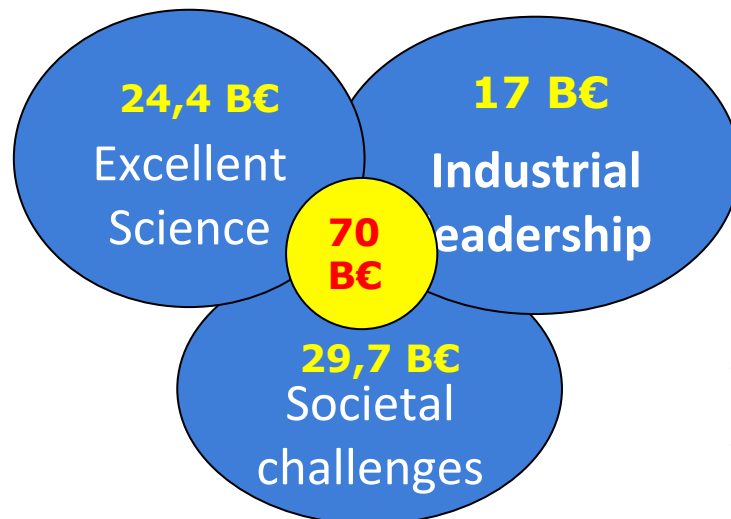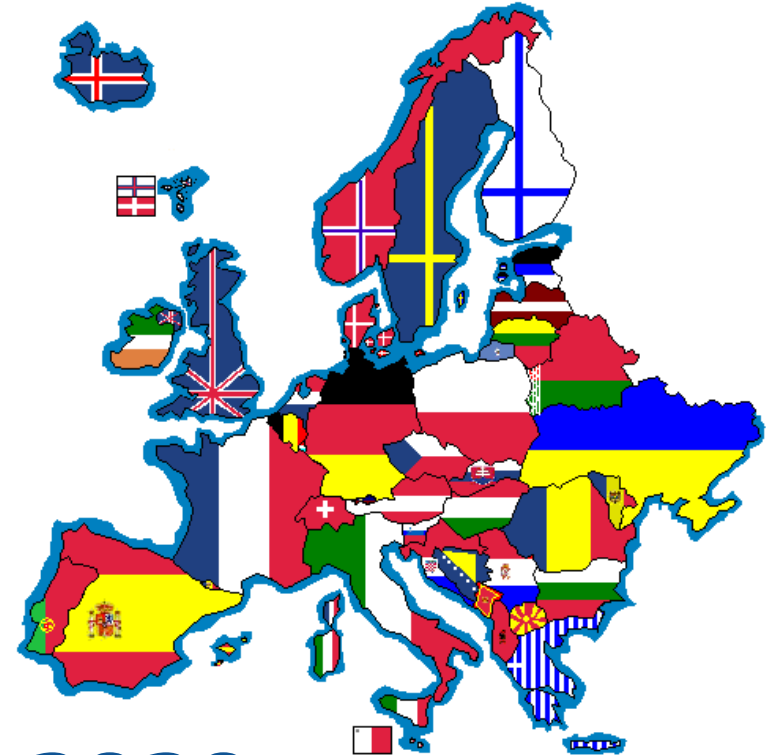European
Commission

Horizon 2020

"Industrial, Research & Innovation policy context"

EuMW/ EuMC2014

Dirk Beernaert

Rome, 9 Oct 2014

The European Union

- *'United in diversity'*
- *28 Member States , 24 languages*
- *508 million citizens*
- *GDP of 13,1 trillion € (16,6 trillion $)*

24,4 B€
Excellent Science

17 B€
Industrial leadership

70 B€

29,7 B€
Societal challenges

Horizon 2020

- A smaller part (<20%) of all EU R&D activities
- Cross-border cooperation & coordination
- Support EU Policy

J-C Juncker political priorities
(Boosting the Eurozone economy)

1. Jobs, Growth & Investment: *100 B€ Innovation and Investment package to increase competitiveness & invest for jobs .*

(PPPs for R&I, Innovative Innovation Financing SMEs *(crowd funding)***)**

2. Digital Single Market: *Everything Connected.*(250B€ additional growth)

5G, Wireless but also Automated Road Transport, Internet of Things, Digital Security

3. Energy Union: *with a forward looking climate change policy.*

Smart cities , Energy efficiency, GRID, Competitive low-carbon energy,...

4. An internal market *with a strengthened industrial base*

Industry 2020 (Industry 4.0), **Industrial Policy, Manufacturing**

ANDRUS ANSIP
VICE-PRESIDENT

GÜNTHER H OETTINGER

Commissioners-designate to DSM:
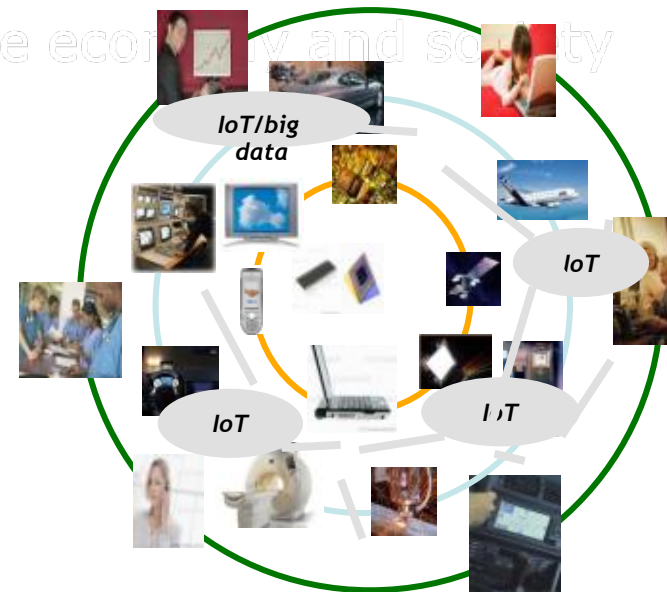
Digital Single Market

Digital Economy & Society

An industrial strategy for KETs

- **KETs is about Systems and Value Chains:**
  (IoT,...)

- **KETs is about products AND (multi-)KETSolutions:**
  (electric vehicle, autonomous driving, ..)

- **KETs is about competitiveness and investments:**
  (Skills, Knowledge, R&I, Manufacturing,....)

- **Nanotechnology**
- **Advanced Materials**
- **Micro- and nano- electronics**
- **Photonics**
- **Biotechnology**
- **Advanced Manufacturing**

European KET Strategy:
- EC Communications (2009)512 & (2012)341
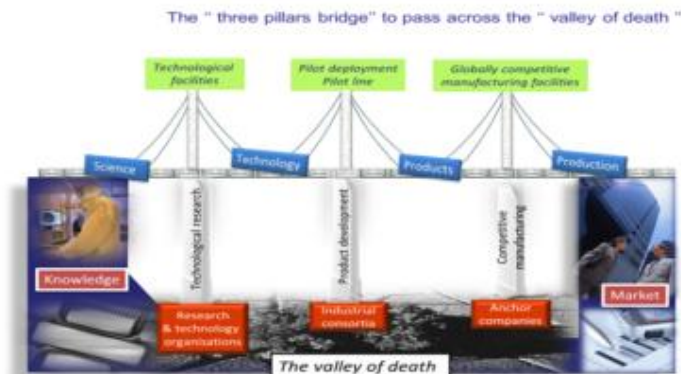- KET High-level Group

An industrial strategy for KETs

Europe has a strong position in science <u>and</u> patent ranking in each KET (1/3) <u>but</u> is weak in manufacturing and deployment.

Invest - next to R&D - in crossing the

"Valley of Death"

- *invest in **pilot lines** and **demonstrators** building trust;*
- *in **(access to) competitive manufacturing** and **products (solutions)***
- *facilitate **entrepreneurial engagement** (SMEs)*

- *provide an **"equal level" playing field.***

From Lab to Industry to Market

The " three pillars bridge" to pass across the " valley of death "

Technological facilities · Pilot deployment Pilot line · Globally competitive manufacturing facilities

Science · Technology · Products · Production

Knowledge · Market

Research & technology organisations · Industrial consortia · Anchor companies

The valley of death

Research and Innovation

A Strategy, Roadmap and an Implementation Plan*
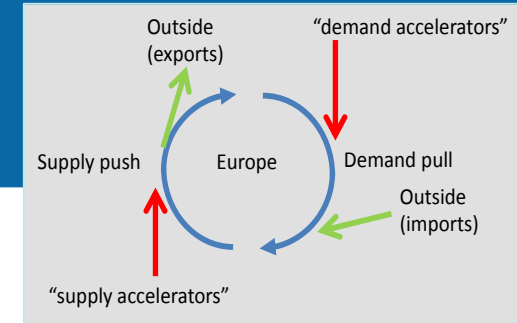https://ec.europa.eu/digital-agenda/en/electronics-strategy-europe

"To double economic value of semiconductor component production in Europe by 2020-2025"

- **Maintain leadership where Europe is strong** e.g. automotive, energy, industrial automation, security, ...

- **Build leadership in emerging high growth markets** in particular IoT/"Smart Everywhere" and autonomous / automated vehicles

- **Mobile convergence/ mobile applications** e.g. maintain leadership in low power processors and grow leading edge semiconductor manufacturing.

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(* ELG group – June 2014)

A European Industrial Strategy for ECS

Three-leg approach:

Support from H2020 but also (and mainly) from ESIF, national , regional.. and industry

Demand accelerators address the whole ECS value chain.

– Trailblazer (lighthouse) projects

- "Smart Everywhere (Everything, Anytime) Initiative"

- Reference zones

Supply accelerators raising (access to) production capacity across supply chain

- Pilot lines

- Important Projects of Common European Interest (IPCEI)

- Innovation ecosystems

Enhanced **Framework and Infrastructure**

– Level playing field, skills, cooperation research & industry, global cooperation

Mastering Microwave Innovation and its' Value Chain in Europe is Key for the ECS Strategy.
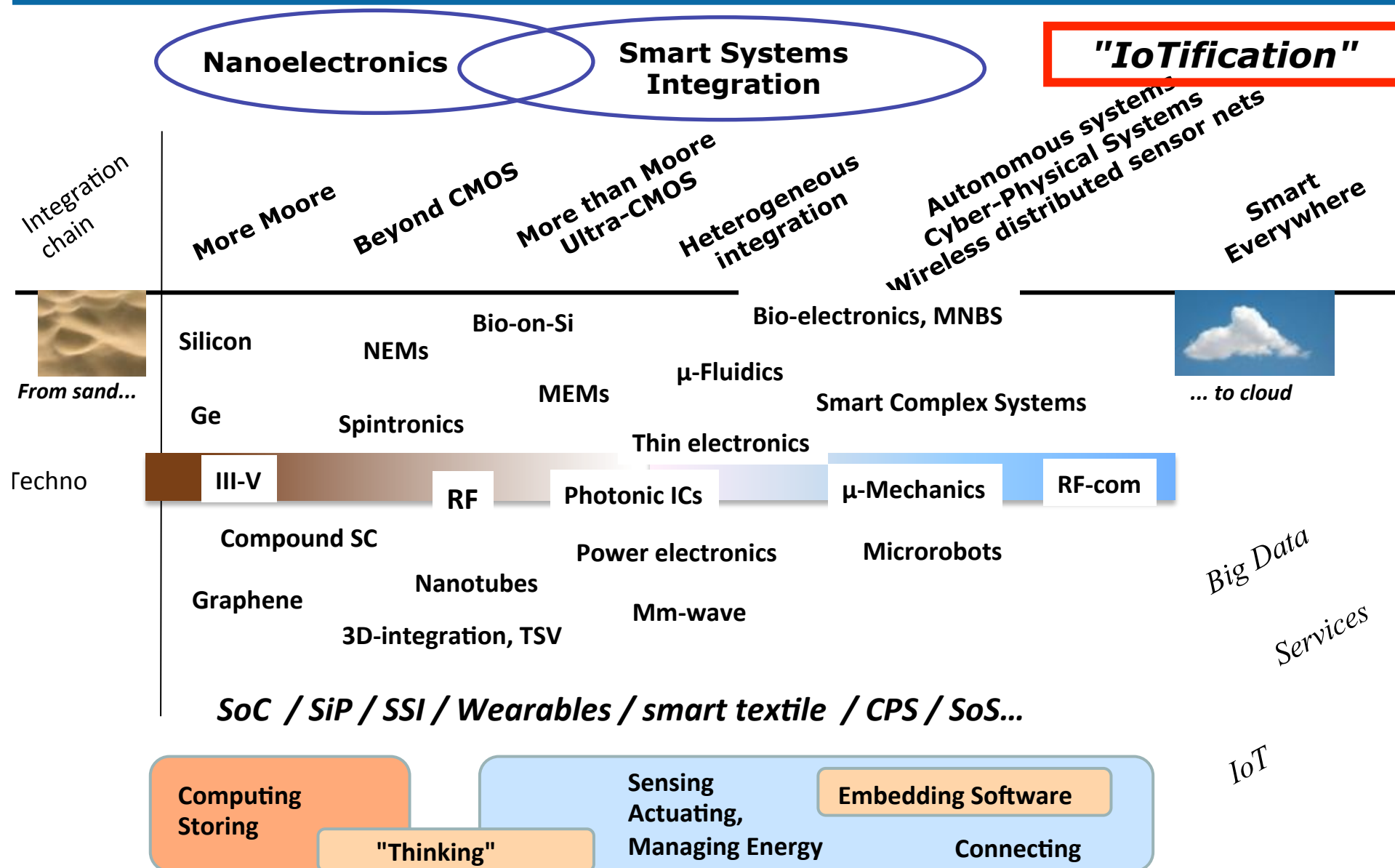
Research & Technology Agenda
From Nano-electronics materials & devices to IoTsystems
"From Sand to Cloud"

Nanoelectronics

Smart Systems Integration

"IoTification"

Integration chain

More Moore

Beyond CMOS

More than Moore Ultra-CMOS

Heterogeneous integration

Autonomous systems
Cyber-Physical Systems
Wireless distributed sensor nets

Smart Everywhere

From sand...

Bio-on-Si

Bio-electronics, MNBS

Silicon

NEMs

μ-Fluidics

... to cloud

Ge

MEMs

Smart Complex Systems

Spintronics

Thin electronics

Techno

III-V

RF

Photonic ICs

μ-Mechanics

RF-com

Compound SC

Power electronics

Microrobots

Graphene

Nanotubes

Mm-wave

Big Data

3D-integration, TSV

Services

SoC / SiP / SSI / Wearables / smart textile / CPS / SoS...

IoT

Computing Storing

"Thinking"

Sensing Actuating, Managing Energy

Embedding Software

Connecting

X-KETs and multi-disciplinarity - combine value and supply chains - link research to industry and the market

- Horizon2020

- Public Private Partnerships

  - JU ECSEL* , cPPPs *(FoF, Robotics, Photonics, 5G,….), ….*

- Combined funding

  - Regional – ESIF – EIB – H2020 - ....

- European Innovation Partnerships

  - Smart Cities, Active and Healthy Aging, …

- IPCEI (Important Projects of Common European Interest)

- Regional Clusters & Smart Specialisation

* ECSEL – a 5 B€ MS-EU-Industry PPP (Electronic Components and Systems for European Leadership)

Working in partnerships

Calls for funding collaborative R&I in H2020 are open on a regular basis.

Check at regular intervals and participate.

Background info.

H2020: http://ec.europa.eu/programmes/horizon2020/en/ (Health, Transport, Smart City, FoF,…)

ICT: http://ec.europa.eu/programmes/horizon2020/en/area/ict-research-innovation

ECSEL (Joint Undertaking, PPP MS-EU-Industry) **:** http://www.ecsel.eu/

ECS (electronic components and systems) : https://ec.europa.eu/digital-agenda/en/electronics and

https://ec.europa.eu/digital-agenda/en/news/electronics-eu100-million-bugdet-call-open-15-october

KETs (Key Enabling Technologies) http://ec.europa.eu/enterprise/sectors/ict/key_technologies/index_en.htm

IoT (ICT30: smart Connected Objects): https://ec.europa.eu/digital-agenda/en/internet-things

Regional policy (combined funding / IPCEI / Smart Specialisation)

http://ec.europa.eu/regional_policy/sources/docgener/guides/synergy/synergies_en.pdf

Preparing the future (2016-2017)

- IoT (and a-Drive?) as a Focus Area in H2020
- IoT Large Scale Pilots (lighthouse projects), beyond technology demonstration, linking Societal Challenges with European Technology

Conclusion

"Industrial, Research & Innovation Policy

for a better, global competitive, connected, smarter, digital Europe. "

- *Addressing demand and supply, addressing whole value and supply chains, linking research with innovation, combining resources and competences*

- *Supporting innovation ecosystems and key Regions*

- *Focusing, cooperation and investment is key*

Europe is __and will be a__ great place for partnerships and investment in new fields (IoT, A-Drive,..)

???Would you take this opportunity ???

What are you waiting for?

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Courtesy Fraunhofer IZM

Thank you

☺ And engage in this exciting future. ☺

dirk.beernaert@ec.europa.eu

More about Horizon 2020: http://www.ec.europa.eu/research/horizon2020

HORIZON 2020

DG CONNECT http://ec.europa.eu/dgs/connect/index_en.htm