

# Research goals and funding opportunities Unit Development of Digital Technologies

BMWi VI B4

Celtic plus Proposers Day

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DLR Program Management Agency



DLR Projektträger



# DLR Project Management Agency

# We

- » drive research, innovation and education
- » support policies, programmes and projects
- » operate nationally, across Europe and internationally
- » network disciplines, industries and stakeholders
- » stand for dedication and professionalism

**CONSULTING**  
EVALUATIONS  
ANALYSES

**TRAINING**

INFORMATION,  
COMMUNICATION, DIALOGUES  
**FUNDING MANAGEMENT**  
RESEARCH AND INNOVATION  
MANAGEMENT



# Our Clients

- » Federal ministries, state ministries, public authorities
- » Foundations, associations, research organisations
- » European Commission, foreign government bodies



Ministerium für Innovation,  
Wissenschaft und Forschung  
des Landes Nordrhein-Westfalen



# Our Unit „Information Technologies / Electric Mobility”

works on behalf of the



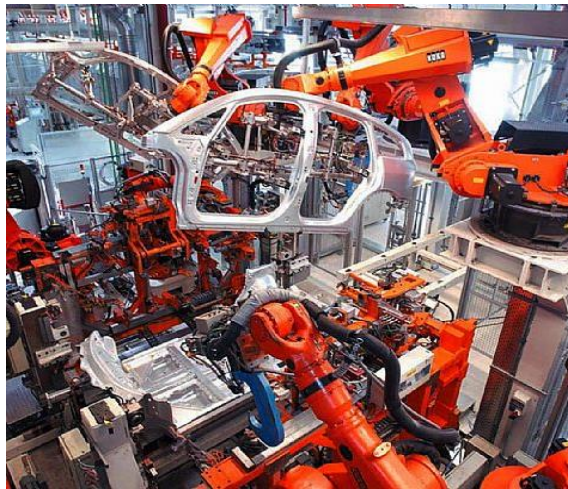
- » responsible for the “Development of Digital Technologies”
- » promotion of research and development at the precompetitive stage.

The aim of our work is to pick up on key trends at an early stage and to accelerate the process of transferring scientific findings into the development of marketable high-tech technologies with high-level potential for practical applications.



# New Challenges for Applying ICT

## The MEGA Trends



Production Systems  
(„Industrie 4.0“)



Energy Systems  
(„Energiewende“)



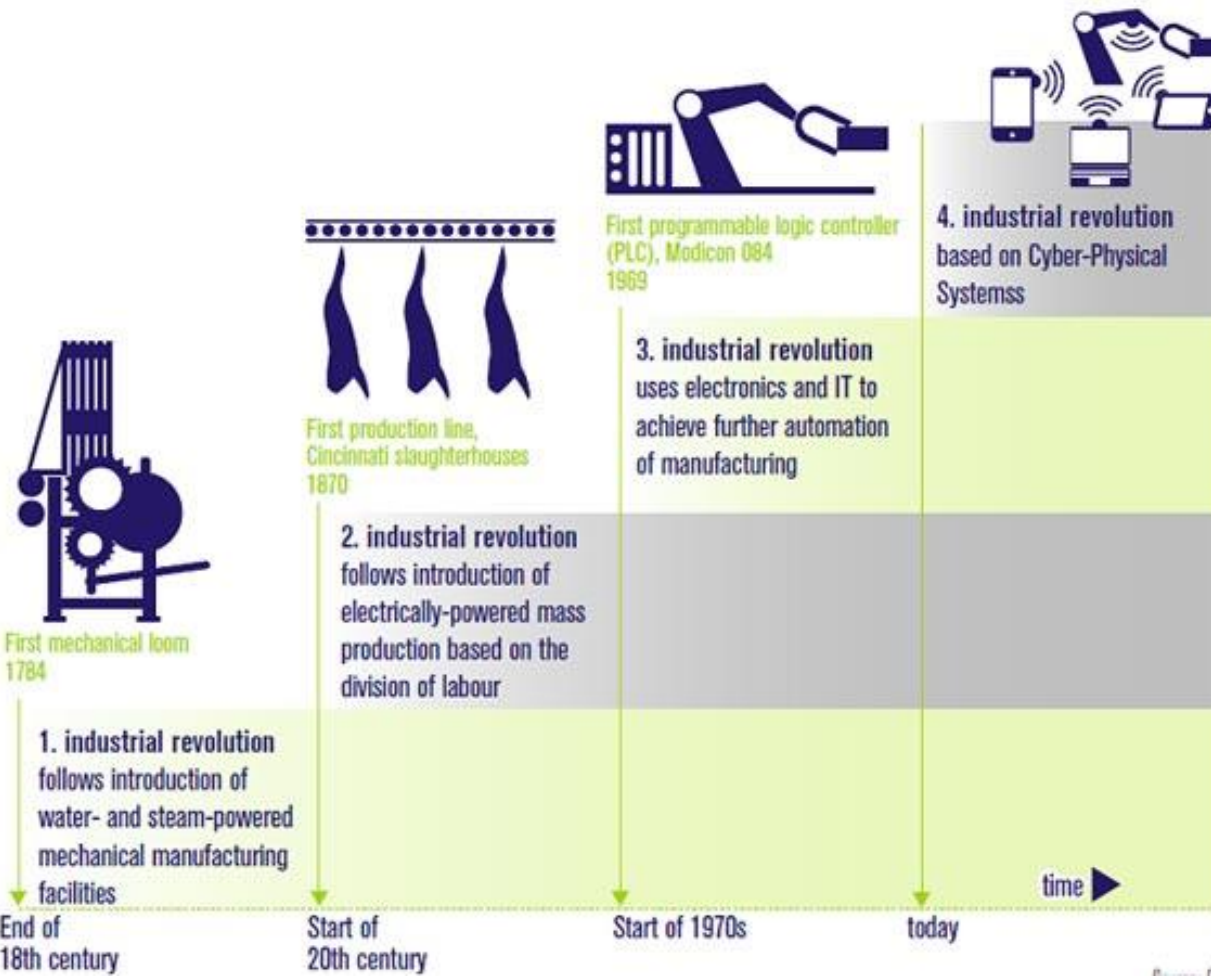
Social Systems  
(„Demographischer Wandel“)

→ ICT connects complex systems and transforms businesses and society



# Effects and impacts on businesses and the society

## Industrie 4.0



Cyber Physical Systems allow for a high grade of automation and self organization in production.

„Smart components“ regulate the process

▲ complexity  
Lot 1 Production: Individual customer preferences and data

From value chains to flexible value networks:  
New forms of logistics



# Effects and impacts on businesses and the society

## Industrie 4.0 – Example „SpeedFactory“

- Manufacturing is the backbone of Germany's prosperity:

**15 mio. jobs affected**

→ Automation allows to bring back production to where the customers are.

→ Intelligent robot technology will produce better Products e.g. Shoes according to individual customer needs and customer foot measures

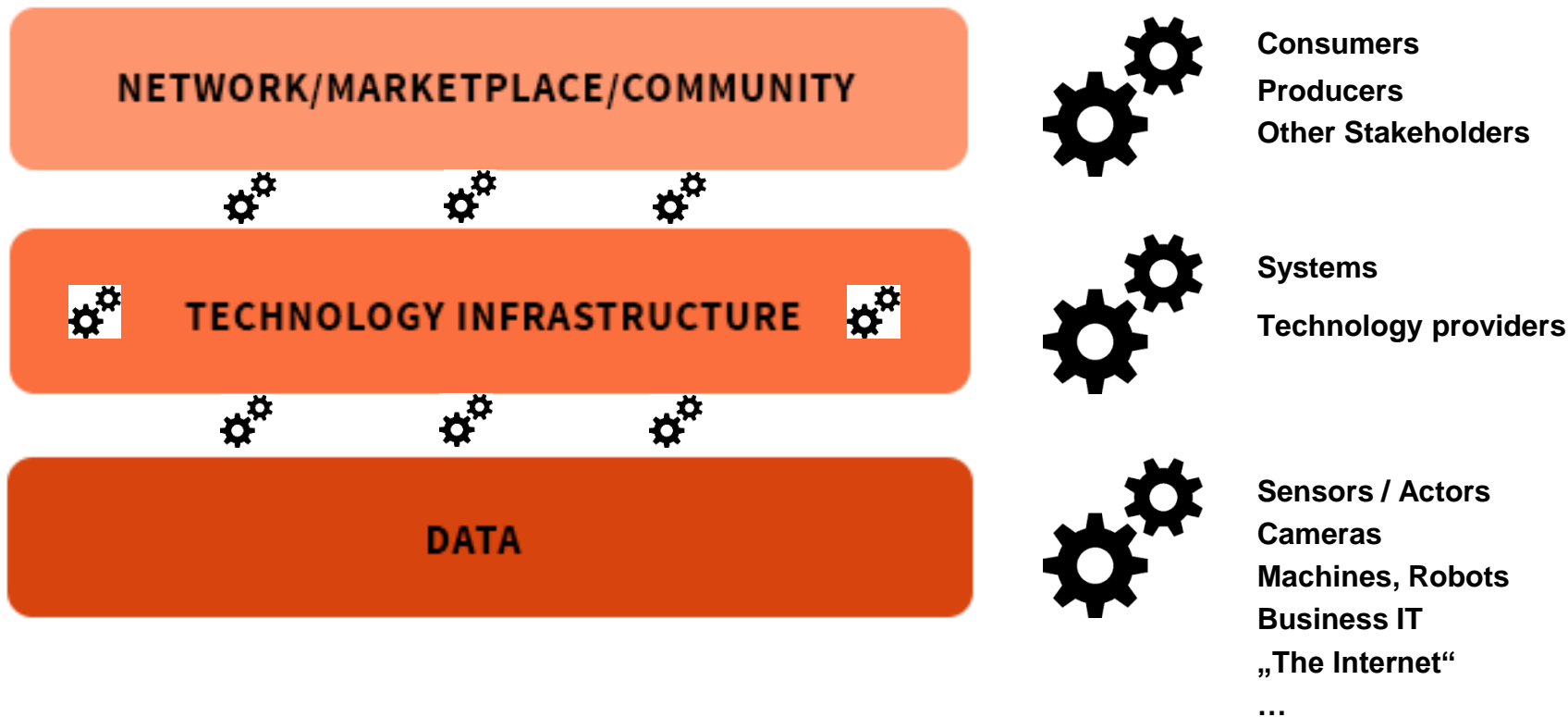
→ Industrie 4.0 will modernize and individualize the classical mass production.



# Effects and impacts on businesses and the society

## Service platforms – Basic technology concept

### Data-driven business models





# Effects and impacts on businesses and the society

## Service platforms – Basic market principles

The digital transformation does not only lead to smart products and services –  
But it also leads to a **structural change of the markets**.

Some digital platforms (amazon, ebay, Uber, Zalando) are getting a mediator function between supplier and customer. The more users they have, the more they can influence and even **determine the value creation processes**.

Other digital platforms (amazon, Paypal, Payback) allow for building up new dynamic value creation networks that **replace the traditional „pipeline“ relationships** (e.g. production – sales – service).




### The Rise of the Platform Enterprise

A Global Survey

### The rise of digital platforms

**81%** of executives say platform-based business models will be core to their growth strategy within three years



Digital companies form the heart of platform economy

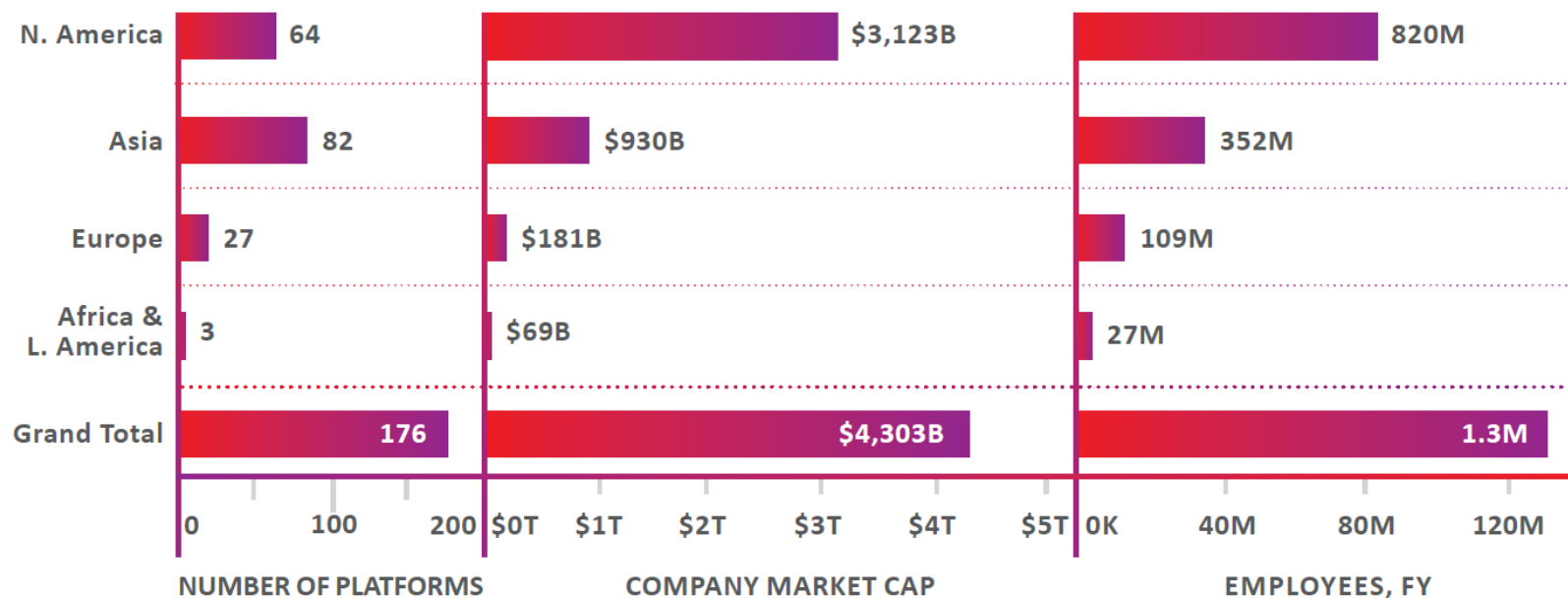
People matter, results count.



# The Digital Platform Revolution

## How competitive is Europe?

### PLATFORM COMPANIES BY REGION



- Only 27 or 15 percent of the platforms come from Europe and collectively they represent a little over 4 percent by market value.
- → For many traditional companies this is still virgin soil (Neuland)



# (How) to govern / influence the digital revolution ?

## 1. Digital Transformation is on the German political agenda

- National IT Summit: the central cooperation platform for politics, science, economy and society for designing the digital change.
- The current coalition agreement addresses important topics of the digital revolution (Industrie 4.0, Service platforms)
- Political strategies have been worked out
  - A) New Hightech Strategy: Ministry of Research and Education
  - B) Digital Agenda (2014-2017): Ministry of Economy + Energy, Ministry of the Interior and Ministry of Traffic and Infrastructure
  - C) Digital Strategy 2025 (BMWi): „funding programs and lighthouse projects will be specifically set up in innovative technology and application areas“





# (How) to govern / influence the digital revolution?

## 2) Investments in applied research to promote a faster adoption

Currently, most of the funding is devoted to the following programs

- **Smart Data:** to develop and test new technologies that enable big data to be used in both the private sector and by the public in a secure and legally compliant manner; *2014-2017, 13 projects, 30 m€*
- **Smart Service Welt:** to connect digital user areas using a targeted, secure combination of open service platforms, data management technologies, and Internet of Things; *2015-2019, 16 projects, 50m€*
- **“Digital technology for the economy – PAiCE”** in which pioneering technology fields such as product engineering, agile logistics, service robotics, industrial 3D applications and industrial communication as well as their interconnectivity are addressed, which are particularly relevant for the digitization of the economy; *2016-2020, 16 projects, 50 m€*
- **ICT for Electric Mobility:** focusing on the key areas of logistics, mobility
- and energy infrastructure; Phase 3 (Commercial e-vehicles) 2015-2019, approx. 30 m€



# Investments in applied research Smart Service Platforms

- The National academy of science and technology has created a first guideline for the digital transformation of businesses with 13 best practice examples from the German industry.
- „Smart Service Welt“ is the BMWi funded program on digital platforms and will continue in 2017 with phase 2.
- Smart Services World II is designed to tap into application fields that are underrepresented in the program Smart Services World I. Another aim is to promote applications for small towns and rural regions. 120 proposals were submitted till 9<sup>th</sup> February.



# Smart Service platforms

## Example SmartFarming



- **Objectives:** Create added value services according to the needs of the farmer, reach a high degree of work automatization.
- **Expected Outcomes:** service platform that connects all kind of agricultural engines (producer-independant) and enables new business models in agriculture.



Projektpartner



**CLAAS**

**GRIMME**



**fir** in der  
**RWTHAACHEN**



# (How) to govern / influence the digital revolution ?

## 3) Fostering competence centres; business platforms & initiatives

- **Platform Industrie 4.0:** Under the lead of Ministers Gabriel and Wanka, a broad alliance of associations, scientific organisations and trade unions has been created. 5 Working groups are driving the relevant topics
- **10 competence centres „Industry 4.0 for SME“** (Berlin, Darmstadt, Hannover, Dortmund, Kaiserslautern, Augsburg, Chemnitz, Ilmenau, Stuttgart), plus 1 **competence centre for crafts:** showrooms, SME will be enabled to test own technologies and interfaces to products or customers.
- **4 SME agencies** work on relevant topics for SME („Cloud“, „Processes“, „Communication“, „Trade“) and take care for a broad knowledge transfer.;
- **Big Data Centres (Berlin, Dresden/Leipzig):** BMWi and BMBF cooperate in funding two centres / labs for cutting-edge research





# (How) to govern / influence the digital revolution ?

## 4) Fostering innovative SME and Start-ups in the digital Sector

- The **Central Innovation Program SME (ZIM)** offers
  - Multiple funding variants for custom-fit funding
  - Possibility for continuous application for all kind of topics (ICT= #4)
  - Easy application and quick decision processes
  - About 400 Mio. Euro SME funding in ICT topics since 2008
  - More at <http://www.zim-bmwi.de/zim-overview>
- **EXIST program** for start-up businesses out of university
  - Supports students and researches in high-tech areas
  - Recently published new guidelines to improve funding and provide higher lump sums for material costs (November 2014)
  - More info at: <http://www.exist.de>



# (How) to govern / influence the digital revolution ?

## 4) Fostering innovative SME and Start-ups in the digital Sector

### Founder's Contest „Innovative ICT“

- A contest for Founding ideas in ICT funded by BMWi
- Prizes up to 30.000 € plus extensive coaching (expert network)
- Winners are announced and honoured at CeBIT

### INVEST - Improved financing of start-ups via Business Angels:

- BMWi offers investment grants up to 20% on venture capital;  
has recently been set free of income tax liabilities



# Objectives of the R&D&I-Funding

**Accelerate the introduction of German Digital Technology innovations to the market**

**Drive the Digital Transformation of the German Economy through the development of prototypical solutions**

All the research programs that receive funding involve model users who pilot the developments in order to establish their technical and economic viability. The results are then used as a starting point for the creation of market-ready products, solutions, and business models, particularly for SMEs.

**Strategic individual projects** serve to advance selected cutting-edge, forward-looking technology solutions, which the Economics Ministry sees as potential game-changers within the ICT sector.



# More info and examples:



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