A Digital Single Market?

Cullen International
Brussels - 14 March 2019

Thomas Nortvedt
Policy Officer - SNE
F1 – Digital Policy
Development & Coordination
DG CONNECT

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Overview

1. *The framework*

2. *Why focus on Digital?*

3. *The EU Approach*
   - **3.1 Digital Single Market - SoP**
   - **3.2 Some examples of policies in the DSM**

4. *Possible Post - Juncker*

Beaulieu, BU25

DG CONNECT
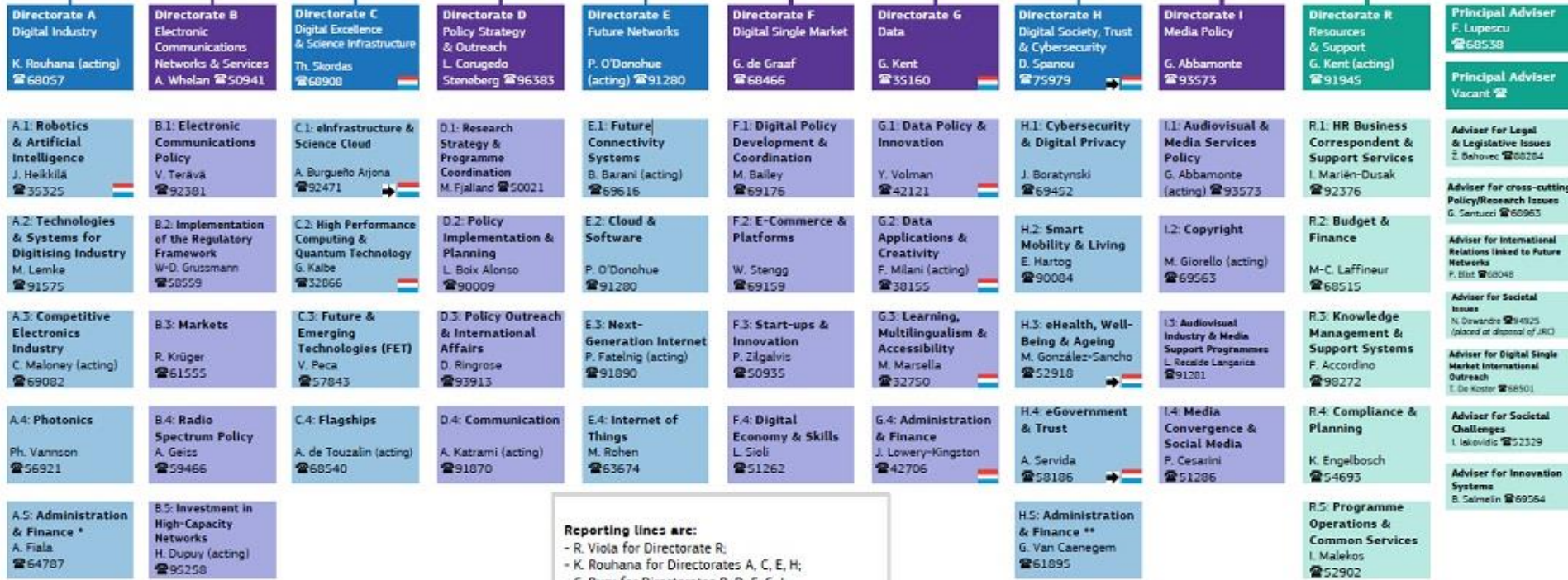## Communications Networks, Content & Technology

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D.3: Policy Outreach & International Affairs
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(placed at disposal of JRC)

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B.5: Investment in High-Capacity Networks
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H.5: Administration & Finance **
G. Van Caenegem ☎ 61895

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I. Malekos ☎ 52902

Reporting lines are:
- R. Viola for Directorate R;
- K. Rouhana for Directorates A, C, E, H;
- C. Bury for Directorates B, D, F, G, I.

▬ Luxembourg;

➡ ▬ To be transferred to Luxembourg.

* Shared Administration & Finance Unit for Directorates A, B, C, D & F.

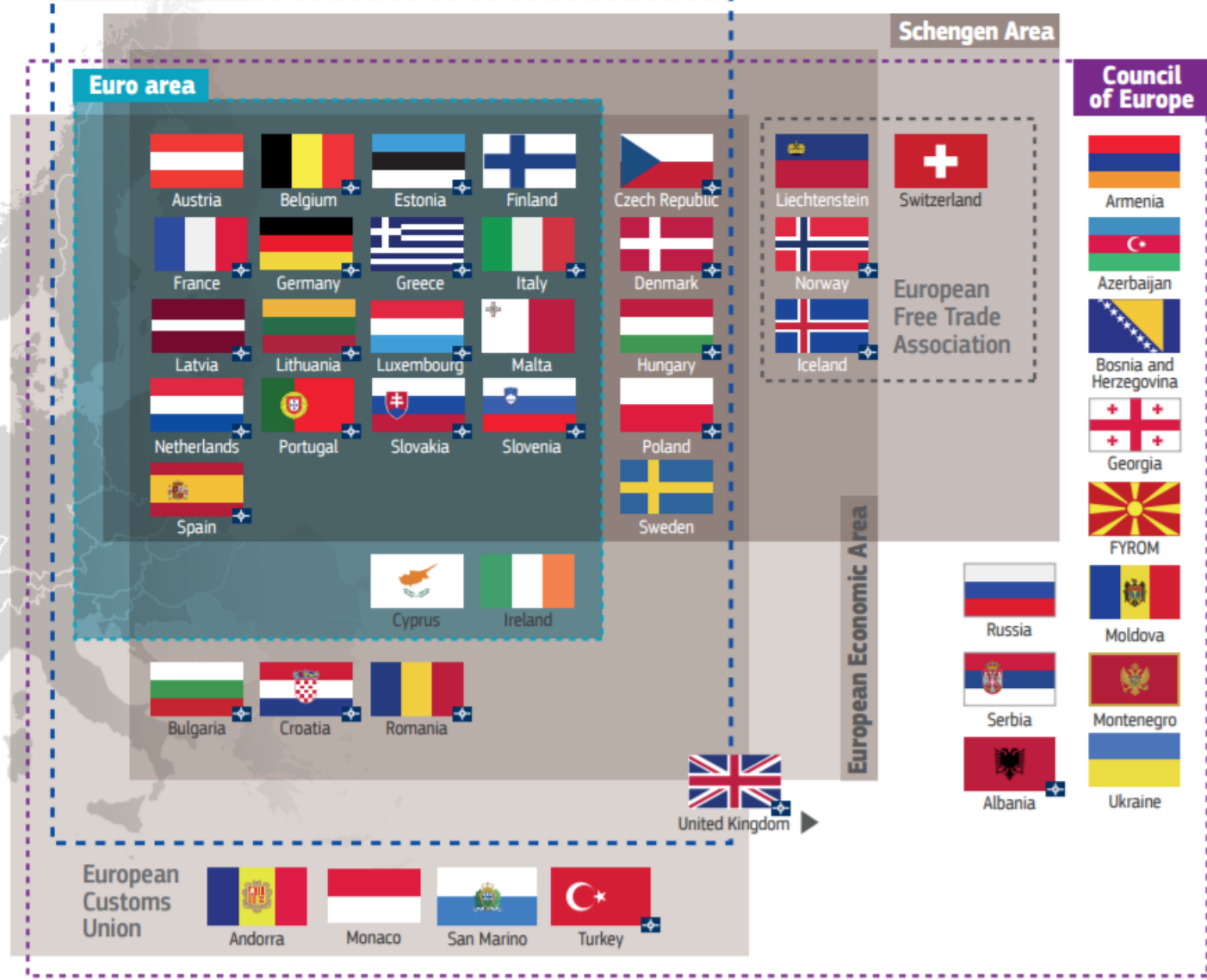** Shared Administration & Finance Unit for Directorates E, H & I.

Mirror-Unit REA.A.5
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T. Hallantie ☎ 68167

Mirror-Unit EACEA.B.2
Creative Europe: MEDIA
H. Trettenbrein ☎ 84955

Mirror-Unit REA.C.4
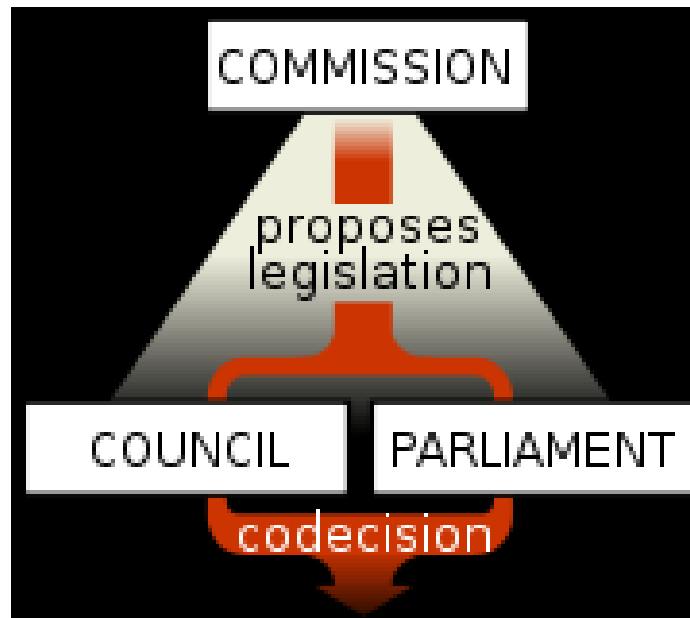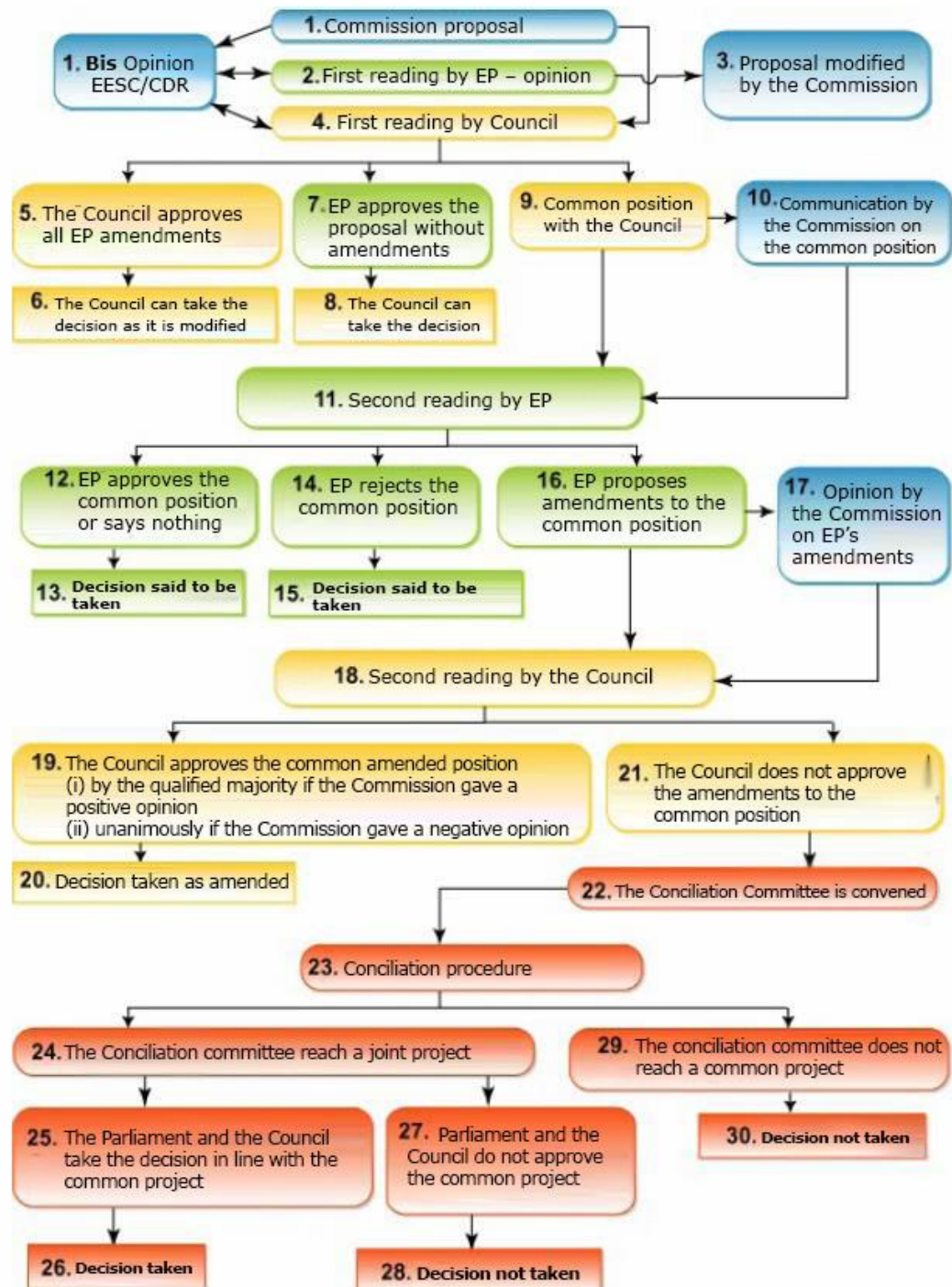**Expert Contracting & Payments**
A. Oram ☎ 97805

4

Olav Thon, born 29 June 1923 in Ål, Hallingdal.

Listed in the Forbes list of billionaires as the 198th richest person in the world

Process

Co-decision procedure

1. Commission proposal
1. Bis Opinion EESC/CDR
2. First reading by EP – opinion
3. Proposal modified by the Commission
4. First reading by Council
5. The Council approves all EP amendments
6. The Council can take the decision as it is modified
7. EP approves the proposal without amendments
8. The Council can take the decision
9. Common position with the Council
10. Communication by the Commission on the common position
11. Second reading by EP
12. EP approves the common position or says nothing
13. Decision said to be taken
14. EP rejects the common position
15. Decision said to be taken
16. EP proposes amendments to the common position
17. Opinion by the Commission on EP's amendments
18. Second reading by the Council
19. The Council approves the common amended position (i) by the qualified majority if the Commission gave a positive opinion (ii) unanimously if the Commission gave a negative opinion
20. Decision taken as amended
21. The Council does not approve the amendments to the common position
22. The Conciliation Committee is convened
23. Conciliation procedure
24. The Conciliation committee reach a joint project
25. The Parliament and the Council take the decision in line with the common project
26. Decision taken
27. Parliament and the Council do not approve the common project
28. Decision not taken
29. The conciliation committee does not reach a common project
30. Decision not taken

European Commission | Digital Single Market

Why focus on digital?

Chart of the Week

THE LARGEST COMPANIES BY MARKET CAP
The oil barons have been replaced by the whiz kids of Silicon Valley

Top 5 Publicly Traded Companies (by Market Cap)   Tech   Other

	#1	#2	#3	#4	#5
2001	GE $406B	Microsoft $365B	EXXON $272B	citi $261B	Walmart $260B
2006	EXXON $446B	GE $383B	TOTAL $327B	Microsoft $293B	citi $273B
2011	EXXON $406B	Apple $376B	PetroChina $277B	Shell $237B	ICBC $228B
2016	Apple $582B	Alphabet $556B	Microsoft $452B	amazon $364B	facebook $359B

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visualcapitalist.com

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4Q18:	1. Microsoft	2. Apple	3. Amazon	4. Alphabet	5. Berkshire Hathaway
	$780B	$748B	$735B	$728B	$499B

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Digital Economy and Society Index (DESI) 2018 ranking

Europe lags behind

International Digital Economy and Society Index (i-DESI)
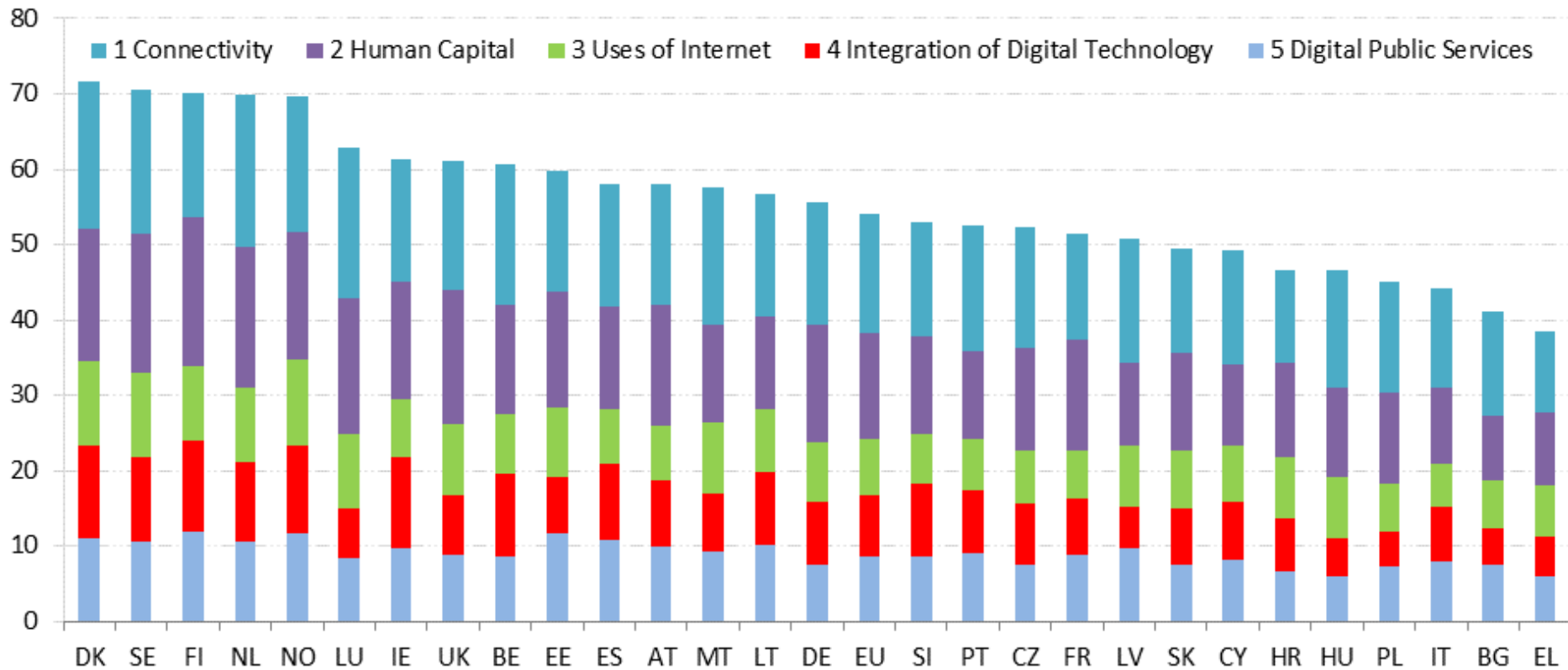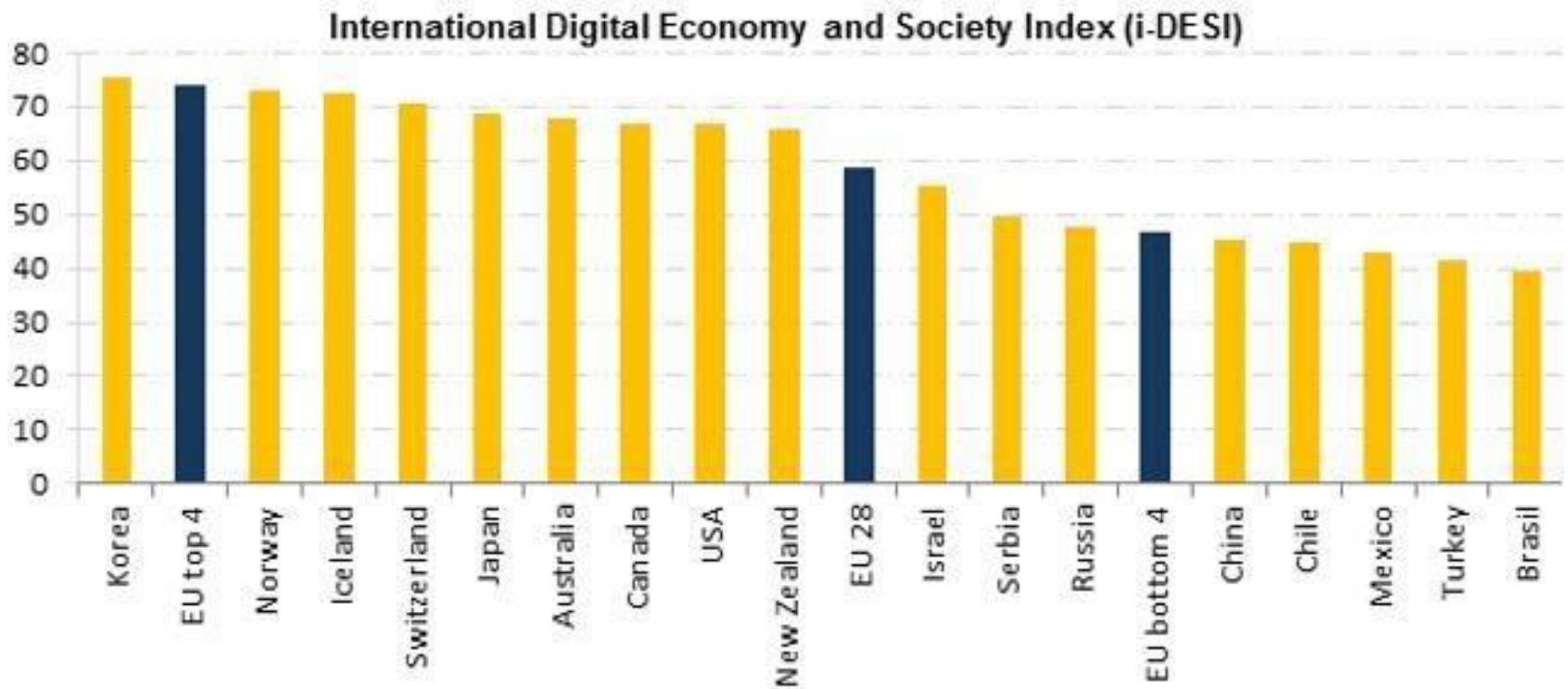
The example of High Performance Computers

Rank	Site	System	Cores	Rmax (TFlop/s)	Rpeak (TFlop/s)	Power (kW)
1	DOE/SC/Oak Ridge National Laboratory United States	Summit - IBM Power System AC922, IBM POWER9 22C 3.07GHz, NVIDIA Volta GV100, Dual-rail Mellanox EDR Infiniband IBM	2,282,544	122,300.0	187,659.3	8,806
2	National Supercomputing Center in Wuxi China	Sunway TaihuLight - Sunway MPP, Sunway SW26010 260C 1.45GHz, Sunway NRCPC	10,649,600	93,014.6	125,435.9	15,371
3	DOE/NNSA/LLNL United States	Sierra - IBM Power System S922LC, IBM POWER9 22C 3.1GHz, NVIDIA Volta GV100, Dual-rail Mellanox EDR Infiniband IBM / NVIDIA / Mellanox	1,572,480	71,610.0	119,193.6	
4	National Super Computer Center in Guangzhou China	Tianhe-2A - TH-IVB-FEP Cluster, Intel Xeon E5-2692v2 12C 2.2GHz, TH Express-2, Matrix-2000 NUDT	4,981,760	61,444.5	100,678.7	18,482
5	National Institute of Advanced Industrial Science and Technology (AIST) Japan	AI Bridging Cloud Infrastructure (ABCI) - PRIMERGY CX2550 M4, Xeon Gold 6148 20C 2.4GHz, NVIDIA Tesla V100 SXM2, Infiniband EDR Fujitsu	391,680	19,880.0	32,576.6	1,649
6	Swiss National Supercomputing Centre (CSCS) Switzerland	Piz Daint - Cray XC50, Xeon E5-2690v3 12C 2.6GHz, Aries interconnect , NVIDIA Tesla P100 Cray Inc.	361,760	19,590.0	25,326.3	2,272
7	DOE/SC/Oak Ridge National Laboratory United States	Titan - Cray XK7, Opteron 6274 16C 2.200GHz, Cray Gemini interconnect, NVIDIA K20x Cray Inc.	560,640	17,590.0	27,112.5	8,209
8	DOE/NNSA/LLNL United States	Sequoia - BlueGene/Q, Power BQC 16C 1.60 GHz, Custom IBM	1,572,864	17,173.2	20,132.7	7,890
9	DOE/NNSA/LANL/SNL United States	Trinity - Cray XC40, Intel Xeon Phi 7250 68C 1.4GHz, Aries interconnect Cray Inc.	979,968	14,137.3	43,902.6	3,844
10	DOE/SC/LBNL/NERSC United States	Cori - Cray XC40, Intel Xeon Phi 7250 68C 1.4GHz, Aries interconnect Cray Inc.	622,336	14,014.7	27,880.7	3,939

The example of Artificial Intelligence

1. Public and private Investments in AI – R&D

Top 100 AI research Institutions

	EU	USA	China
	32	30	15
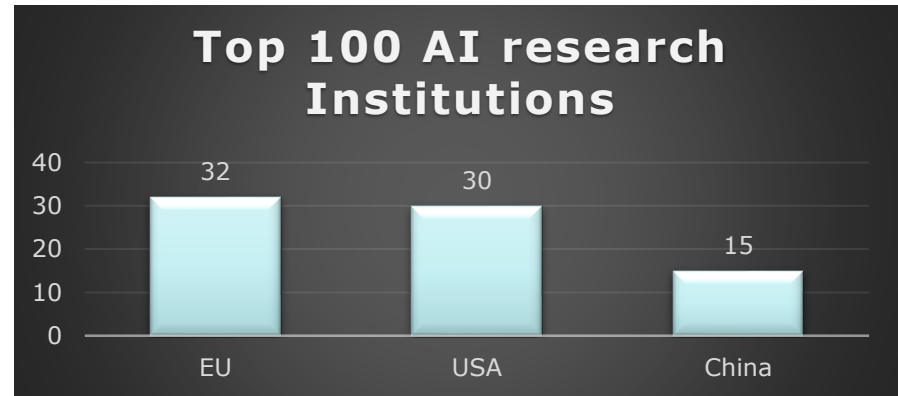
2. Investments in AI – VC Start-ups - $15,2 bln

Rest of the World — 13
USA — 38
China — 48
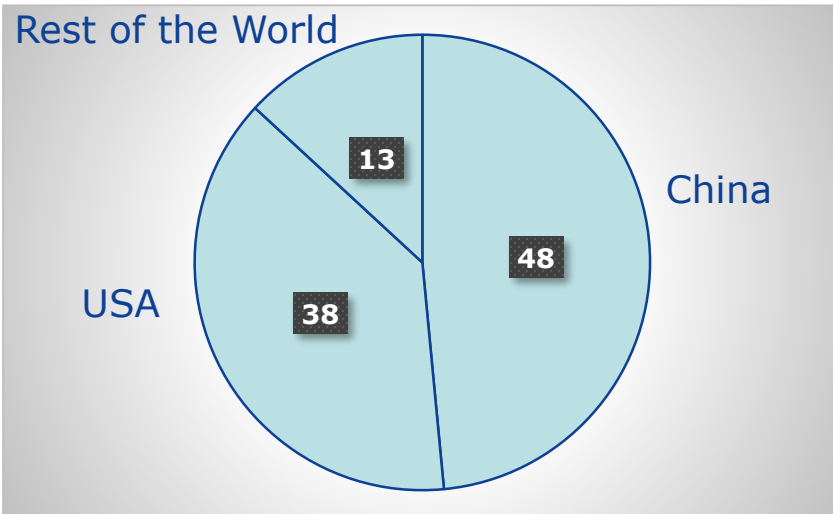
3. Investments in AI – Talent

PHD EDUCATED AI RESEARCHERS - GLOBALLY

CHINA	5500
UK	1900
EU27	4000
USA	9000
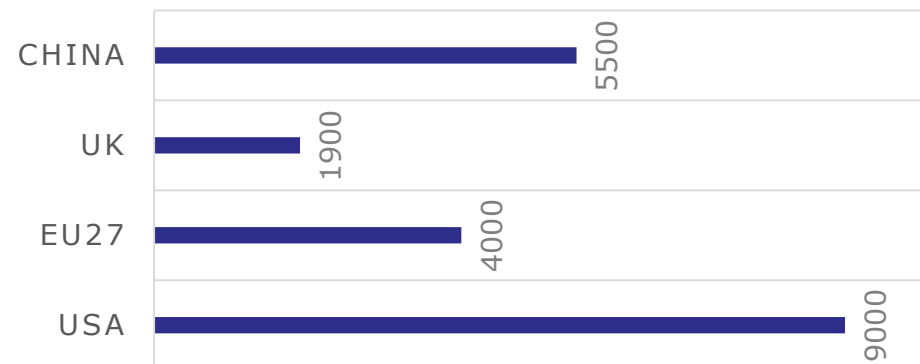
Top 100 Digital companies

Forbes
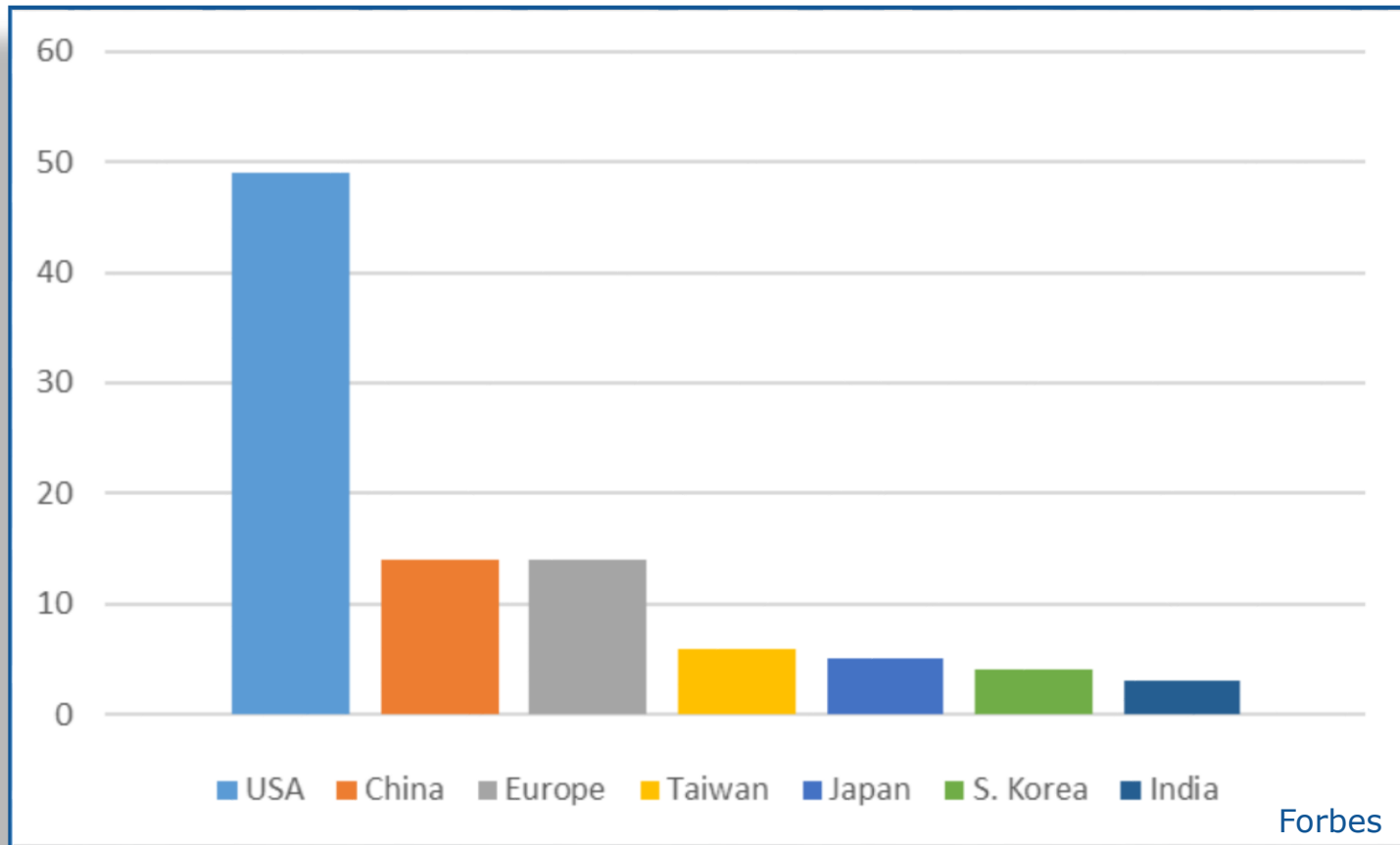
Geopolitics: it's not just about the economy, stupid!

TECH

Putin: Leader in artificial intelligence will rule world

PUBLISHED MON, SEP 4 2017 · 2:33 AM EDT

AP

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KEY POINTS
- Putin says that whoever reaches a breakthrough in developing artificial intelligence will come to dominate the world.
- Putin warned that "it would be strongly undesirable if someone wins a monopolist position".

Why Northern Ir
has the skills for
tomorrow's econ

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TRENDING NOW

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in home
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2 'Be care
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levels, w

China c

The short version:

"The Digital Single Market is a Juncker Commission's top priority. A fully functional Digital Single Market could contribute €415 billion per year to our economy and create hundreds of thousands of new job"

The EU approach

Main underlying drivers to take into account

Economic

- Impact of AI and robotics on jobs
- Digital skills gap

Social

- Digital divide
- Wealth distribution

Ethical

- Algorithmic bias
- Explainability of AI based decisions

A MIX OF POLICY MEASURES

Non-legislative initiatives

Legislative proposals

Investment

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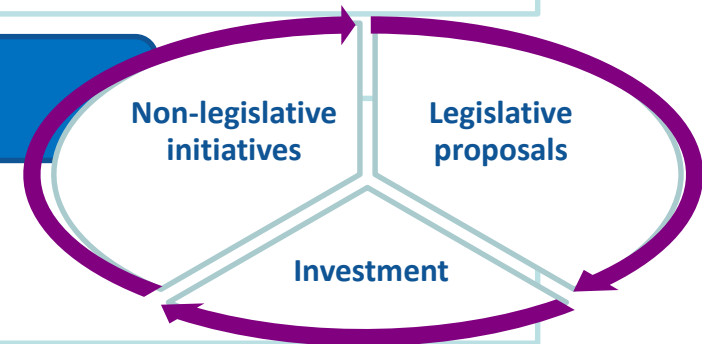
The Digital Single Market Strategy

Policy response to the opportunities & challenges of the digital revolution

THE STRATEGY AT A GLANCE

Better access for consumers and businesses

- Geo-blocking
- E-commerce (digital contracts, consumer protection)
- Copyright
- Parcel delivery
- VAT

An environment where digital networks and services can prosper

- Telecoms market
- Media services
- Platforms and intermediaries
- Trust and security (e-privacy, cybersecurity cPPP)

Maximise the growth potential of the digital economy

- Data Economy
- Inclusive digital society
- Interoperability and Standardisation
- Digitisation of European industry

European Council implementation deadline: 2018(ish)

DSM Strategy Mid-Term Review: May 2017

DSM Strategy: May 2015

European Commission | Digital Single Market

Legend:
- CI = Commission Initiative adopted (light blue)
- Aim = Aim to reach agreement in Parliament and Council (dark blue)
- Agr = Adoption in Parliament and Council (agreement reached) (green)

Pillars	Policy initiatives		Legislative proposal	2015 2nd Sem	2016 1st Sem	2016 2nd Sem	2017 1st Sem	2017 2nd Sem	2018 1st Sem	2018 2nd Sem	2019 1st Sem	2019 2nd Sem
Access	Modernise eCommerce	Geo-Blocking	X		CI			Agr				
		Digital contracts – supply of digital content	X	CI						Aim		
		Digital contracts – online sales of goods	X	CI						Aim		
		Reduce VAT burden for eCommerce	X			CI		Agr				
		Parcel delivery	X		CI			Agr				
		Consumers rights enforcement	X		CI			Agr				
		Report on eCommerce sector inquiry					Agr					
	Cross-border portability		X		CI		Agr					
	Intellectual Property Rights Enforcement	Guidance on IP enforcement aspects						CI				
	A modern copyright framework	Copyright Directive	X		CI					Aim		
		Copyright Regulation (including Satellite Cable*)	X		CI			Agr		•		
		Marrakesh Treaty (Directive&Regulation)	X		CI			Agr				
Digital environment	Spectrum - UHF band (470-790 MHz)		X		CI		Agr					
	Audiovisual Media Services Directive (AVMSD)		X		CI				Agr			
	Online platforms		X		CI				CI			
	Wholesale Roaming		X		CI		Agr					
	European Agenda for Collaborative Economy					CI						
	Connectivity	BEREC Regulation	X			CI				Agr		
		European Electronic Communications Code	X			CI				Agr		
		WiFi4EU	X			CI	Agr					
		Towards a Gigabit Society Communication (incl. Connectivity targets)				CI						
		5G Action Plan				CI						
		Guidelines on significant market power in the telecoms sector							CI			
	ePrivacy		X				CI			Aim		
	Cyber Security*		X			CI		CI		Agr		
Economy and society	Digitising European industry				CI							
	European Data Economy	Communication on Building a European Data Economy					CI					
		2nd Data Package (Free flow of non-personal data)	X				CI		Agr			
		3rd Data Package (PSI Review, private data sharing, scientific data sharing)	X						CI	Aim	Agr	
	e-Government				CI							
	Standardisation & interoperability	ICT Standardisation priorities			CI							
		European Interoperability framework					CI					
	Digital skills	New Skills Agenda for Europe			CI							
		Digital Education Plan							CI		CI	
	European Cloud initiative	European Open Sciece Cloud			CI							
		High Performance Computing	X						CI	Agr	CI	Agr
	Communication on AI								CI			
	Recommendation on tackling illegal content online								CI			
	Communication on Fake News								CI			
	.eu top level domain regulation		X						CI	Aim		Aim
	Fintech Action Plan								CI			
	Communication on eHealth								CI			

Legend:
- Commission Initiative adopted
- Aim to reach agreement in Parliament and Council
- Adoption in Parliament and Council (agreement reached)
- * Provisional agreement reached

European Commission | Digital Single Market

Implementation progress in –> 4 years –> legislative proposals
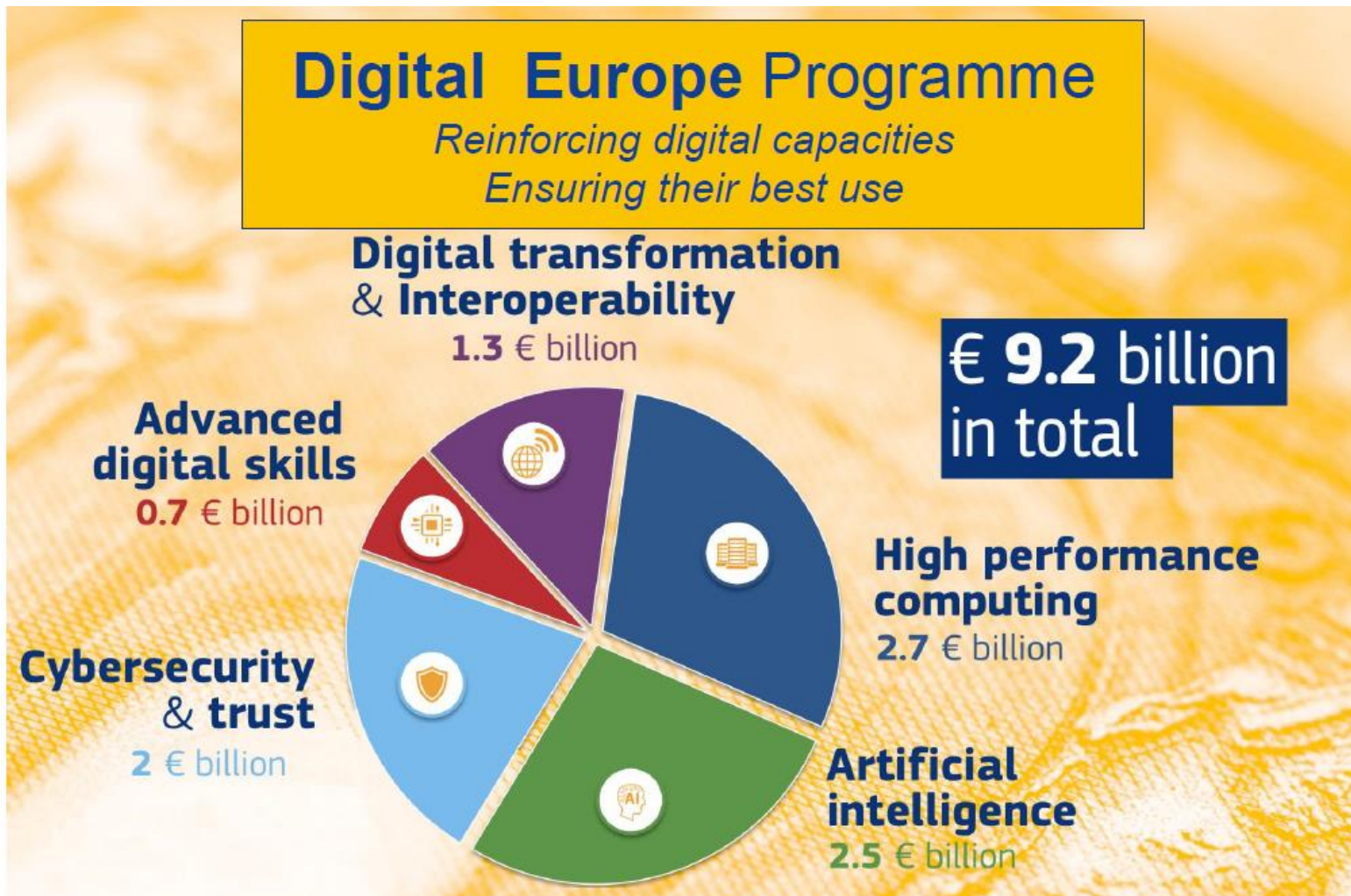
Almost 30 legislative proposals. Agreement reached on:

- ✓ **End of roaming charges**
- ✓ **Portability of content**
- ✓ **Spectrum**
- ✓ **Marrakesh Treaty implementing acts**
- ✓ **Wifi4EU**
- ✓ **End of unjustified geo-blocking**
- ✓ **Modernisation of VAT for e-commerce**
- ✓ **Consumer Protection Cooperation**
- ✓ **AVMSD review**
- ✓ **Telecoms Code**
- ✓ **Free Flow of Non-Personal Data**
- ✓ **(Copyright and Platform-to-business?)**
- ✓ **...and more!**

Possible Post - Juncker

Policy response:
The Digital Europe Programme 2021-2027

Digital Europe Programme
Reinforcing digital capacities
Ensuring their best use

Digital transformation & Interoperability
1.3 € billion

€ **9.2** billion in total

Advanced digital skills
0.7 € billion

High performance computing
2.7 € billion

Cybersecurity & trust
2 € billion

Artificial intelligence
2.5 € billion

European Commission | Digital Single Market

Artificial intelligence

The Commission will fund projects to support the use of AI in many applications in key areas:
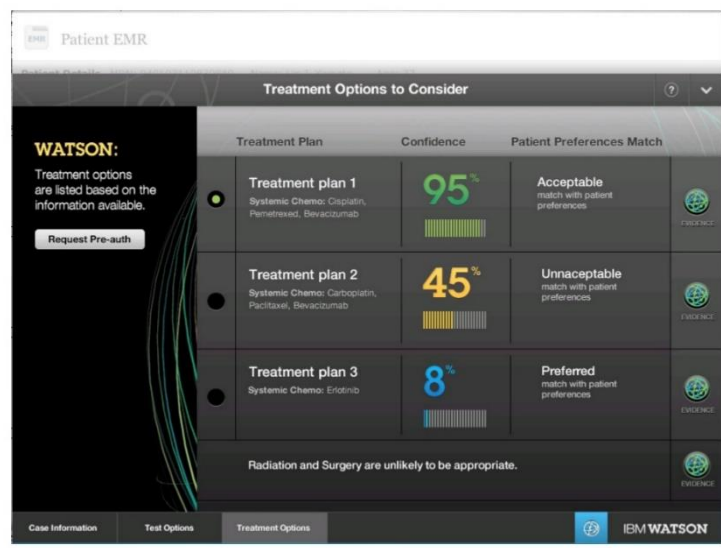
- **Healthcare (Watson)**
- **Farming (prediction, picture processing etc.)**
- **Transport (CCAM, traffic jams, decentralised traffic flows, sea transport, door-to-door delivery)**
- **Public administration (Prediction: right place at the right time)**
- **Digitise industry in general (Finance, insurance and McDonalds)**

Watson Corpus

Over 1TB of data

Over 40M documents

Over 100M entities and relationships

Chemical database	12M+ chemical structures
Public genomics	20.000+ genes
Medical text books	50+ books
Medline	23M+ abstracts
Other journals	100+ journals
FDA drugs/labels	11.000+ drugs
Patents	16M+ patents

*IBM Watson correctly diagnosed a 60-year-old woman's rare form of leukaemia within 10 minutes — a medical mystery that doctors had missed for months at the University of Tokyo: Watson sifted through 20 million cancer research papers, and came up with the proper diagnosis **within 10 minutes,** suggesting a new treatment that has since been more effective*

Superhuman eyes

Input
Chest X-Ray Image

CheXNet
121-layer CNN

Output
Pneumonia Positive (85%)

Rajpurkar et al (2017)

What could go wrong?

Robots read all the worlds news, social media feeds, etc. and then they buy/sell the best stocks in 0.01 second

70% of **all** stock trades done by robots, <u>not people!</u>

Kilde: IBM

"And then there are other tested and tried methods of politics. We need to go back to this messy thing of making political regulations and choices of all this. It's maybe the most important. Politics is about power. And this is where power is right now."

Yuval Noah Harari on how to handle the super-computer aimed at your head – Wired April 2018

High Performance Computers

- *Two exascale machines by 2022/2023 (at least one with European technology)*
- *At least one post-exascale machine by 2027.*
- *Hybrid HPC-Quantum infrastructure by 2027*

Cyber Security

- *By 2020: At least one cybersecurity competence center per Member State*
- *By 2025: encryption techniques that can resist quantum computing*

Skills

The demand for information and communications technology specialists is growing fast; today Europe has +350 000 vacancies for ICT specialists

In the future, 9 out of 10 jobs will require

digital skills

At the same time, 44% of Europeans between 16 and 74 years do not have basic digital skills

Potential Timeline post-2019

May 2019

Election of the European Parliament

October 2019 **?**

Appointment of the next EU Commission

Digital Policy Strategy Post-2019

May 2020 **?**

Adoption of the Strategy

** Estimation based on past timing for the DSM Strategy

Managing the Digital Transformation of our Economy and Society

"People and businesses in the EU have the inherent strengths needed to take advantage of the Digital Single Market. These include a **strong manufacturing base** *and* **fast-growing startup ecosystem**, *which combined with newly digitised industrial processes and a skilled workforce, can drive growth for the foreseeable future. To fully unlock the data economy, the EU must also harness such assets to maximise the* **digitisation of the European service sectors, in particular health and care, energy, transport and finance**."

DSM Mid-Term Review

Next steps?

1. The inherited work; commitments from the current DSM strategy

2. Digital trends and tech developments
Proactively follow up on important technology trends, e.g. AI, HPC, AR/VR to provide a political narrative focusing around:
o   everyone should profit from the digital revolution;
o   managing the digital transformation without losing our core values;
o   fostering a European digital investment climate, including pushing for European projects where no MS alone can achieve the necessary scale needed for success; and
o   ensuring strategic technological autonomy.

3. Dig deeper into the Socio/economic effects of technology
We need to better understand and prepare for the effects technology has on our society to ensure better alignment of digital policy with Europe's societal goals:
o   how technology affects citizens and consumers;
o   prepare for and equip our population to make the most of the digital transformation;
o   how technology influences our democracies; a need to make the Internet safer and more trustworthy (e.g. privacy, cyber security, illegal/hate speech content/disinformation);
o   help address our societal challenges such as climate change/energy/mobility;
o   how technology impacts the interaction between citizens; and
o   deploy assertive digital diplomacy (values/norms, standards, cyber security, market access).

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