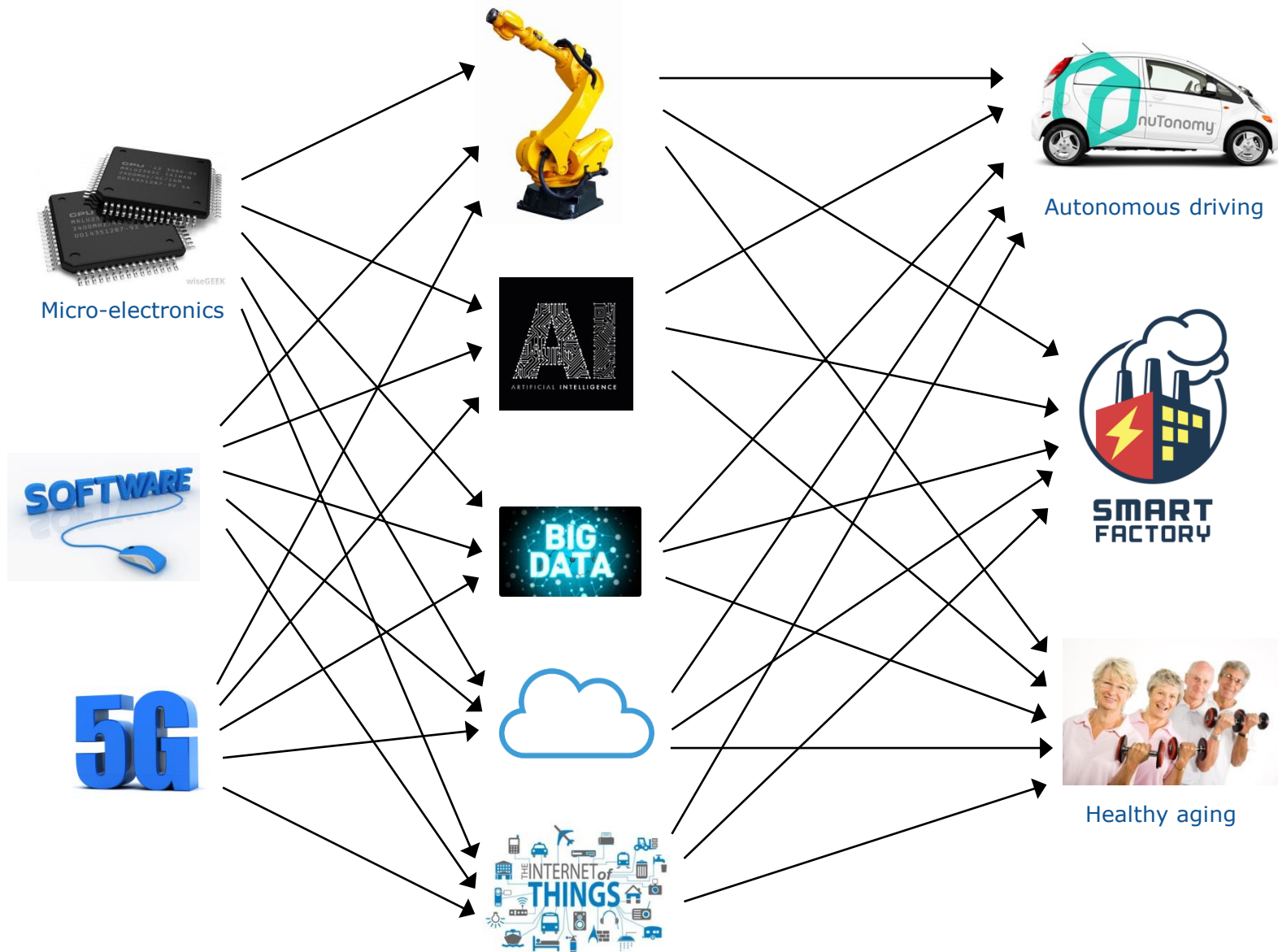


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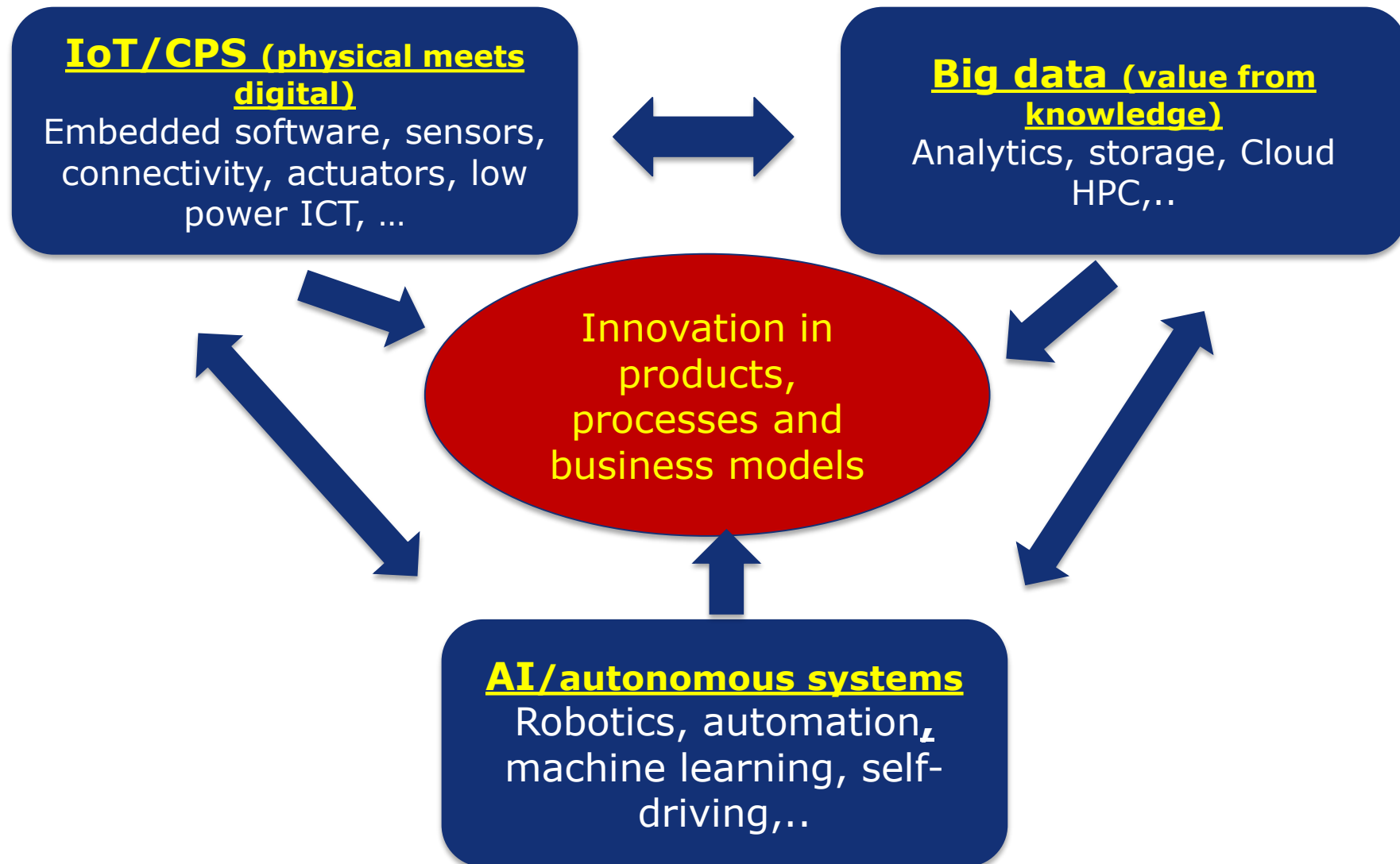
## Technologies and Systems for Digitising Industry

# Technology value chains

## Some examples



# Technologies driving the change



### Digitising European Industry

To facilitate coordination of European, national & regional initiatives  
such as Industrie 4.0 (DE), Smart Industry (NL) (SK), Industrie du Futur (FR)

#### Mainstreaming digital innovation across all sectors:

Setting up a pan-European network  
of Digital Innovation Hubs

#### Strengthening leadership in key parts of the digital value chain:

- Public-Private Partnerships
- Industrial platforms
- Large scale pilots & test beds

#### Preparing People for the digital age: Skills & Training

#### Regulatory framework:

- Free flow of data & data ownership
- Safety & liability of autonomous systems & Internet of Things

#### Challenges & opportunities of the Internet of Things

#### CLOUD



#### European Cloud Initiative in a data-driven economy:

- European Open Science Cloud
- European Data Infrastructure
- Widening access & building trust

High  
Performance  
Computing

Quantum

#### STANDARDS



#### Fast development in 5 priority areas:

- 5G
- Cloud Computing
- Internet of Things
- Data Technologies
- Cybersecurity

#### DIGITAL PUBLIC SERVICES



#### eGovernment Action Plan:

- New Digital Single Gateway
- eJustice Portal
- “Once-only” principle in Administrations
- Cross-border Health services
- eProcurement & “Once-only” in public procurement

#### To focus investments

(Horizon 2020, EU Investment Plan, EU Structural & Investment Funds,  
national & regional funds, private sector)

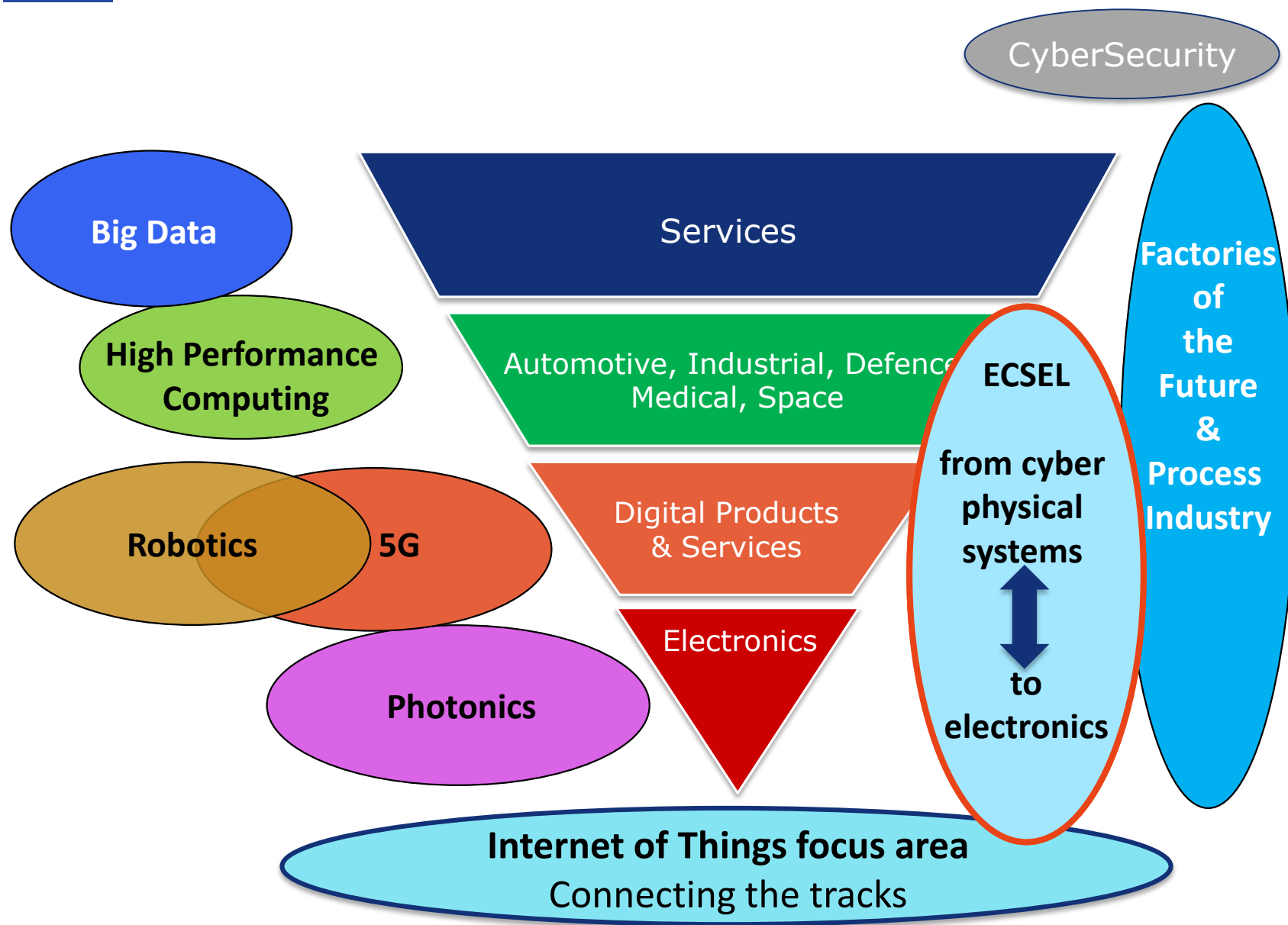
**MOBILISING €50bn of public & private investments**

 #DigitiseEU  
@DSMeu

 DigitalSingleMarket

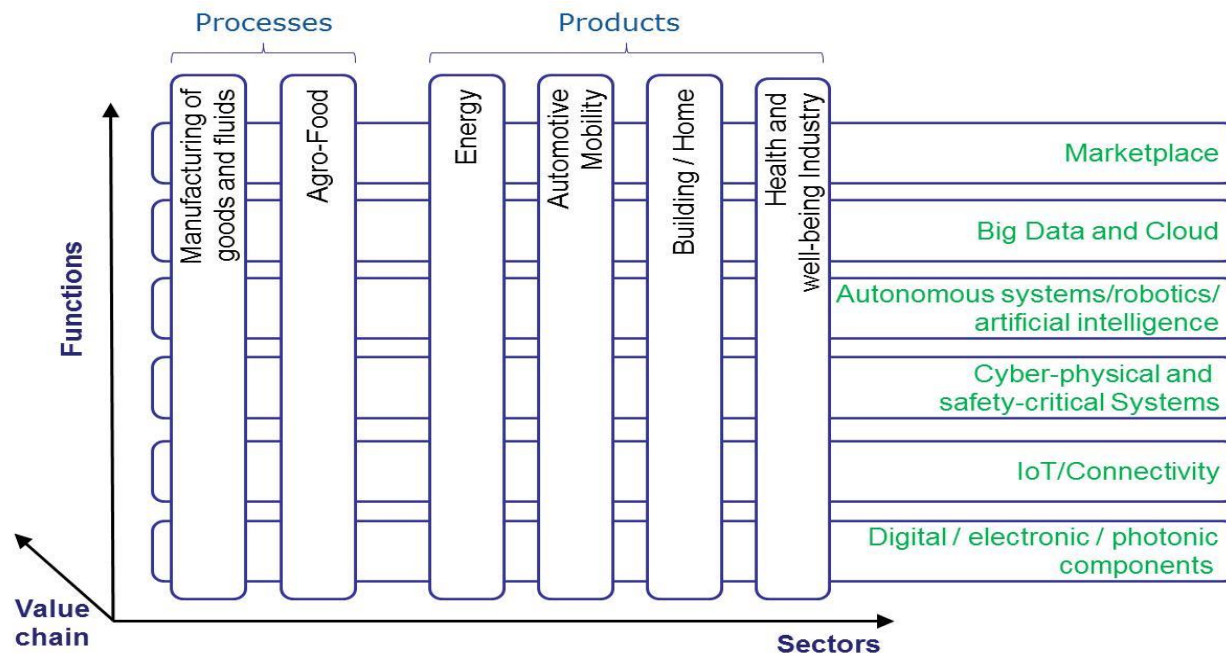
[bit.ly/DigitiseEU](https://bit.ly/DigitiseEU)

# Public Private Partnerships: preparing the supply of digital technologies across the value chains

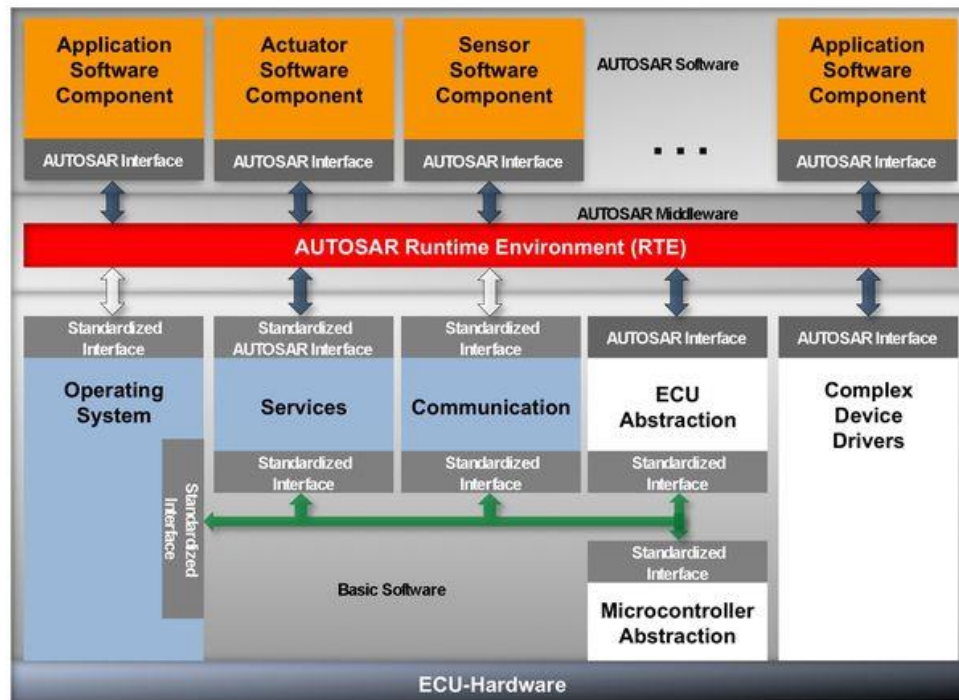


# Leadership in digital technologies value chains

- Target
  - European leadership in open digital platforms for industry, and "technology gateways" that any business can use
- The challenge
  - Building on strengths in vertical markets, develop Europe's presence in cross sector platforms (IoT, Data, web, consumer,...)







## Pooling of resources

- FP6, FP7, ARTEMIS
- 9 core, 47 premium, 100+ associate, 31 development partners
- To standardise basic software functionality of automotive Electronic Control Units

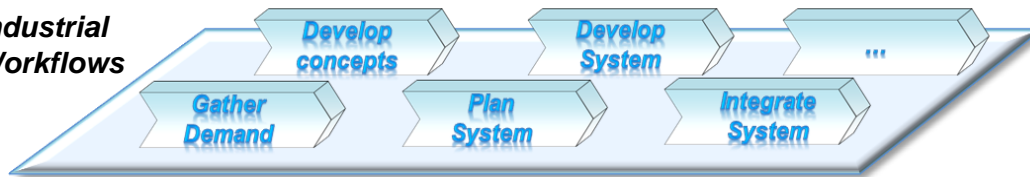
## What - Standardized architecture for embedded automotive HW/SW

- Eases cooperation of car manufacturers, suppliers and tool developers
- Facilitates innovation through open standards
- "Cooperate on standards, compete on implementation"

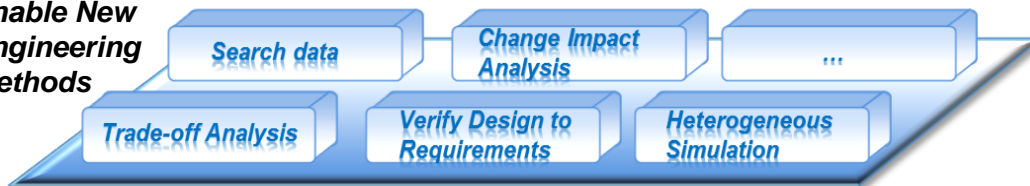
## Who – ecosystem

- Bootstrapped by EU industry (manufacturers, suppliers)
- Worldwide use
- Strong framework programme support

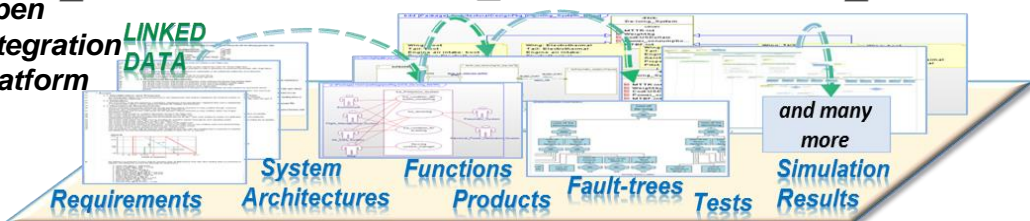
## Industrial Workflows



## Enable New Engineering Methods



## Open Integration Platform



## Tool Layer



## Pooling of resources

- FP7, ARTEMIS
- 82 MEuro, 71 partners
- To build a technology platform for safety-critical systems, with reference solutions

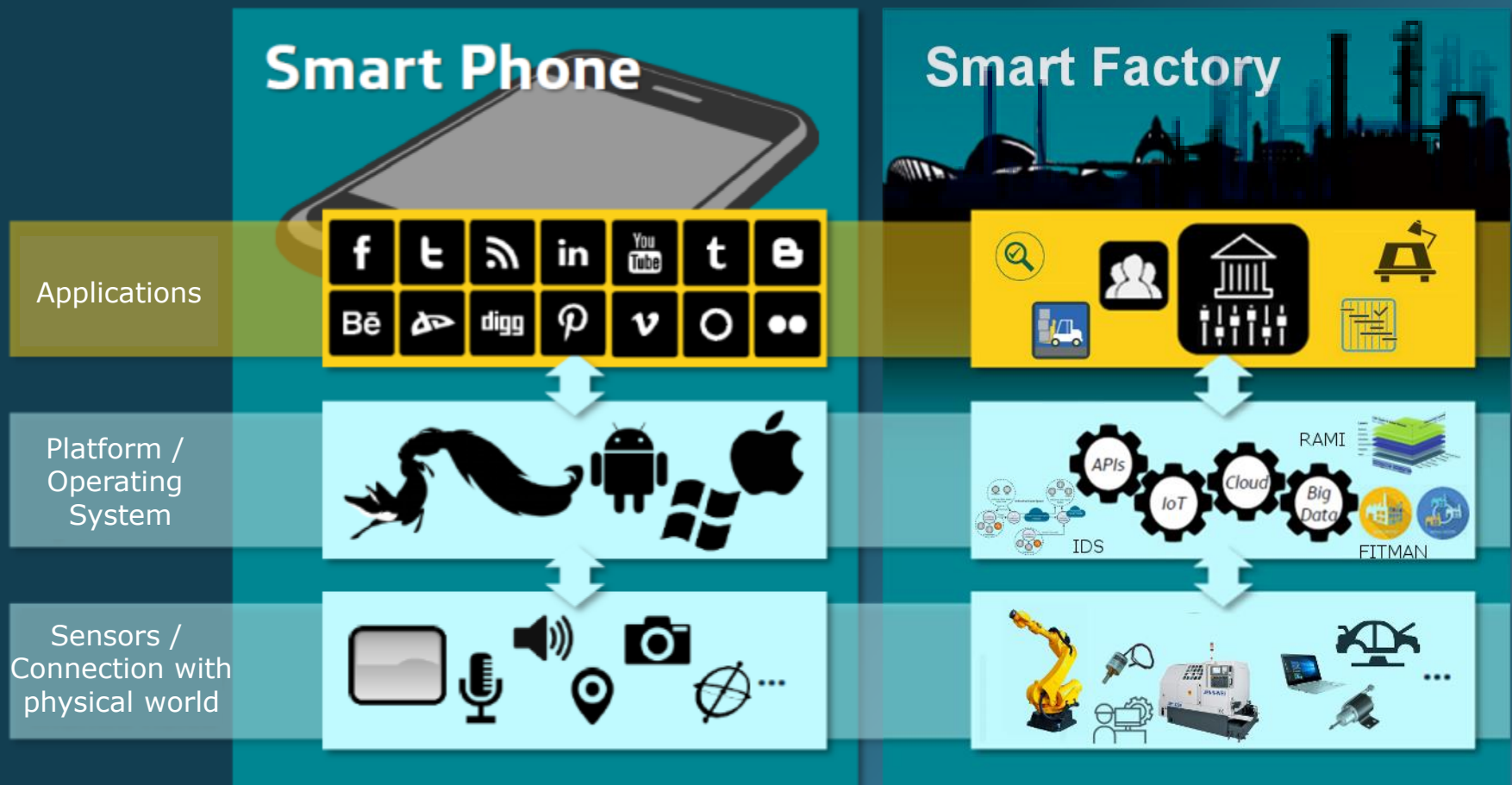
## What –reference architecture

- Open and driven by EU actors
- Builds on EU leadership on safety-/time-critical systems
- Builds on Interoperability Specification + Reference Technology Platform
- Reference solutions available
- Involved in international standardisation efforts

## Who – ecosystem

- 71 actors directly involved
- Cutting across sectors: rail, automotive, aerospace, health
- Involving market actors across the full value chains





# Industrial Platforms - Examples

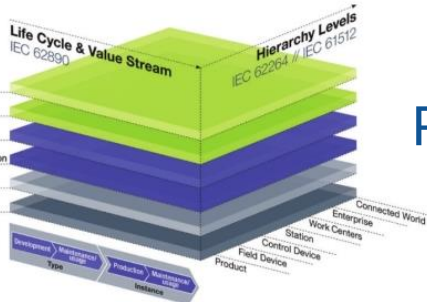
## Community-led sector-specific (vertical)

**AUTOSAR**

ISOBUS



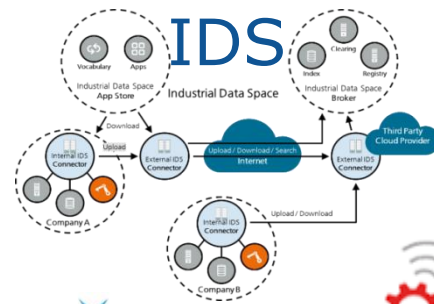
RAMI



FITMAN



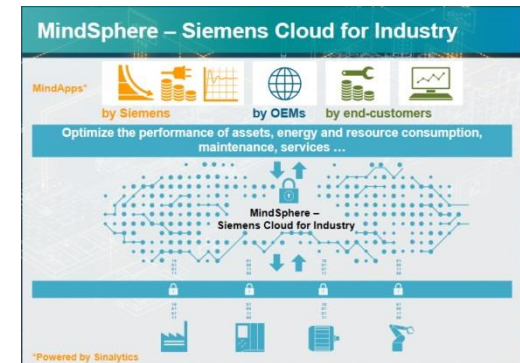
## Community-led cross-sector (horizontal)



AIOTI



## Proprietary with open interfaces

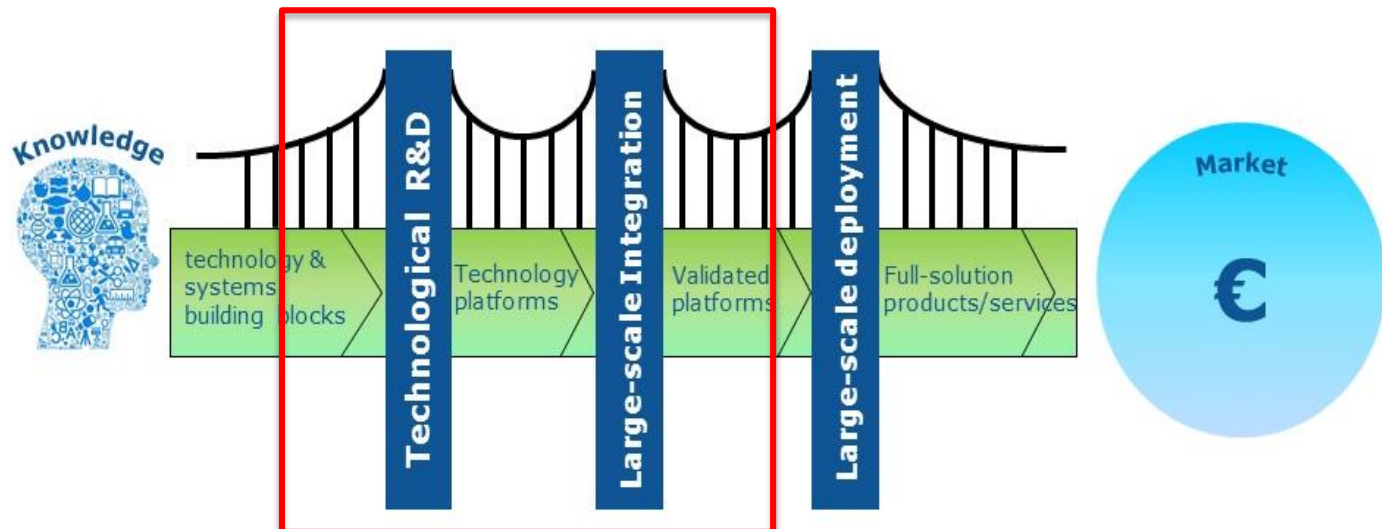


- Social and Collaborative apps**  
Related brands: ENOVIA, 3DSWYM
- Information Intelligence apps**  
Related brands: EXALEAD, NETVIBES
- Content and Simulation apps**  
Related brands: 3DVIA, DELMIA, SIMULIA
- 3D Modeling apps**  
Related brand: CATIA, GEOVIA, SOLIDWORKS
- Real time 3DEXPERIENCE Platform**

# Pan-European Collaboration on Platform-Building across the R&D&I cycle

## Targets

- **Alignment of** EU-wide R&I effort, national initiatives and industrial strategies
- **Focus investments on**
  - Key technologies and their integration across all sectors
  - **Cross-sector digital platforms**
  - **Ref. implementations and exp. environments in real setting**
- **Bring platforms to market quicker and standardise**
- **Innovation ecosystem around platforms, validation with I4MS**



# Programmes related to Cyber-Physical Systems in Europe

**ITEA: Software  
Intensive Systems**

**Societal Challenges**

**Internet of  
Things**

**CPS in Manufacturing**

**Cyber-Physical  
Systems**

**Following  
ARTEMIS-IA  
Agenda**

**Low power  
Computing**

**ECSEL - CPS  
(Joint  
Technology  
Initiative)  
driven by  
ARTEMIS**

**Smart Anything  
Everywhere**

**Photonics**

**Robotics...**

**5G**

**Big Data**

**Cloud**

**Member States  
Initiatives**

- **Cross-cutting focus area**
  - Contributions from **SC1** and **SC2**
- Increased support with the ambition to **foster the take-up of IoT in Europe** and to **enable the emergence of IoT ecosystems** supported by open technologies and platforms
- Organised in three topics:
  - **Large scale pilots** (100 M€)
    1. Smart living environment *Living well*
    2. Smart farming and food *Security*
    3. Wearables for smart *Systems*
    4. Reference zones *Activities*
    5. Autonomous vehicles in a connected environment
  - IoT Horizontal *Activities* (4 M€)
  - **R&I on IoT integration and platforms** (35 M€)





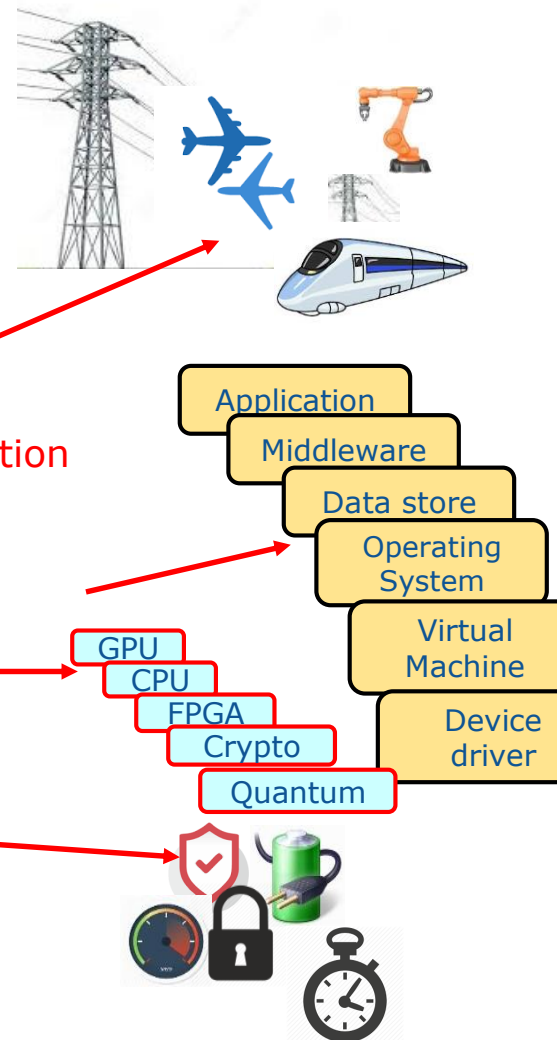
# ICT 5 - Customised and low energy computing

## What we ask for (RIA)

### Programming environments and toolboxes for low energy and highly parallel computing

- optimised for specific application domains
- ideally covering complete software stack from runtime to application
- supporting multicore and heterogeneous architectures
- supporting non-functional requirements: time criticality, power, reliability, security, etc...
- reuse and extension of existing solutions is OK

**Suggested EU contribution: 4 to 6 million (not binding!)**





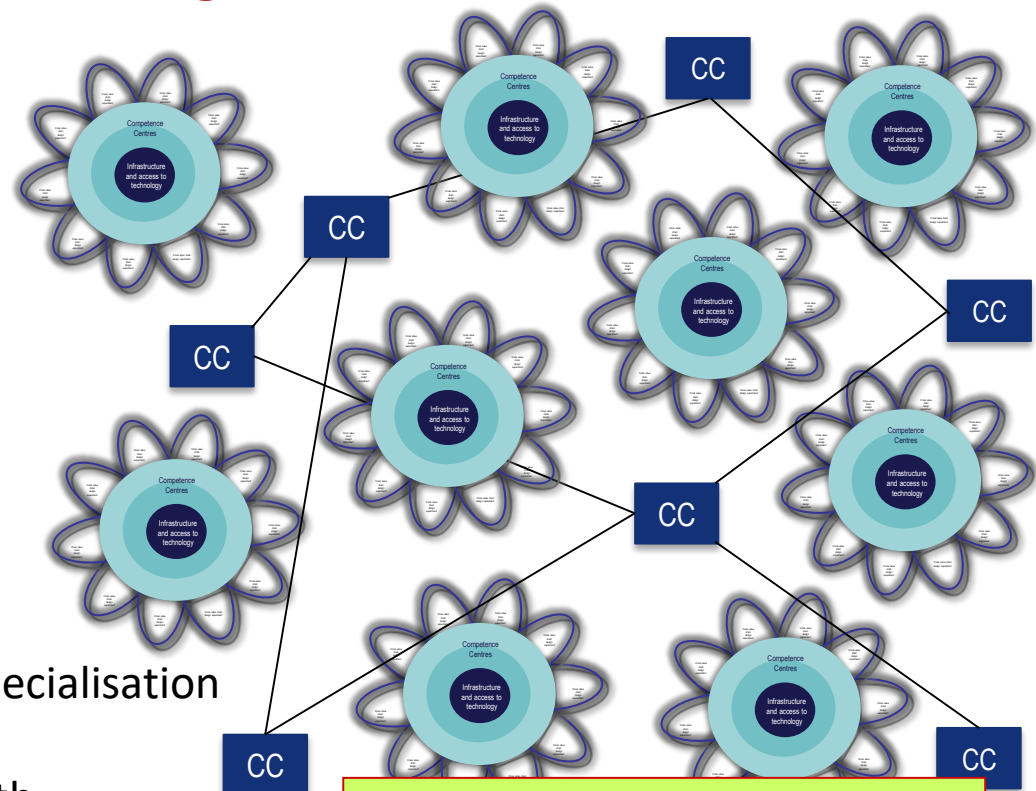
# ICT 4 – 2017: Smart Anything Everywhere – Phase 2

## EU-wide network of Competence Centres Acting as the heart of Digital Innovation Hubs

### Competence Centres

- Access to technology through marketplaces
  - Service for developing products
  - Brokers between suppliers and users
- 
- Builds on regional strengths/smart specialisation
  - Flexible and scalable
  - H2020 funding can be augmented with
    - regional/structural funds, e.g. ESIF

[www.smartanythingeverywhere.eu](http://www.smartanythingeverywhere.eu)



**IA Projects (up to 7 M€  
for CPS and low power  
computing each)**

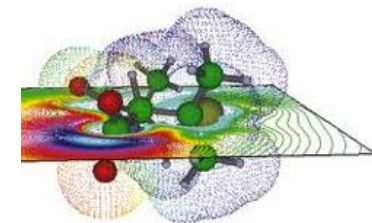
**What we ask for : Innovation Actions in one or more of the following areas of technologies**

**Large projects (5-8 M€)**

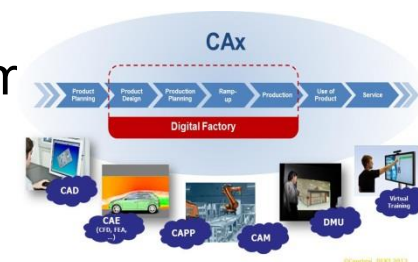
**1. Integration of CPS and IoT concepts** in smart production environments



**2. Robotics systems** cost effective at lower lot sizes



**3. HPC Cloud-based** modelling, simulation and analytics services focusing on sustained service models and real-time support



**4. Digital design for additive Manufacturing** focusing on link between design tools and production

**Budget  
32 M€**

**For more information see website of**



<https://ec.europa.eu/digital-single-market/en/ict-proposers-day-2016>

# THANK YOU

**Digitising European Industry**

**<http://ec.europa.eu/digital-agenda/en/digitising-european-industry>**

**Twitter: #DigitiseEU**