

The challenge of Digital Transformation for the Italian and German industries

European and domestic policies at a glance

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Outline of the presentation

- First part

- The challenge of Digitising Industry in Italy and Germany: state of play
 - Digital Intensity Index
 - The challenge of Industrial Gigabyte
 - Encouraging cooperation between start-ups and established companies

- Second part

- Digital Transformation Policies
 - Italian National Plan Industry 4.0 and Italian Start-up Act
 - German Digital Strategy 2025 and Action Plan



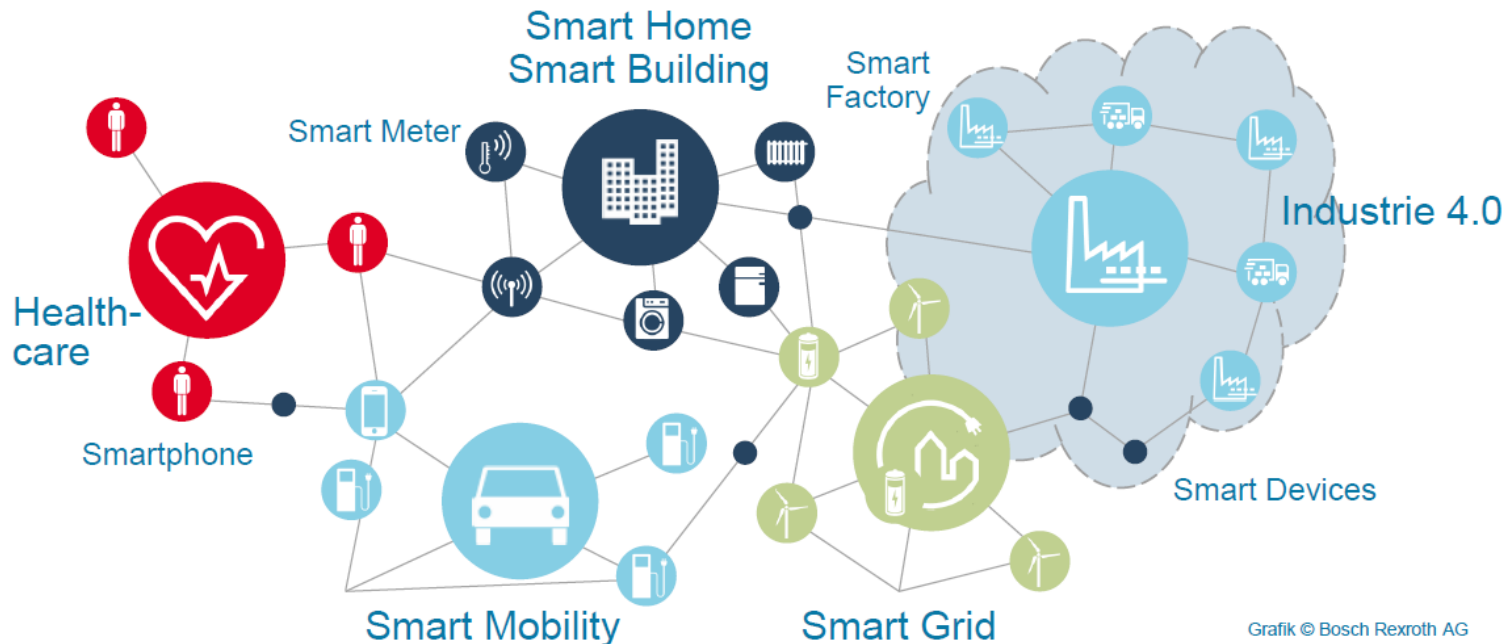
The challenge of Digitising Industry in Italy and Germany: state of play



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Basic Facts and Trends

- According to the European Commission, a Digital Single Market could contribute **415 billion euros per year** to the economic performance of the European Union and create hundreds of thousands of new jobs.
- The market volume of the Internet of Things is estimated to be some **1.9 billion euros in 2020**



Industrie 4.0 will integrate Manufacturing to the Internet of Things

Basic Facts and Trends

Digitalising industry will open up potential additional cumulative added value of **425 billion euros** in Germany alone. Projections put **productivity gains at up to 30%**, annual efficiency gains at 3.3% and cost reductions at 2.6% annually. Improved cooperation between companies and start-ups in Germany could open up **growth potential totalling 100 billion euros up to 2020**.

Europe has 4.7 million programmers and software developers – the U.S. has only 4.1 million. In the five European leading tech hubs of London, Paris, Berlin, Madrid, Milan and Amsterdam there are around 700,000 software experts – more than in the Silicon Valley region (565,000).

But:

- Only **a fifth of companies** in the EU are highly digitized.
- Only **12% of the resources** allocated to the European Fund for Strategic Investment “Juncker Plan” were devoted to digital transformation projects
- According to the World Economic Forum (The Future of Jobs”), digital transformation could have **a net employment impact of more than 5.1 million jobs lost** to disruptive labor market changes over the period 2015–2020, with a loss of 7.1 million jobs - two thirds of which are concentrated in routine white-collar office functions - and a gain of 2 million jobs, in Computer and Mathematical and Architecture and Engineering related fields.
- Over **80% of job losses** in advanced economies are not due to trade but to increased productivity through technology



Basic Facts and Trends: Italy and Germany in a pan-European perspective

Exploited digitalisation potential



Digital share in gross domestic product



Mobile broadband technologies (accesses per 100 inhabitants)



Basic Facts and Trends - Germany

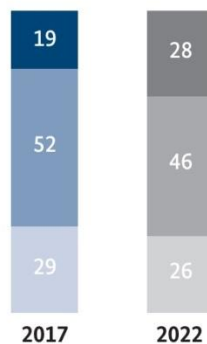
- According to the 2017 **Digital Economy Monitoring Report** from the Federal Ministry for Economic Affairs, the take up of digitalization among large companies and midcaps is growing, even if the overall figure remains stable (54 points in average)
- The digitisation of mid-sized companies grew by two points in 2017, and is expected to reach 54 points in 2022
- 19% of mid-sized companies have a “high” degree of digitalization
- The figure for large companies has improved to **54 points in 2017** and is expected to rise to 56 points in 2022. **17%** of large companies are “highly digital”

Analysis of level of digitalisation by company size 2017 vs. 2022

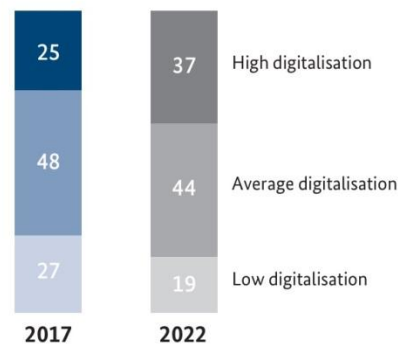
Large (> 250 employees)



Mid-sized (10 - 249 employees)



Small (0 - 9 employees)



Source: Kantar TNS, representative company survey: “Digitalisation of the German economy 2017”, own calculations, n=1,021; rounding differences may occur



Basic Facts and Trends - Germany

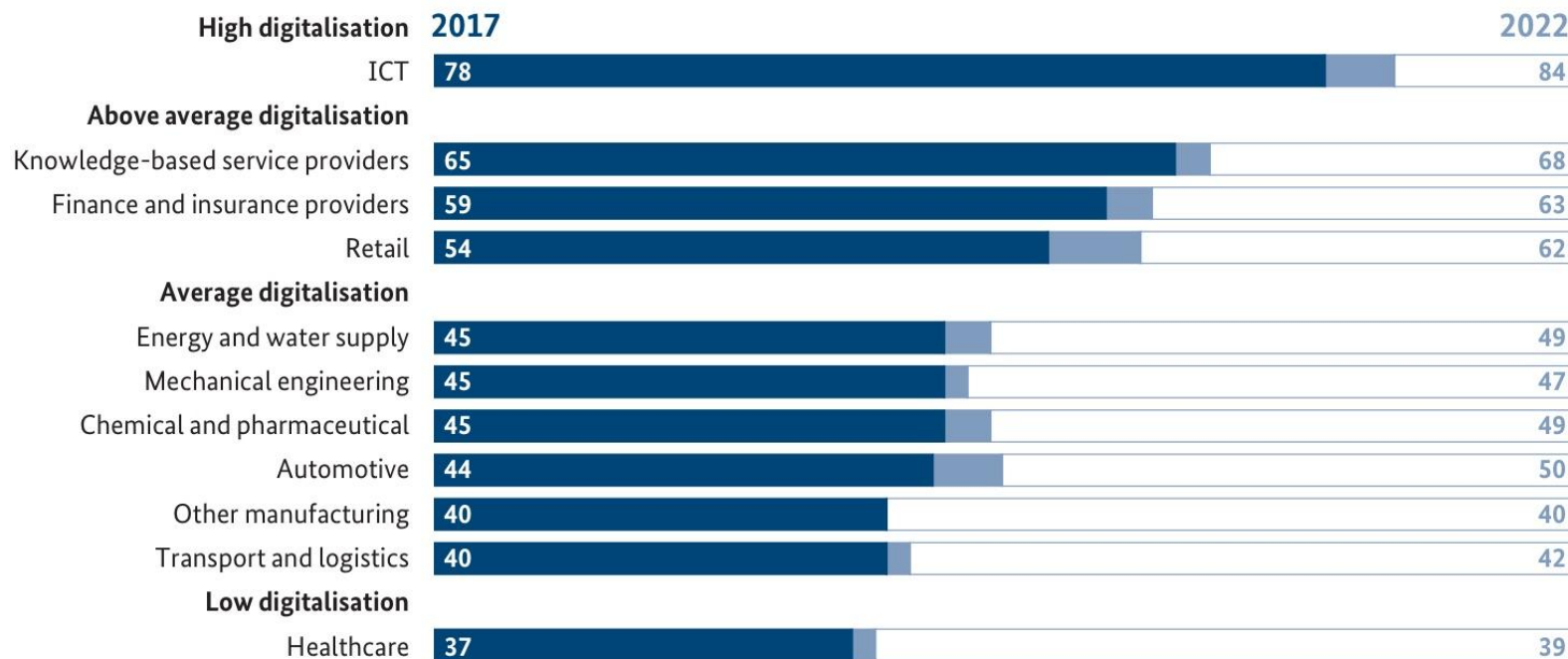
- At **78 index points**, the highly digitised ICT sector continues to lead the field, followed by finance and insurance, energy and water supply, mechanical engineering and the chemical industry.
- The potential of innovative applications is still largely untapped. **Every third company** uses smart services, **every fifth** big data, **every seventh manufacturer** uses Industry 4.0.
- Around **60%** of commercial companies are digitally connected with their business customers
- **86%** of companies want the government to promote the expansion of broadband. This is followed by the creation of a pro-digital legal environment (**81%**), and free access to information about new innovations gained using public funds (**79%**).



Basic Facts and Trends - Germany

DIGITAL Economy Index by Sector in 2017 vs. 2022

Index = max. 100



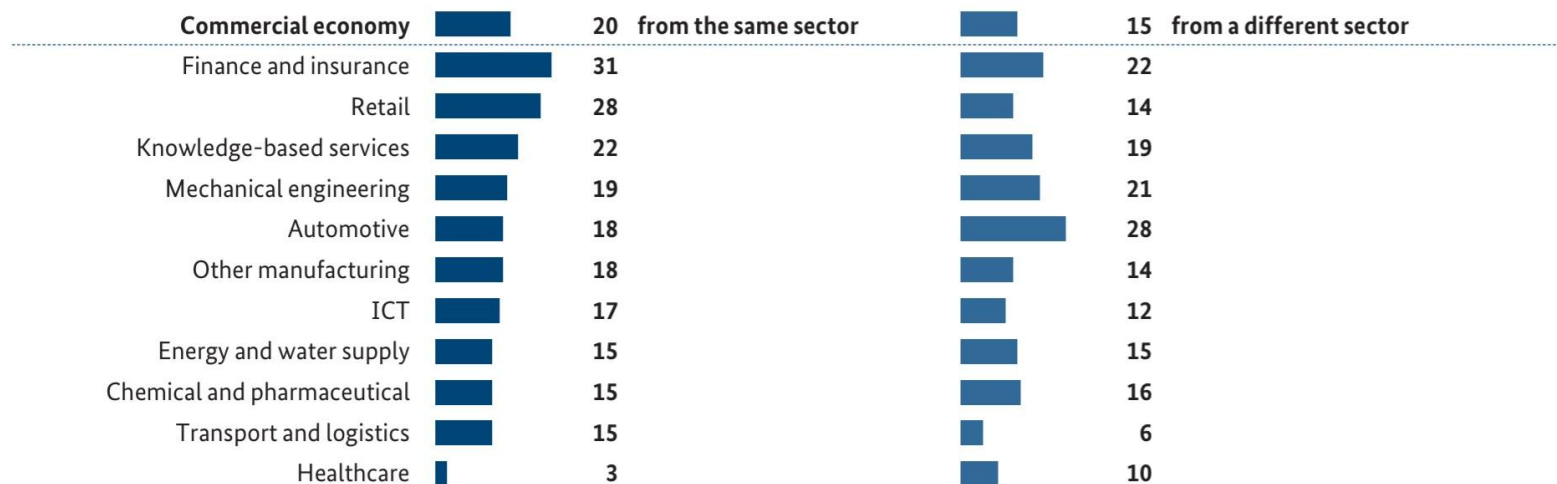
Source: Kantar TNS, representative company survey: "Digitalisation of the German economy 2017", own calculations, n=1,021



The Digital Economy as an Enabler for Open Innovation Ecosystems - Germany

- In Germany, only one fifth of commercial companies cooperate with companies from the same sector to drive forward digitalization. Finance and insurance providers and retail lead the field here. The ICT sector is in the middle of the pack. In last place is healthcare. Only 15 percent of companies cooperate across sectors. However, mechanical engineering and automotive lead the way, as core sectors of Industry 4.0, with 21 and 28 percent respectively.

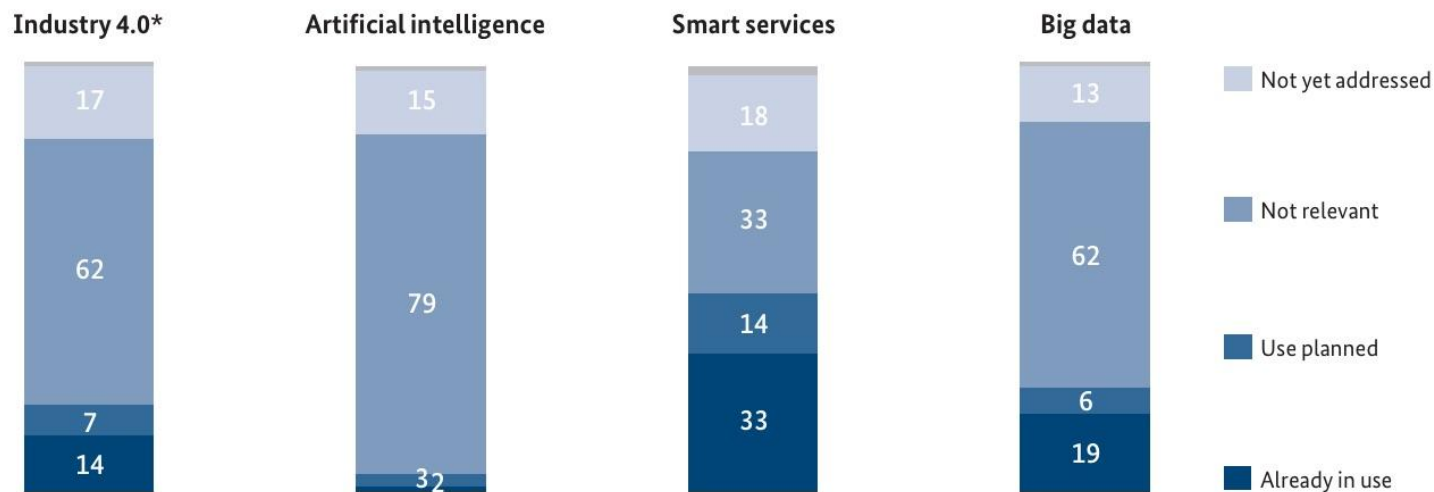
Current and future cooperation by sector



Source: Kantar TNS, representative company survey: "Digitalisation of the German economy 2017", n=1,021; figures in percent in response to the question: "Has your company cooperated with other companies to drive forward digitalisation in the past three years, or does it plan to do so in the next five years?"

Basic Facts and Trends - Germany

Use of innovative applications in the commercial economy



Source: Kantar TNS, representative company survey: "Digitalisation of the German economy 2017", n=1,021, * basis: Manufacturing sector n=392; figures in percent in response to the question: "Is your company active in the following areas of digitalisation?"; no answer (don't know/no answer) shown as difference to 100%; rounding differences may occur

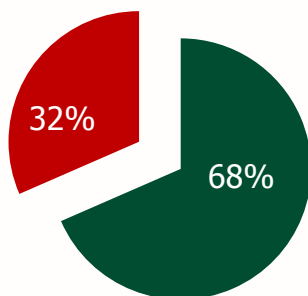


Basic Facts and Trends - Italy

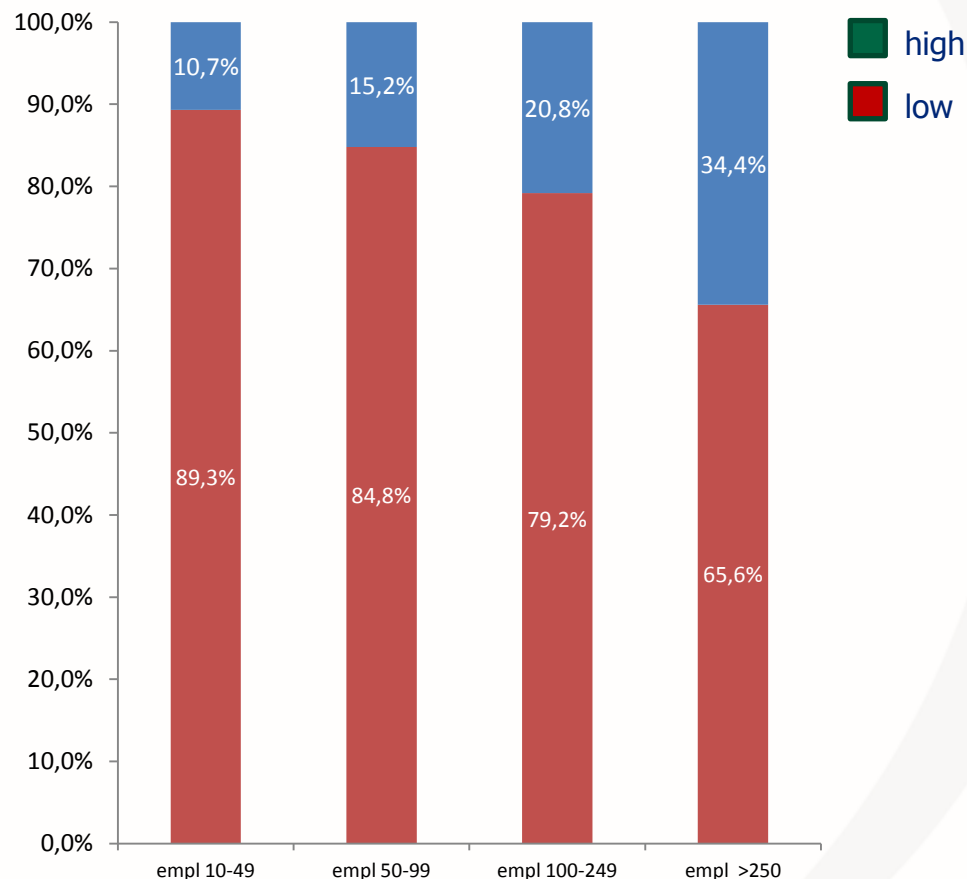
Economic system based on Micro & SMEs

% of value added in the italian economic system

■ SMEs ■ BIG Ent

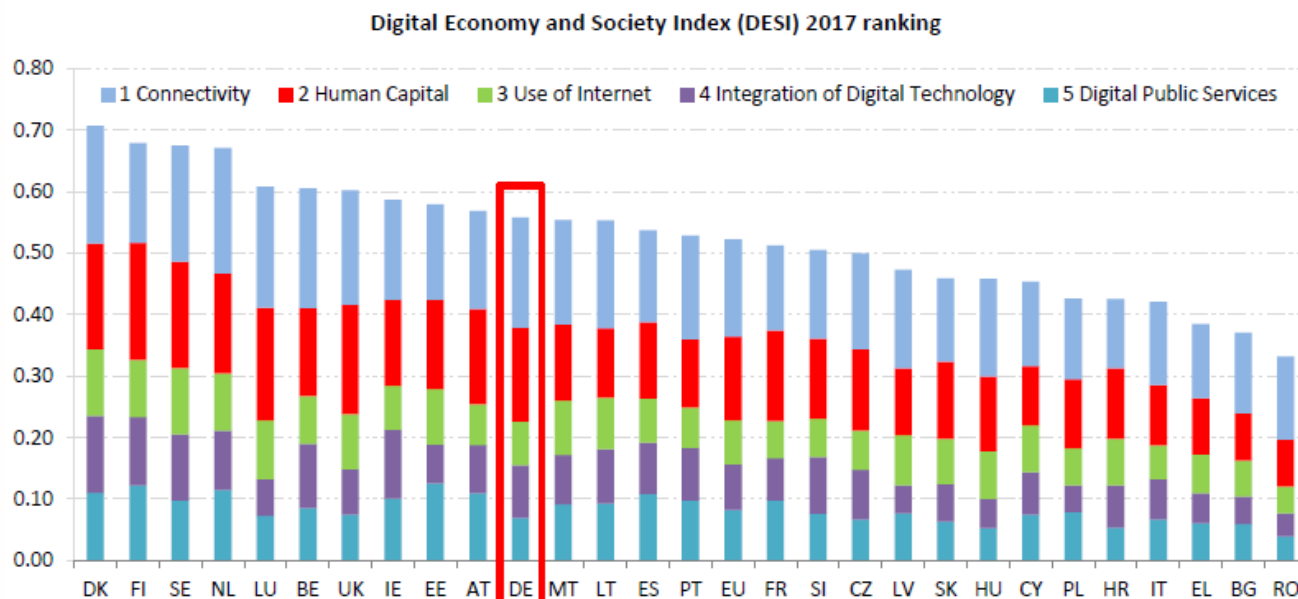


Digital intensity



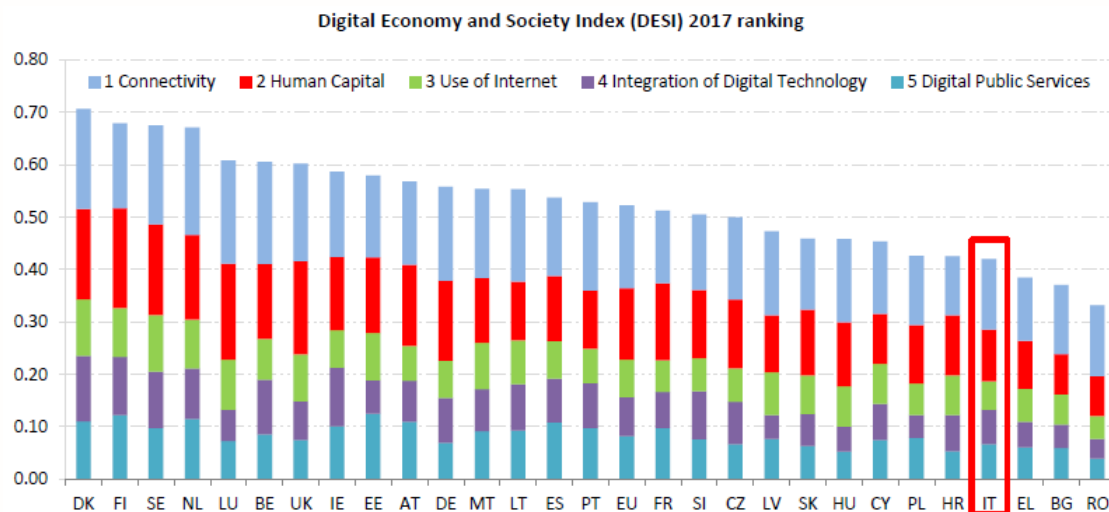
Digital Economy and Society Index 2017 - Germany

- Germany ranks **11th** in DESI 2017.
- Germany is performing well, in particular when it comes to spectrum assignment. However, Germans are taking up mobile broadband and fast fixed broadband subscriptions at a slower rate than other Europeans.
- Germans are above average users of the internet and their digital skills are progressing well.
- German citizens and companies are actively approaching the opportunities of eCommerce.
- Germans are reluctant to subscribe to fast broadband. With only 19% eGovernment users, the greatest challenge is to improve the online interaction between public authorities and citizens.



Digital Economy and Society Index 2017 - Italy

- Italy ranks **25th** in DESI 2017.
- The use of digital technologies by enterprises and the delivery of online public services is close to average.
- Compared to last year, Italy made progress on Connectivity, in particular through improvements in Next-Generation Access.
- However, its low performance in digital skills risks acting as a brake on the further development of its digital economy and society.
- More and more people are online, but skills levels remain low across all indicators.
- Italy is closing the gap with the EU on business digitisation. 30% of enterprises use eInvoicing, well above the EU average of 18%. SMEs, however, rarely use electronic sales channels.



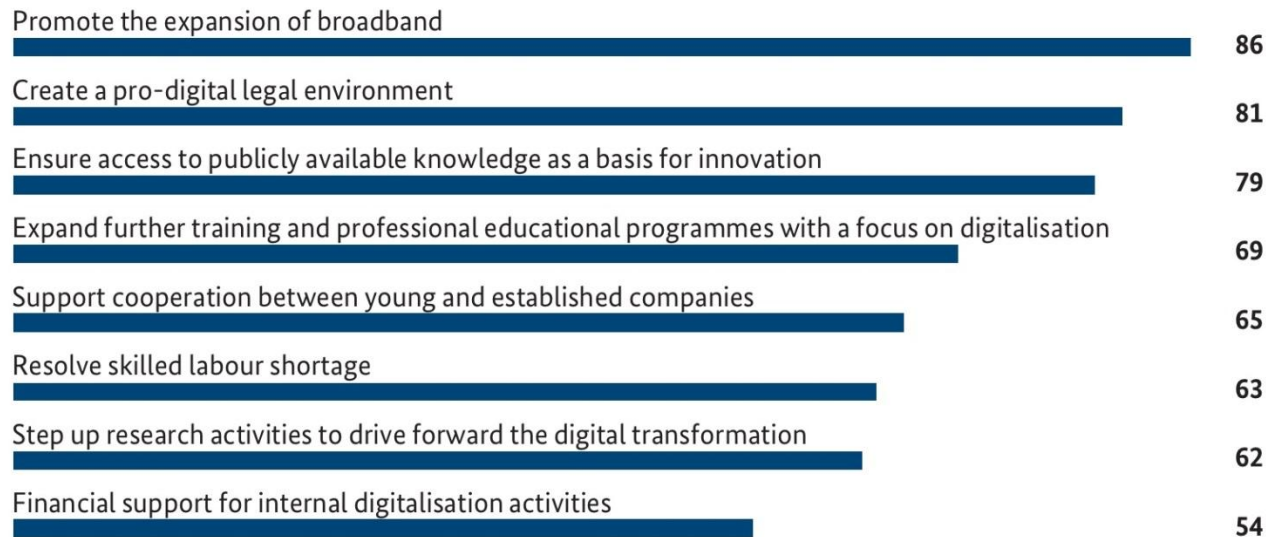
Digital Transformation Policies in Germany



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The German Digital Strategy 2025: main assumptions

Policy Demands

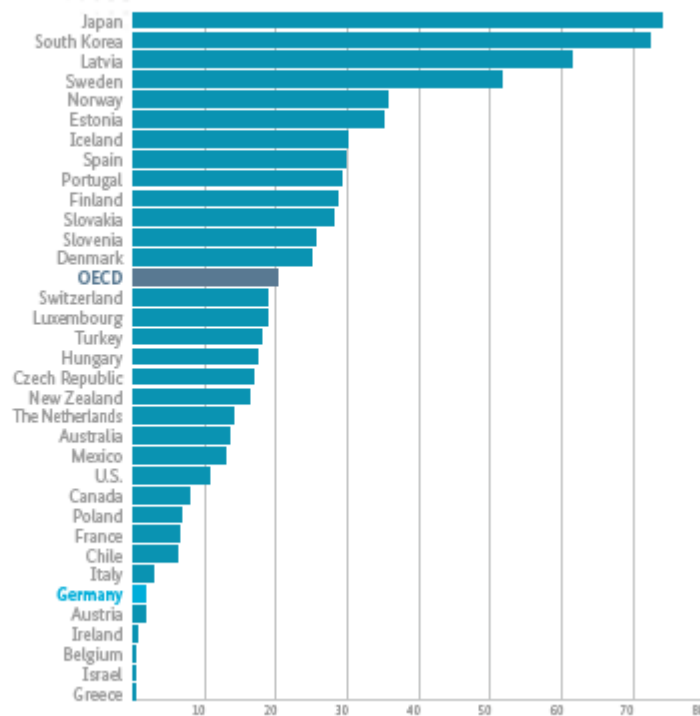


Source: Kantar TNS, representative company survey: "Digitalisation of the German economy 2017", n=1,021; agreement in percent in response to the question: "What are your demands on the government with respect to digitalisation?"

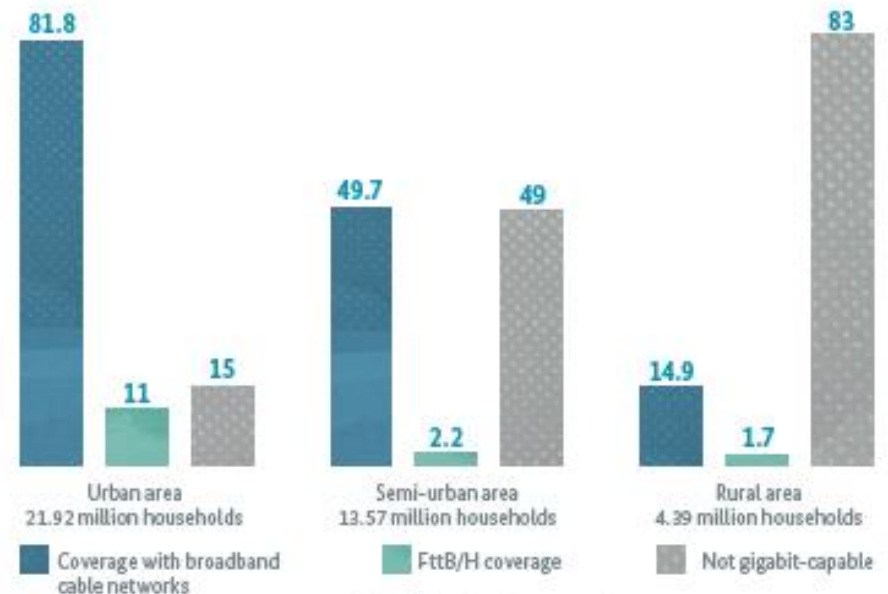


The German Digital Strategy 2025: Broad Band development

Percentage share of fibre connections in total broadband
(June 2016)



Source: OECD Broadband Portal



* Aggregate figure is not 100% since coverage with broadband cable and coverage with FttB/H overlaps; no overlapping in rural area
Source: Final WIK report on the BMWI-funded project "Gigabit Networks for Germany"



The German Digital Strategy 2025: main assumptions

The **German Digital Strategy 2025**, put forward in 2016, focused on four goals:

- **Transformation instead of disruption:** Germany and Europe need a digital transformation process that is backed and moderated by policies. There must not be an uncontrolled development of digitalization.
- **Growth dynamism and participation:** The development of high-speed broadband networks across the country is an important driving force. Up to 100 billion additional investment will be required until 2025.
- **Security and clear rules for democratic discourse:** A secure space must exist away from supply and demand, economic performance and technology-driven business models in which citizens and businesses may act on a basis of trust. So the state must develop authorised and qualified institutions to monitor the digital spaces, register infringements and above all sanction them.
- **European sovereignty:** Germany will profit most if Europe can pull together to use the opportunities presented by digitalisation. The European response to the global digital markets can only be to act as a digital unit.



The German Digital Strategy 2025

The aim of the 10-step plan is to make Germany the world's most modern industrial centre and to build up the digital society of the future.

1. Creating a gigabit network for Germany by 2025
2. Ushering in a new age of entrepreneurship
3. Creating a regulatory framework for more investment and innovation
4. Pushing forward with smart networking in the core areas within our economy
5. Strengthening data security and data protection
6. Enabling new business models for SMEs
7. Utilising Industrie 4.0 to modernise Germany as a manufacturing base
8. Bringing research, development and innovation in digital technology to a competitive level
9. Offering digital training to people at every stage of life
10. Creating a digital agency as the central unit for implementing the Digital Strategy 2025



The White Paper on Digital Platforms

The Action Program outlines 12 points for the digital future:

- 1.Promote digital hubs in Germany
- 2.Accelerate the digitalisation of SMEs
- 3.Expand Gigabit networks
- 4.Facilitate private investment in digital equipment
- 5.Secure value added digital networks
- 6.Mobilise more venture capital
- 7.Promote digital communication and eGovernment, reduce bureaucracy
- 8.Digitalise the energy transition
- 9.Digitalise the healthcare industry
- 10.Strengthen FinTech in Germany
- 11.Promote Digital Mobility
- 12.Make more sharing possible through a social sharing economy

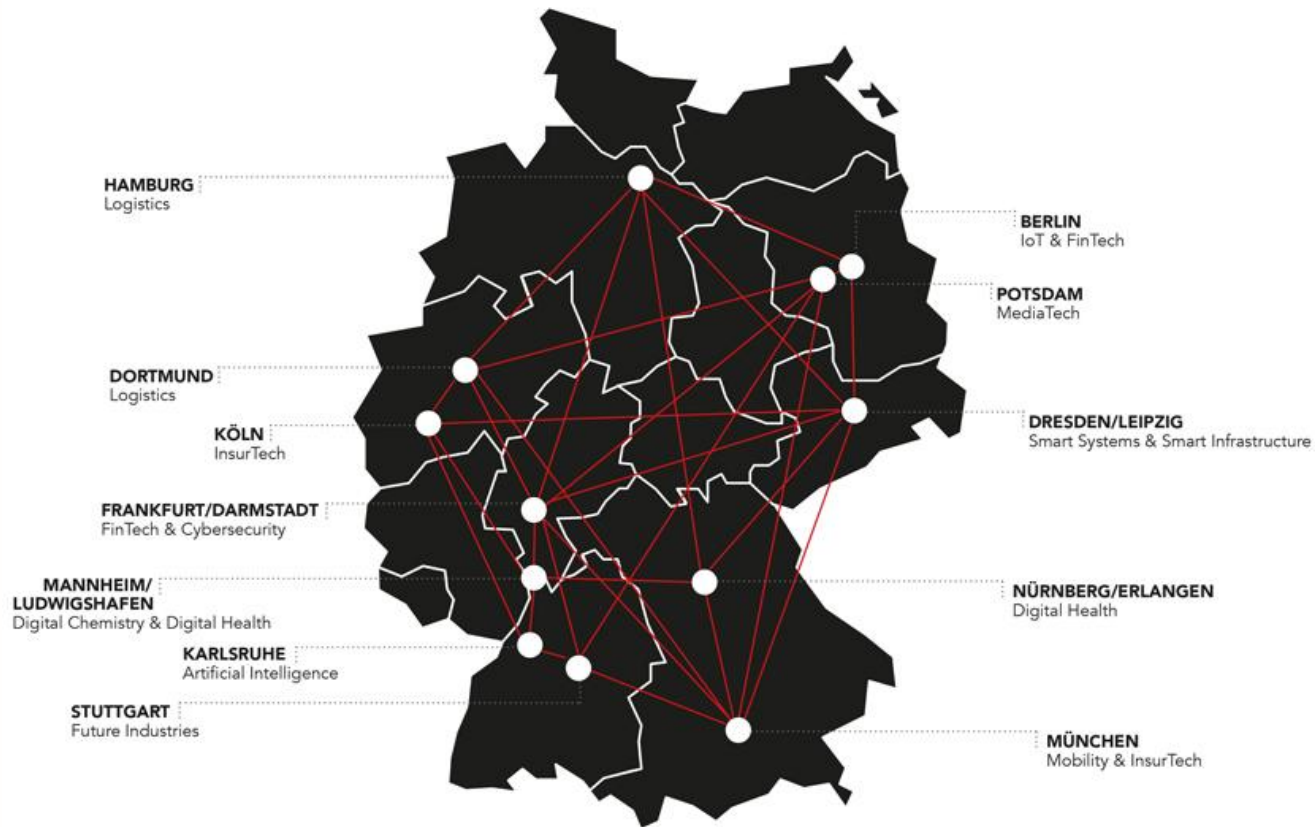


The German Digital Hub Initiative

- The Digital Hub Initiative, launched by the Federal Ministry for Economic Affairs, seeks to support the establishment of digital hubs in Germany.
- The underlying idea is that cooperation between companies and start-ups within a small area (like in Silicon Valley) will boost innovation, not least in the digital age.
- In order for this to happen, Germany has supported 12 hubs with an international reputation where German and international start-ups, scientists, investors and established companies work together and benefit from each other's expertise.
- In order to make it easier for the hubs to connect with one another and exchange knowledge, a joint brand (de:hub) and a joint Hub Agency have been created.
- Hamburg, Munich, Cologne, Frankfurt, Berlin, Dortmund, Dresden/Leipzig, Karlsruhe, Stuttgart, Mannheim, Potsdam and Nuremberg are part of the Digital Hub Initiative.
- Although each city focuses on a particular industry, the idea is that clusters will emerge where other industries can bring in their expertise as well.



The German Digital Hub Initiative



Digital Transformation Policies in Italy



Italian Embassy to Germany

Industry 4.0: growth issues at stake in Italy



Investments

Decreasing quantity of fixed industrial investments in the last 15 years: increasing obsolescence in installed equipment



Capital allocation

Low quality of investment allocation: resources going to low-performing firms, misallocation within, rent seeking, and poor bank creditors' discipline, credit mispricing



Stronger skills

Poor skills in STEM subjects: only 14 out 1,000 graduated in STEM **and low appeal of vocational education:** >200,000 students do not go to university nor to tertiary professional education, poor re-placement services



Connectivity

70% of companies do not have adequate connectivity (>30 Mbps) and are located in grey/white areas (where providers experience some degree of market failure)



Digital Competitiveness

Italy ranks 25th out of 28 EU member States in the Digital Economy and Society Scoreboard: only 6.5% of SMEs are selling online.



«Industria 4.0»: policy approach

Italian industrial sector features

-  Few large industrial and ICT private players able to lead the Italian manufacturing transformation
-  Limited number of industry champions able to coordinate the evolution/integration of value chains
-  Industrial sector largely based on SMEs where productivity gains are more needed
-  High quality of research but fragmented network of research/tech-transfer centers
-  Strong manufacturing know-how and Made in Italy quality



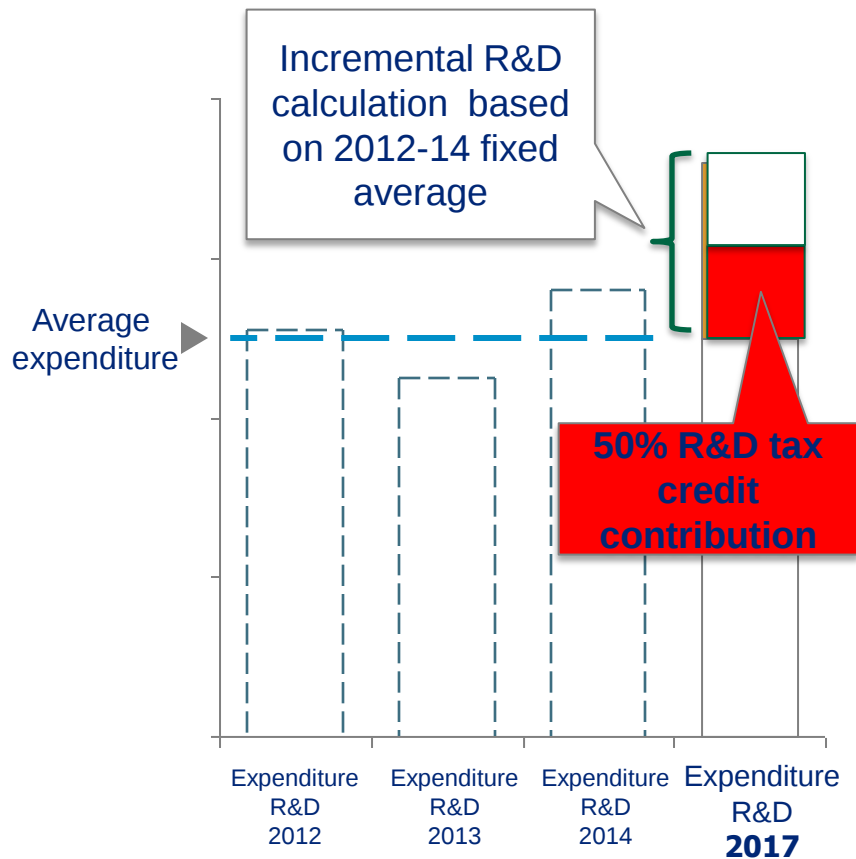
Government guidelines

- Operate in a technological and sectoral neutral logic
- Avoid “call for tender”; implement fiscal measures and horizontal actions
- Operate on enabling factors: investments, skills, finance, infrastructures
- Leverage on tech suppliers – firms established relations
- Steer existing instruments to promote technological leap and productivity
- Coordinate key stakeholders

Key measures



Tax credit on incremental R&D expenditure



Super & Hyper depreciation schemes

Super and Hyper-Depreciation

- Increase on amortization cost to lower taxation on investments

Super

Hyper

Machinery&equipment + Industry 4.0 technologies

- Hyper applied to high tech Industry 4.0 oriented investments
- Super applied to standard equipment and machinery renewal
- Super extended also to immaterial assets like software, IT systems, digital platforms

Other key measures



- **“Patent box” optional tax regime:** a deduction by 50% of corporate income deriving from direct or indirect use (as licensee) of IP assets, such as: industrial models, patents, formulas, software protected by copyright, know-how
- **Digital vouchers to SMEs:** 10k euros voucher to buy hardware and software, to support e-commerce, high speed connectivity, training on ICT
- **Soft loans to SMEs:** interest rate contribution (+ public guarantee fund) on SMEs loans to finance investments and industry 4.0 technologies acquisition.
- **Innovative startups:** 30% tax deduction to equity investments up to 1 mln in startups; new tax regulation on “carried interest” to support PE and VC
- **Digital Innovation Hubs** and **Competence Centers** to support tech transfer and adoption

Italy : the 2nd most attractive country for digital investment (Digital Tax Index 2017)



Country (Region)	Effective tax rate 2017	Ranking
Ireland	-10.32%	1
Italy	-8.84%	2
Hungary	-6.85%	3
...	...	...
Switzerland (Zurich)	8.39%	11
United Kingdom	11.11%	16
France	12.39%	18
Spain	12.85%	20
Netherlands	13.61%	22
Germany	22.81%	31
USA (California)	22.82%	32



Trilateral cooperation with France and Germany



- Agreement signed June 2017 in Torino
- Ambition to strongly contribute to EU “Digitising European Industry” actions
- Three cooperation areas:

1. Standardization and reference architectures:

Lead: Germany, Plattform Industrie 4.0

- Two documents in elaboration: a technical one for technology producers and system integrators; a simplified, business-oriented one.
- Italy to take particular care of representing the interests of technology users (SMEs) and integrators, in favor of open systems

Trilateral cooperation with France and Germany/2



2. Engagement of SMEs and testbeds:

Lead: Italy, Piano Industria 4.0

- Site visit of respective competence centers and digital innovation hubs (DIH)
- “Coach the coaches” network
- Joint digital readiness (evaluation) tool for SME
- Foster participation in EU funded projects, at level of platforms DIHs and companies

3. Policy supporting group (to start soon):

Lead: France, Alliance Industrie du futur

Exchange of best practices, interaction with other parts of digital agendas, e.g. free flow of data



Measures introduced by the budget law

Hyper- and Super-Depreciation	Renewal at unchanged conditions for Hyper (HW and SW). Renewal with phase out for Super (no more than 30% increase in amortisation costs, excluding vehicles)
New Sabatini Law	Refinancing (€ 330 million in the 2018-2023 period) of interest rate contribution mechanism on loans to SMEs investing in machinery/equipment and Industry 4.0 technologies
Tax credit Education 4.0	Introduction of a tax credit of 40% of the expenses relating to the employees business costs for the period in which they are employed in training activities 4.0. Max benefit per enterprise € 300K
Non-university tertiary education	A € 50 million refinancing of Istituti Tecnici Superiori (ITS) to guarantee a significant increase in the number of students in professional tertiary education
National Innovation Fund on Industry 4.0	A € 250 million annual funding for a new fund to support innovation and industrial research on Industry 4.0

Digital Innovation Hubs and I4.0 Competence Centers



Digital Innovation Hubs

Features:

- Point of contact and information for companies on I4.0
- Selected DIH located at *Confindustria's* and *R.E.TE. Imprese Italia's* branches

Mission:

- Awareness creation on I4.0 opportunities
- Digital maturity assesment
- Support in innovative investment planning
- Orientation to Competence Centers and I4.0 network
- Support in accessing public and private financing solutions/investors
- Mentoring services

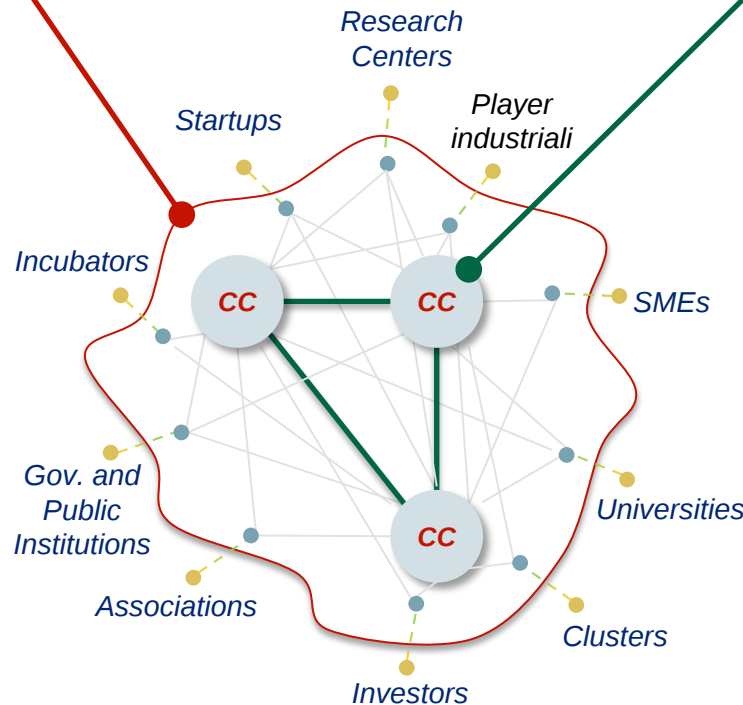
I4.0 Competence Center

Features:

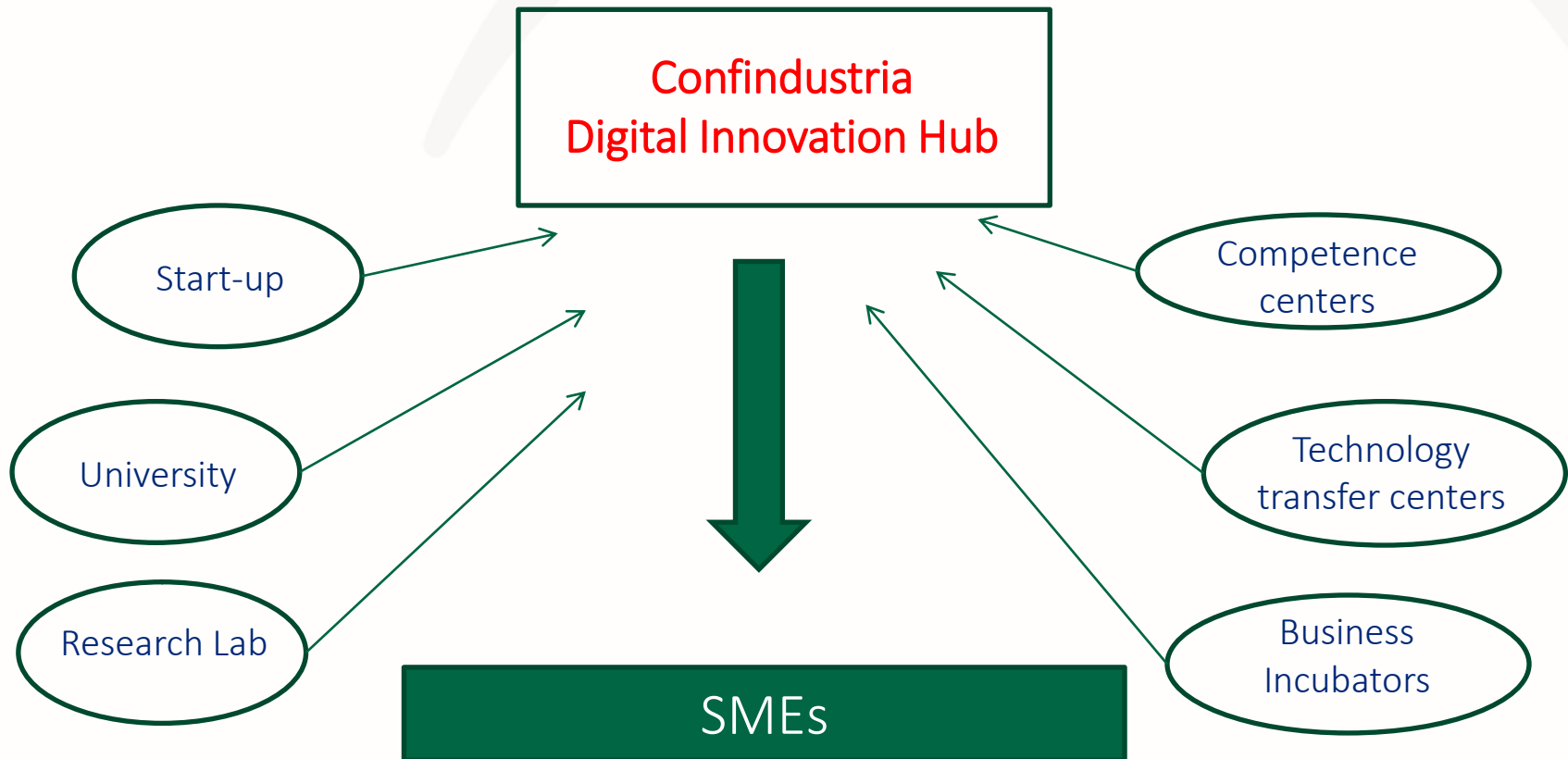
- Few and selected national Competence Centers, putting together the best practices
- Strong involvement of leading Italian universities and private players (PPPs)
- Ad hoc governance and adequate managerial skills

Mission:

- Live demos on new technologies and access to I4.0 best practices
- Technical advisory on I4.0 for SMEs
- Launch and acceleration of technological development and innovative projects with high TRL
- Trial support and "on-site" development of new I4.0 technologies
- On-site I4.0 advanced training
- Coordination with European CCs



The Italian Digital Hub Initiative



The Italian Digital Hub Initiative

- Operational
- Next opening



DIH
Digital Innovation Hub

Policy challenges to govern the Next Production Revolution



Including SMEs
for higher
productivity

We may see more and more robots but no productivity gains: diffusion and adoption of new technologies among SMEs is the **big conundrum**. How to digitally transform firms which were not born digital? Tech-transfer issues and infrastructures

Skills empowerment
and vocational
training

Will automation and labour-saving innovations destroy jobs? Adjustment process is critical: job demand and supply may mismatch. **Skills empowerment and retraining are key**: STEM competencies, vocational education, on-the-job training and LLL: **workplaces as evolving learning places**

Intangible assets
and Data

Data-driven innovation and know-how are the real drivers: while production factors dematerialise, it is necessary to codify know-how to manage the generational transition. Challenge: taxation and regulation remain pre-digital

Data ownership &
security.
Standards &
interoperability.
Competition issues

A certain regulatory framework on data ownership and open standards, to ensure a seamless integration and secure interoperability: new barriers to trade/entry and data related competition issues when data control rather than size matters, zero marginal costs economics push for winner takes all market equilibrium

Thanks for your attention

