Digitising European Industry

Strengthening competitiveness in digital technologies value chains and platforms

Agenda

#DigitiseEU

Agenda 21 October 2016 (1/2)

- 08:30 - 09:00 Welcome Plenary: purpose, concept, setting, by Khalil Rouhana, Peter Droell
- 09:00 - 10:00 State-of-play on Digital Platforms in
  - Vertical topics
    - Smart Connected Factory (15'), by Max Lemke and Erastos Filos
    - Digital transformation of health and care (5'), by Michel Brochard
    - Smart agriculture (5'), by Ana Cuadrado Galvan
    - Connected Autonomous Driving (5'), by Eddy Hartog
  - Horizontal topics
    - Industrial Data Platforms (10'), by Jiri Pilar
    - Internet of Things (10'), by Joel Bacquet
- 10:00 - 10:30 Discussion
- 10:30 - 11:00 Coffee break
    - Outside room 2D

Agenda 21 October 2016 (2/2)

- 11:00 - 12:45 Parallel sessions on vertical areas:
  - Smart Connected Factory (2D, Erastos Filos and Arian Zwegers)
  - Digital transformation of health and care (3A, Michel Brochard)
  - Smart agriculture (0B, Ana Cuadrado Galvan and Joel Bacquet)
- 12:45 - 13:45 Lunch break
  - Outside room 2D
- 13:45 - 15:30 Parallel sessions
  - Industrial Data Platforms (2D, Jiri Pilar)
  - Internet of Things (3A, Joel Bacquet)
- 15:30 - 16:00 Closing plenary: reporting from groups, next steps, and closure

Questions (1/3)

- What is the current landscape of activities in Europe (national initiatives, EU funded activities, other)?
- Where do we want to go?
  - What kinds of next-generation platforms are needed (if any)?
  - What kinds of large-scale federating initiatives are needed (if any)?
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- How do we bridge the gap between what we have and what we want to achieve?
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Questions (2/3)

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Questions (3/3)

In a later stage:

- How do Member States see the role of the PPPs in supporting the alignment of R&I programmes?
- How do Member States see the PPPs evolving, the Member States involvement in PPP activities, and PPP involvement in Member States activities?
- Standardisation: how can alignment of initiatives strengthen the European position in standardisation?
- How to ensure the necessary mobilisation of resources at all levels?
- Which targets and indicators should be used to provide evidence and monitor progress?

Digitising European Industry

Strengthening competitiveness in digital technologies value chains and platforms

Peter Droell and Khalil Rouhana
European Commission
DG RTD and DG CONNECT

#DigitiseEU

What is the problem?

- How to build on Europe's strengths in order to seize the opportunities ahead?

- Given that:
  - Competition is fierce to master key digital gateways for value creation
    - Big data platforms, AI platforms, connectivity techno, OSs, key IoT and Cloud Components/software
    - Standardisation
  - Europe has still key strengths but also important gaps in key parts of digital value chains
  - Efforts from R&D to experimentation to deployment are often spread across Europe:
    - Difficult to reach critical mass

Pan-European collaboration across the R&D&I cycle

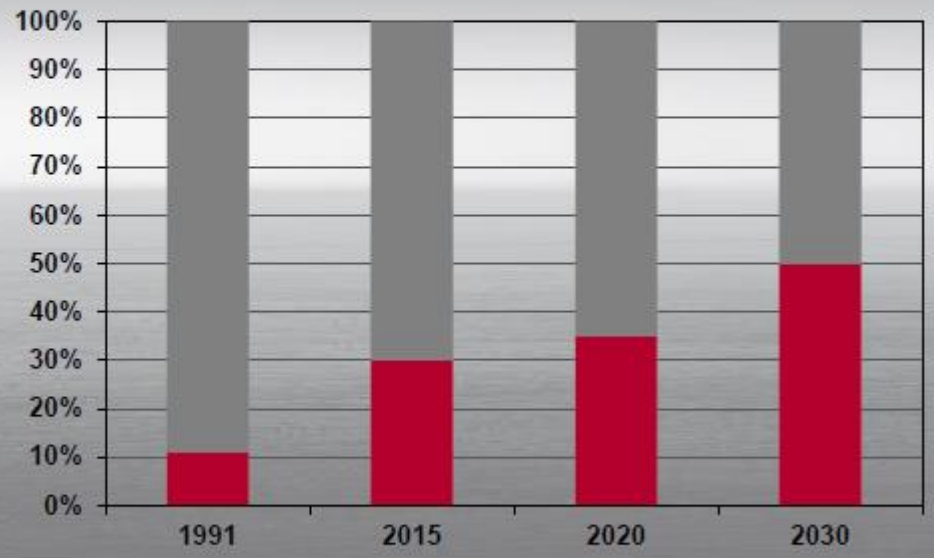
- Approach
  - Alignment/Better articulation of efforts
    - EU, national and regional initiatives and industrial strategies,
    - PPPs play an important role
  - Focus investments on
    - Key technologies and their integration across all sectors
    - Select "moon-shot " like initiatives from R&D to experimentation to full deployment
    - In areas f key importance
    - Across the value chain user-suppliers-technology providers
  - Bring technologies/platforms to market quicker & standardise

Innovation in products: The automotive example

Value Share of Electronics

Outlook

Electronic components share of vehicle production cost



(forecast for 2020 and 2030)
Data source: http://www.pwc.de

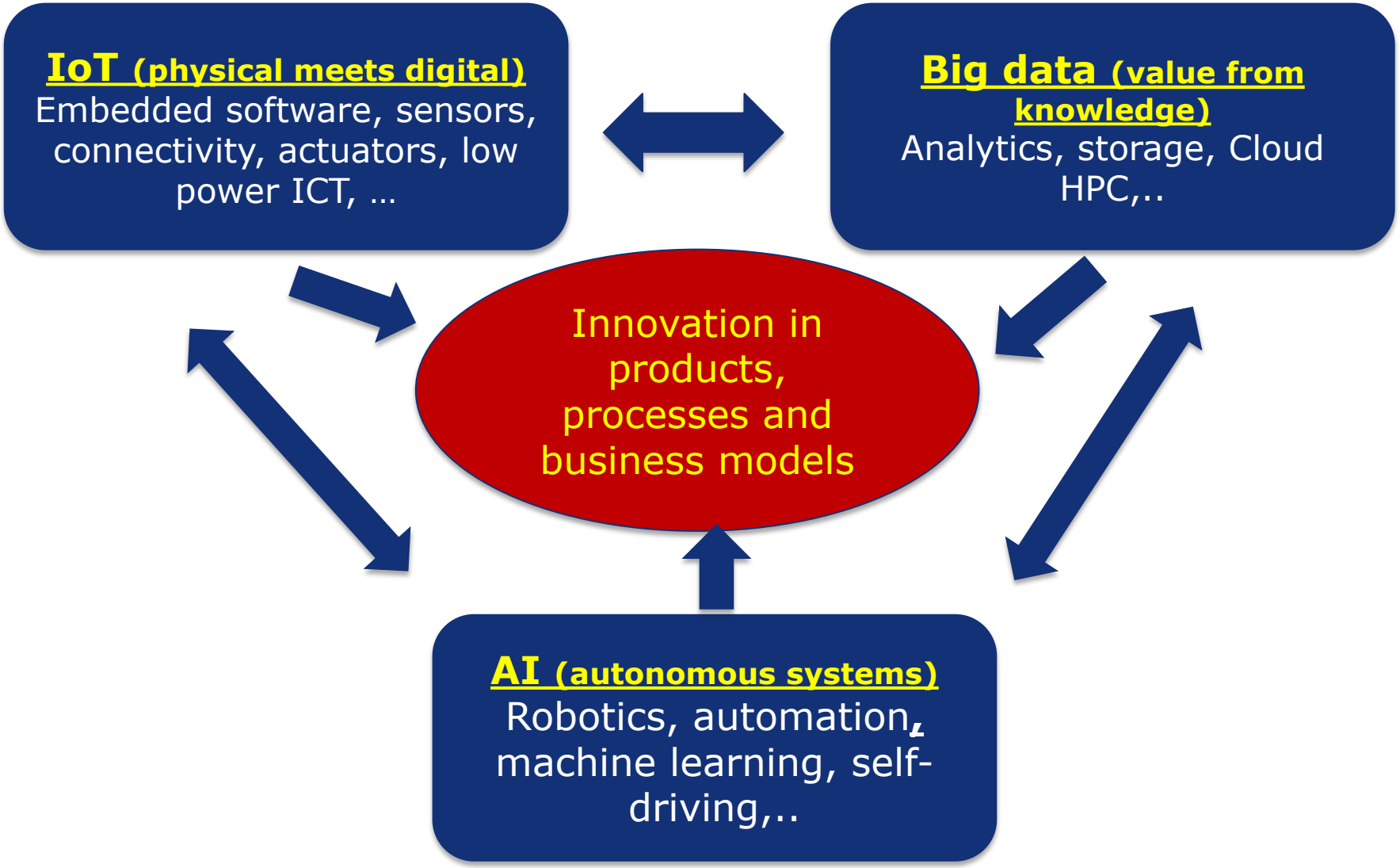
ICT for automotive market value:

- **Today: ~800 B€**
- **Projected to reach 1800 B€ in 2020**

in addition:

- continuously **increasing** number of **lines of software code**
- continuously **increasing** amount of **data traffic** within and from/ to the vehicle

Technologies driving the change



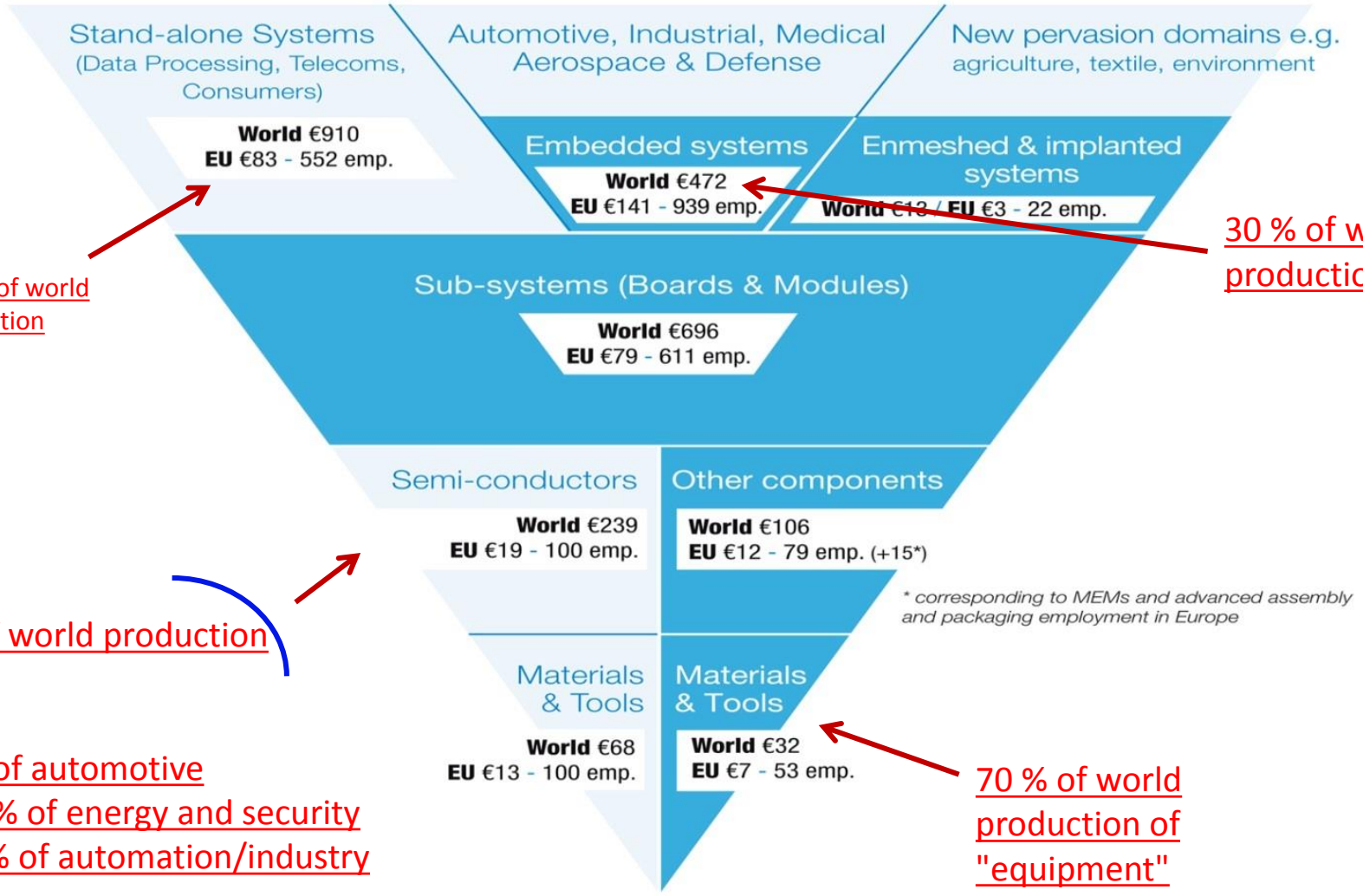
Digital value chains Some examples

Micro-electronics

Connected and Autonomous driving

Healthy aging

Fuelling digital innovation: Where is Europe in the supply chain



<10 % of world production

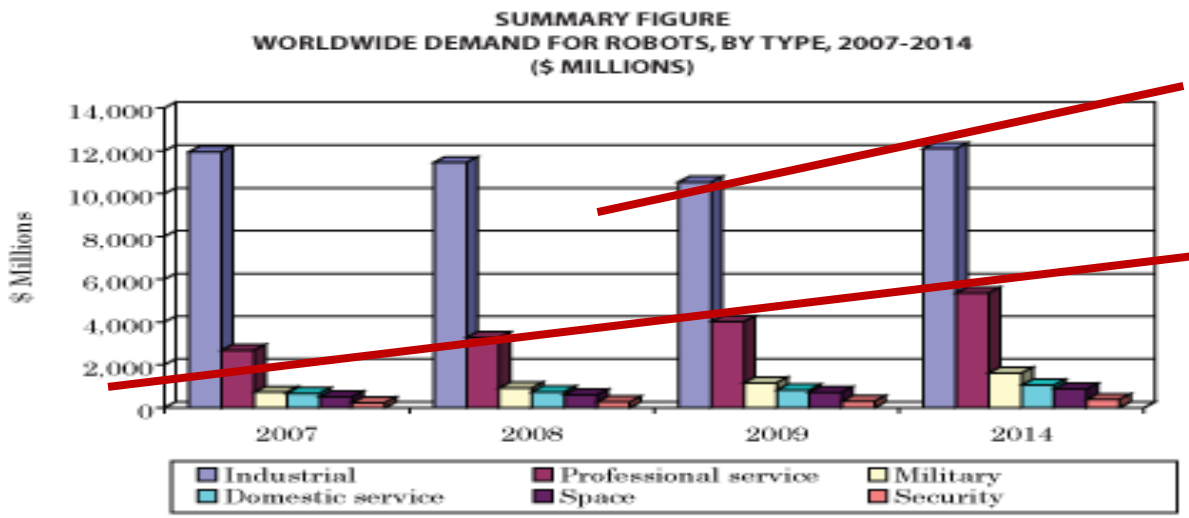
30 % of world production

11 % of world production

But
- 55% of automotive
- > 50 % of energy and security
- > 40% of automation/industry

70 % of world production of "equipment"

Where does Europe stand?
Robotics and autonomous systems

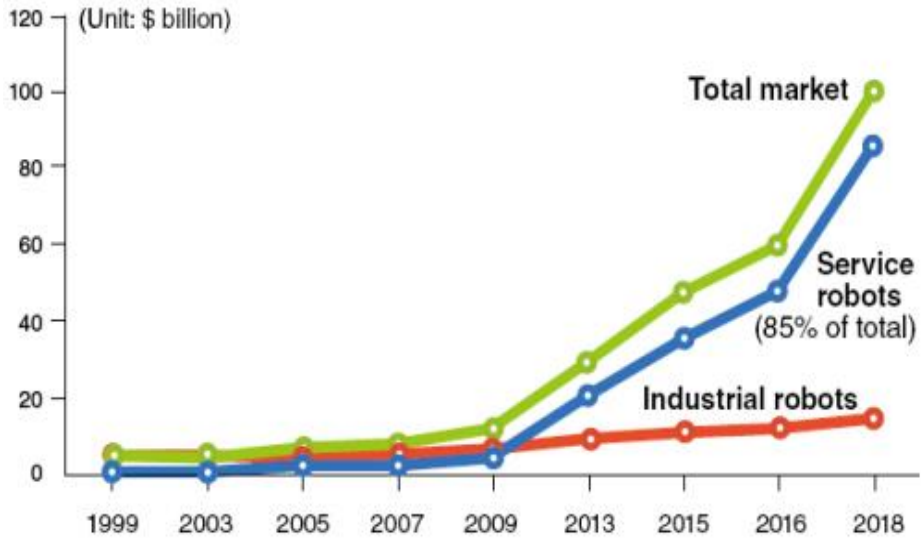


Source: BCC Research

Industrial robotics: coming back

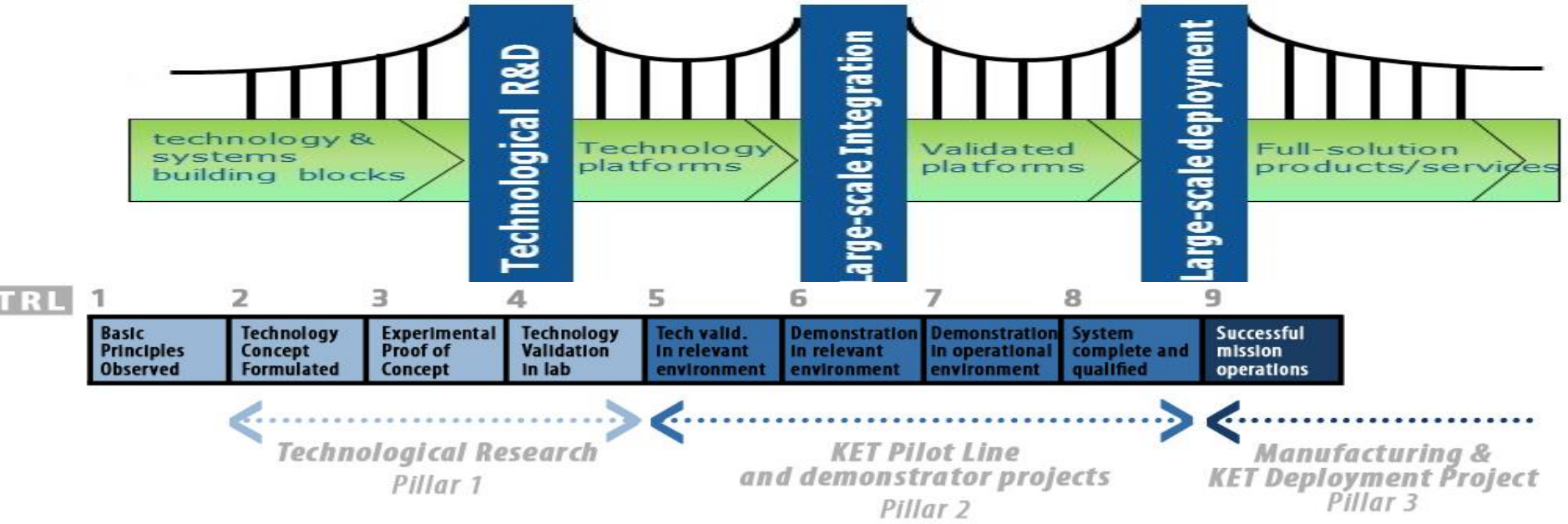
Professional Service robots "Steady growth", 15%/year

Global robot market outlook



EU production in value:
~25 % of industrial robotics
~50 % of prof. service robotics
~<10% of consumer robotics

Align our efforts in different development stages – Example of microelectronics and embedded software



R&D projects

- FP7, Horizon 2020
- TRL 2-5
- National programmes

x 10

Testing experimentation, Pilot lines

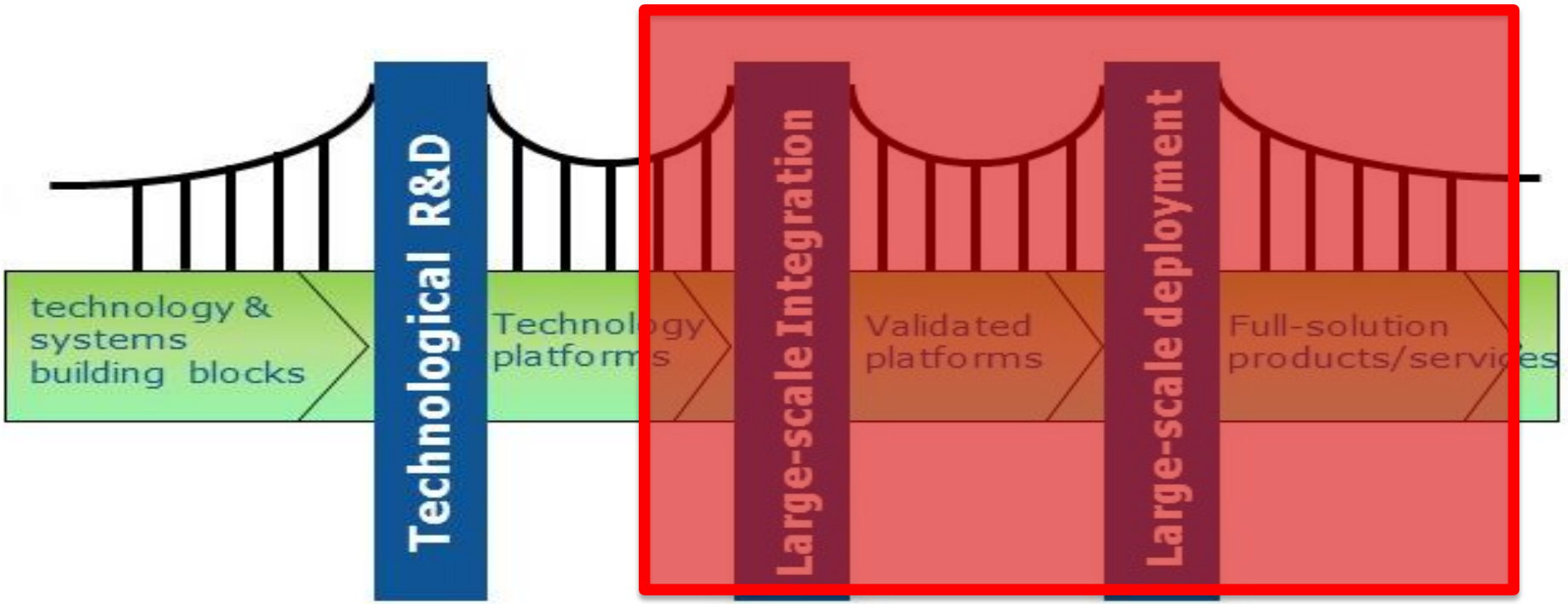
- FP7, Horizon 2020, MS, industry
- E.g. 400 M€ for power semi-con pilot lines
- TRL 5-8

Deployment e.g. IPCEI,

- MS, industry
- E.g. microelectronics IPCEI
- TRL 8-9

x 10

Emphasis on aligning R&D&I initiatives on technology **platforms** and large-scale integration



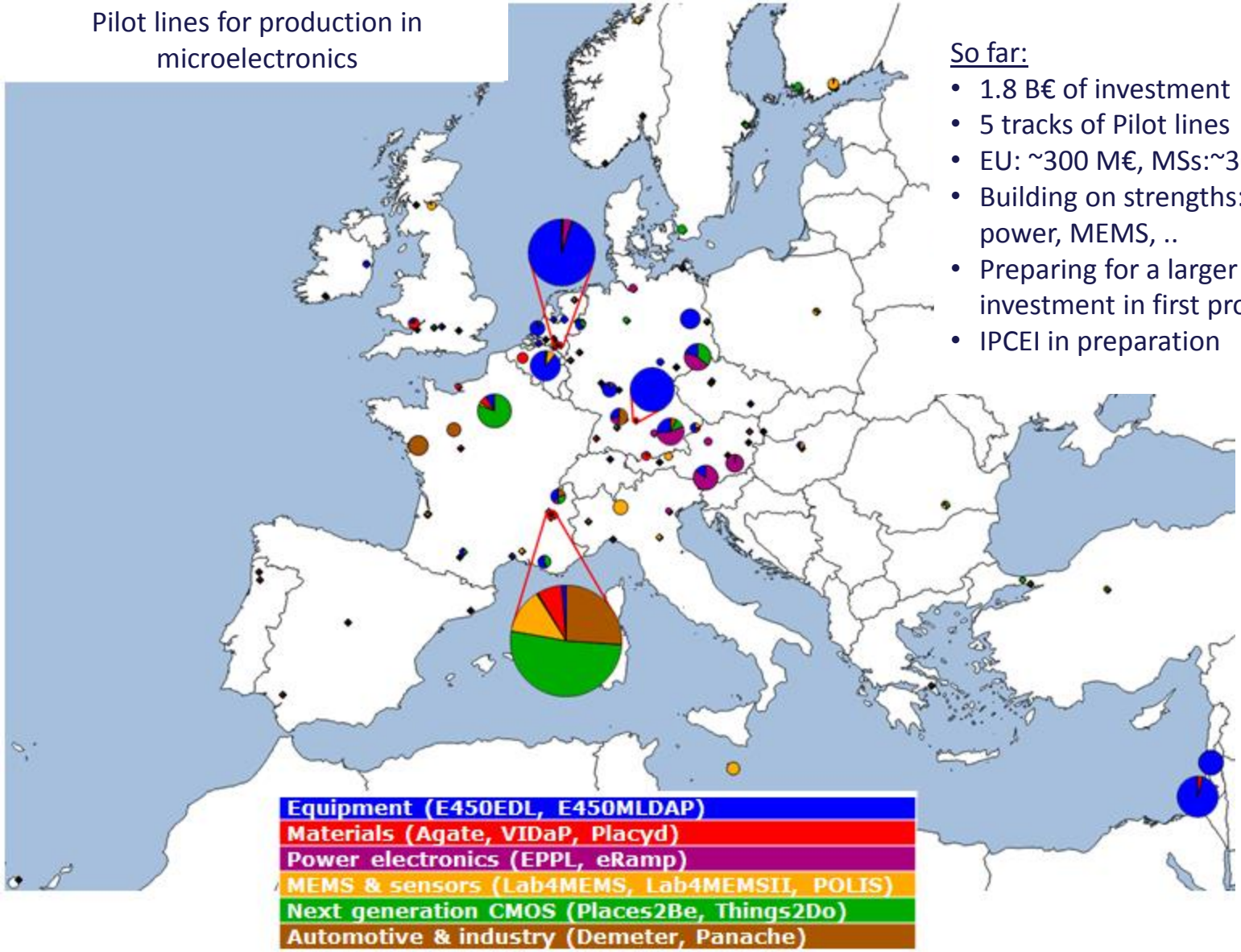
Investment targets
Digitising European Industry

2016/2020	EU (planned)	Member States (digital focus)	Industry
Digital innovation hubs	€500m (from Horizon 2020)	€5bn (ESIF, regional budgets, …)	Part of the below
Public-private partnerships	Close to €4bn (from H2020)	Close to €1bn (contribution ECSEL)	Close to €17bn
Focus of national policies on strategic priorities	-	€15bn (national programmes on digitisation)	tbd
Important Project of Common EU Interest (IPCEI) on electronics - planned	~ €300m in ECSEL	~ €1bn from participating Member States	~ €5bn

Not including the Cloud Strategy and the planned IPCEI on HPC.

What can we achieve together, example

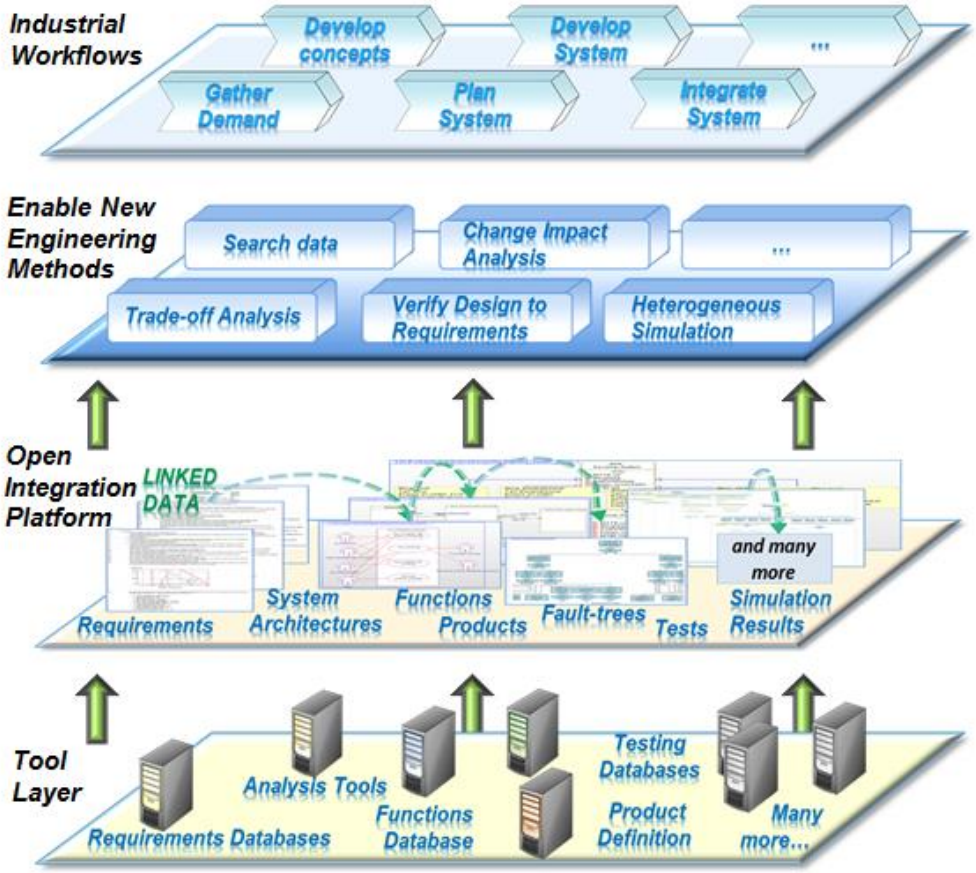
Pilot lines for production in microelectronics



So far:

- 1.8 B€ of investment
- 5 tracks of Pilot lines
- EU: ~300 M€, MSs:~300M€
- Building on strengths: Low power, MEMS, ..
- Preparing for a larger investment in first production
- IPCEI in preparation

CRYSTAL platform for safety-critical systems



Crystal

- ARTEMIS
- 82 MEuro, 71 partners
- Technology platform for safety-critical systems, with reference solutions

…. integrated in eco-systems ….

Raw Material Sourcing

- Supplier management
- Inbound logistic
- Warehouse management

Manufacturing Operations

- Production planning
- Quality management
- Blending/customizing
- Optimization
- Maintenance

Distribution

- Filling/packaging/labeling
- Order processing
- Outbound logistic
- Warehouse management
- Claims/returns management

Delivery

- Transport management
- Customer relationship
- Differentiated service

Information Backbone

Supply Chain Management Software

ERP, LES, Barcodes, RFID, Labeling

PCS, ERP, SAP-APO, MES, CAD, CAE

ERP, MES, LES, Labeling, RFID, GPS

IT Solutions

CAD:	Computer Aided Design
CAE:	Computer Aided Engineering
ERP:	Enterprise Resource Planning
GPS:	Global Positioning System
LES:	Logistics Execution System
MES:	Manufacturing Execution System
PCS:	Process Control Systems
RFID:	Radio Frequency Identification
SAP-APO:	Advanced Planner & Optimizer

… and supported by cPPPs

Advance the production of high-value products that meet high quality demands **in flexible continuous plants** by introducing novel online sensors & closed-loop control methods.

Characteristics

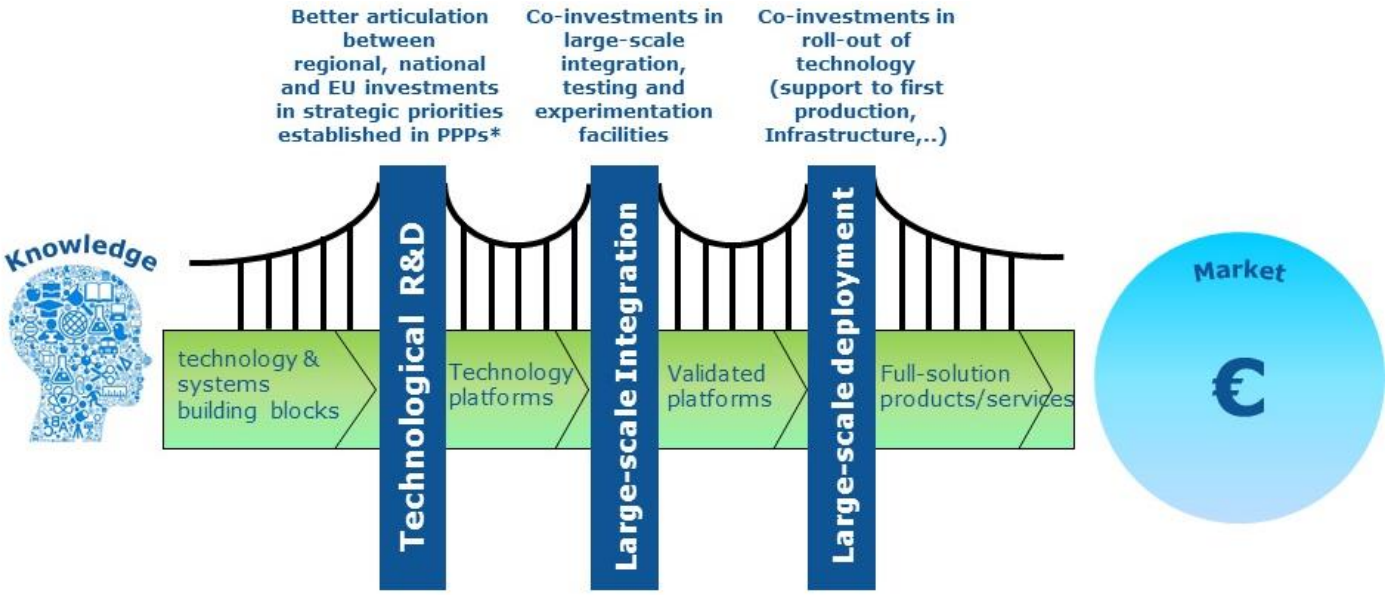
- Miniaturized equipment
- Intensified heat & mass transfer
- Possibly modular setup
- Standardisation
- Advanced Learning

Containerized modular plant from F³ Factory project

Benefits

- Product uniformity
- Sustainability
- Fast adaption to market demand
- Innovative products
- New Start-ups
- Adapted Workforce

Where can we work together?



Vertical topics

- **Smart Connected Factory**
- **Digital transformation of health and care**
- **Smart agriculture**
- **Connected Autonomous Driving**

Horizontal topics

- **Industrial Data Platforms**
- **Internet of Things**
- **…**

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THANK YOU

Digitising European Industry
http://ec.europa.eu/digital-agenda/en/digitising-european-industry

Twitter: #DigitiseEU

Digitising European Industry: Towards Platforms and Ecosystem for Connected Smart Factories

Dr. Max Lemke, DG CONNECT
Head of Unit Technologies and Systems for Digitising Industry

with contribution by
Dr. Erastos Filos, DG RTD

#DigitiseEU

Technology value chains
Some examples

Micro-electronics

Autonomous driving

Healthy aging

ERT Position Paper: Towards European Leadership in the Industrial Internet (August 2016)

- Drive global standards for the industrial internet
- Foster industry-driven platforms for the industrial internet

Starting point: Recommendations (2)

EFFRA Recommendations: Factories 4.0 and Beyond (Sept 2016)

EFFRA EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

Building on the vision of the FoF 2020 roadmap and public consultation in 2016 → **Key priorities for FoF 18-19-20**

Vision of the factories of the future: the challenge perspective

Vision of the factories of the future: the technology perspective

Agile value networks: Lot-size one - distributed manufacturing

Excellence in manufacturing: Advanced manufacturing processes and services for zero-defect processes and products

The human factor: Human competences in synergy with technological assets

Sustainable value networks: Manufacturing in a circular economy

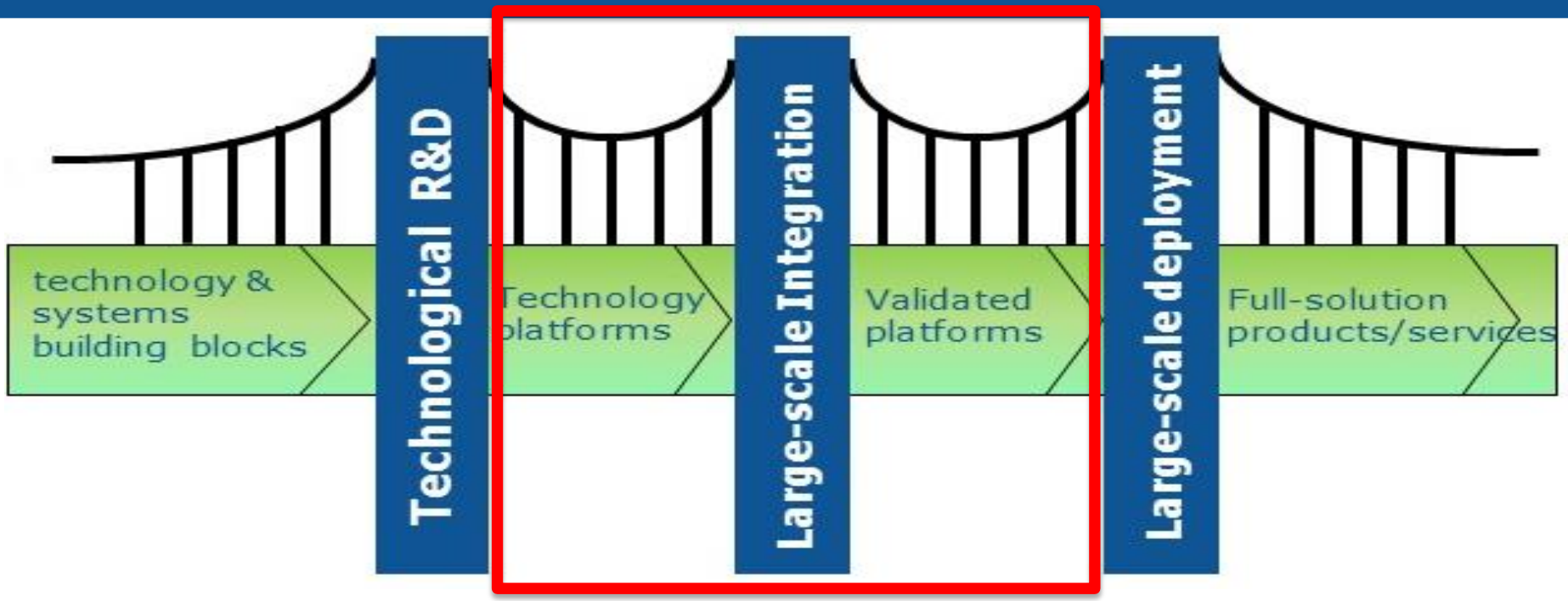
Interoperable digital manufacturing platforms: connecting manufacturing services

Some key challenges in manufacturing

- Flexibility – agility – logistics 4.0
- Mass customisation – lot size 1
- Autonomous systems – cobotics - AI
- Excellence in manufacturing
- Energy and resource efficiency
- Fully linked physical and digital worlds
  AND fully linked product and production

- Platform economy
- Data economy
- Security – trust

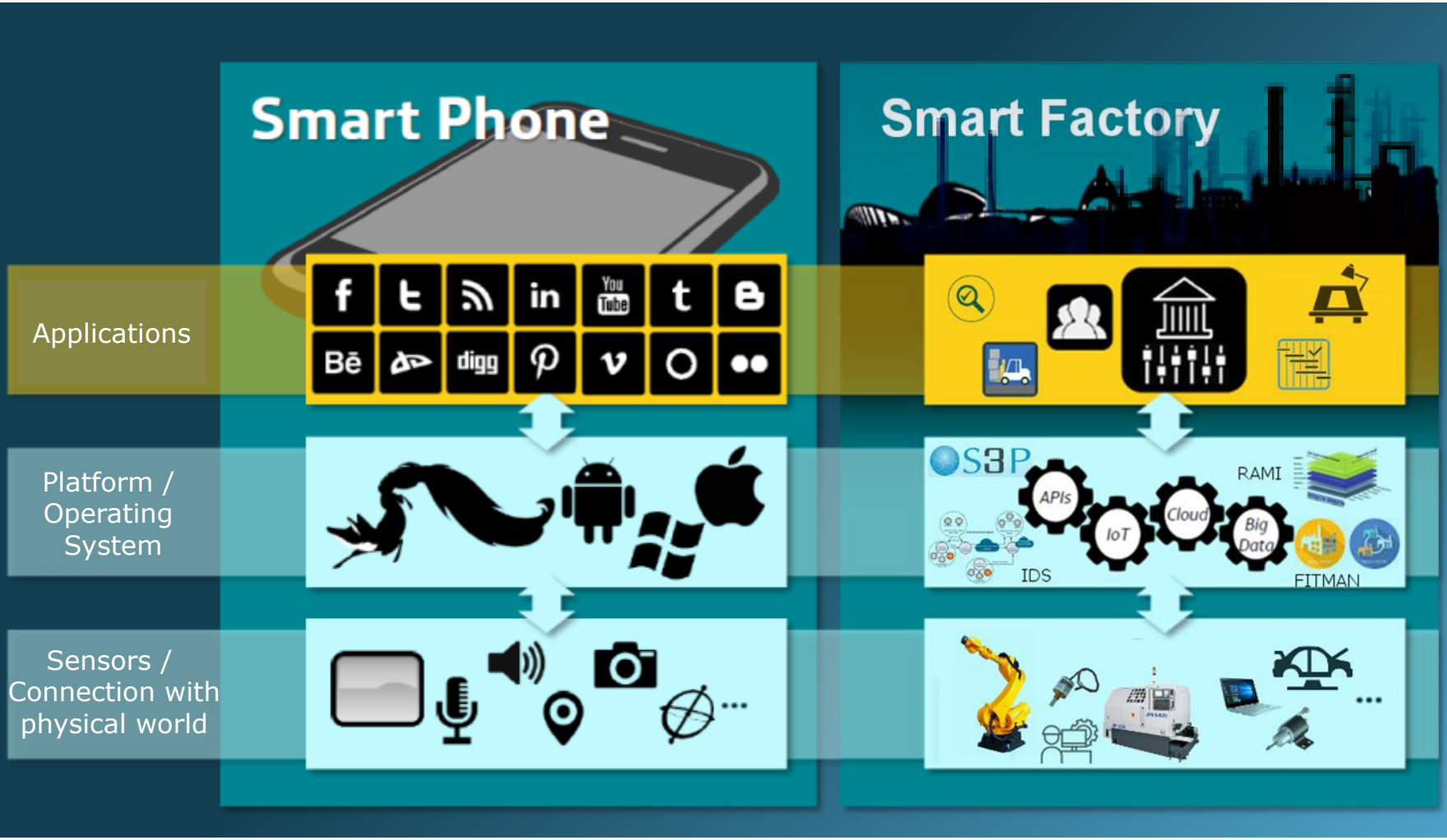
Emphasis on aligning R&D&I initiatives on digital industrial technology **platforms** and large-scale integration



- Narrow interpretation: "Platforms here are to be understood as multi-sided market gateways creating value by enabling interactions between several groups of economic actors" (COM(2016) 180 final, 19 April 2016)
- Broad interpretation: agreements on functions and interfaces between industry players that create markets and market opportunities
  - Platforms (narrow interpretation)
  - Reference architectures
  - Interaction protocols
  - Interoperability frameworks

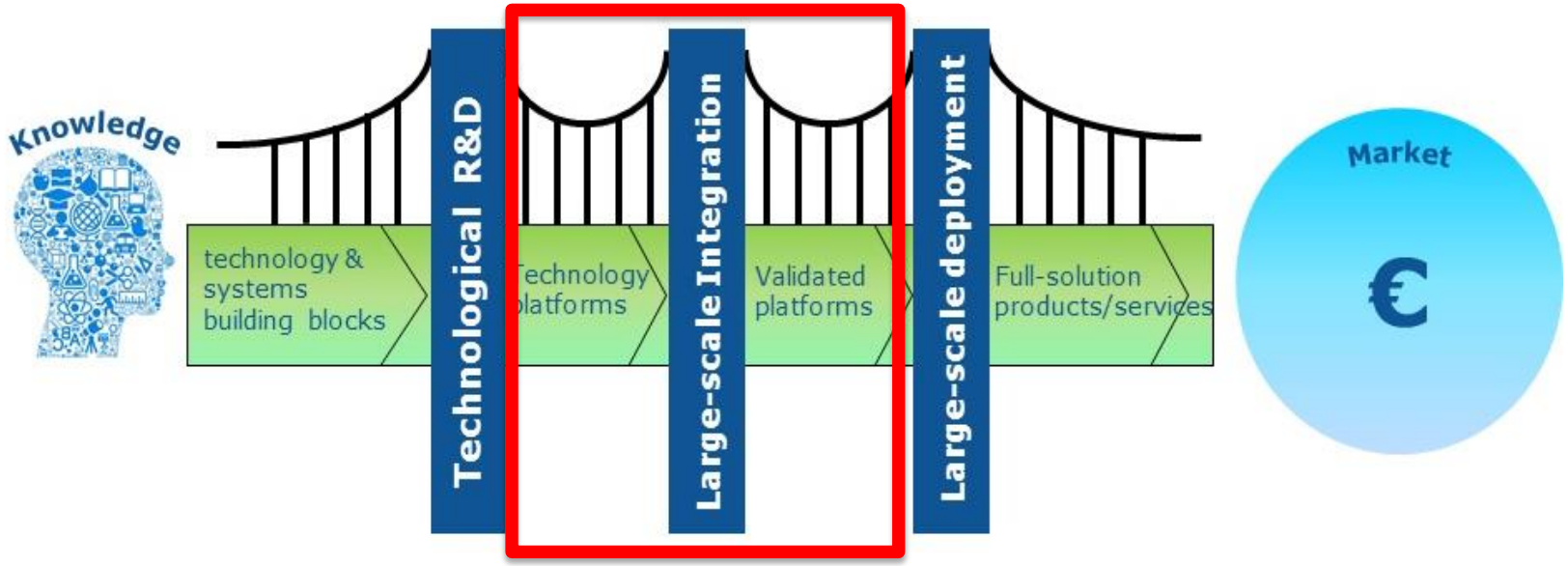
  leading to ecosystems and standards

Smart Connected Factory Platforms



A Strategic and Ambitious Initiative on European Scale on Platforms and Ecosystem for Connected Smart Factories

- Under the Digitising European Industry Strategy:
  "Leadership in digital industrial value chains and platforms"
- Overall goal: **aligning regional, national and EU strategies on platforms and large-scale reference implementations**
  - Initiatives by industry and MSs/regions
  - Linking pin: WP 2018-20 PPPs FoF, SPIRE, … (100M€ ++)
- Focusing on a small number of larger strategic pan-European Innovation Actions, which pool resources across the EU



Towards interoperable digital platforms for the connected smart factory of the future

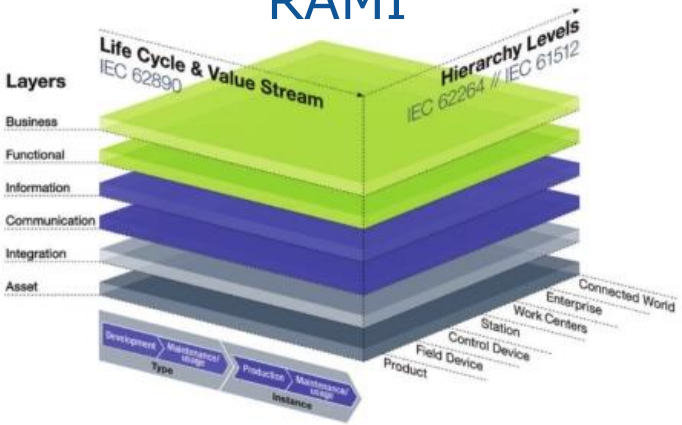
- Key objectives
  - Future global standards and platforms for the Connected Smart Factory driven by the interests of EU actors
  - EU actors joining forces along common interests in the "platform economy"
- Approach: Bottom-up standardisation and platform building:
  - Reference architectures, platforms, interoperability frameworks
  - Testbeds and large scale experimentation
  - Piloting on manufacturing system level
  - Standardisation and ecosystem building
- Scope:
  - Addressing the manufacturing challenges of the future
  - Profiting from digital advances (AI, data analytics, CPS/IoT, …)
  - Building on existing platforms and reference architectures
  - Balancing the interest of EU industrial actors – large and small
- Basic concept:
  - "digital twin" of physical assets
  - digital models of production, logistics, … facilities

Starting Point (1): Industry–driven platforms

European Commission

Community-led sector-specific (vertical)

RAMI



FI-WARE

FITMAN

Community-led cross-sector (horizontal)

S3P

SMART, SAFE & SECURE PLATFORM

IDS

Industrial Data Space

AIOTI

CRYSTAL

industrial internet CONSORTIUM

ARROWHEAD

Proprietary with open interfaces

SIEMENS

DASSAULT SYSTEMES

Social and Collaborative apps
Related brands: ENOVIA, 3DSWYM

Information Intelligence apps
Related brands: EXALEAD, NETVIBES

Content and Simulation apps
Related brands: 3DVIA, DELMIA, SIMULIA

3D Modeling apps
Related brand: CATIA, GEOVIA, SOLIDWORKS

Real time 3DEXPERIENCE Platform

SAP HANA

for Supply Chain and Manufacturing

Predix

Your cloud platform for the Industrial Internet

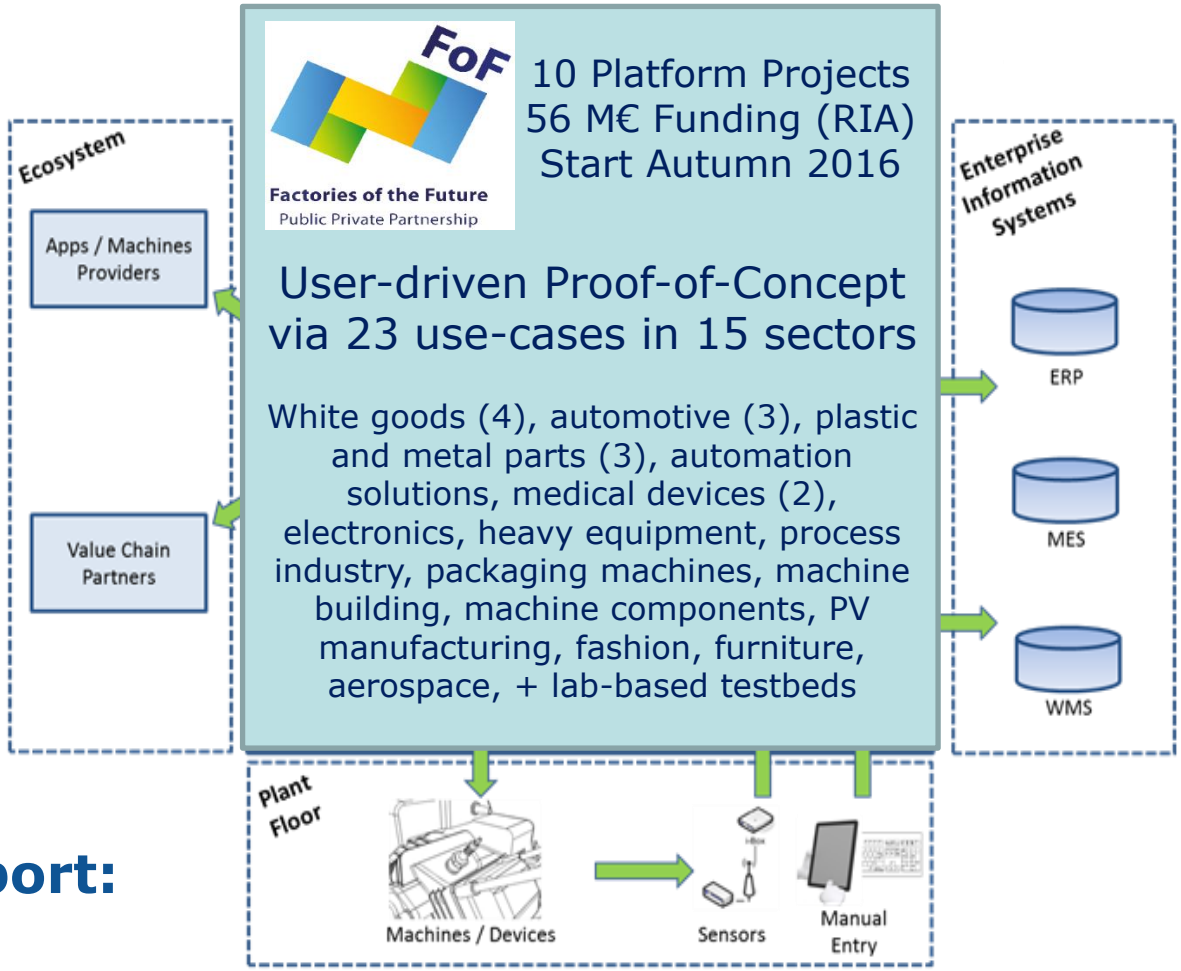
CODE of PLM OPENESS

ProSTEP iViP

Starting point (2): PPP FoF Digital Industrial Platform Projects

In essence:

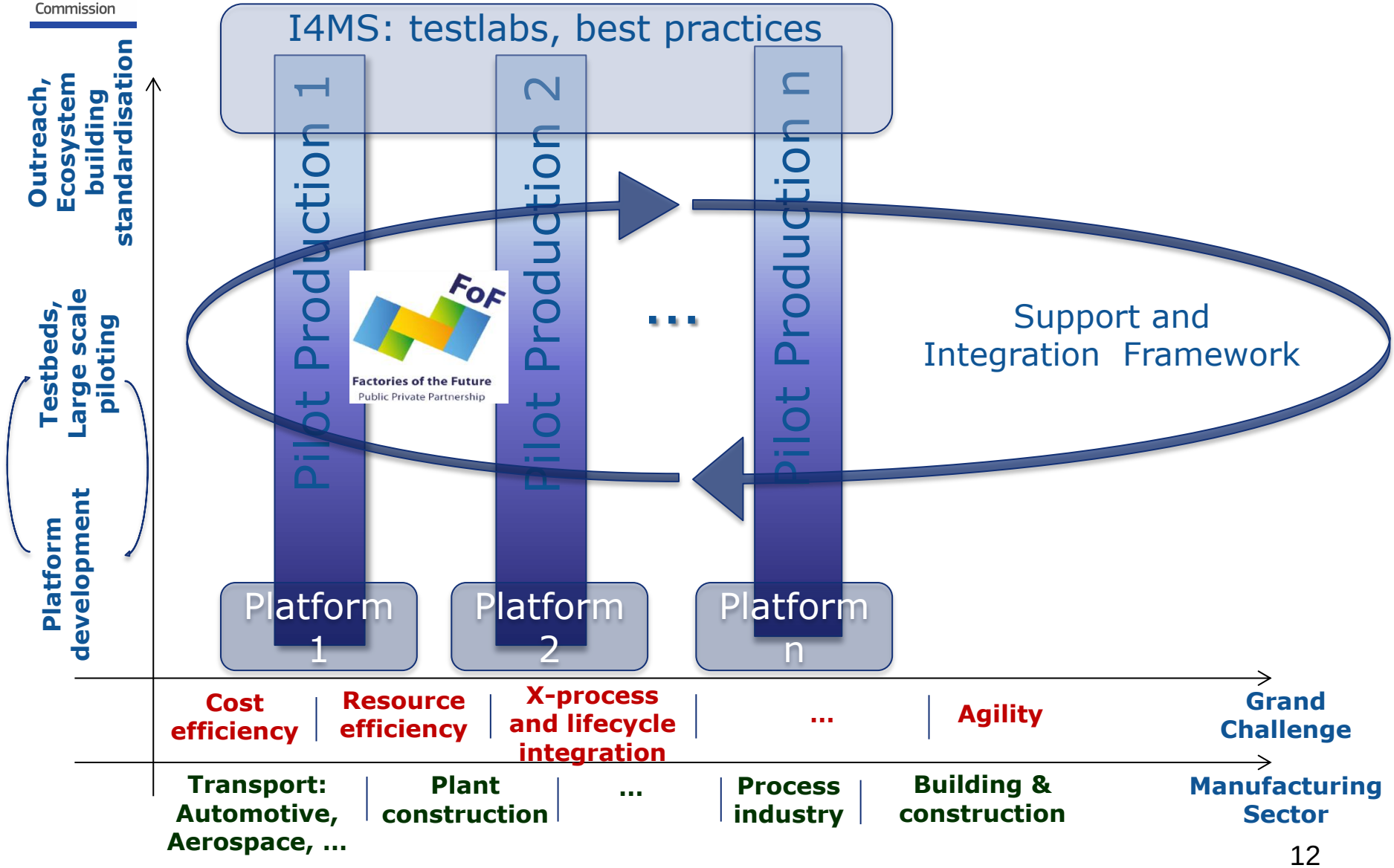
- Connecting manufacturing services through platforms
- Building on running platform initiatives
- Integrating digital technologies
- Focus on:
  - Collaborative manufacturing
  - And/or factory automation
- Reference Implementations
- Ecosystem building
- Compatibility with legacy information systems
- Open to 3rd party innovations



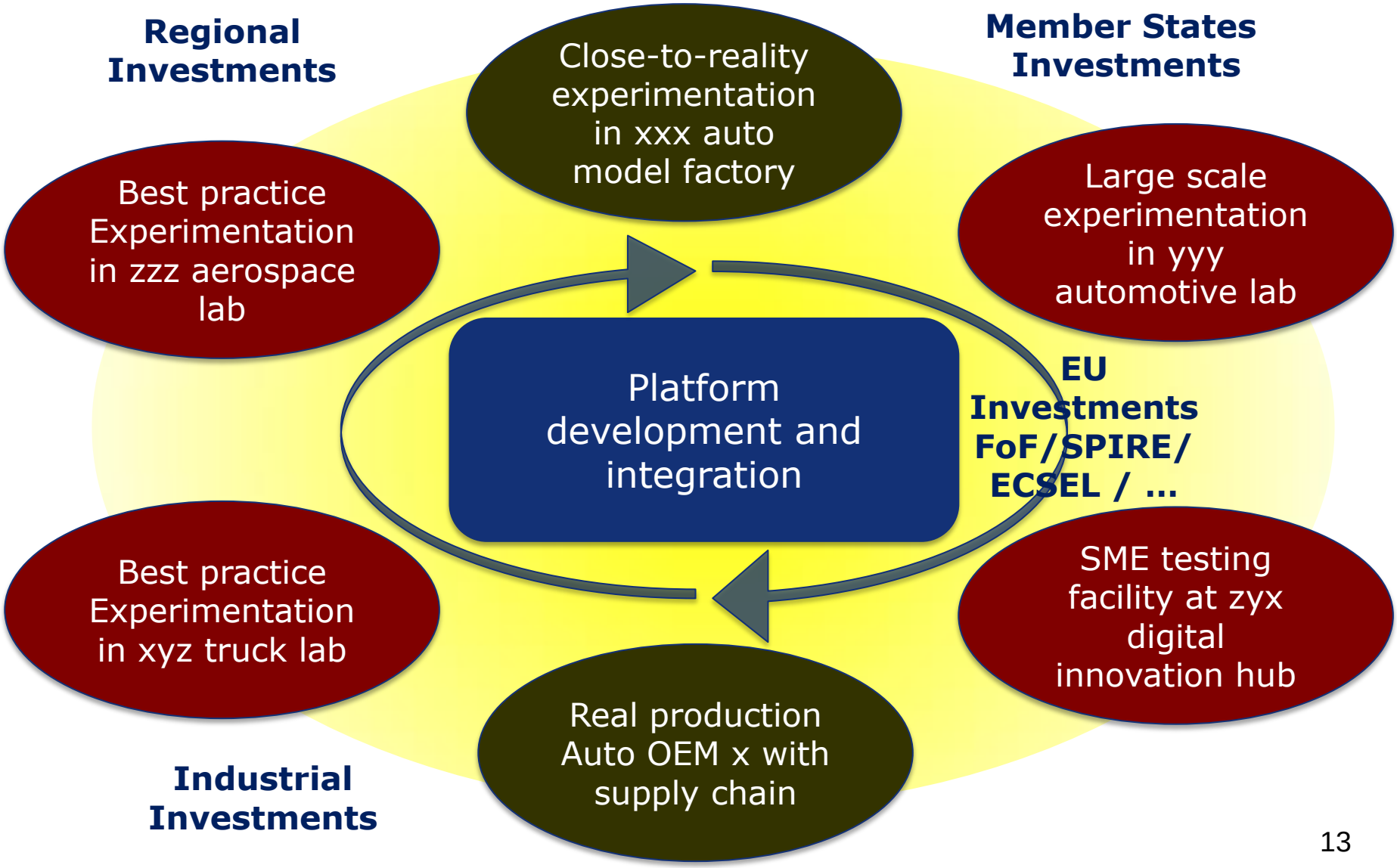
Co-ordination and support:

- ConnectedFactories Project
- EFFRA with major EU RTOs in digital manufacturing
- Exploit synergies across projects
- Derive future-looking concepts and strategies for platforms

The Pilot Production Concept



Example of a potential platform-based large scale pilot production initiative in the automotive sector



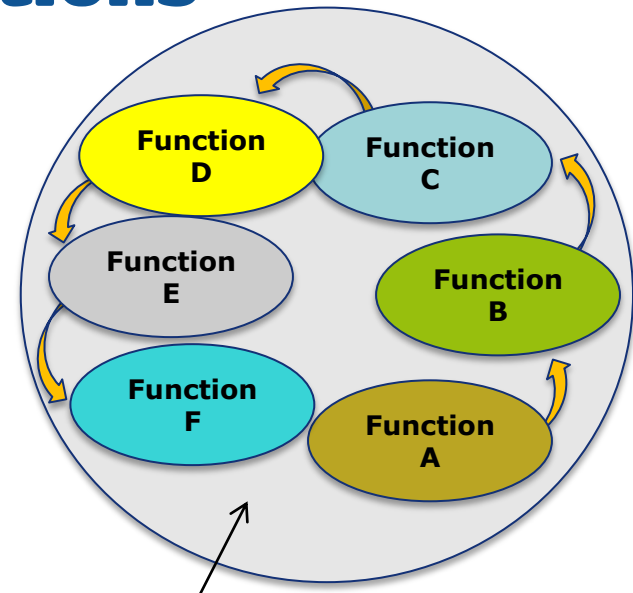
Reflections

- Choice of baseline platform(s)
- Use case / sector
- Grand challenge
- Unifying concept: digital twin, …
- Steps in product life cycle
- Balance: visionary – real vs lab – innovative - pre-competitive
- Involvement of SMEs
- Degree of openess of platforms and interoperability frameworks:
  - safeguarding the interests of strong European industrial actors
- Flexible funding schemes – different actors in different phases

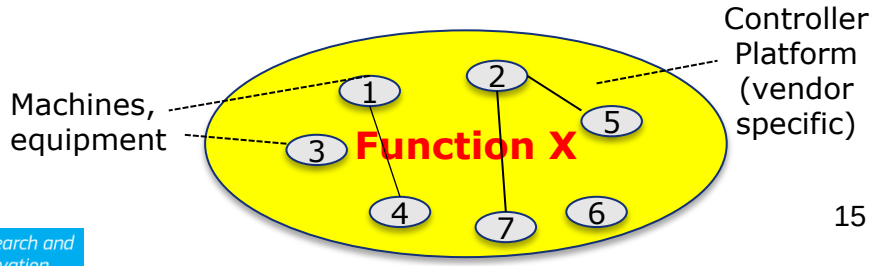
- **Interests of Member States and regions**
- **Pooling of resources:**
  EU, MSs, industry - conditional funding

Manufacturing Operations

- Organised as complex arrangements of consecutive functions, such as
  - treatment of work pieces, e.g. cutting, milling, glueing, painting, …
  - handling, packaging/assembly, …
  - Loading (firmware), measuring, testing, …
- At different levels of factory equipment hierarchy
- Requiring machines and equipment to run them
- Which are driven by control systems running on vendor-specific platforms



The ideal factory:
A platform of platforms?



Research and Innovation

WG2: Addressing All Sectors

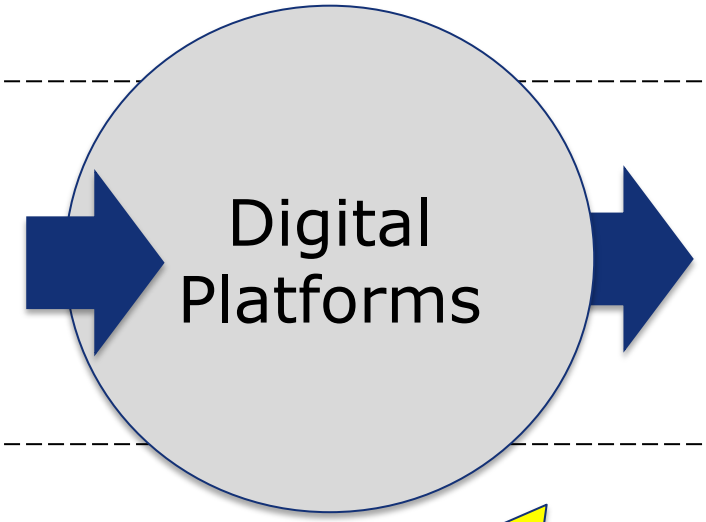
- **Manufacturing is a complex endeavour:**
  - **Many sectors:** consumer goods, industrial installations, automotive, …
  - **Many types:** Discrete, process, one-of-a-kind production
- **2 PPPs explicitly address manufacturing/production:**
  - **FoF: Factories of the Future PPP** (discrete manufacturing)
  - **SPIRE: Sustainable Process Industry PPP** (industrial processing)
- **These 2 PPPs are initiated & supported by DG RTD**
- **Both PPPs could in principle be involved in setting up digital platforms in a variety of sectors**

Based on Existing FoF Project Clusters

1. Product-service engineering platforms

2. Smart industrial components

3. Additive Manufacturing



Open RAMI-based product-service lifecycle management environment

Open factory platform facilitating the encapsu-lation of production resources & assets

Open design platform for Additive Manufacturing

Realising true 'plug & produce'

WG2: A Possible Contribution from SPIRE

- **Foreseen future activities towards digital platforms in the process industries:**

  - **Towards Cognitive Production:** Enhanced digitalisation to implement cognitive production plants for improved performance in the process industries
  - **Process Decision Making:** Integration of life-cycle assessment and costing tools for process decision making
  - **Towards Industrial Symbiosis:** Optimisation of industrial processes based on standardisation

THANK YOU

Digitising European Industry
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Digitising European Industry

Digital Transformation of Health and Care

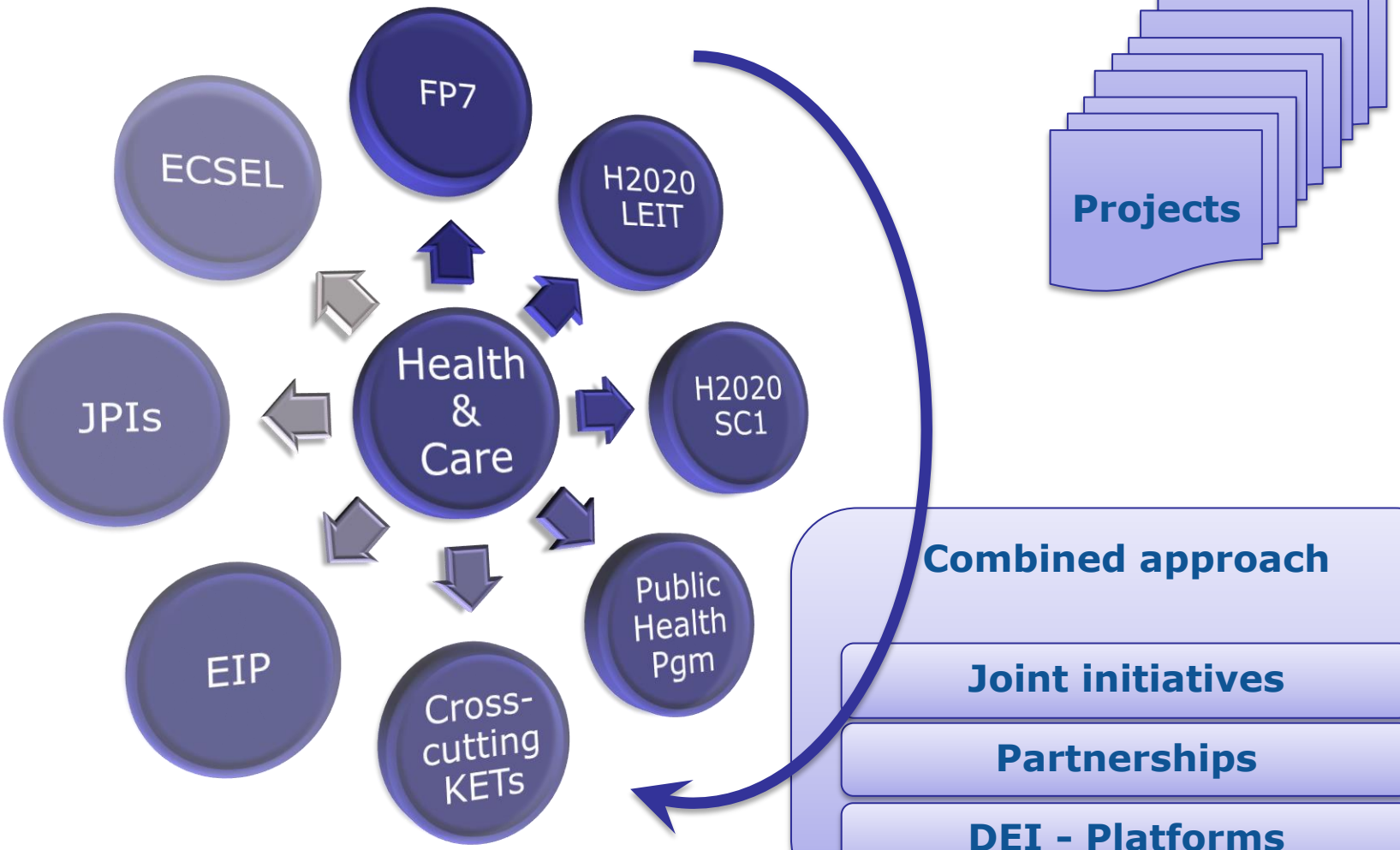
Michel Brochard

European Commission DG CONNECT

Robotics and Artificial Intelligence Unit

#DigitiseEU

Health and Care @ EC



Health and Care: EC initiative

IoT

Robotics

Bio-Photonics

Micro-Nano-Bio-Systems

ECSEL

Open platforms

Projects

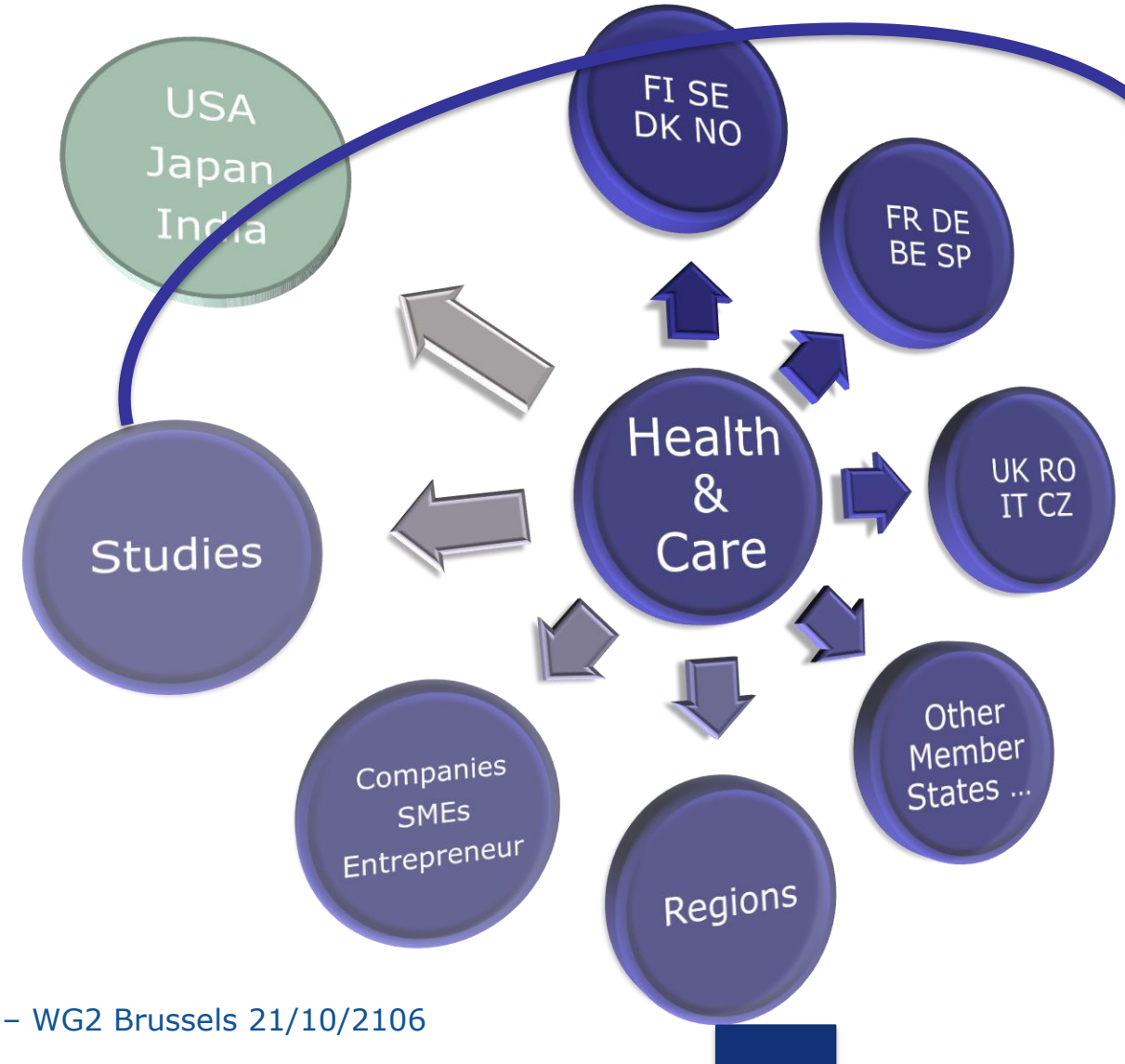
Combined approach

Joint initiatives

Partnerships

DEI - Platforms

Health and Care across EU



Market

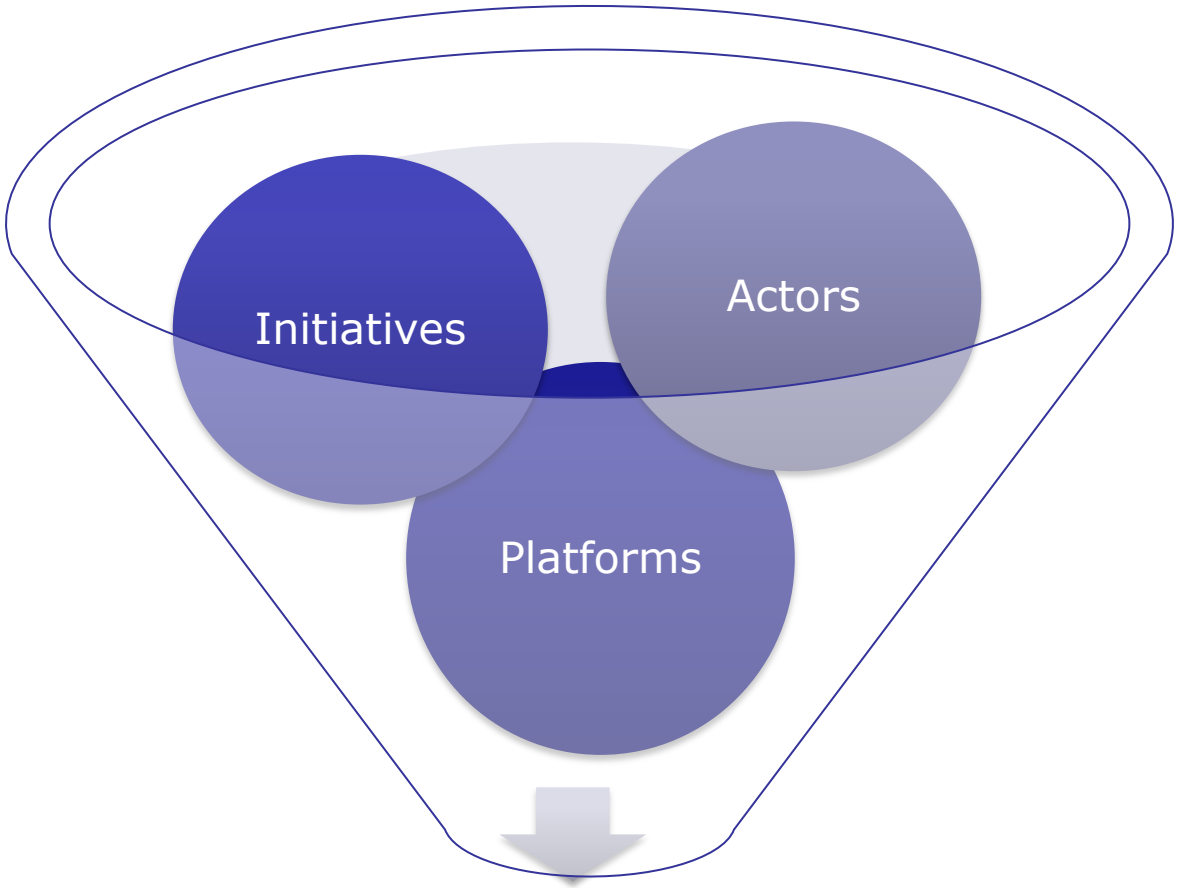
- **Business opportunities**
- **All technologies**
- **Full digital trends**
- **Highly Challenging**

Health and Care: a Strategy

- **SPARC issued a Strategy (*working*) document**
  - **A Lighthouse for robotics in healthcare**
- ✓ **Concept**
  - ✓ **Healthcare & ambient assisted living as a long term innovation strategy**
- ✓ **Themes**
  - ✓ **The all chain:** from home to hospital and personalized approach
  - ✓ **All aspects/technologies**
- ✓ **Funding**
  - ✓ Different sources of co-financing, public and private

SPARC
The Partnership for Robotics in Europe

Health and Care: next steps



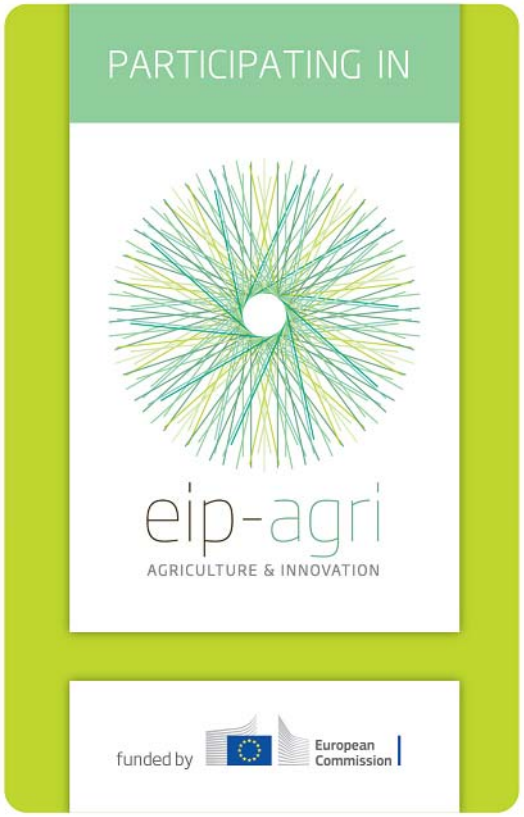
eHealthcare of Tomorrow

AGRI-FOOD
State of play of R&I activities related to digital technologies

WG2
Implementation of the DEI Initiative

Brussels, 21 October 2016

Ana Cuadrado Galván
European Commission
DG Agriculture and Rural Development
Research and Innovation Unit



H2020

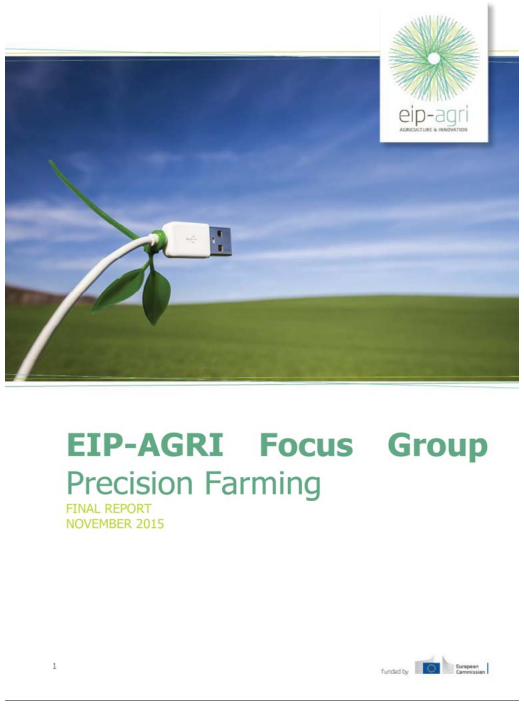
EIP-AGRI

STRATEGIC FRAMEWORK FOR DIGITAL ACTIVITIES IN THE AGRI-FOOD SECTOR:

https://ec.europa.eu/digital-single-market/digital-single-market

https://ec.europa.eu/programmes/horizon2020/en/news/final-paper-strategic-approach-eu-agricultural-research-and-innovation

EIP-AGRI ACTIVITIES RELATED TO DIGITAL TECHNOLOGIES:



https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_focus_group_on_precision_farming_final_report_2015.pdf

https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_seminar_data_revolution_final_report_2016_en.pdf

H2020 – WP 2018-2020:
WORKSHOP "DIGITISING THE AGRI-FOOD SECTOR"
Brussels, 28/29 September 2016

- **Objective:** contribute to preparing the next 2018-2020 Work Programme for H2020 by **defining appropriate research and innovation priorities for supporting the demand-led digitization of the agri-food sector**.

- **Outcomes:**
  - ✓ optimization of farm operations
  - ✓ tracking and traceability in the agri-food chain
  - ✓ new agri-food business models
  - ✓ data combination and exchange for value creation
  - ✓ improve the environmental performance for food production and the food chain

- **Final Report: End November !!!**

https://ec.europa.eu/programmes/horizon2020/en/food-security-sustainable-agriculture-and-forestry-marine-maritime-and-inland-water-research-and-0

WHAT DO WE NEED WHEN BUILDING DIGITAL PLATFORMS IN AGRICULTURE?

- Driven by the demand side
- Develop standards and interoperability
- Open systems: to avoid vendor lock –in systems
- Data sharing: legal and technical limitations
- Protect the ownership/privacy of farm data

NEXT STEPS……..


Creating a #DigitalSingleMarket
DIGITISING EU INDUSTRY
EU CLOUD
Digital public services
PARTICIPATING IN
eip-agri
AGRICULTURE & INNOVATION
funded by
THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION
HORIZON 2020

Thank you for your attention !!!!!

Ana Cuadrado Galván
ana.cuadrado-galvan@ec.europa.eu

Industrial Data Platforms: State of play from the EC's perspective

Jiri PILAR

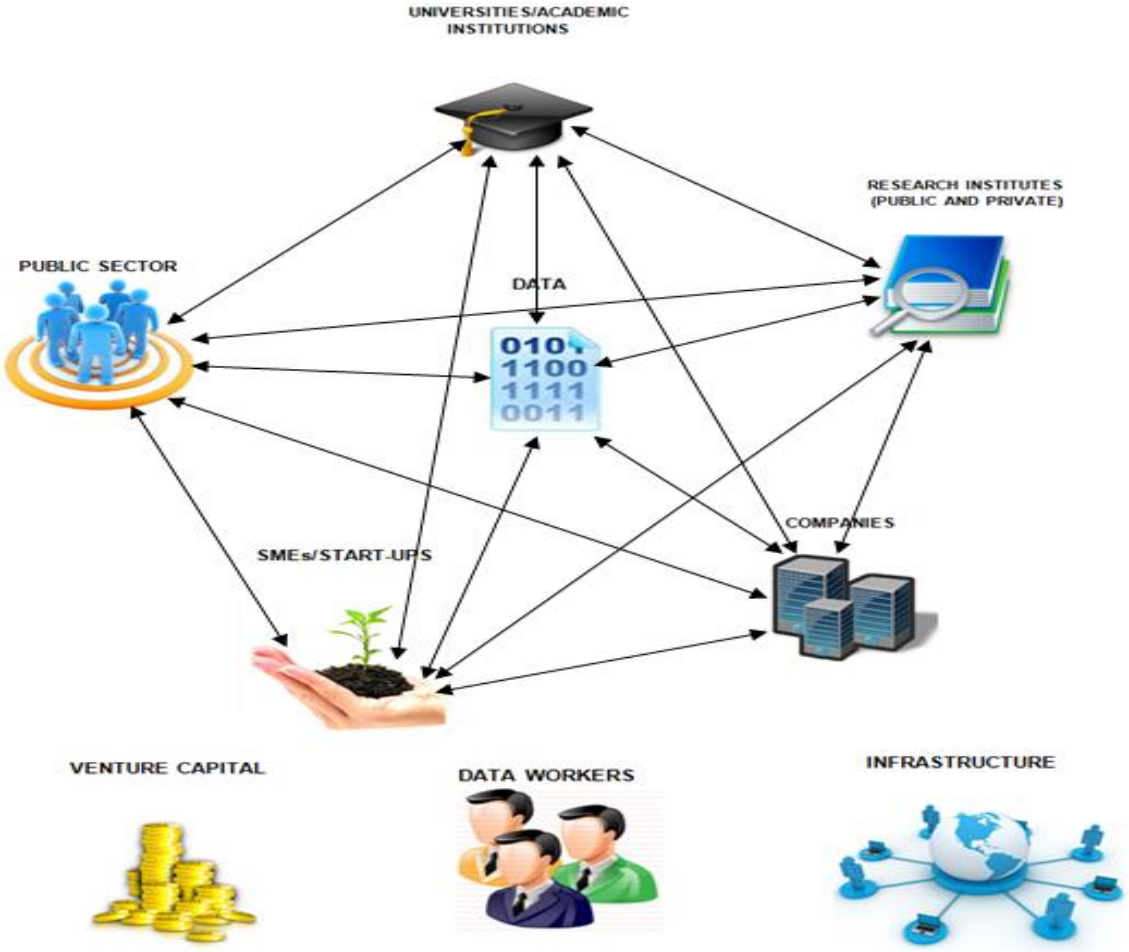
Data Policy and Innovation Unit, DG CONNECT, European Commission

The challenges for the EU's Data Economy policy

- Seize the **opportunities** provided by the data economy: **higher growth**, more and better **jobs**, better-**quality** and more **personalised** products and services;
- Boost Europe's **capabilities** to embrace the potential of the data economy in all sectors;
- **Preserve European values** (e.g. personal information protection, multilingualism)

European Commission

Europe needs efficient industry data ecosystem/s



Industrial Data Platforms

Virtual environments facilitating the **exchange and connection of data** between different companies and organisations through a shared reference architecture, common governance rules and within a secure business ecosystem.

- **Community-led sector-specific (vertical)**
- **Community-led cross-sector (horizontal)**
- **Proprietary with open interfaces**

Industrial Data Platforms

- Industrial Data Platforms could provide the technical infrastructure **allowing data to be shared with the players that make best use of them** while respecting the rights and interest of the party that has invested into the collection of the data

- Crucial for the digitalisation of the industrial production

Industrial Data Platforms in the DEI

The aim is to support the development of competitive data platforms and the availability of world class data infrastructure in Europe.

Public intervention for first production and deployment of technology may be essential

Stakeholder events to date

Commissioner Oettinger held a **roundtable on Industrial Data Platforms on 17 February 2016** in order to gather inputs from stakeholders on the development of the strategy and its implementation

Workshop on **Legal and technical preconditions for the free flow of industrial data on 6 July 2016** in Frankfurt am Main

Further context

European Commission procured a report on industrial data platforms in July 2016.

Competition Commissioner M. Vestager mentioned in her recent speech a relatively concrete proposal on data pooling among private companies as a response to the need for better access to data.

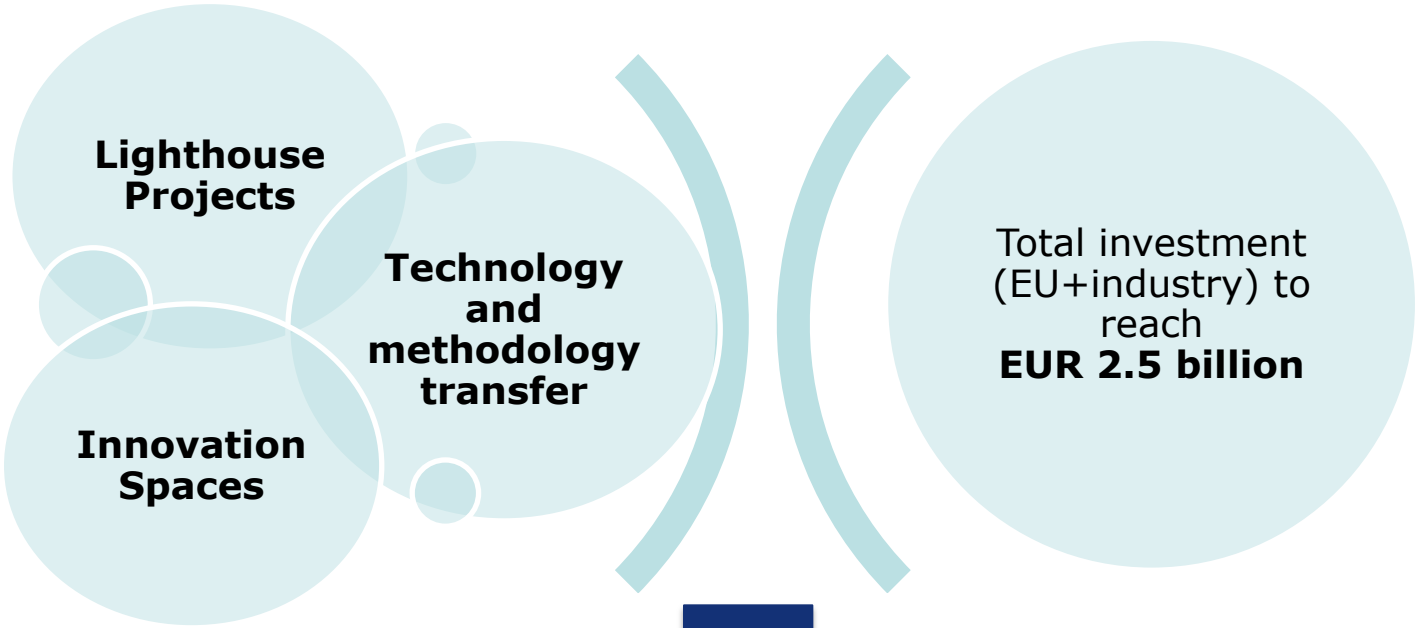
European Commission

BDV BIG DATA VALUE ASSOCIATION

BIG DATA VALUE PPP

The EC's main community building instrument: Big Data Value PPP

- More than **130 members in the Big Data Value Association (BDVA)** since October 2014
- **Strategic Research & Innovation Agenda** (SRIA) for 2016-2020



Big Data PPP: The Challenge

- The main objective is to roll out an **industrial strategy** to develop Europe's data driven economy as outlined in the **EC Communication 'Towards a thriving data-driven economy'** COM(2014)442

- The Work Programme 2016-17 implements the Big Data PPP's **Strategic Research and Innovation Agenda** (http://www.bdva.eu)

Relevant funding on the EU level

- **Upcoming**
  - BDVe: Coordination Support Action (CSA) from 2017

- **Open Call: iSpaces (Horizon 2020-LEIT-ICT-2017)**
  - ICT 14 Big Data PPP: **cross-sectorial and cross-lingual data integration and experimentation** - Budget 27 M€
  - The Call opens in December 2016, closes in April 2017
  - Info Day in Luxembourg on 17-18 January 2017

Industrial Data Platforms Subgroup Objectives

- Present the **concept**
- Identify the **needs**
- Reflect how to support the exploitation of the potential of the **value of data** across sectors
- Contribute to the **Report**

Industrial Data Platforms: Parallel session discussions

Parallel session discussions (1)

What is the current landscape of activities in Europe (national initiatives, EU funded activities, other)?

Parallel session discussions (2)

Where do we want to go?

- **What kinds of industrial data platforms are needed (if any)? Which would be key functions?**
- **What kinds of large-scale federating initiatives are needed (if any)?**
- **What concrete gaps/problems (legal, technical) could be addressed through platform development and large-scale initiatives at EU level?**

Parallel session discussions (3)

How do we bridge the gap between what we have and what we want to achieve?

- **What concrete platform building initiatives and large-scale pilots can be expected/supported/promoted?**
- **How to combine large-scale demonstrators across the EU and across Member States, taking into account already ongoing national developments?**

Parallel session discussions (4)

Who are the main stakeholders to be involved?

- **How can PPPs contribute to building platforms?**
- **How can existing/planned MS initiatives contribute to building platforms?**
- **What are the complementarities/synergies/needs for coordination between EU (PPPs) and MS levels? How to avoid overlaps and strengthen synergies?**

State of Play
Internet of Things

DEI WG2 21st October 2016

Joel Bacquet

IoT Unit

European Commission - DG CONNECT

Convergence of Platforms: Automotive sector example

European Commission

Online Platforms dominated by non-EU

Google (search, youtube, gmail, drive, android, ...)

Criteo

Facebook

eBay

Amazon

Apple

Blahblah car

AUTOSAR

Embedded Platforms
EU with significant WW market share

IoT-EPI Program

- The IoT European Platforms Initiative (IoT-EPI) program includes the research and innovation consortia that are working together to deliver an IoT extended into a web of platforms for connected devices and objects.
- The IoT platforms support smart environments, businesses, services and persons with dynamic and adaptive configuration capabilities.
- The goal is to overcome the fragmentation of vertically-oriented closed systems, architectures and application areas and move towards open systems and platforms that support multiple applications.

Co-funded by the European Commission

IoT Platform ecosystem

European Commission

IoT platform ecosystems

European Platforms Initiative

VC investment

$1.9B in 2014

$768M in 2010

221 deals in 2014

91 deals in 2010

Source: CBInsights

IoT platforms

360+ IoT platform offerings

200 startups

50+ Multinational

< 20 Open Source

200 US based

100 European

30+ IoT platforms acquired

Source: IOT Analytics

IoT developers

4.5Mio IoT developers

91% IoT developers use open source

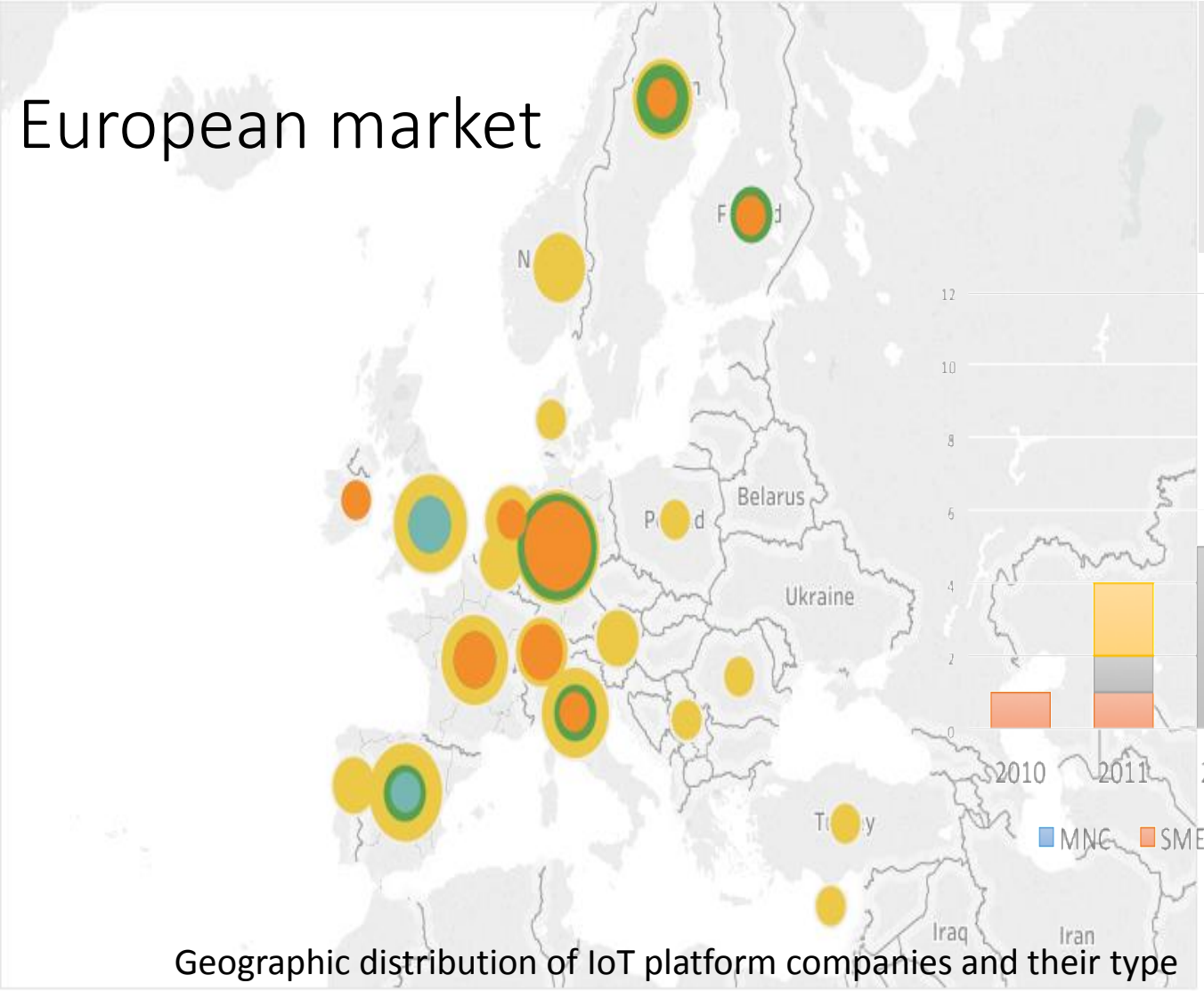
Source: Vision Mobile

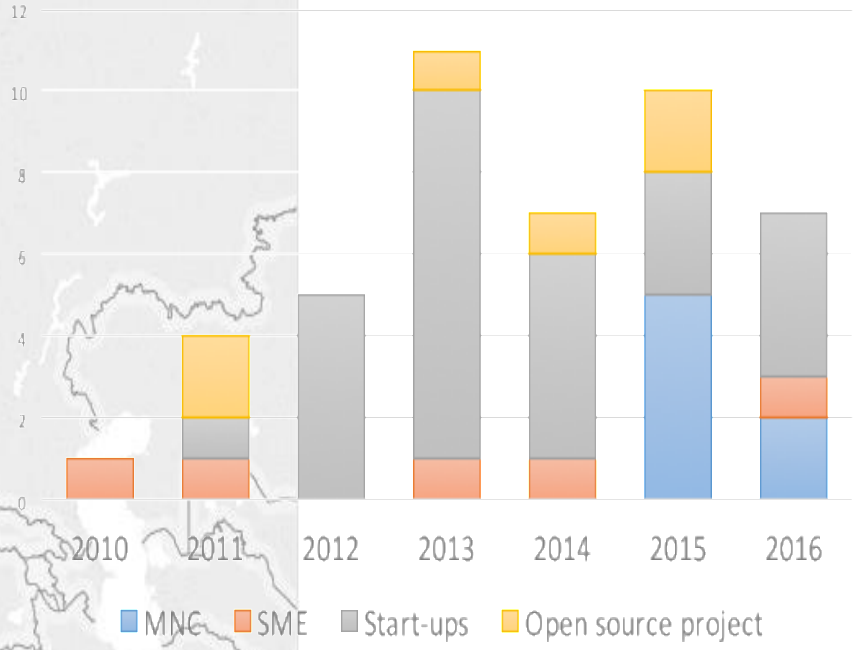
Be IoT · UNIFY-IoT · AGILE · bIoTope · TAGIT SMART · symbioTe · BIG IoT · VICINITY · interiot

Co-funded by the European Commission

Source: **//EPI-IOT.eu based on IoT-Analytics data**

European market

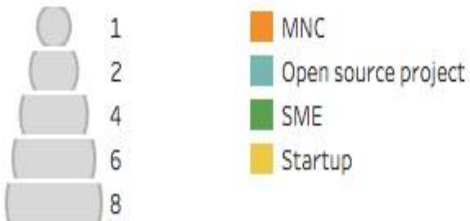




Geographic distribution of IoT platform companies and their type

European market growth

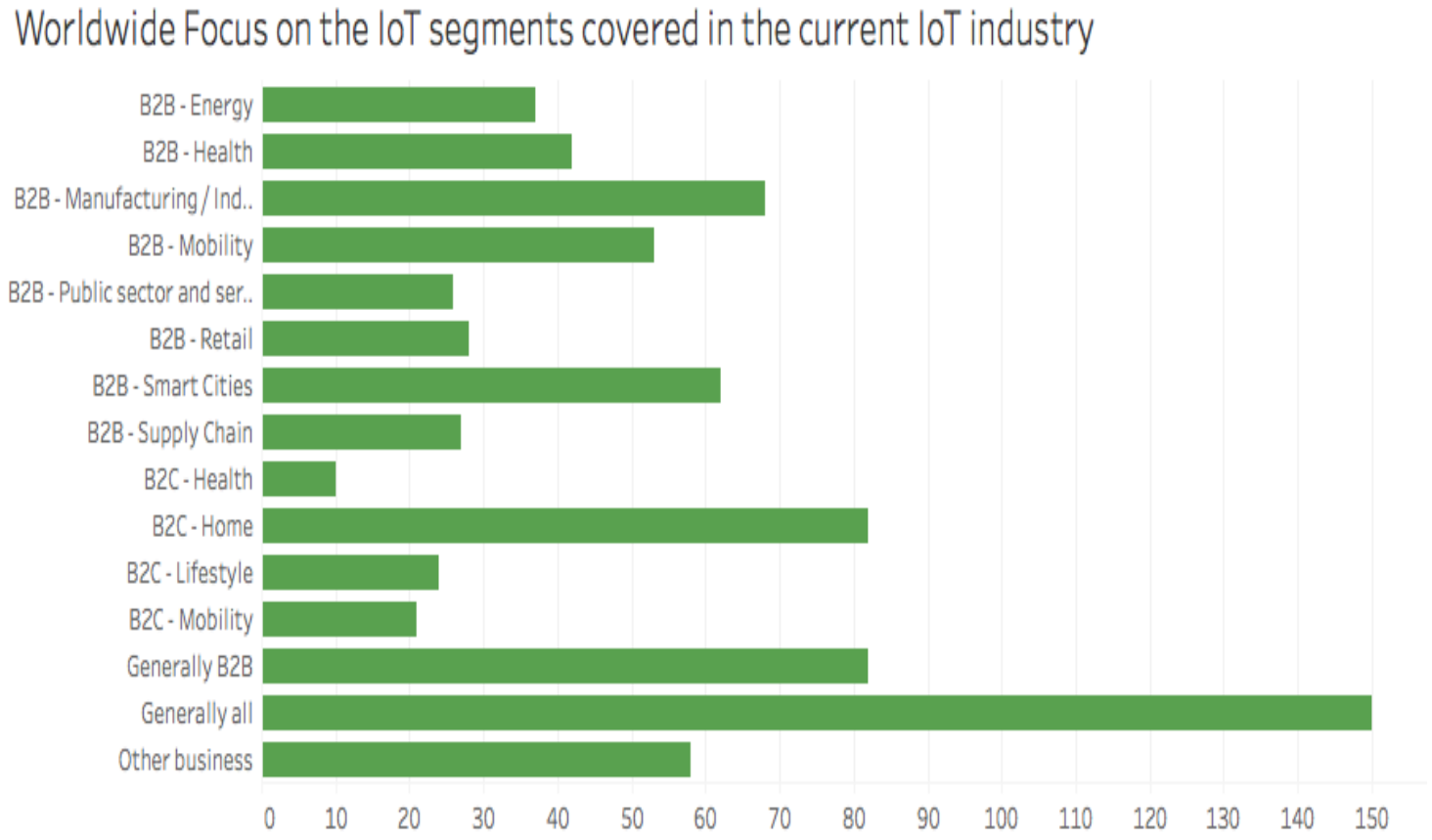
Map based on Longitude (generated) and Latitude (generated). Color shows details about Company type. Size shows sum of Number of Records. Details are shown for Location Country. The view is filtered on Exclusions (Company type,Location Country), which keeps 42 members.



Co-funded by the European Commission

Sector focus of IoT platform

European Platforms Initiative



Co-funded by the European Commission

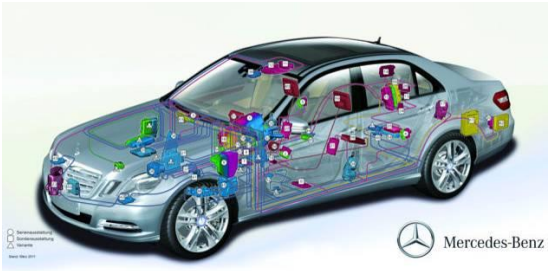
Internet of Things Focus Area

FA IOT Pilot areas:

- Pilot 1: **Smart living environments for ageing well** (EU contr. up to 20 MEUR)
- Pilot 2: Smart Farming and Food Security (EU contr. up to 30 MEUR)
- Pilot 3: Wearables for smart ecosystems (EU contr. up to 15MEUR)
- Pilot 4: Reference zones in EU cities (EU contr. up to 15MEUR)
- Pilot 5: Autonomous vehicles in a connected environment (EU contr. up to 20 MEUR)

Total budget:

- 100 MEUR (funding rate: 70%)



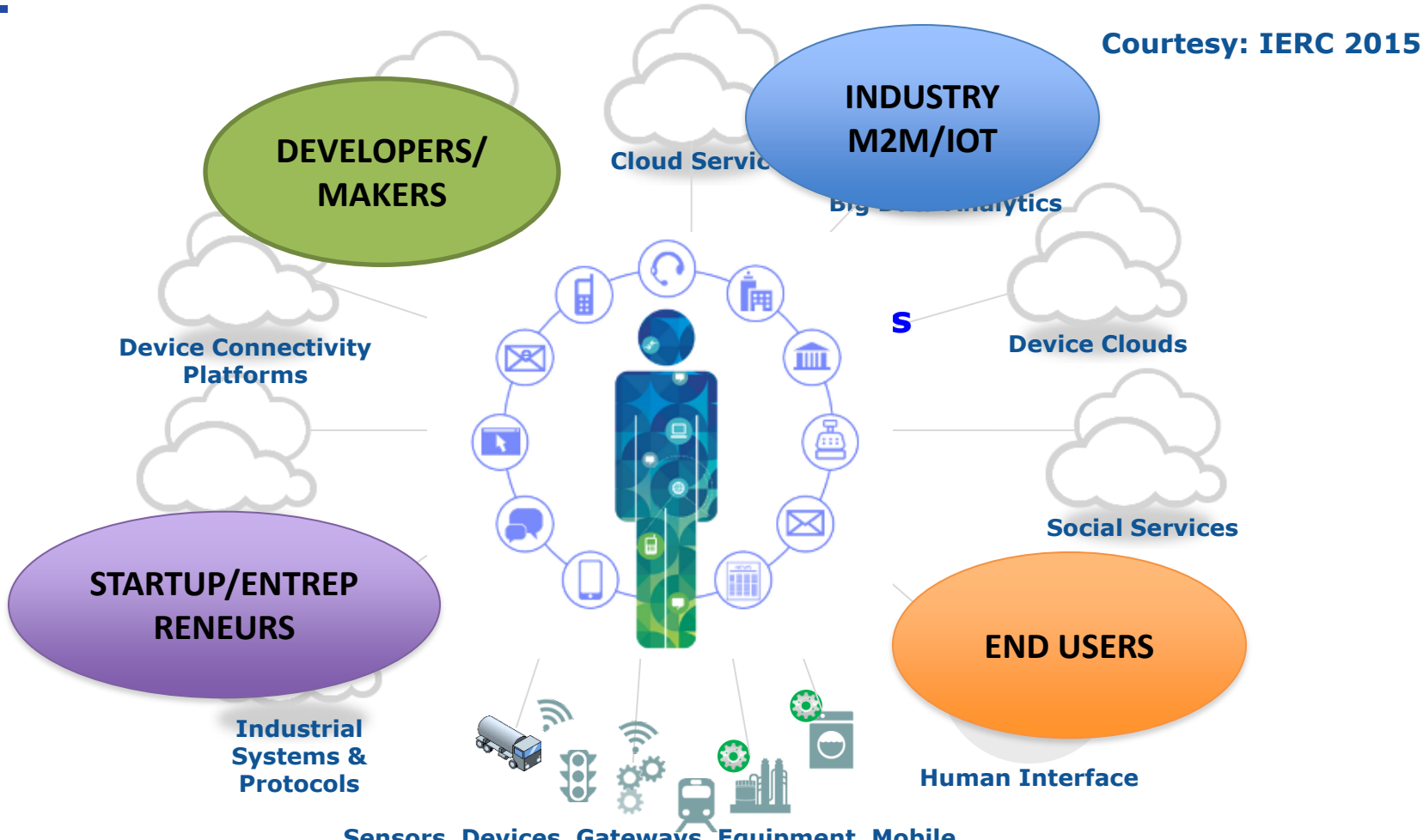
Internet of Things Focus Area

- Fostering the take-up of IoT in Europe and enabling the emergence of **IoT ecosystems** supported by open technologies and platforms.

- Supported **IoT Pilots** will use the rich portfolio of technologies and tools so far developed and demonstrated in reduced environments and extend them to real-life use case scenarios.

- provide **coherent implementation / programming in H2020** across different themes (AGRI, Health, City, Home) -- consistency and linkages between Policy and Innovation Projects

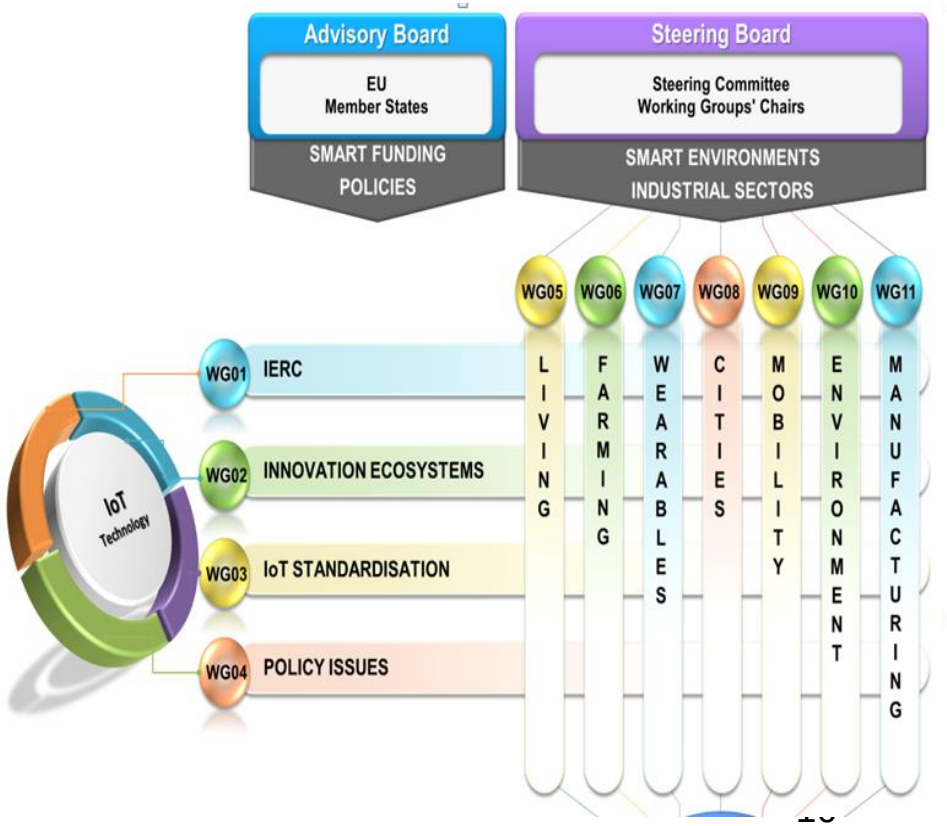
IoT eco system: Platforms, Devices, Applications and Business models



European Commission

Policy cooperation:
AIOTI – Alliance Internet of Things Innovation

- **Open Platforms that accelerate innovation by companies and communities of developers**
- **Advancing IoT convergence across verticals for standardisation/ interoperability**
- **Discuss with industry to provide guidance for Digital Single Market**
- Get connected on **www.AIOTI.eu**



Reflection – Cross cutting Activities Partnerships for leadership on IoT

- **Open integrated platforms cutting across sectors**
  - **Building on converging technology trends like CPS, Big Data, Cloud, HPC, robotics & autonomous systems, AI**
  - **Extending from IoT to B2B data platforms.**
- **Exploring synergies for platform up-scaling**
  - **Interoperability and standards approaches at technical and semantic levels for object connectivity, protocols, data formats, privacy & security, open APIs;**

➢ **Focus a significant part of the European and national investments on cross-sectoral and integrated digital platforms and ecosystems incl. reference implementation and experimentation environments in real setting**

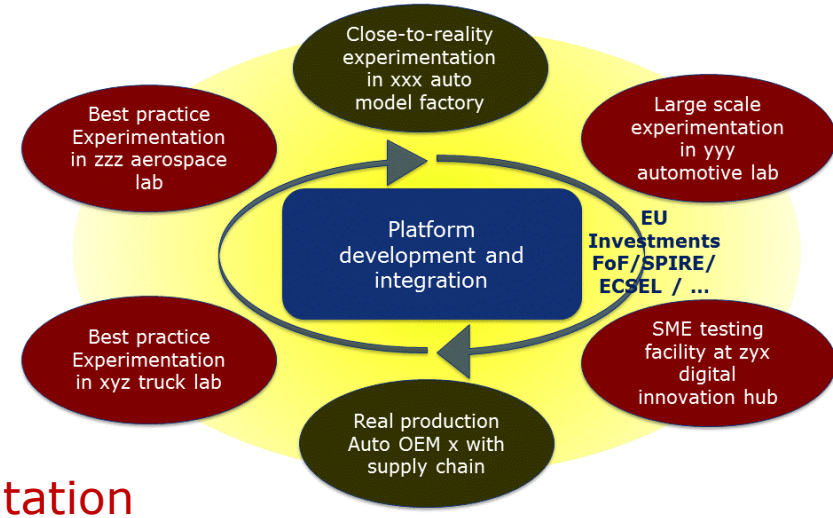
THANK YOU

CNECT-E4@ec.europa.eu

https://ec.europa.eu/digital-single-market/en/internet-things

Connected Smart Factories

- Current landscape
  - Various initiatives in Member States, regions, PPPs
- Next-generation platforms and experimentation
  - Connected Smart Factory Platform for Circular Economy
  - Existing platforms?
  - Focus/involvement on SMEs?
- From current to future situation
  - Incentives for industry?
  - IPR, SEPs, etc?
- Member States and PPPs
  - General willingness
  - Need for concrete results
  - PPPs: 'aligning' SRAs and implementation



Industrial Data Platforms: Parallel session discussions (summary)

What is the current landscape of activities in Europe?

- Mapping of national initiatives is necessary
- EU level: iSpaces, Lighthouse Projects
- There are examples of the three main kinds of IDP (Community-led sector-specific and cross-sector, as well as proprietary)

Where do we want to go?

- Defining legal regime for data (standard contracts, govenrnance of the IDP)
- Ensuring data sovereignty and trust in data transactions (role of blockchain)

How do we bridge the gap between what we have and what we want?

- Lighthouse projects, replicable in various environments
- Ensuring a secure value chain by respecting its requirements in different stages

Who are the main stakeholders to be involved?

- High level management in data users and data holders
- Governments
- Big Data Value PPP in cooperation with other PPPs (e.g. HPC)

European Commission

Digitising European Industry

Parallel session on the vertical area
Digital Transformation of Health and Care

Main Conclusions

Michel Brochard
European Commission DG CONNECT
Robotics and Artificial Intelligence Unit

#DigitiseEU

Landscape of activities

Initiatives

Problems

Vision

EC

Group of MS

MS

Regions

Cities

Regulation for Medical Data

Interoperability

Privacy
Security
Property
Confidentiality

Mobility

Vision

Holistic data platforms for future ehealth and care

Interconnectivity

Cross-sectorial

Combination of EC initiatives

Mobility

Standardisation

Joint efforts of PPPs

Ways to follow

Bottom – Up

Top - Down

Actors


practice
ehr vendor
data
health system
hospital
ehr incentive
report
health record
ehr
meaningful use stage
meaningful
years
health care system
information technology
technology
healthcare
medicare and medicaid
health information
clinical
physicians
system
ehr
health information exchange
medical
electronic
new
providers
health information technology
medical center
emr
electronic medical records
records
information
work
company
ehr incentive program
management
electronic health records
accountable care organizations
clinical decision support
health
department of health
privacy and security
patient
health care
patient care
care
doctors
time
services
improve

MS & PPP & resources

Standardisation

Benchmarking & indicators

WG2- Smart Farming - Reporting

- **What is the current landscape of activities in Europe (national initiatives, EU funded activities, other)?**
- Already farmers using a variety of fragmented platforms (also different stakeholders agencies, co-operatives)
- Large Scale Pilot in IoT for Agrifood
- Commercial systems exist for autonomous tractors, e.g., John Deer (actually ahead of autonomous cars).
- Automated milking, cattle monitoring, etc.
- Sustainability – efficient use of fertilisers, etc.

- **Where do we want to go?**
  - **What kinds of next-generation platforms are needed (if any)?**
  - Need interoperability and standardisation (without vendor lock-in), security and trust
  - **What kinds of large-scale federating initiatives are needed (if any)?**
  - Sharing of data amongst farmers, data ownership, creation of value and services from data
  - **What concrete gaps/problems could be addressed through platform development and large-scale initiatives at EU level?**
  - Large scale demonstration to persuade farmers (usually family businesses) to adopt/trust platforms
  - Provenance and security of data

WG2- Smart Farming - Reporting

- **How do we bridge the gap between what we have and what we want to achieve?**
  - **What concrete platform building initiatives and large-scale pilots can be expected/supported/promoted?**
  - Already big pilot initiatives being proposed – more information January 2017
  - Platform that is open to all farmers
  - Open test regions for smart farming
  - **How to combine large-scale demonstrators across the EU and across Member States, taking into account already ongoing national developments?**
  - More common to have regional co-operatives - disparity across regions an issue
- **Who are the main stakeholders to be involved?**
  - **How can PPPs contribute to building platforms?**
  - Farmers should be at the centre of system
  - Task forces in BDVA – consensus on cross sectorial platforms - European Innovation Spaces – provide place for data across borders/sectors
  - **How can existing/planned MS initiatives contribute to building platforms?**
  - AIOTI mapping national initiatives in sectors
  - Some Spanish initiatives (Galicia) Public Procurement for better management of subsidies
  - University initiatives on precision farming in Netherlands
  - **What are the complementarities/synergies/needs for coordination between EU (PPPs) and MS levels? How to avoid overlaps and strengthen synergies?**
  - Collaboration between IoT, Big Data, etc. + need Rural Broadband for connectivity

WG2 – open platforms on the Internet of Things

Joel Bacquet
Rolf Riemenschneider
DG CONNECT /E4

WG2- IoT- Reporting

- What is the current landscape of IoT activities in Europe (national initiatives, EU funded activities, other)?
  - ***IOT → web of systems to reflect complexity of Indistrial IoT***
    Europe lost leadership in B2C
  - ***Zoo of IoT platforms – need for convergence of standards***
  - ***IOT strong incubator space for start-ups, new business and services/ access to finance***
  - ***Build on strong leadership in mechatronics / automation / system engineering / automotive***

WG2- IoT- Reporting

- What is the current landscape of IoT activities in Europe (national initiatives, EU funded activities, other)?
  - ***UK – has a unique research & innovation programme on IoT, IoT hubs for new business sectors: smart cities, health, mobility***
  - ***EU: 50 Mill cluster on IoT European Platform initiative***
    coordinated through Task Forces on standards, innovation, accelerators for start-ups/SMEs

(to little insight on MS activities from the meeting)

WG2- IoT- Reporting

- Where do we want to go?
  - What kinds of next-generation platforms are needed (if any)?

    IoT platforms must be sector-driven to identify urgent problems

    Trend bundling of multi-platforms, Europe is strong in connectivity, sensor platforms – BUT weak on data platforms

    Stakeholder platforms – to governance, standards, security

    Industry to preserve their commercial platforms / need a common marketplace to link existing platforms

  - What kinds of large-scale federating initiatives are needed (if any)?

    PPPs to coordinate and link its demonstrations linked to IoT

  - What concrete gaps/problems could be addressed through platform development and large-scale initiatives at EU level?
    - Open platforms to avoid vendor lock-in
    - Fragmentation of IoT platforms – interoperability of commerical platforms

WG2- IoT- Reporting

- How do we bridge the gap between what we have and what we want to achieve? Where to focus?
  - Standards must serve an European interest
  - Focus on convergence on standards rather than new IoT standards
  - Standardisation fit to feed policy framework
  - Avoid fragmentation – support convergence of platforms through large deployment / create critical mass
  - Standardisation must have international scope, serving global market, e.g. oneM2M defining semantic interfaces

WG2- IoT- Reporting

- Who are the main stakeholders to be involved?
  - How can industrial partnerships (such as PPPs or AIOTI) contribute to building platforms?
    - **JTI ECSEL, PPP FOF, SPARC PPP with relevant IoT dimension, 5G PPP**

    (fairly little industrial input received during the meeting)
  - Why Countries need National IOT strategies? What governments must do for building platforms?
    - **Need to spread best practice on start-ups (UK)**
    - **Need of increase of awareness of IoT**
  - How to maximise benefits through coordination at European level?
    - **Connect to Innovation hubs**

Digitising European Industry

Strengthening competitiveness in digital technologies value chains and platforms

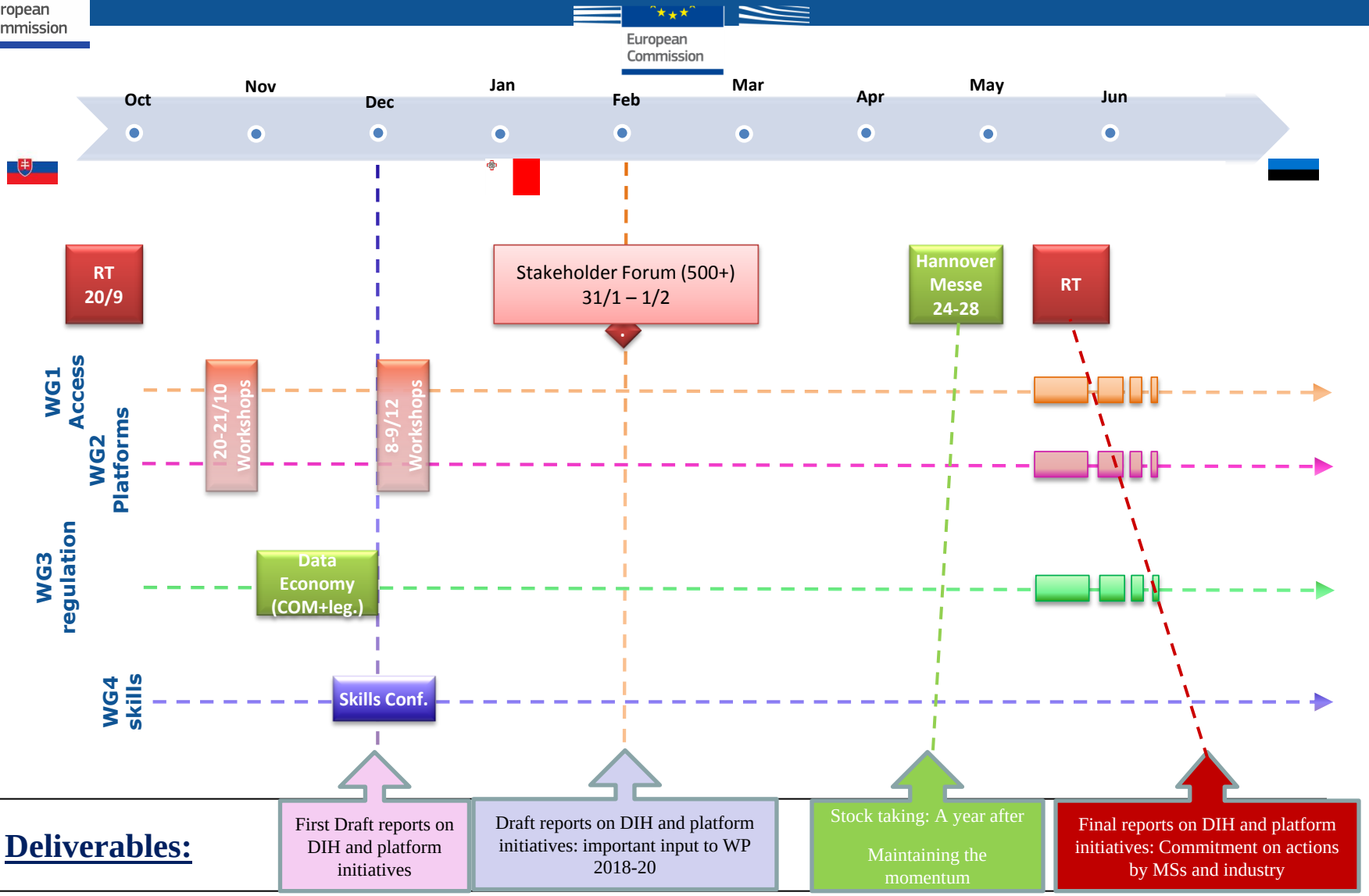
Next steps

European Commission

DG RTD and DG CONNECT

#DigitiseEU

Next Steps


European Commission
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
RT 20/9
Stakeholder Forum (500+) 31/1 – 1/2
Hannover Messe 24-28
RT
WG1 Access
WG2 Platforms
20-21/10 Workshops
8-9/12 Workshops
WG3 regulation
Data Economy (COM+leg.)
WG4 skills
Skills Conf.
Deliverables:
First Draft reports on DIH and platform initiatives
Draft reports on DIH and platform initiatives: important input to WP 2018-20
Stock taking: A year after
Maintaining the momentum
Final reports on DIH and platform initiatives: Commitment on actions by MSs and industry

Next steps

- Next week: email to workshop participants to request input
  - For all 5 subgroups
  - On the 4 main questions discussed today
- Week of 7 November: workshop report published
- "Homework" for 21 November

  For the whole of Working Group:
  - Have we well identified all the needed "moon-shot" initiatives?
  - Which important initiatives do you see missing?

  For each subgroup:
  - Written contributions on all 4 questions
  - In particular, for all Member States: a list and map of relevant national and regional digital industrial platform and experimentation initiatives
  - In particular, for all PPPs: take into consideration possible complementarities to other PPPs
- "Homework" for the Commission, in preparation to the 8-December Workshop
  - Consolidation of the contributions

Expectations for the Next Workshop

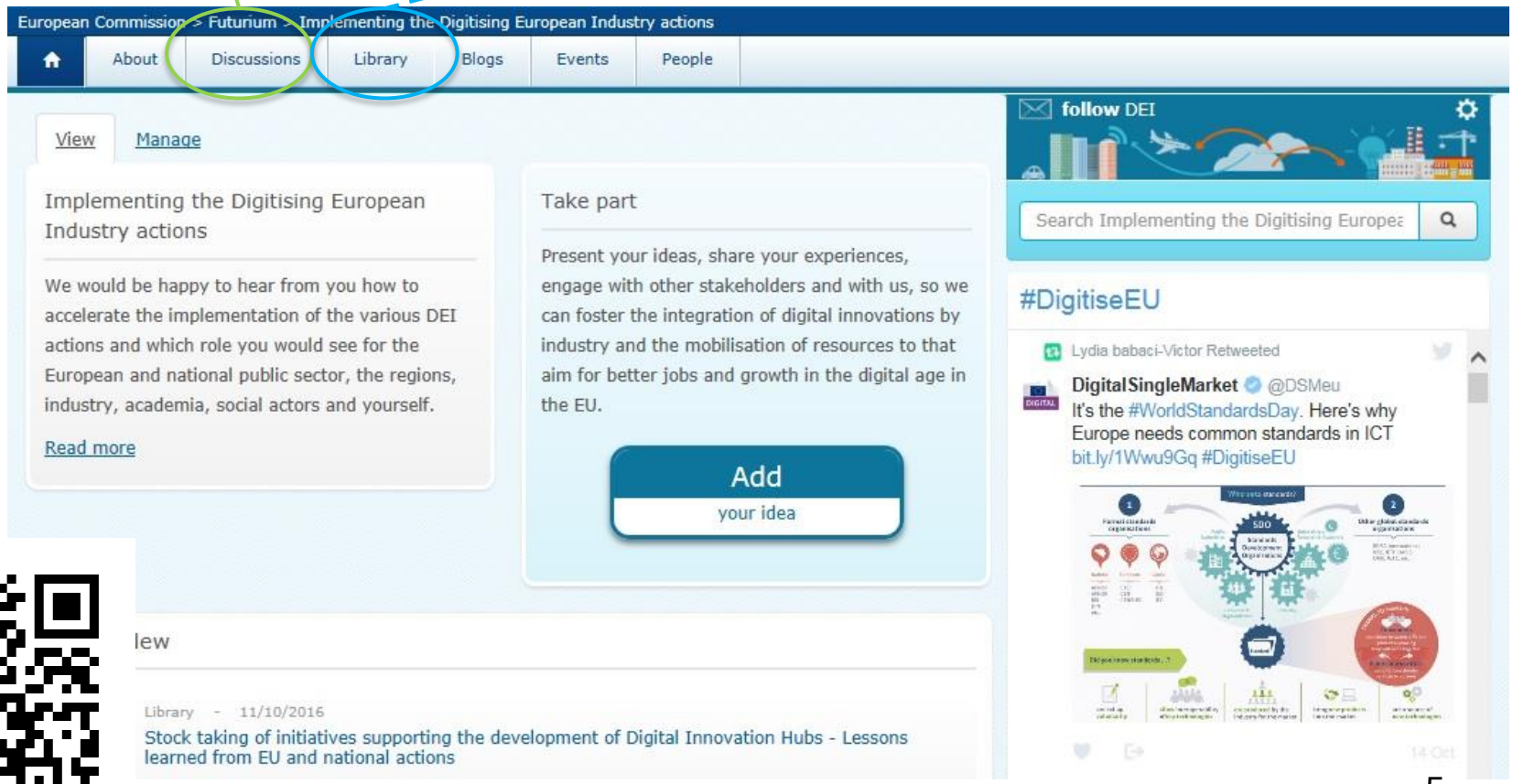
December 8 workshop

- Stocktaking of inputs
- Refinement of next-generation platforms and large-scale pilots needed
- Refinement of concrete platform building initiatives and large-scale pilots to be expected/supported and combining demonstrators across EU
- Further concretisation of possible contributions by PPPs and MSs

Online collaboration

A Collaborative website has been set up to

discuss and exchange reference documents



https://ec.europa.eu/futurium/en/dei-implementation

THANK YOU

Digitising European Industry
http://ec.europa.eu/digital-agenda/en/digitising-european-industry

Twitter: #DigitiseEU