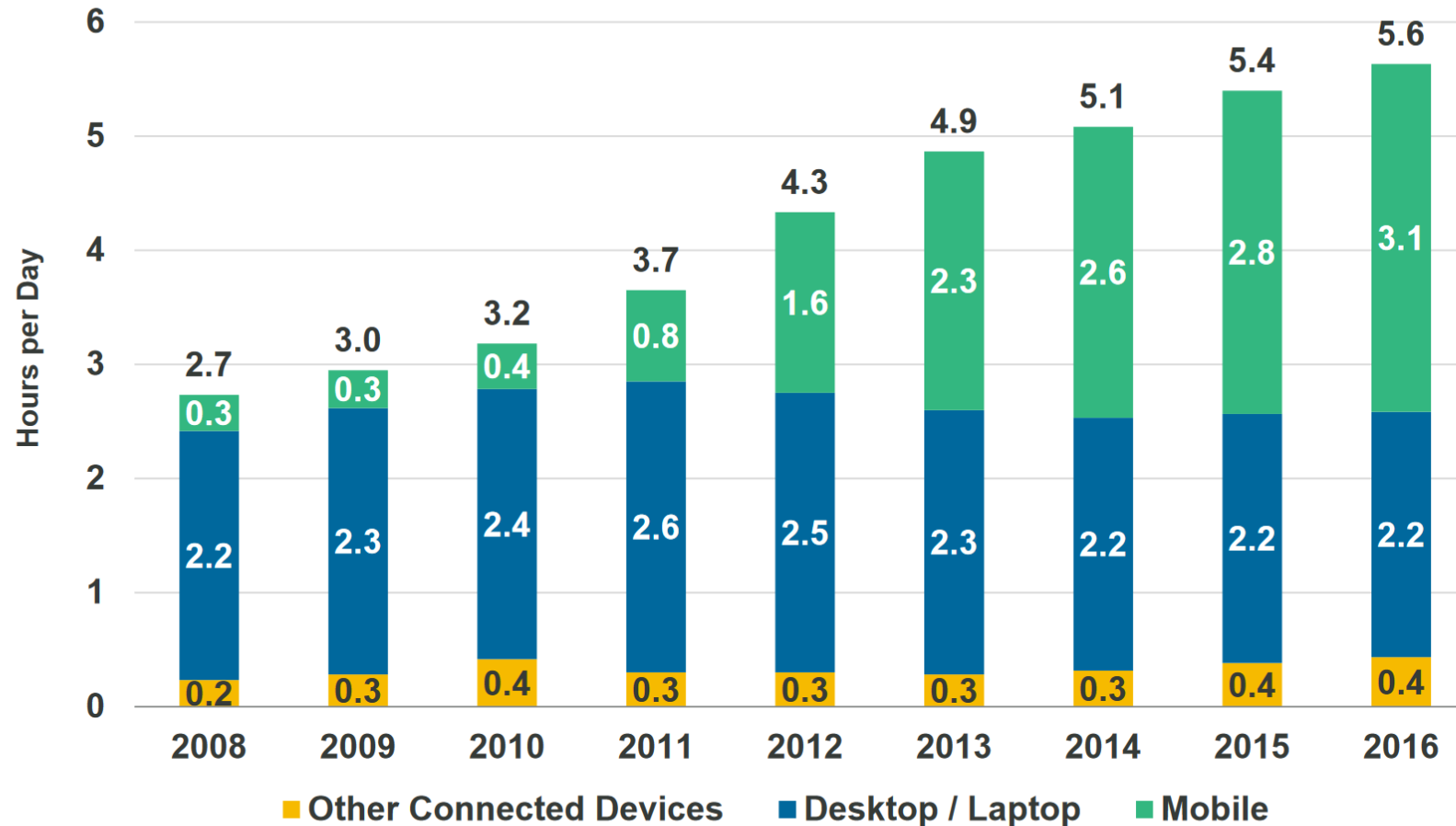
Germany's Merkel says digital world needs global rules

The big trends

Internet Usage (Engagement) = Solid Growth…+4% Y/Y… Mobile >3 Hours / Day per User vs. <1 Five Years Ago, USA

Time Spent per Adult User per Day with Digital Media, USA, 2008 – 2016

Legend: Other Connected Devices | Desktop / Laptop | Mobile

Year	Mobile	Desktop / Laptop	Other Connected Devices	Total
2008	0.3	2.2	0.2	2.7
2009	0.3	2.3	0.3	3.0
2010	0.4	2.4	0.4	3.2
2011	0.8	2.6	0.3	3.7
2012	1.6	2.5	0.3	4.3
2013	2.3	2.3	0.3	4.9
2014	2.6	2.2	0.3	5.1
2015	2.8	2.2	0.4	5.4
2016	3.1	2.2	0.4	5.6

…Increasing Digitization of Inputs = Healthcare Data Growing at 48% Y/Y

Growth in Healthcare Data

48% Annual Growth

153 Exabytes

Exabytes of Healthcare Data

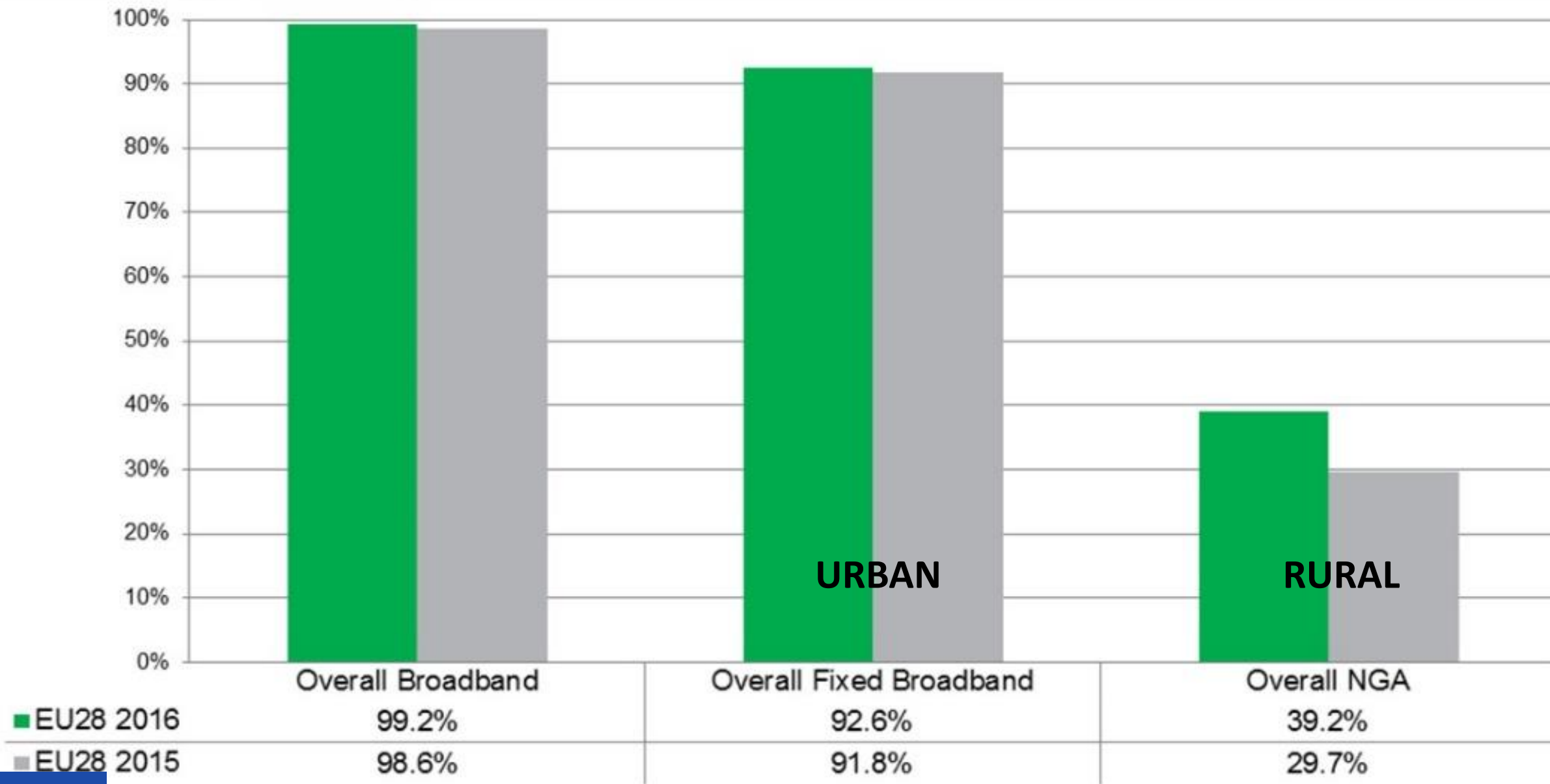Worldwide Healthcare Data (2013)
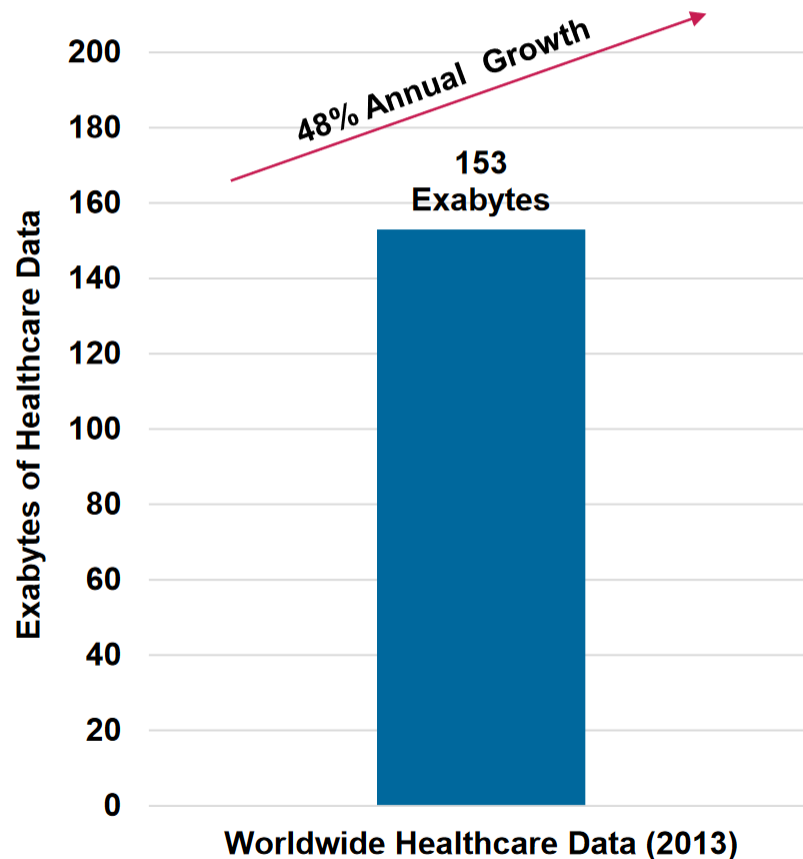
Data Drivers

Typical 500 Bed Hospital

- 500 Beds
- 8,000 Employees
- 400 Applications
- 500 Databases
- 1,000 Interfaces
- 10,000 Desktops
- 500 Owned/Controlled Tablets
- 2,000 Owned/Controlled Mobile Devices

→ 50 Petabytes of Data per Hospital
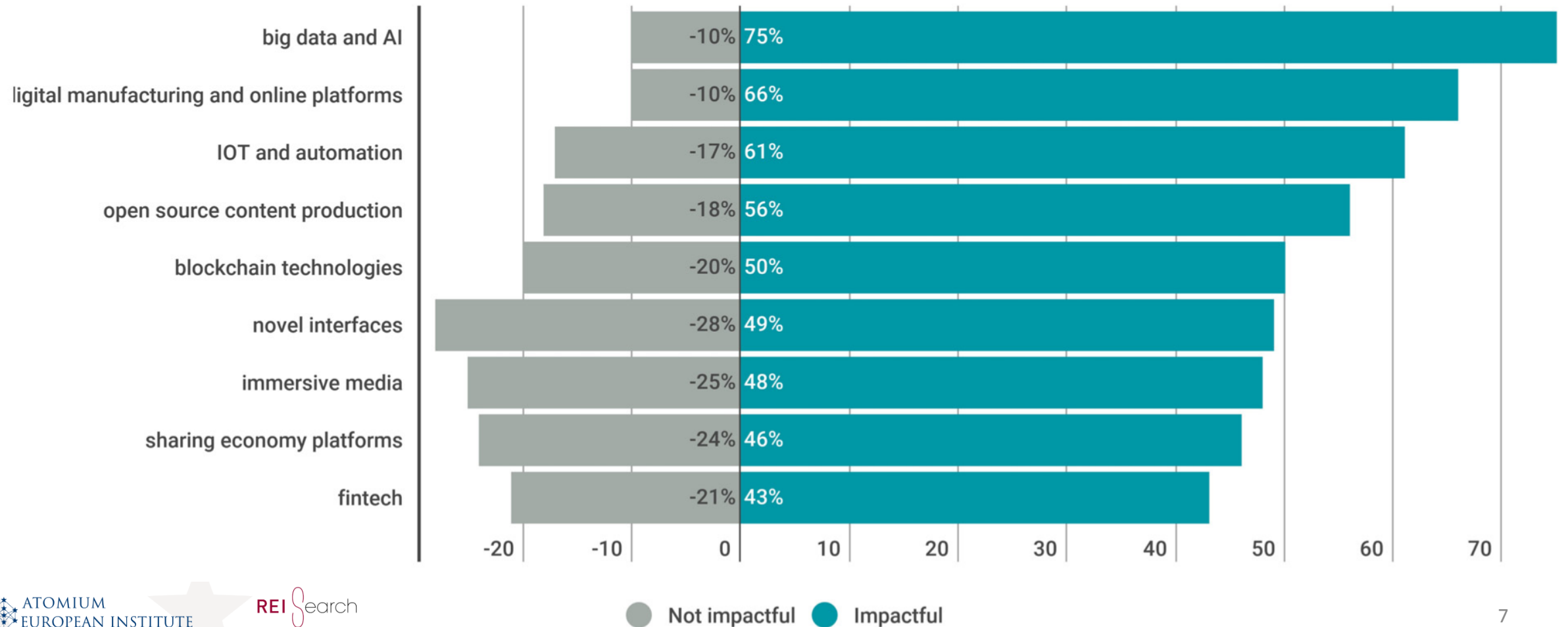
KLEINER PERKINS

EU28: Coverage by technology combination in rural areas, 2016

	Overall Broadband	Overall Fixed Broadband	Overall NGA
■ EU28 2016	99.2%	92.6%	39.2%
■ EU28 2015	98.6%	91.8%	29.7%

Atomium Next-Generation Internet debate (2017)

Graph 2.2 – Which technologies will bring the most profound change in change in how we learn, work and do commerce in the next 10 years?

Technology	Not impactful	Impactful
big data and AI	-10%	75%
digital manufacturing and online platforms	-10%	66%
IOT and automation	-17%	61%
open source content production	-18%	56%
blockchain technologies	-20%	50%
novel interfaces	-28%	49%
immersive media	-25%	48%
sharing economy platforms	-24%	46%
fintech	-21%	43%

Not impactful ● Impactful ●

Open Data in Government · Internet of Things · Mobile device based sensing · Intelligent Transport · Smart Grid

Location & Condition Sensing Technologies · Citizen e-ID · Mobile Health Monitoring · Big Data · Data Analytics Predictive & Prescriptive

Innovative Public Services Outsourcing
- Power/energy
- Transportation
- e-government services
- Water
- Waste

Integrated City & CityOpps
- Transportation
- e-government services
- Citizen engagement
- Urban planning
- Power/energy

Urban domains expected to undergo transformation

City Advisory Services
- Transportation
- Urban planning
- e-government services
- Innovation and entrepreneurship
- Power/energy

Sharing & Circular Economy
- Transportation
- Power/energy
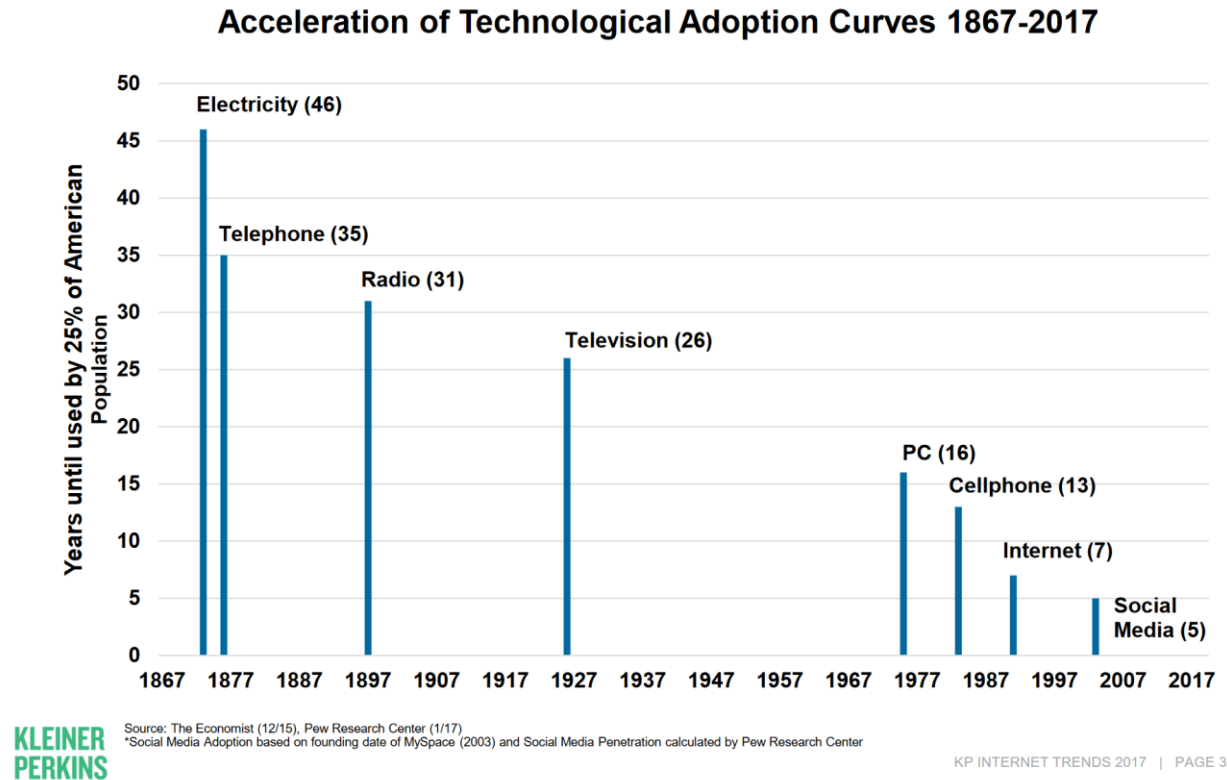- Waste
- Water
- Education

Source: World Economic Forum, Shaping the Future of Urban Development & Services Initiative, Global Survey on Urban Services (Oct.-Dec. 2015)

The big expectations

- It will go ever faster….

Acceleration of Technological Adoption Curves 1867-2017

Years until used by 25% of American Population

- Electricity (46)
- Telephone (35)
- Radio (31)
- Television (26)
- PC (16)
- Cellphone (13)
- Internet (7)
- Social Media (5)

1867 1877 1887 1897 1907 1917 1927 1937 1947 1957 1967 1977 1987 1997 2007 2017

- …. what does this mean for <u>digital transformation and territorial thinking?</u>

Big expectations

- We will all become **smarter and more productive with AI**

- We will enjoy **abundance with IoT and data**

- We will **live longer and healthier**

Smarter with AI

PREVENTIVE MEDICINE

Artificial intelligence can now predict suicide with remarkable accuracy

Actual face   Predicted face

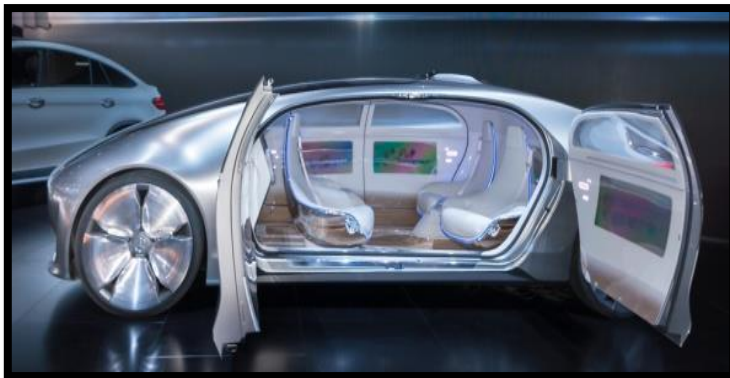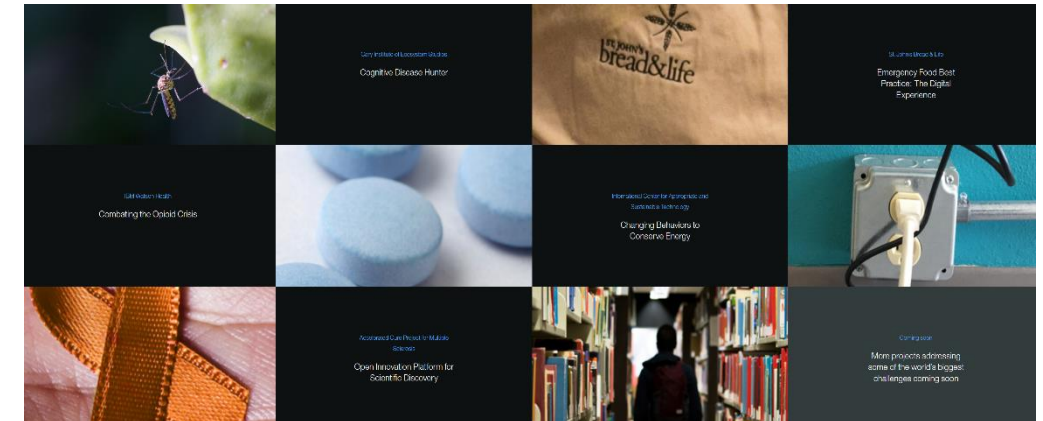**205 neurons are enough for face recognition**

Illustration: iStockphoto

Robocars and Electricity—a Match Made in Heaven
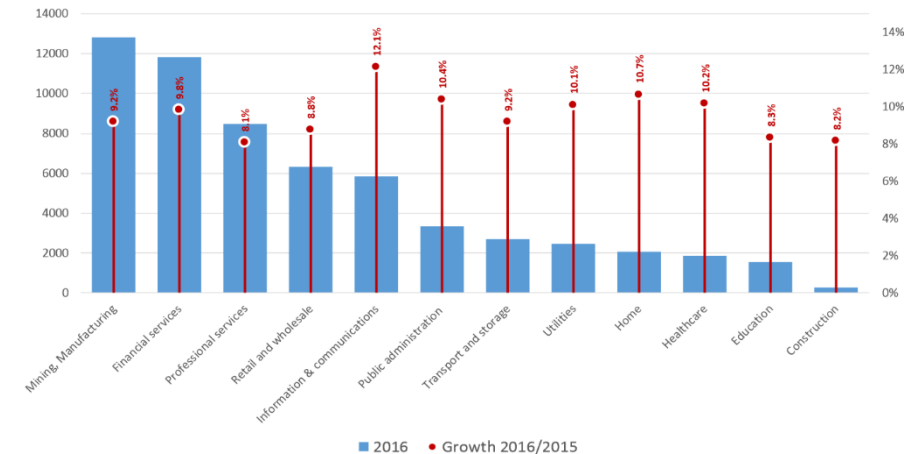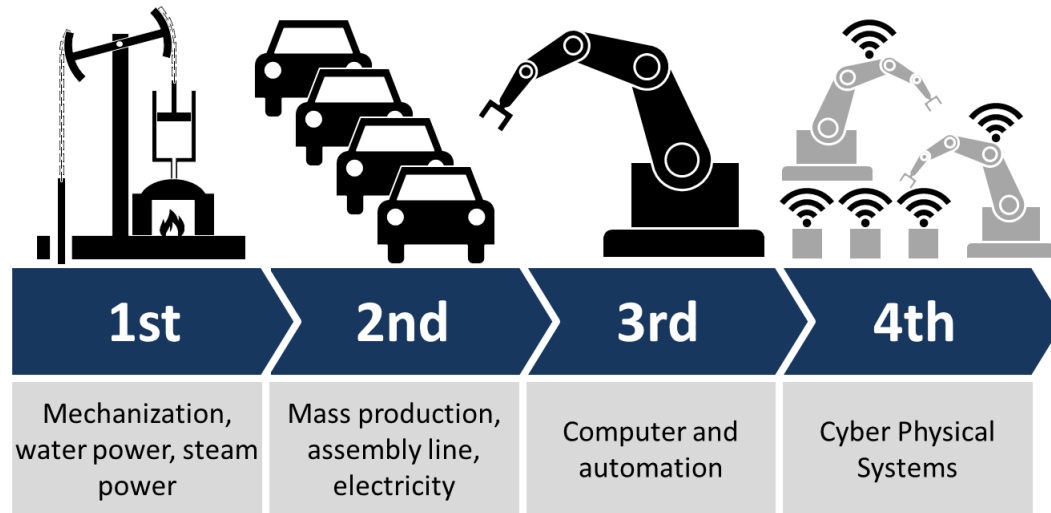
IEEE.org

Science for Social Good
AI, cloud and deep science for societal challenges (IBM)

Abundance with IoT and Data

THE BEDBUGS WON'T BITE THANKS TO THIS SMART IOT TRACK−AND−TRAP DEVICE

By Luke Dormehl — Updated June 8, 2017 12:19 am

1st	2nd	3rd	4th
Mechanization, water power, steam power	Mass production, assembly line, electricity	Computer and automation	Cyber Physical Systems
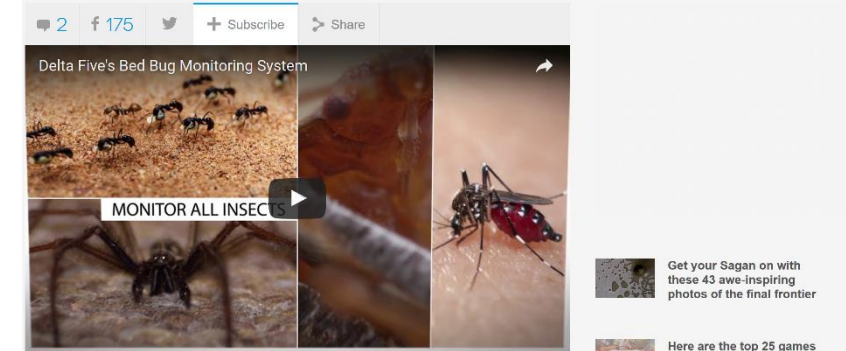
Source: European Data Market Monitoring Tool, IDC October 2016

Picture sources: *Christoph Roser at [http://www.allaboutlean.com AllAboutLean.com*

Living longer and healthier
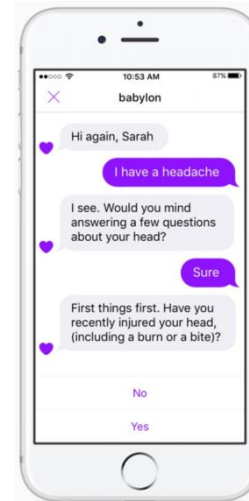
EU Tobi project

Picture sources: Babylon, EU Tobi project, EU DALI project, http://deathisobsolete.com/

But of course this happy story is not going to become true...

AI, Data, IoT, Longevity – the dark side

Graph 4.6 – What are the most important issues posed by Artificial Intelligence systems in the next decade?

security
Security (i.e. how do we keep AI safe, and secure and how do we protect ourselves against unintended AI consequences)
-9% | 80%

stay in control
Control (i.e. how do we stay in control of AI and when is this really necessary, for instance to avoid cognitive computing replacing human expertise to an extent that we can no longer test whether these machines are...
-11% | 79%

empowerment
Citizens awareness and empowerment (i.e. how do we ensure that citizens are aware of how AI is influencing their decisions and able to opt-out)
-10% | 73%

employment & inequality
Employment and inequality (i.e. how do we adjust labour and employment practices to ongoing structural changes such as automation, whilst exploring different ways of income and resource distribution and workforce...
-15% | 67%

legal framework
Putting in place the right legal framework (i.e. how do we create incentive structures that allow the industry to engage in responsible innovation, levelling the playing field by engineering legal protection at the level of...
-15% | 65%

AI stupidity
Artificial stupidity (i.e. how can we safeguard against AI mistakes and the unknown risks of deep learning)
-17% | 59%

humanistic
Humanity (i.e. how do machines affect our behaviour and interaction, and how do our behaviours in turn influence machines' outputs)
-18% | 56%

AI bias
Bias (i.e. how do we eliminate AI bias and ensure fairness and neutrality, and how does this relate to the selection and collection of data)
-18% | 54%

-10% 0 10% 20% 30% 40% 50% 60% 70% 80%

● Disagree ● Agree
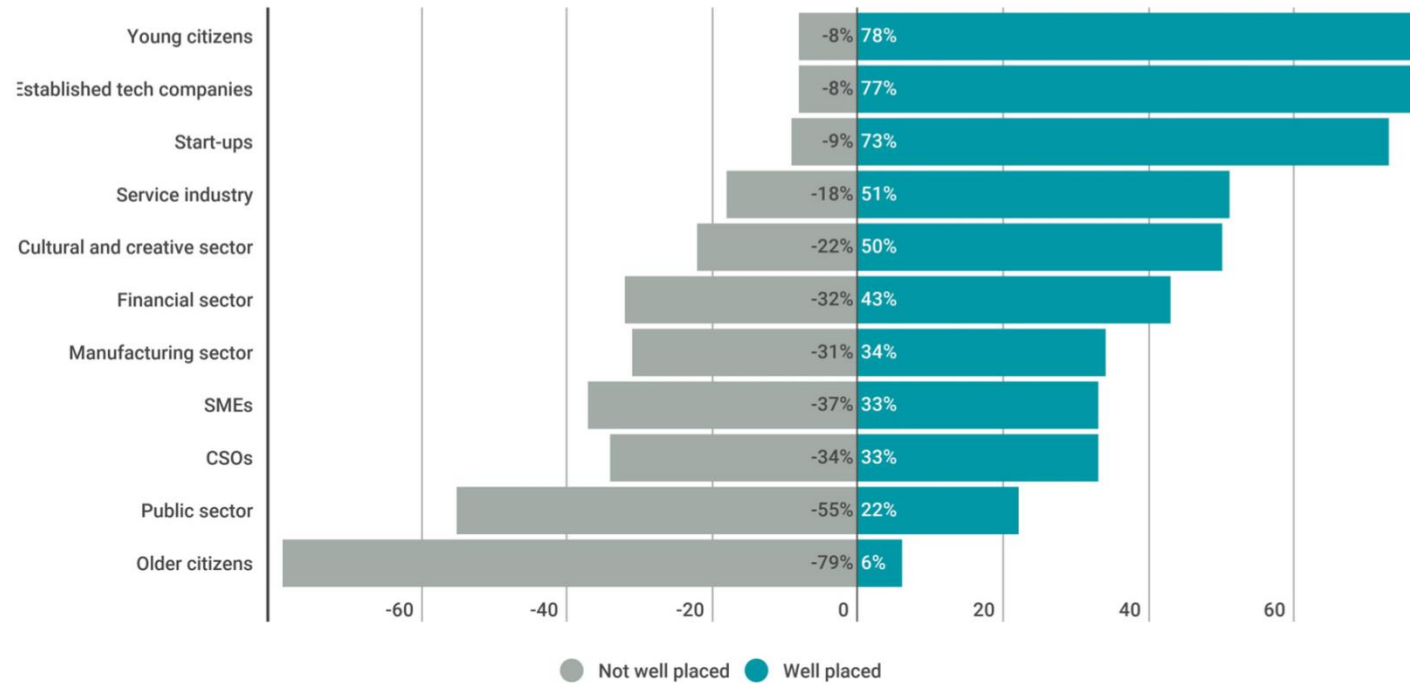
The dark side for jobs

Graph 2.5 – Will the digitisation and "internetisation" of business deliver meaningful work for all, and generate salaries that equal or exceed current levels?

> under most scenarios, the transitions will be very challenging—matching or even exceeding the scale of shifts out of agriculture and manufacturing we have seen in the past.

McKinsey&Company

- Not contribute
- Contribute
- Neither

56% 21% 23%

AI, Data, IoT, Longevity – Haves and Have-nots

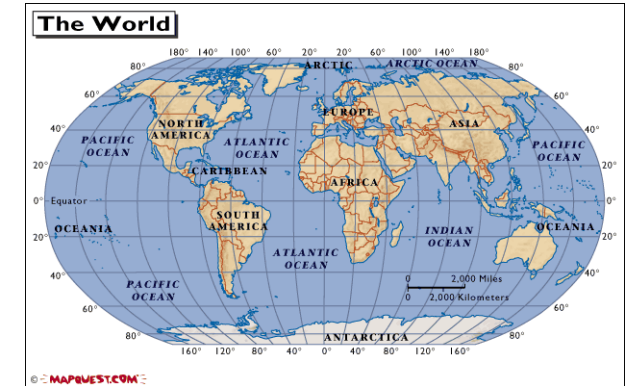Graph 2.7 – Who is best placed to take advantage of the next generation of internet technologies?

Category	Not well placed	Well placed
Young citizens	-8%	78%
Established tech companies	-8%	77%
Start-ups	-9%	73%
Service industry	-18%	51%
Cultural and creative sector	-22%	50%
Financial sector	-32%	43%
Manufacturing sector	-31%	34%
SMEs	-37%	33%
CSOs	-34%	33%
Public sector	-55%	22%
Older citizens	-79%	6%

● Not well placed   ● Well placed

Tackling the difficult digital policy questions

Data ownership
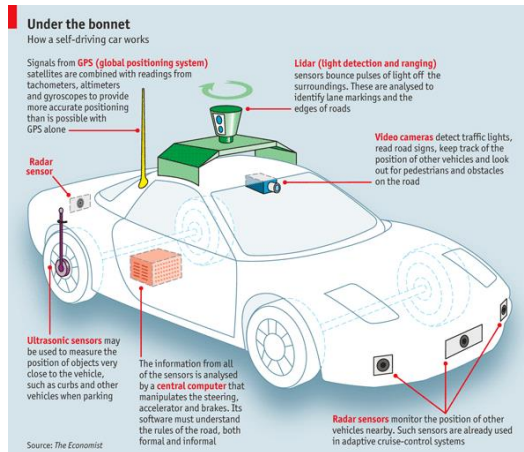
Free flow of data

Digital sovereignty

Democratizing, humanizing **AI**
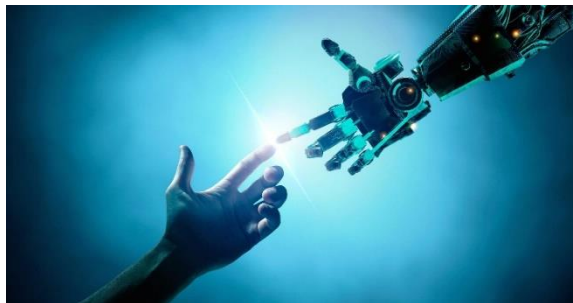
The good, the bad and the ugly of the **sharing economy**

Picture sources: http://data.whicdn.com/images/126381313/original.jpg; grimsrudberkowitz.deviantart.com; sup-slovenia-discovery.com; The Economist; mapquest.com; bsfqq.sieraddns.com; seanheritage.com;

Make especially use of these EU digital policies…

- Plug the **broadband** gap
- Build your key digital asset: **data**
- **E-services** in and across regions
- Organise **cyber-resilience** for all
- Put digital to **work**
- **Go digital** in all sectors of economy and society
- Shape your own **future**

- Electronic Communications Code
- Free Flow of Data / GDPR
- Digital Service Infrastructures
- Cybersecurity policy
- Urban & Regional Agendas
- E-gov, transport, energy, health, environment, …
- EU Research & Innovation + Territorial Governance

Thank you!

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