European Commission

Digital Industrial Platforms Action line

Outcome of the Working Group on Digital Industrial Platforms

by Max Lemke, Rositsa Georgieva, and Joel Bacquet

WORKING GROUP 2

SETTING THE SCENE

Micro-electronics

Robotics

Autonomous driving

ARTIFICIAL INTELLIGENCE

SMART FACTORY

BIG DATA

Cloud computing

Healthy aging

THE INTERNET of THINGS

5G

SOFTWARE
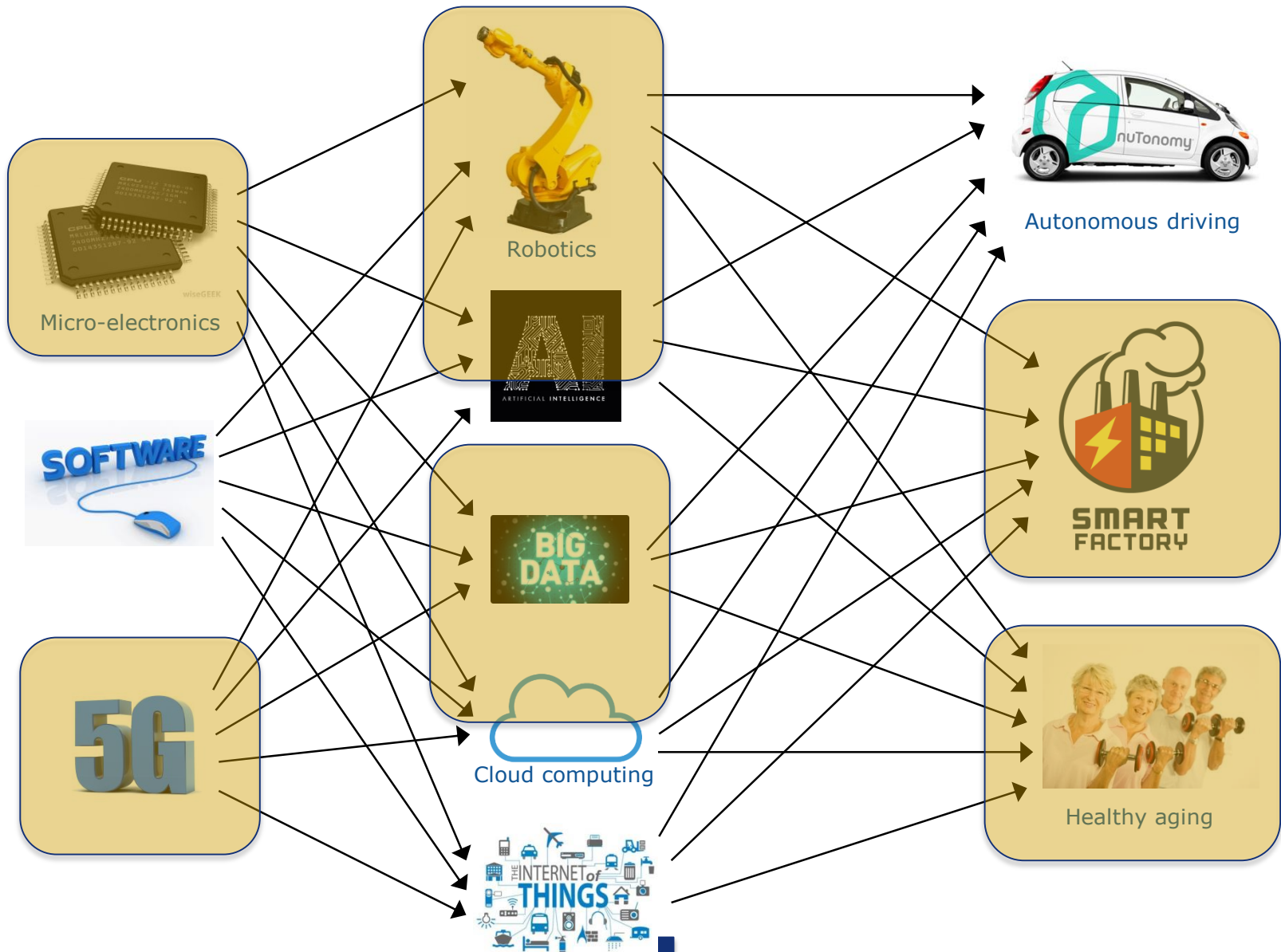
POOLING EU, NATIONAL, REGIONAL, AND INDUSTRIAL INVESTMENTS

Regional Investments

Member States Investments

Close-to-reality experimentation in xxx model factory

Best practice Experimentation in zzz lab

Large scale experimentation in yyy lab

Development and integration of platforms, interoperability frameworks, …

EU Investments FoF/SPIRE/ ECSEL / …

Best practice Experimentation in xyz lab

SME testing facility at zyx digital innovation hub

Real production OEM x with supply chain

Industrial Investments

WORKING GROUP 2

OUTCOME

X **A place or opportunity for public discussion**
*e.g. European Platform of National Initiatives*

✓ **An operating system that integrates different technologies and various applications and services**

X **Online platforms in the consumer world**
e.g. Facebook, Nest, Android

✓ **Industrial platforms in the business world**

In different ways and to varying degrees they may take in:
1) a **community** role
2) an **infrastructure** role
3) a **data** role
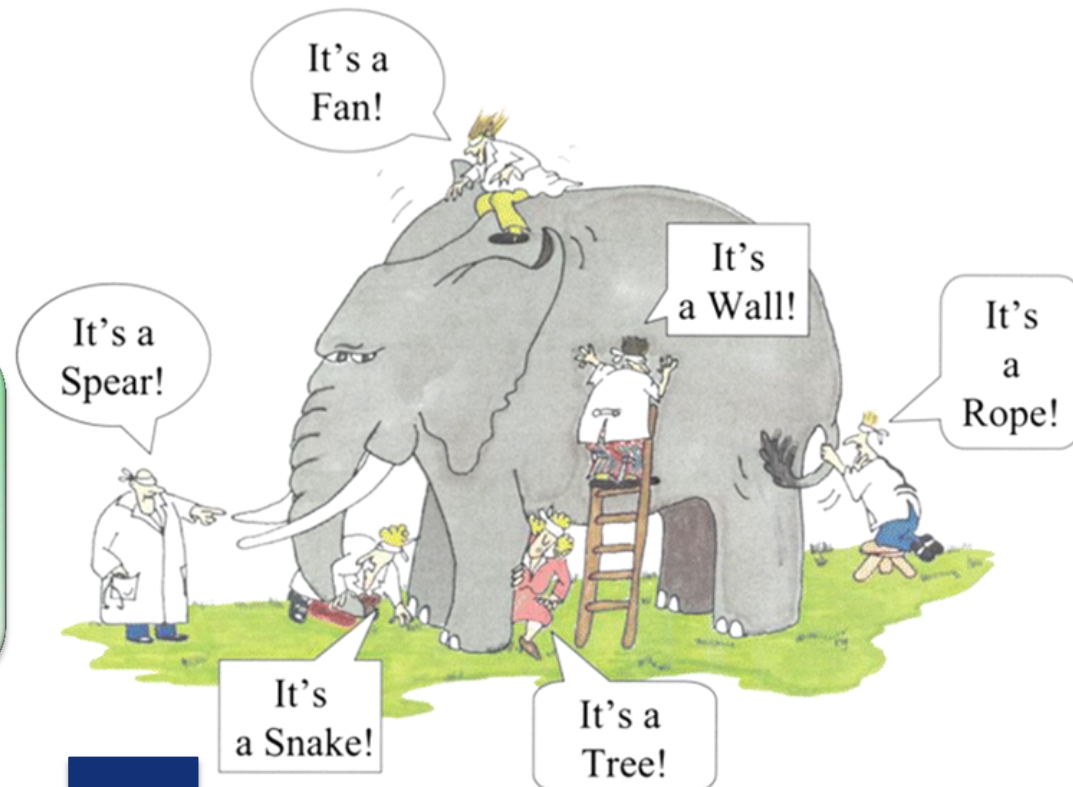
Community-led sector-specific (vertical)
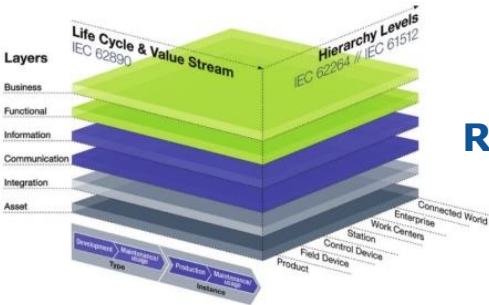
Community-led cross-sector (horizontal)
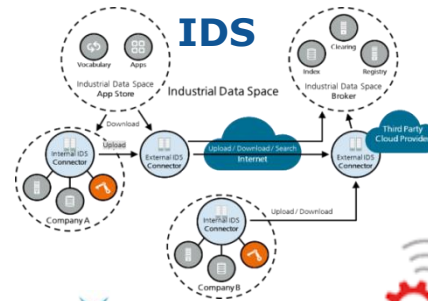
Proprietary with open interfaces
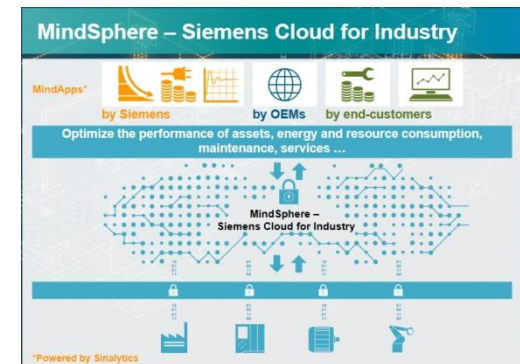
European Commission

Subgroups within the WG2

CONNECTED SMART FACTORIES

SMART AGRICULTURE

DIGITAL TRANSFORMATION OF HEALTH & CARE

Internet of Things (IoT)

Industrial Data Platforms

67 respondents – 12 national authorities / 55 experts from 14 countries
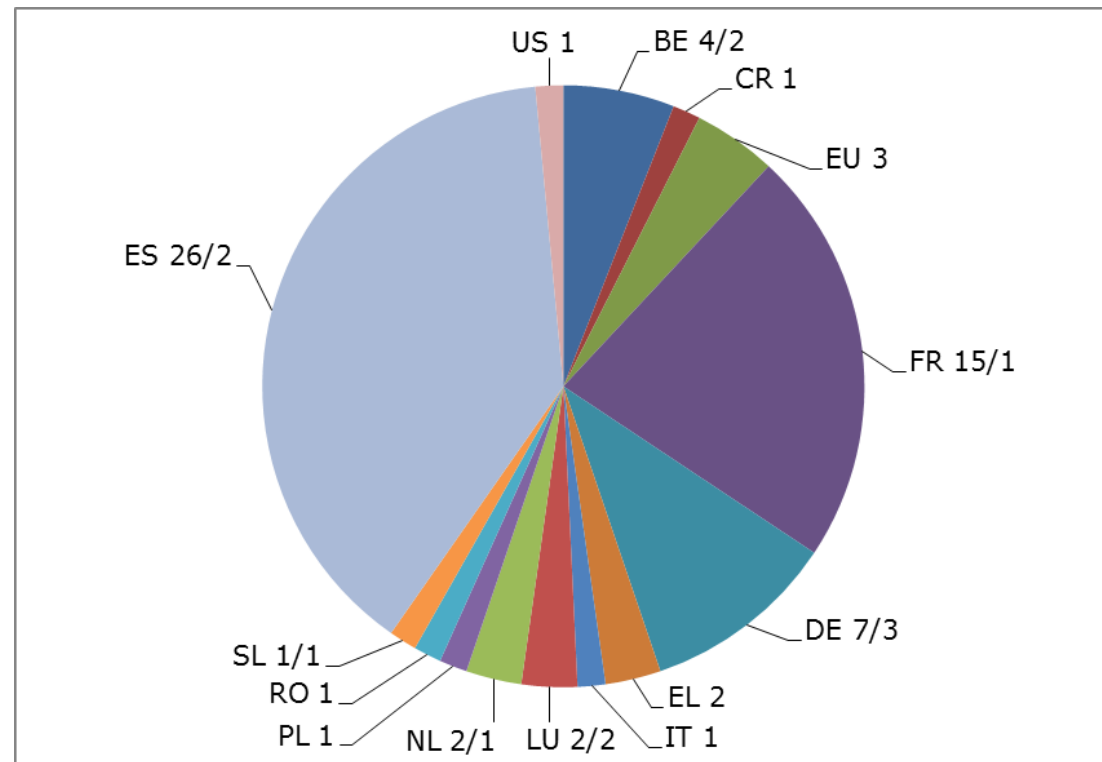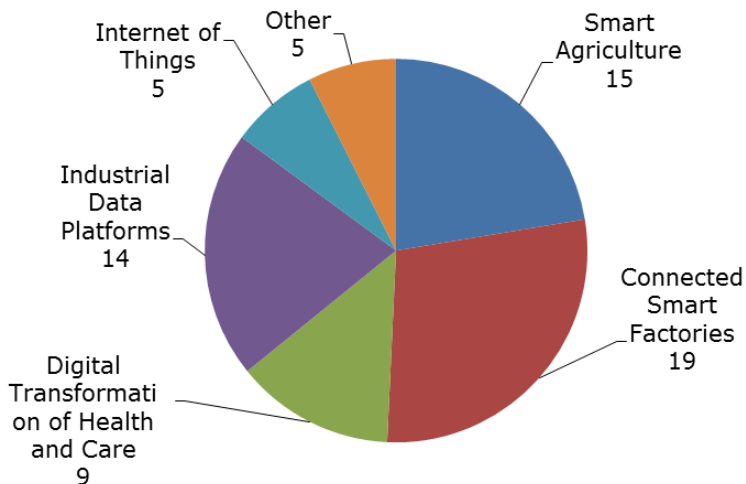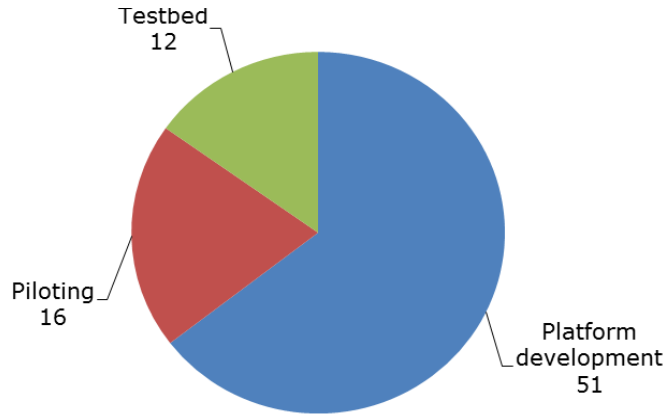
Testbed 12
Piloting 16
Platform development 51

Internet of Things 5
Other 5
Smart Agriculture 15
Industrial Data Platforms 14
Digital Transformation of Health and Care 9
Connected Smart Factories 19

US 1
BE 4/2
CR 1
EU 3
ES 26/2
FR 15/1
DE 7/3
SL 1/1
RO 1
PL 1
NL 2/1
LU 2/2
IT 1
EL 2

http://bit.ly/DEI-WG2-survey

CONNECTED SMART FACTORIES

SMART AGRICULTURE

DIGITAL TRANSFORMATION OF HEALTH & CARE

Internet of Things (IoT)

Industrial Data Platforms

Industry-Driven Platforms
Strategic Requirement for Europe

- *FoF PPP* – discrete manufacturing
- *SPIRE PPP* – industrial processing

- *Cooperation agreements among national initiatives*
  - **NL & DE** – CPO certification roadmap
  - **FR & DE** – Joint Working Program & Common List of Scenarios

- *The importance of an "open" approach*
  - **IIC** – Industrial Internet Consortium (US-led)
  - **Made in China 2025 & Internet Plus** – Chinese investment level exceeds the level of investment in the EU

Some federating initiatives already exist
joint mapping together with the PPPs

✓ *FoF project clusters* – *'plug and produce' approach*

  RIA – on specific challenges (security, data liability, data analytics)

   IA – on bringing validation as close as possible to the manufacturing

✓ *SPIRE*

  Cognitive production – improved performance

  Industrial Symbiosis – optimization

  Process Decision Making

More details about the national actions are still needed!
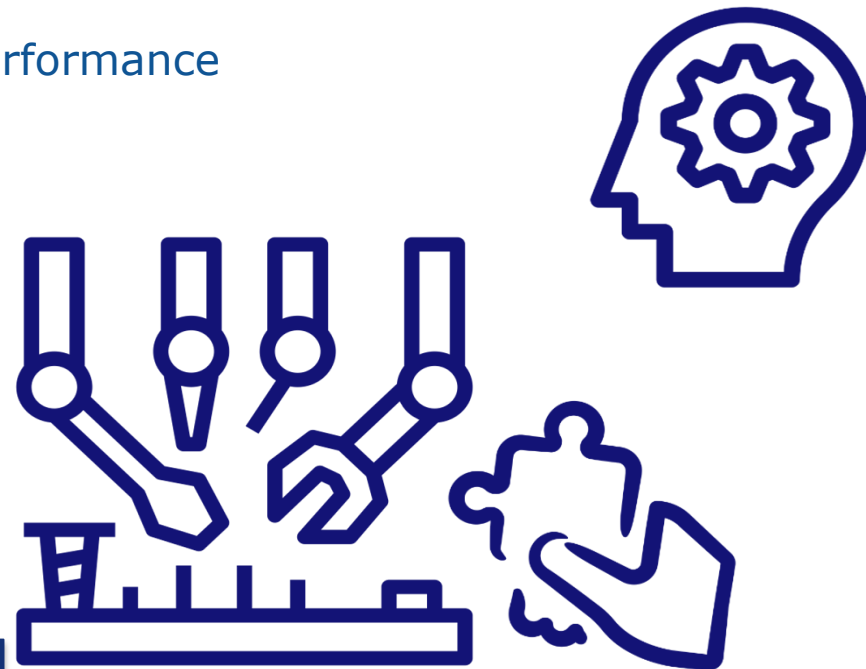
Interoperability & Integration of legacy systems
in testing and validation efforts

❑ *Lack of interoperability*

❑ *Limits to access*

❑ *Fragmentation*
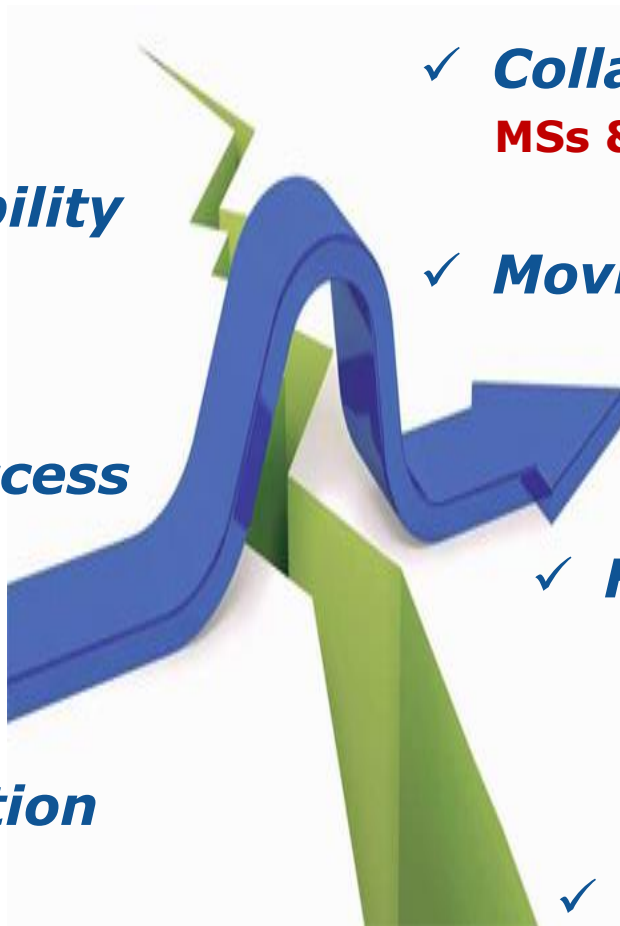
✓ *Collaboration & Joint efforts*

MSs & EC – detailed assessment of National Initiatives

✓ *Moving into realistic facilities*

Labs / testbeds / pilot lines / digital twin factories

Emphasis on validation, demonstration & experimentation

✓ *Federation*

Increased acceptance

Connection & Leverage

Open APIs

Enhanced Security

✓ *Addressing economic, legal & social issues*
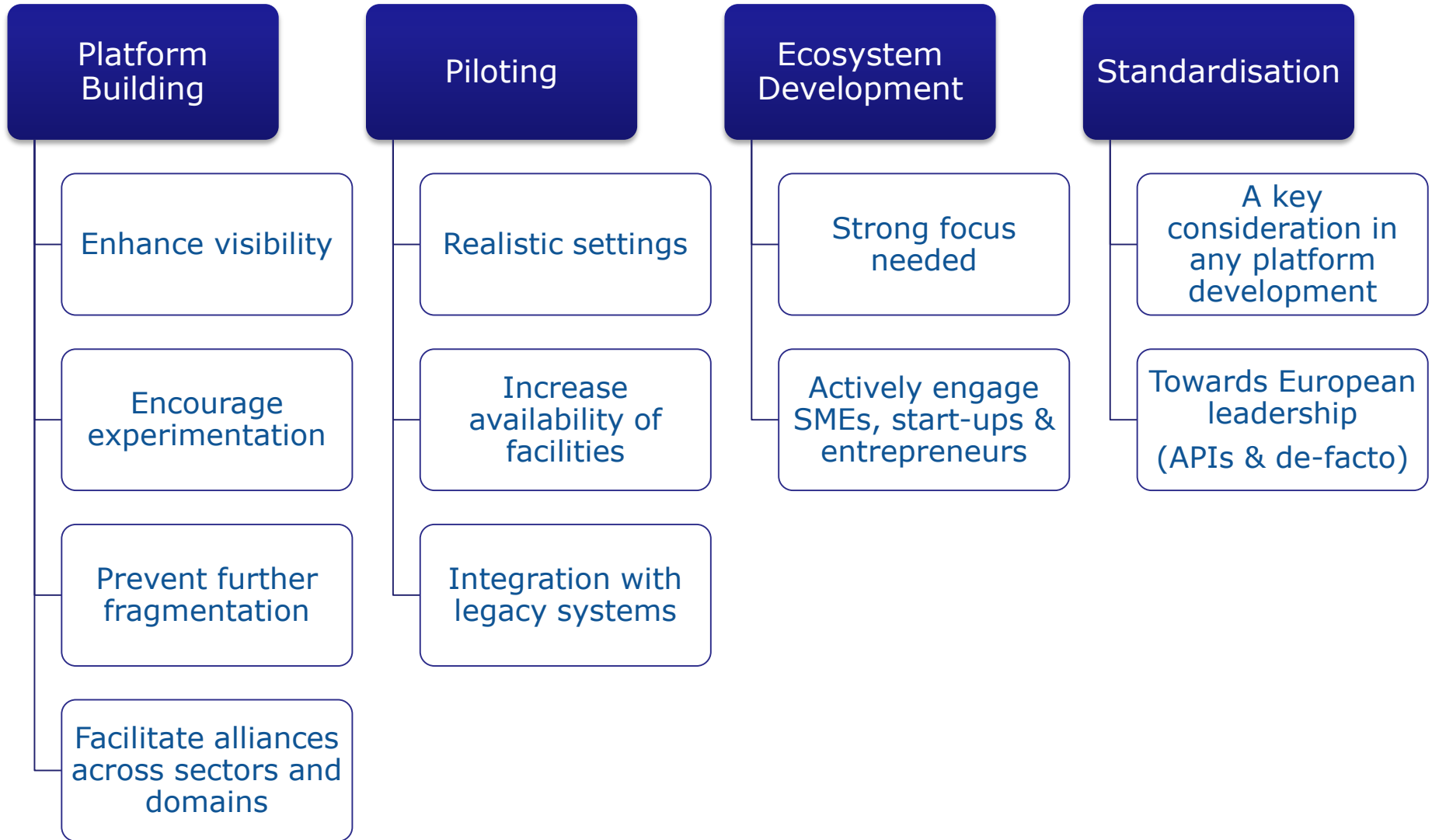
Platform Building

- Enhance visibility
- Encourage experimentation
- Prevent further fragmentation
- Facilitate alliances across sectors and domains

Piloting

- Realistic settings
- Increase availability of facilities
- Integration with legacy systems

Ecosystem Development

- Strong focus needed
- Actively engage SMEs, start-ups & entrepreneurs

Standardisation

- A key consideration in any platform development
- Towards European leadership (APIs & de-facto)

CONNECTED SMART FACTORIES

SMART AGRICULTURE

DIGITAL TRANSFORMATION OF HEALTH & CARE

Internet of Things (IoT)

Industrial Data Platforms

Cloud-computing & Robotics
Technologies driving the sector

- **EIP-AGRI**
  funded by MSs through Rural Development Programmes
  Focus Group on Precision Farming
- **BIODATA**
  funded via the Big Data Value Association
  Addresses data for agricultural applications
- **IoT Large Scale Pilot (IoF2020)**
  Real demonstrations in the agri sector
  Promotes interoperability and standardisation
- **euROBOTICS**
  Planning to set up an Agri Food Lighthouse Project
- **SMAG**
  Farm management application for French Farmers
- **Global Open data for Agriculture and Nutrition (GODAN)**
  400 partners from national governments, NGOs and private sector
- **Netfarming, a subsidiary of AGRAVIS**
  German co-operative has developed an application for its members
- **Commercial platforms**
  365FarmNet – linking together applications and services of different providers
  MyJohnDeere – access to agri machinery data
  PLM Connect Farm Management Information and Decision System

Creating a consensus

✓ ***A number of PPPs*** *– address issues of key relevance*
Big Data PPP, FoF PPP, 5G PPP, euROBOTICS and Cyber Security PPP

✓ ***BDVA*** *– task force addressing the Agri-Food Sector*

✓ ***AIOTI*** *– collaborating with the PPPs through:*
WG06 – smart farming and food security
WG03 – standardisation
WG04 – policies

In regions which have identified agri-food priorities in their Smart Specialisation Strategies (**RIS3 plans**), measures can also be supported by **EARDF funds** implementing Public Procurement of Innovation (**PPI**)

Farmers at the center
of collecting and processing of data

- ❑ *Lack of interoperability*

- ❑ *Existing data flows are not exploited*

- ❑ *Links with co-operatives at the regional level*

- ❑ *Requirements not based on the size & needs of the farm*

- ✓ *Plug-and-play freedom*
  Farmers easily shift to use other platforms

- ✓ *Transparency*
  Clarification of rights to access and process data

- ✓ *Hands-on experience*
  Open Living Labs engage farmers and developers

- ✓ *Platforms for optimisation*
  Fertiliser / pesticide / water usage / quality
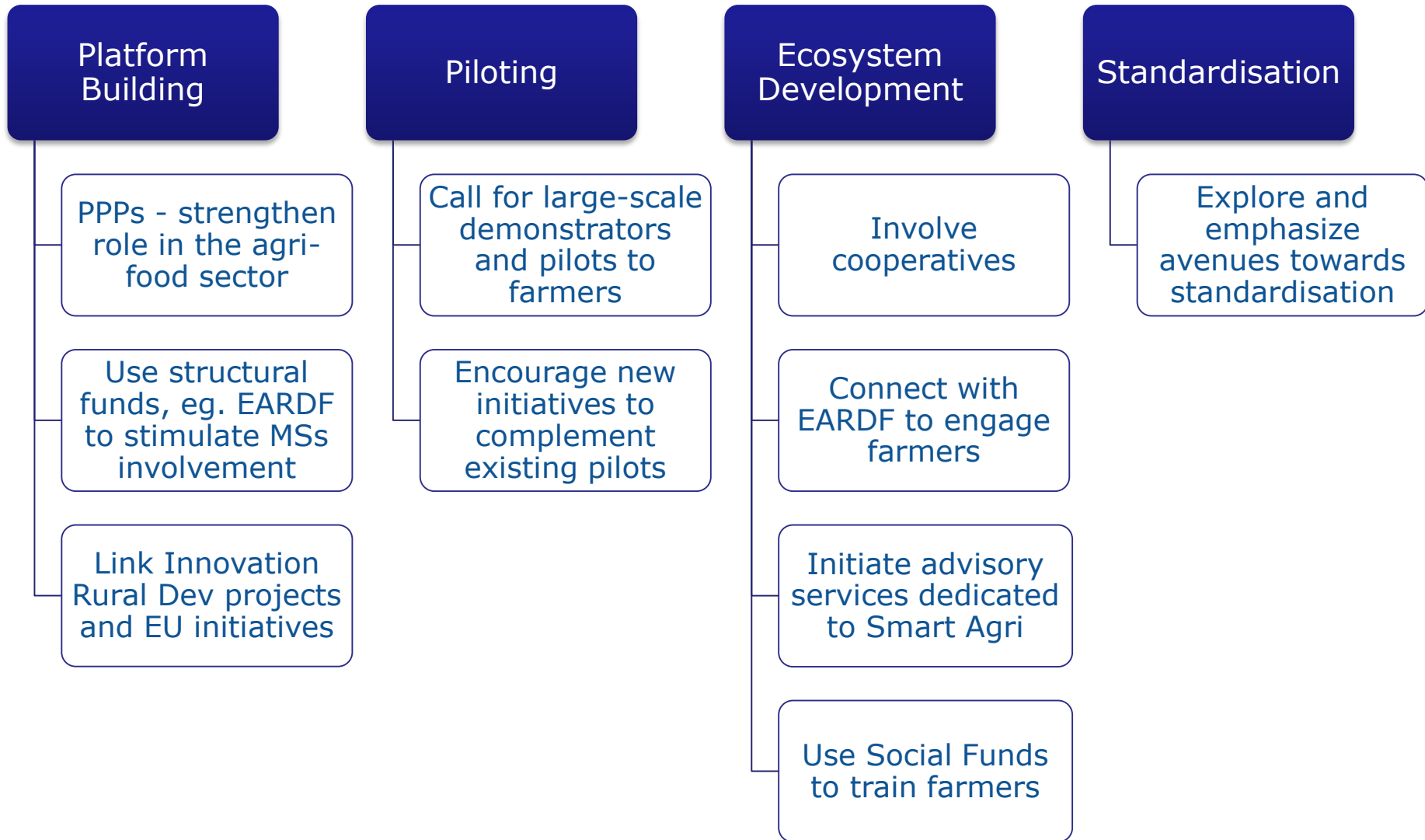
Platform Building

- PPPs - strengthen role in the agri-food sector
- Use structural funds, eg. EARDF to stimulate MSs involvement
- Link Innovation Rural Dev projects and EU initiatives

Piloting

- Call for large-scale demonstrators and pilots to farmers
- Encourage new initiatives to complement existing pilots

Ecosystem Development

- Involve cooperatives
- Connect with EARDF to engage farmers
- Initiate advisory services dedicated to Smart Agri
- Use Social Funds to train farmers

Standardisation

- Explore and emphasize avenues towards standardisation

CONNECTED SMART FACTORIES

SMART AGRICULTURE

DIGITAL TRANSFORMATION OF HEALTH & CARE

Internet of Things (IoT)

Industrial Data Platforms

Addressing 'social gradient' is key
(the link between income and health)

EU initiatives

1. Boosting Jobs, Growth and Investment

Health policy

Social Care Long term Care Strategy

Ageing policy

2. A Connected Digital Single Market

eHealth 2020, mHealth, Silver Economy Strategy

European Innovation Partnership on Active and Healthy Ageing EIP-AHA

Horizon 2020 Societal Challenge 1 Health, Demographic Change and Wellbeing

Active Assisted Living Joint Programme (AAL)

European Institute of Technology- KIC on Health and Ageing

Health & wellbeing — **Integrated care** — **Cross-border care** — **Independent living & Active Ageing** — **Sustainable care** — **Legal & market conditions**

MSs initiatives

to federate their R&D and business development in this domain
Top Sector initiative Health in the Netherlands

Regional initiatives

Within the EIP-AHA
74 regions and initiatives with status of Innovation Reference Sites based on their local initiatives in health and care innovation

Large Industrial Companies

Embracing the domain of health and care
HealthSuite by Philips
Siemens investing substantially to position as a provider of medical technology

PPPs are important asset
to advance collaboration and quick market uptake

✓ ***A number of PPPs*** *– address issues of key relevance*
Big Data, HPC , 5G, euROBOTICS and Cyber Security PPPs

✓ ***Large projects***
scale up what is working and test what is new

✓ ***74 Reference Sites from EIP-AHA***
willing to spearhead upscaling of innovative solutions

✓ ***Member States***
*important role in addressing and harmonising regulatory,
legal, and ethical aspects of digitisation in the domain*

Member States are invited to **mobilize relevant national initiatives** to take this vision forward.

Interaction and strong synergies
among current EU and national/regional initiatives

- ❑ **World-leading infrastructure**
  build on the European Cloud Initiative and European Open Science Cloud

- ❑ **Large-scale market creation**
  support from the ESIF; regional innovation "twinning schemes"

- ❑ **Enabling conditions**
  reduce fragmentation of national legislation & the uncertainty of access, use & sharing of data

- ❑ **Constraint within national platforms**
  Ethics and privacy to be taken into account at an international level

- ❑ **Big Data Importance**
  address issues of data storage and processing

- ❑ **Cross-disciplinary research and clinical validation**
  Blueprint – Shared political vision on DSM transforming Europe's aging society

The European Open Science Cloud, Free Flow of Data Initiative, High performance Computing
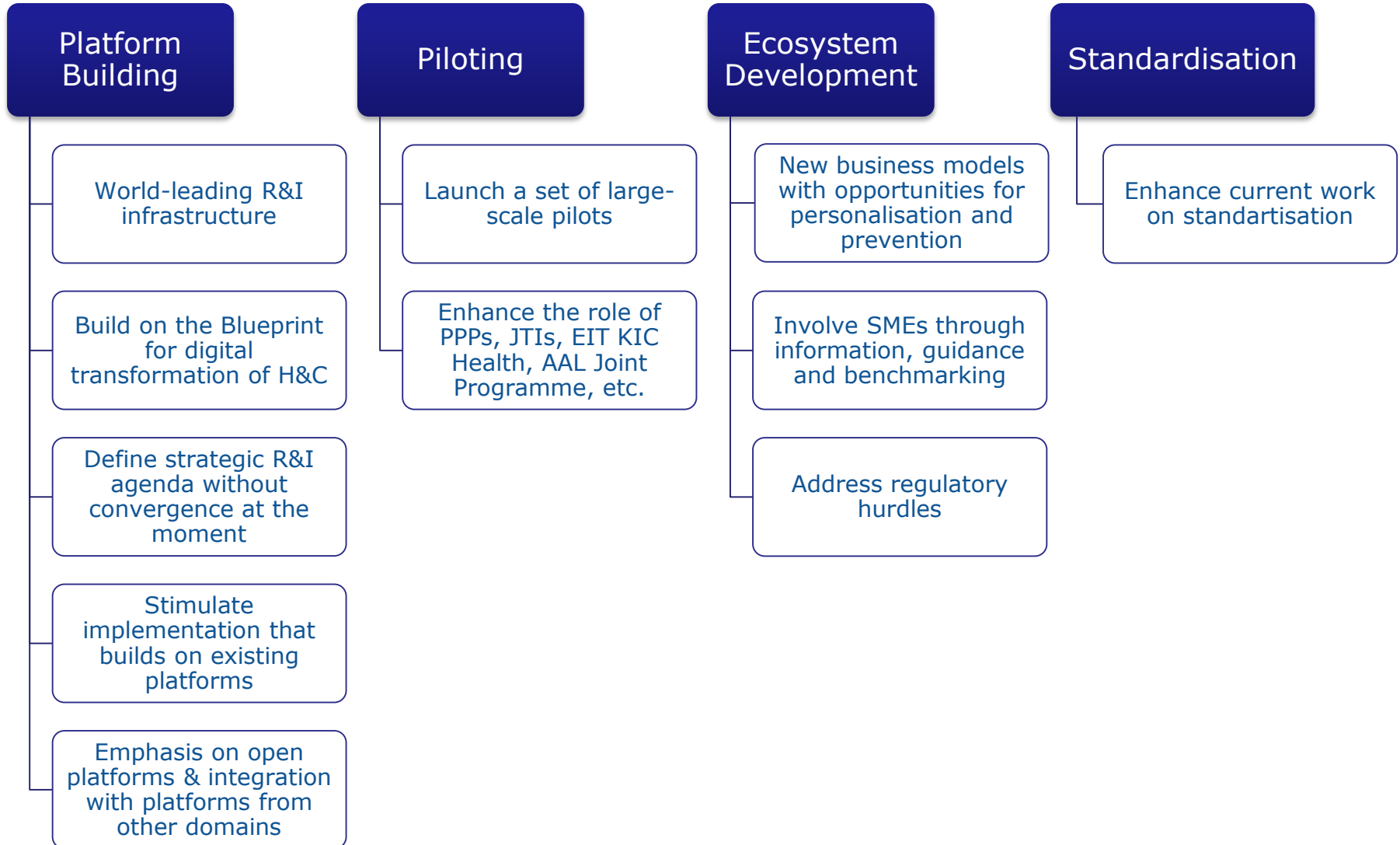
Platform Building

- World-leading R&I infrastructure
- Build on the Blueprint for digital transformation of H&C
- Define strategic R&I agenda without convergence at the moment
- Stimulate implementation that builds on existing platforms
- Emphasis on open platforms & integration with platforms from other domains

Piloting

- Launch a set of large-scale pilots
- Enhance the role of PPPs, JTIs, EIT KIC Health, AAL Joint Programme, etc.

Ecosystem Development

- New business models with opportunities for personalisation and prevention
- Involve SMEs through information, guidance and benchmarking
- Address regulatory hurdles

Standardisation

- Enhance current work on standartisation

CONNECTED SMART FACTORIES

SMART AGRICULTURE

DIGITAL TRANSFORMATION OF HEALTH & CARE

Internet of Things (IoT)

Industrial Data Platforms

Industrial Data Platforms (IDPs)
crucial for the digitisation of industrial production

- ✓ **Private sector**

  MindSphere *by Siemens and SAP*

- ✓ **Big Data initiatives**

  Germany, Denmark, the Netherlands, and Spain

- ✓ **Cross-border membership**

  Industrial Data Space, *launched in Germany with members from other countries*

- ✓ **European Network**

  European Network of National Big Data Centres of Excellence

- ✓ **PPPs contributions**

  i-Spaces by BDV PPP – *incubators for new business models and skills*

  Lighthouse projects by BDV PPP – *incubators for whole data-driven ecosystem*

  FoF PPP – *data management for increased production performance*

Cooperation with **MSs** is essential to reinforce the role of **PPPs** as coordinators of **EU-wide R&I effort**, national initiatives and industrial strategies

European Commission

Industrial Data Platforms
prompt transparent discussion on trust

- ❑ *Legal issues – right to access and process data*

  ✓ *Relevant laws*

  IP law including database and design law
  Privacy law
  Competition law
  COM (Jan 2017) - 'Building a European data economy'

- ❑ *Technical challenges of sharing data*

  ✓ *Technical solutions for legal issues*

  ***Model contracts** respecting the rights and interests of the parties*

Possibility of **certification** of parties to easy the organisation of data exchange

Collaboration b/n MSs and the EU to encourage experiments

Clarification of rules at EU level: security, confidentiality, international transfer

Benefits of the data economy to reach **SMEs** in all sectors

Skills development

Platform Building

- Creating an environment for efficient cross-border experimentation
- Stimulate open platforms based on FRAND rules
- Explore opportunities to federate national/regional initiatives
- New projects to link to existing national and regional initiatives

Piloting

- Strengthen the role of PPPs in building and validating IDPs
- Stimulate the growth of existing IDPs with public sector data, model contracts & good practices

Ecosystem Development

- Stimulate cross-sectoral platforms
- Use flagship PPPs projects as a source of cross-sectoral IDPs
- Address regulatory challenges on access and processing of data

Standardisation

- Harmonise data architectures and data models

CONNECTED SMART FACTORIES

SMART AGRICULTURE

DIGITAL TRANSFORMATION OF HEALTH & CARE

Industrial Data Platforms

Internet of Things (IoT)

- **European Initiatives**

IoT-EPI cluster

FoF and *ECSEL* *(ARTEMIS-IA, EPoSS, Aeneas)*

Alliance in the Internet of Things Innovation (AIOTI) – acting as a technology platform

- **National Initiatives for IoT**

'La French Tech' – with a number of supporting regional initiatives

Industrie4.0, Germany – supports IoT-related research for manufacturing

- **International Initiatives - >360 known platforms exist**

US vs EU – lower barriers to deployment; IoT are driven by private investment and therefore less interested in international cooperation

Industrial Internet Consortium (IIC) – GE, Bosch and Microsoft are members

- **Coordinating activities among PPPs**

ECSEL, Big Data, 5G, etc. on cross-sectorial and integrated digital platforms

AOITI and ETSI with an important role in horizontal coordination for scaling up

Some MSs are keen to have a **common standard platform for IoT** that is agnostic of hardware

Convergence driven by the market
a focus on a European approach to standards

❑ *Platform development is driven by different sectors*
⇨ *differences in national initiatives*

    ✓ *Initiatives that foster more explicit actions between MSs are needed*

❑ *Proliferation of platform offerings*
⇨ *considerable fragmentation*

    ✓ *Harmonised European market for IoT interoperability standards and open APIs is a prerequisite to reduce dependencies and barriers for SMEs*

    ✓ *SMEs have a role in leveraging the potential in IoT innovation – faster in developing applications and exploring less conventional solutions*

    ✓ *Large-scale pilots to get the SMEs and start-ups involved*

❑ *Number of developments underway*
⇨ *silos of security, standards, applications and infrastructure*

    ✓ *A need for clustering to create scale*

Platform Building

- Stimulate IoT strategies in all MSs
- Increase awareness of existing platforms
- Link existing alliances (AIOTI) to lighthouse projects in MSs
- Address fragmentation across MSs and work towards open integration platform
- Enhance the role of JTI in building platforms

Piloting

- Calls (WP2018-19) to show benefits of cross-cutting IoT platforms
- Support access to and validation of emerging IoT platforms in national calls
- Connect promising testbeds and validate them in in a complex policy context

Ecosystem Development

- Engage SMEs and developer communities

Standardisation

- Stimulate the definition of common interfaces and common data formats
- Better coordination of industrial, national and EU initiatives to stimulate interoperability
- Engage with regional and national actors, e.g IoT standardisation and the Standardisation Council Industry 4.0

PLATFORMS AND PILOTS

WORK PROGRAMME 2018-2020

Key objectives

- **Future global standards & platforms driven by interests of EU actors**

- **EU actors join forces along common interests**

- **European industry needs to come to agreements on functions and interfaces for those platforms, reference architectures and interaction protocols that have the potential to create markets and market opportunities leading to ecosystems and standards**

EU investments of 300 M€ in 2018-20

European Commission

DIGITAL MANUFACTURING PLATFORMS

- Agile Value Networks: Lot-size One

- Zero-defect Processes and Products

- Machines & Human Competences

- Sustainable Value Networks

PLUG & PRODUCE EQUIPMENT PLATFORM

...

AGRICULTURAL DIGITAL INTEGRATION PLATFORMS

- Optimize farm operations

- High-precision farming

DIGITAL SERVICE PLATFORMS FOR RURAL ECONOMIES

...

SMART HOSPITAL OF THE FUTURE

SMART AND HEALTHY LIVING AT HOME

- Healthy & independent living

- Early risk detection and intervention

...

INTERNET OF THINGS FOR ENERGY: INTEROPERABLE AND SMART HOMES AND GRIDS

BIG DATA SOLUTIONS FOR ENERGY

...

5G FOR CONNECTED AND AUTOMATED DRIVING

...

Cross-cutting issues, IoT, Big Data, Security...

Focus Area 'Digitising and transforming European industry and services', Platforms and Pilots

LEIT-ICT

DT-ICT-07-2018-2019: Digital Manufacturing Platforms for Connected Smart Factories

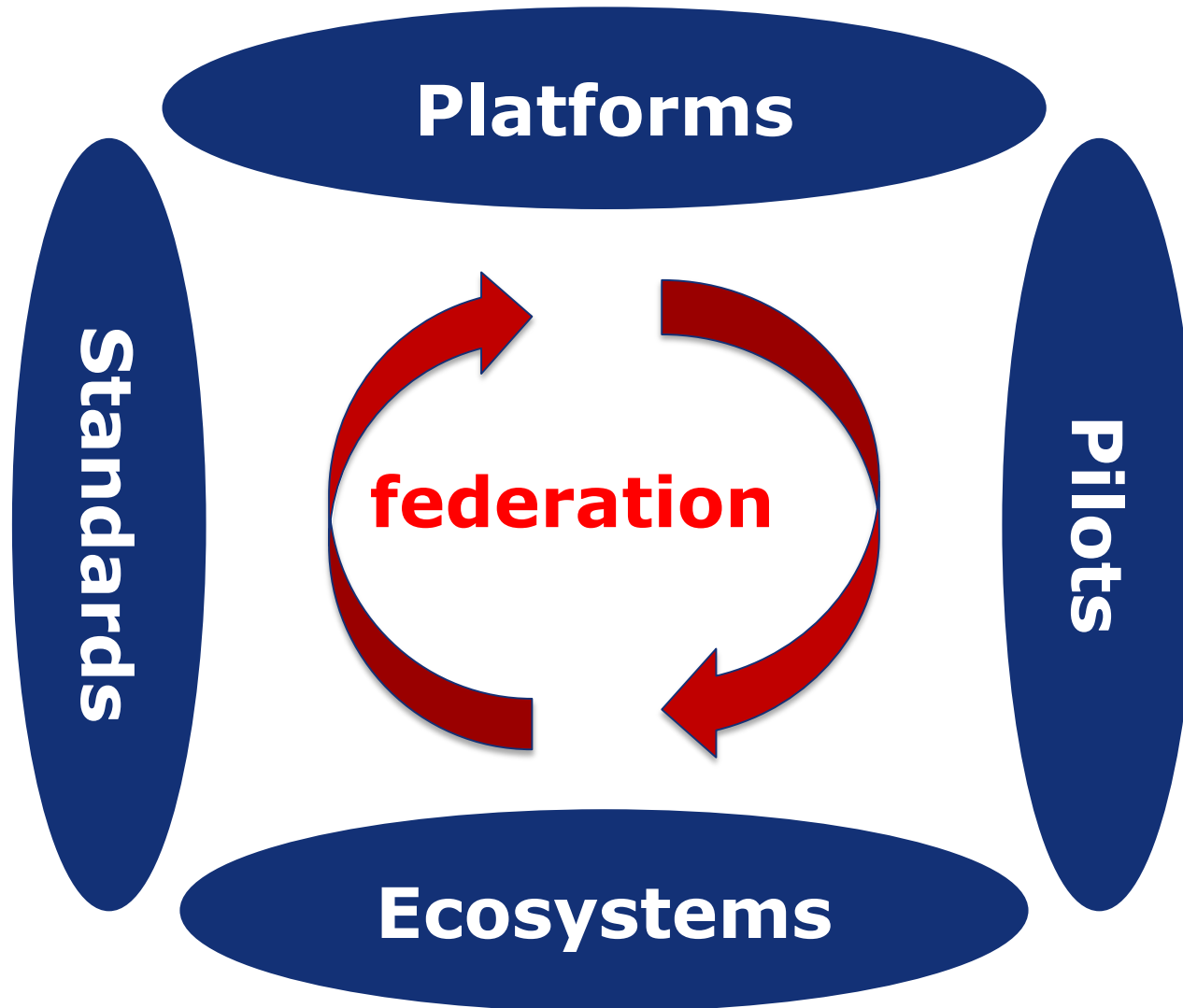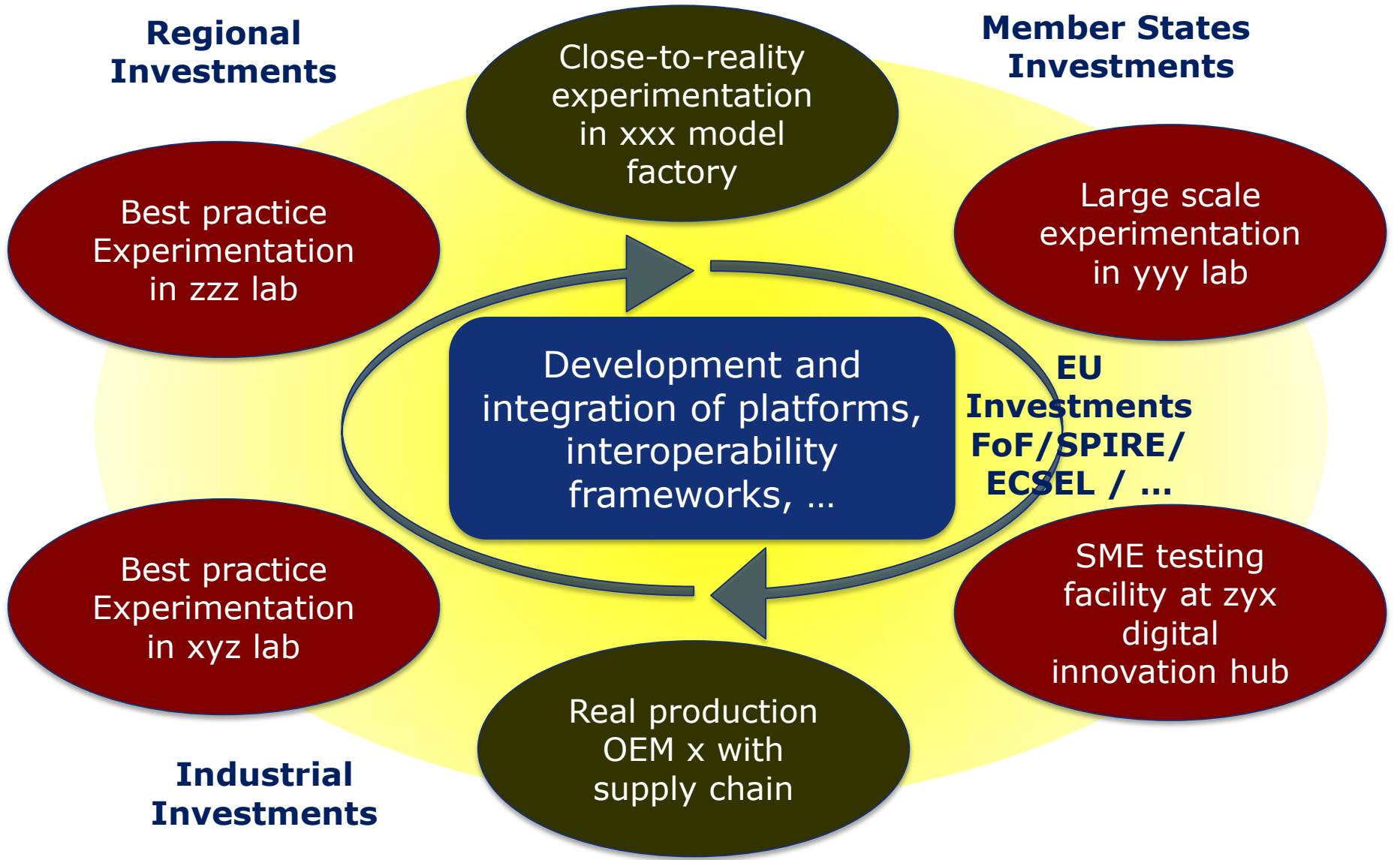|	
	95 M€
DT-ICT-08-2019: Agricultural digital integration platforms	15 + 15 M€
DT-ICT-09-2020: Digital service platforms for rural economies	15 + 15 M€
DT-ICT-10-2018-2019: Interoperable and smart homes and grids	15 + 15 M€
DT-ICT-11-2019: Big data solutions for energy	15 + 15 M€
DT-ICT-12-2019: Smart and healthy living at home	25 + 35 M€
DT-ICT-13-2020: The smart hospital of the future	25 M€
DT-ICT-14-2019: Digital Platforms/Pilots Horizontal Activities	3 M€

LEIT-NMBP:

- **DT-NMBP-20-2018: A digital 'plug and produce' online equipment platform for manufacturing**   **20 M€**

Regional Investments

Member States Investments

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EU Investments FoF/SPIRE/ ECSEL / …

Best practice Experimentation in xyz lab

SME testing facility at zyx digital innovation hub

Real production OEM x with supply chain

Industrial Investments

CONCLUSIONS
&
NEXT STEPS

Platform Building

- Enhance visibility
- Encourage experimentation
- Prevent further fragmentation
- Facilitate alliances across sectors and domains
- Use structural funds to stimulate MSs involvement

Piloting

- Realistic settings
- Increase availability of facilities
- Integration with legacy systems

Ecosystem Development

- Strong focus needed
- Actively engage SMEs, start-ups & entrepreneurs

Standardisation

- A key consideration in any platform development
- Better coordination of industrial, national and EU initiatives to stimulate interoperability
- Collaboration to achieve weight of EU actors

- **Q to MS:** Which **initiatives and investments** do you envisage in your MS in the next 5 years for programs on digital industrial platforms, piloting, and testbeds? Do you see needs and **possibilities for linking** these programs to activities on EU level and by other MSs?

- **Q to cPPPs:** cPPPs are organised by digital technology focused. How do you see **your role in integrating** all relevant digital advances in vertical/sector-specific platform initiatives, which cut across technology silos?

- Do you see any **promising platform initiatives** and **pilot projects** that should be scaled up to full deployment, with enlarged ecosystems? For such scale-ups, how do you see **the role** of several sources of EU, national, regional and private **financing**?

- Do you see the need for **a partnership instrument** to implement joint industrial digital strategies across the EU, that allows for pooling of substantial resources to tackle grand challenges, involving large industry and SMEs, startups, RTOs, and academia.

➢ Provide specific support to start-ups, SMEs and mid-caps

➢ Reinforce national/regional activities and link them to EU activities

➢ Promote the approach of open platforms and piloting towards standardisation

➢ Trigger co-investment

Cooperate with EC to **coordinate strategy and finance** at regional, national and EU levels

Reports:

DEI WG2 report v2, after Stakeholder Forum

Stakeholder Forum, 31 January – 1 February 2017

DEI WG2 report v1, after December workshop

Workshop 21 October 2016

Questionnaire

Futurium