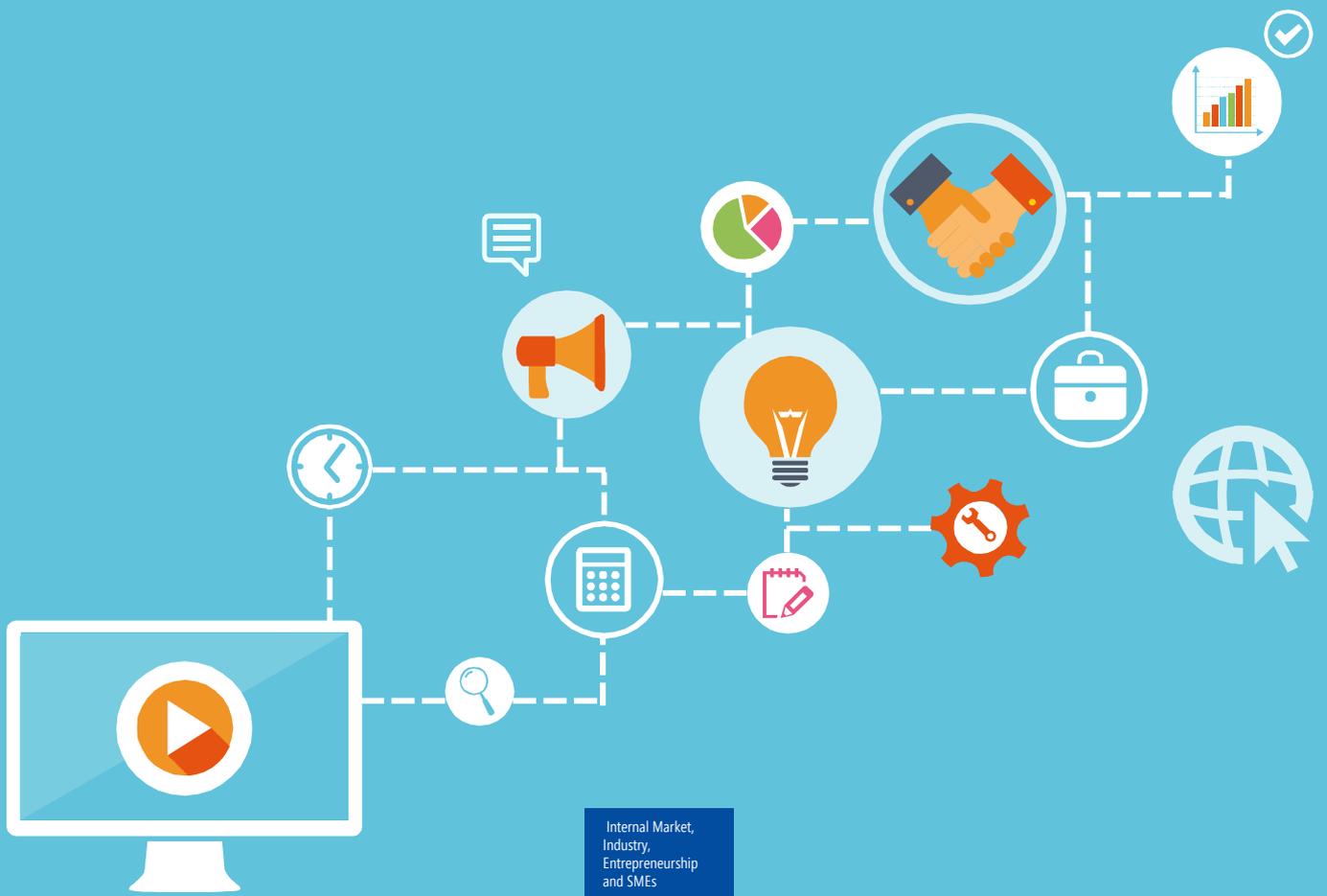




Digital Transformation Monitor

Italy: "Industria 4.0"

August 2017





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Fact box for Italy’s Industria 4.0 policy initiative

 Policy Lever(s)	Top-down approach, orientation towards technology as well as skills, public financing.
 Funding Model	Funding model based on public funds earmarked for implementation of specific measures in order to create favourable conditions boosting private investment in technology, innovation, R&D.
 Target audience(s)	Companies and entrepreneurs, regardless of the size, sector or location.
 Concepts & Focus Areas	Take full advantage of opportunities related to the fourth industrial revolution, promoting investments in innovation, intangible assets and R&D, spreading the culture related to “Industria 4.0” and developing skills.
 Key drivers	Active involvement of the policy makers and key stakeholders, variety of easily accessible fiscal instruments, a strong network of highly specialised competence centers offering tech transfer services to SMEs.
 Key barriers	So far, the implementation process is smooth, without any barriers and complications.
 Implementation strategy	Automatically activated fiscal measures (tax incentives) on investments, R&D expenditures and IP assets, and support to the creation of network of Digital Innovation Hubs (DIH) and Competence Centers.
 Results expected	> €10 bn. private investment increase in 2017/2018, +11 bn. R&D&I private expenditure in 2017-20, 200.000 academic students and 3.000 managers qualified in I4.0, doubling the students in vocational schools on I4.0 topics
 Budget	More than €18 billion for the period 2017-2020.
 Uniqueness factor	Parallel focus on technology and development of skills necessary for the successful digital and technological transformation. A wide variety of fiscal incentives available for companies of any size, sector and location.
 Value-added for policy-makers	Active cooperation with stakeholders; international cooperation with France and Germany on I4.0 topics.
 Expected Impact	New development of I4.0 skills, uptake and diffusion of new technologies, expansion of R&D activities; increasing the competitiveness of Italian companies and industry.

Source: Digital Transformation Monitor

Industria 4.0 National Plan

The fourth industrial revolution is transforming the world, bringing great opportunities but at the same time critical challenges. The Italian Ministry of Economic Development has launched the Industria 4.0 National Plan (I4.0), a strategy aiming at supporting industrial change through a series of conjunctural measures. The measures seek to promote investments in innovation, technology and skills development while taking into consideration principles set by the fourth industrial revolution. The Government intends to design a framework for effective and suitable operation. The top-down approach is, however, dependant on the extend to which the entrepreneurs will uptake and take advantage of proposed measures.

The Plan provides a wide array of measures in the short and medium term for the period 2017-2020, as well as long term, collectively ensuring the foundation of an efficient framework. The strategic measures focus on innovation, competitiveness and the development of skills. Moreover, complementary measures are put in place supporting efforts of Industria 4.0 in different areas. Altogether, the Government has earmarked €18 billion of financial funds for the purposes of the initiative.

The target audience are SMEs, micro enterprises and large companies

without any dimensional, sectoral or territorial constraints. The key stakeholders involve Ministries, regional governments, academia, research centres, trade unions and business associations which are all represented on the national Steering Committee.

A strong support of Government

The Industria 4.0 National plan was first presented in late September 2016 in Milan in the presence of the former prime minister Matteo Renzi and the Minister of Economic Development Carlo Calenda. The significant importance of the new industrial policy was also underlined by the 2017 Budget Act, which brought it back to the heart of the political agenda. The Plan was launched in February 2017 putting in place horizontal measures accessible for all enterprises with an objective to boost the investment in new technologies, research and development, and revitalise the competitiveness of Italian companies.

Simultaneously, several complementary measures were introduced in order to strengthen I4.0. Among these are the Ultra Broadband Plan (to ensure adequate network infrastructure), collaboration for the definition of IoT standard communication protocols and measures to trigger private investments to support I4.0, especially venture capital and private equity.

I4.0 was inspired by similar national strategies in Germany (Platform Industrie 4.0), France (Alliance Industrie du Future) and the Netherlands (Smart Industry), taking into consideration the international and national economic environment, up-to-date series of macroeconomic data and industrial sector dynamics.

Objectives of the policy

The main objective is to support innovative investment and empowerment of skills related to the fourth industrial revolution by setting the framework for attracting private investment in technologies, support to research, development, and innovation and the promotion of investment in venture capital and start-ups. On the other hand, the initiative seeks to contribute to the empowerment of skills by promoting I4.0 education programmes, strengthening vocation training, skills development, Competence Centres, Digital Innovation Hubs and the financing of I4.0 Technology Clusters and Industrial PhDs.

Overall, implemented measures will contribute to higher flexibility of production, higher quality of products, increased productivity, faster processes from prototyping to the position and higher competitiveness of the products, as well as the Italian companies.

Policy levers for Italy's Industria 4.0



Source: Digital Transformation Monitor

Top-down approach focus on skills & technology

The I4.0 National Plan was initiated by the Italian government in a top-down implementation approach. However, the key stakeholders (academia, R&D associations, business associations, trade unions, local and regional policy makers) are actively involved in the Steering Committee.

Even though a top-down approach was applied in regards to financing, I4.0 is strongly dependant on generating private funds. The funding model is based on turning public investment into fiscal conditions, which will encourage private investment in new technologies and innovative processes.

The initiative concentrates on two main focus areas: it seeks to support the uptake of innovative technologies, helping companies to adapt and digitally transform, grow and increase their competitiveness. Secondly, it focuses on the development of skills through the Digital Innovation Hubs, I4.0 Competence Centres, supporting education programmes, vocational training, Industrial PhDs related to I4.0.

Public funds activating private investment

The Italian government earmarked approximately €18 billion for the purpose of the Industria 4.0 National Plan for the period of 2017-2020. The initiative is based on automatic tax incentives, which exclude political intermediation rewarding those who invest regardless of the sector involved or the technology applied¹.

Furthermore, allocated public funds are expected to create the conditions to generate the private investment.

However, the top-down approach is in reality highly dependent on bottom-up investment decisions of private actors.

Furthermore, a number of implemented measures have proven effective in the past, whereas others are a conceptual novelty.

There are a number of easily accessible fiscal measures which are encouraging private investment in the short to medium term (2017-2020/2022). On the other hand, structural measures are creating the effective and fiscal framework which will enable continued growth in the long term.

The Italian Industry 4.0 package

The core activities comprise innovative investment, stimulating private investment in the uptake of I4.0 technology, expenditures in R&D, and development of skills.

The first group of measures is based on tax incentives. 'Hyper and super depreciations' schemes support companies in their tangible investments in their technological and digital transformation processes. For hyper-depreciation, the investment costs are increased (for fiscal reduction purposes) by 150% of their value, while for super-depreciation by 40%. It is automatically accessible when preparing the financial statements through self-certifications. 'Patent box' stimulates the use of intellectual property and intangible assets by applying a special tax rate (reducing corporate income tax and regional production tax up to 50%) for incomes deriving from the (direct or indirect) use of IPR. Furthermore, the corporate income tax (IRES) has been reduced to 24% in 2017.

Meanwhile, 'Innovative Start-ups and SMEs' can benefit from tax breaks for equity investment in startups (up to 30%). 'Productivity Wages' provide a special tax rate for salary bonuses of 10% for companies achieving an increase in productivity, profitability, efficiency, quality and innovation. Finally, tax credits encourage an increase in R&D activities by

implementing the tax credits at 50% of costs up to the annual ceiling of € 20 million per year.

The second group of measures ensures easy access to finance. 'Nuova Sabatini' provides a contribution for payment of interest from 2.75-3.57% when requesting a bank loan (€ 20,000 - € 2 million) to invest in machinery, equipment and capital goods to be used in production and digital technologies. 'The Guarantee Fund for SMEs' provides publically guaranteed loans up to 80% for those who have difficulties to access bank loans.

The third group puts an emphasis on the development of skills related to new technologies and innovative processes stemming from the fourth industrial revolution. I4.0 launched the 'Digital Innovation Hubs', which serve as a contact point between companies, investors and research institutions, supporting and facilitating innovative investment plans, and the 'I4.0 Competence Centres', which provide training, live demos, presentation of best practices, technical advisory services for SMEs, launching and accelerating innovative projects and technological development². Furthermore, the Plan foresees several measures focusing on empowerment of skills through educational programmes such as 'Scuola Digitale' (a national programme modernising and restructuring the school system), 'Alternanza Scuola Lavoro' (an innovative learning experience), vocational training support through the 'Istituti Tecnici Superiori' and the financing of I4.0 Technological Clusters and Industrial PhDs.

SMEs in the spotlight

The measures are designed to be automatically put in place by the companies, implying no restrictions regarding the size, sector or location of businesses. By means of an easy implementation process, the government intends to avoid any complex evaluation procedures. Since SMEs are a cornerstone of the country's economy, the target audience are primarily SMEs, but also entrepreneurs in general, including micro enterprises and large companies.

"The success of the 'Industria 4.0' National Plan depends on the extent to which entrepreneurs take advantage of the measures that have been put in place."

Carlo Calenda, Italian Minister of Economic Development.

A number of key stakeholders play a crucial role in Industria 4.0 serving as members on the Steering Committee. The multi-stakeholder national steering committee brings together different Ministries, representatives of Regional Governments, leading Italian universities and CRUI³, research centres, associations of manufacturing and service companies, National Promotion Bank and trade unions.

Innovation and Skills hand in hand

A central theme of the initiative is to boost the competitiveness of Italian companies to take full advantage of the opportunities provided by Industry 4.0. Through a number of tools, the initiative establishes a solid foundation for the financial and regulatory framework. This way favourable conditions for Italian businesses are created providing support in investment and innovation programmes.

I4.0 was designed as a common and strategic vision for the future of Italian industry, building on two conceptual pillars: innovative investment and skills. A number of financial tools, easily applicable without excessive administrative burden, are set to trigger private funds in innovation, new technologies and digitalisation. Simultaneously, several measures orientated on skills development are put in place. Through this approach, innovation and skills are treated to go hand in hand, to ensure a smooth transformation, and ultimately, to increase competitiveness, productivity and to deliver economic growth.

Italian way - concept

I4.0 is designed on a top-down approach, addressing existing and emerging needs related to the fourth industrial revolution.

The national plan offers concrete measures based on these main principles:

- i. Operate in a technological neutrality logic;
- ii. Implement horizontal actions rather than vertical or sectoral ones;
- iii. Operate on enabling factors (investments in innovation, broadband infrastructure, skills);
- iv. Steer existing instruments to promote technological leap and productivity;
- v. Coordinate key stakeholders without acting as a controller or intervene into the decision making.

The initiative is based on automatic tax incentives, which are relying and rewarding those who invest in innovations and technologies. The aim is to act as an enabler.

I4.0 strengthened by awareness raising activities

Even though the Italian initiative found an inspiration in the other key initiatives responding to fourth industrial revolution, it was built upon the specific features of the Italian industrial sector. Proposed measures are complementing each other not only in relation to their technology/skills orientation but also in terms of their time frame.

The implementation is supported by a national communication plan and awareness raising activities generating interest in I4.0 opportunities. What is more, communication will be enforced via the press, internet and social media. On a local/regional level, the Roadshow I4.0 will provide training seminars (presentations, video etc.) in order to attract SMEs. In addition, competence centres and digital Innovation Hubs (DIHs) will provide information and tech transfer services on the latest digital and manufacturing technologies.

Network 4.0 facilitating the implementation process

One of the key enablers in the implementation of the initiative is the National Network Industria 4.0. Founded in May 2017, the network was designed to accompany and support businesses in digital transformation through the following activities:

- i. Dissemination of knowledge related to the benefits emerging from I4.0 investments;
- ii. Assisting with the self-assessment of companies and identifying technology needs and challenges;
- iii. Strengthening and dissemination

SWOT Matrix for Industria 4.0	
<p>Strength</p> <ul style="list-style-type: none"> • Strong focus on SMEs regardless size, sector and location. • State as driving force giving significant financial backing. • Boosting private investment. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Hand in hand approach, however, measures focusing on skills do not bring the results as fast as innovation investment tools
<p>Opportunities</p> <ul style="list-style-type: none"> • Create a sustainable effective financial and regulatory framework • Transferability and scalability not only at national but also at European level 	<p>Threats</p> <ul style="list-style-type: none"> • Insufficient reach of microenterprises and small companies. • Low interest of SMEs to invest in and benefit from proposed measures.

Source: Digital Transformation Monitor

- of technology expertise in I4.0;
- iv. Business orientation towards Digital Transformation Support Facilities and Technology transfer Centres;
- v. Stimulating the businesses and providing assistance in the realisation of the industrial research projects and experimental development.

Based on the synergic, complementary approach, the network consists of a number of points deployed across the country. It is divided into three types of structures:

- *77 Digital Business Points* at Chambers of Commerce dissemination of the industry-specific knowledge related to I4.0;
- *100 Innovation Hubs (DIHs)* offer training related to new technologies, specific solutions in various areas of expertise and coordination of digital transformation facilities and technology transfer centres;
- *Competence Centres*, highly specialised tech transfer service providers launched in a form of PPP between key universities and companies (funded by the Ministry of Economic Development), are in charge of calls of proposals and projects evaluations.

Smooth implementation

So far, the implementation process has been smooth, without experiencing any significant problems and barriers. After the presentation of the national plan explaining the strategy and measures designed for an effective implementation, the approved 2017 Budget Law supported and placed I4.0 and its ambitious goals in the spotlight of the political agenda. The involvement of the key stakeholders in

the Steering Committee ensures continuous feedback, evaluation and consultation on next steps and future development.

Work in progress or what to expect

Since the implementation of I4.0 is in an early stage, there are very limited data on the results achieved. However, the first effect was demonstrated in the manufacturing industry by an increasing trend of domestic orders. More specifically, UCIMA has collected data showing an increase of 22.2% (orders collected by Italian manufacturers) in the first quarter of 2017, followed by an increase of 28.5% in the second quarter, confirming the tendency to acquire new machinery and new technologies as a result of implemented financial tools⁴.

As for expected results, I4.0 set ambitious goals. The table below presents specific short-term targets for the period 2017 – 2020 in terms of innovative investment and skills.

Additionally, the Ultra Broadband Plan is expected to enable access to 30Mbps broadband connection to all Italian companies by 2020, while at least 50% should have access to a 100 Mbps connection. In terms of stimulating private investment, additional measures set the targets to increase by € 1 billion on large scale investments focused on I4.0. The additional reform and refinancing of the Public Guarantee Fund for 2017 should generate an additional €1 billion. Furthermore, significant investments on digital chains (Made in Italy plan) are expected to rise by € 0.1 billion⁵.

In the long term, new technologies and innovative processes are expected to contribute to a higher flexibility in production, faster development from the stage of prototyping to production, increased productivity as a result of lower set-up time and reduced downtimes. Thanks to the real time production monitoring through advanced sensor and higher competitiveness of the products, improved quality and additional functionalities enabled by IoT.

Expected results (2017-2020) for Industria 4.0	
Innovative investment	<ul style="list-style-type: none"> • > 10 billions € private investment increase 2017/2018 • +2.6 billion € mobilised early stage investment 2017-2020
R&D	<ul style="list-style-type: none"> • + 11 billion € research, development and innovation private expenditure (exceeding 2% of GDP) over the period 2017- 2020
Skills	<ul style="list-style-type: none"> • 200.000 academic students and 3.000 managers qualified on I4.0 topics • +100% students attending vocational schools on I4.0 topics • ~1.400 industrial PhDs focused on I4.0 topics (out of ~ 5.000 included in the National Research Plan)

Source: Digital Transformation Monitor

Trilateral international cooperation

The Italian Industria 4.0 National Plan has recently joined forces with other key initiatives, such as the French Alliance Industrie du Futur and the German Platform Industrie 4.0 in an international trilateral cooperation to support and strengthen the digitisation processes of their manufacturing sectors.

Since the talks started (March 2017) the action plan was developed and adopted in June 2017 by the steering committee of the cooperation bringing together industry, scientists and political experts from the three countries working on three core themes, which are standardisation, engagement of SMEs and testbeds. Furthermore, the policy support and promotion of digitising manufacturing at the European level are also foreseen to be part of the joint initiative⁶.

The first results are expected to be presented in the first half of 2018.

Lessons learned

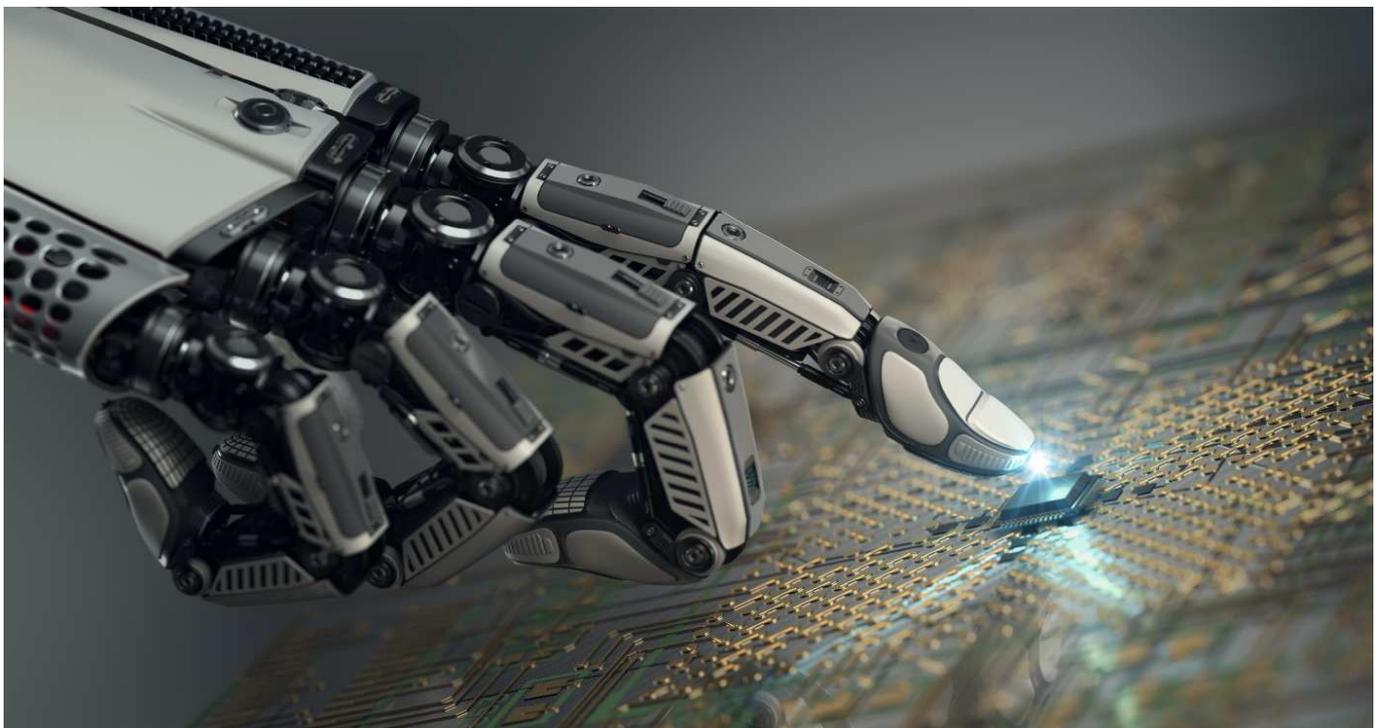
The key is to avoid too much interfering with the selection process and let the businesses make their own choices and decisions. After all, the idea is to build a stable fiscal framework providing the favourable conditions to invest and grow.

Furthermore, the parallel focus on technology and skills is one of the main features, however, the measures boosting the investment in technology and innovative processes shows results in the short run, while measures focusing on skills development need more time to be implemented and deliver first results.

So far, there is a higher interest of medium and large companies, whereas, it is more difficult to reach out to micro enterprises and small businesses. The initiative is designed to provide an opportunity to all companies regardless of size, sector or location. It is necessary to ensure a higher involvement of small and micro enterprises to avoid new possible divergences arising from technological and digital uptake.

References

- ¹ The weekly Timpri interviews with Minister Carlo Calenda, Ministry of Economic Development, July 2017. <http://www.sviluppoeconomico.gov.it/index.php/it/198-notizie-stampa/2036892-il-settimanale-tempri-intervista-il-ministro-carlo-calenda>
- ² "Industria 4.0 " Italy's National Plan for Industry, Ministry of Economic Development, 2017. http://www.sviluppoeconomico.gov.it/images/stories/documenti/BOOKLET_EN-red.pdf
- ³ CRUI - The Conference of Italian University Rectors <https://www.crui.it/>
- ⁴ Impresa e Arigiani, July 2017. <http://www.ilsussidiario.net/News/Impresa/2017/7/6/ASSEMBLEA-UCIMU-Carboniero-a-Calenda-Industria-4-0-funziona-va-resa-strutturale-/772640/>
- ⁵ Industria 4.0 National Plan, Ministry of Economic Development, January 2017. http://www.sviluppoeconomico.gov.it/images/stories/documenti/2017_01_16-Industria_40_English.pdf
- ⁶ Press Release of Ministry of Economic Development, June 2017, http://www.sviluppoeconomico.gov.it/images/stories/documenti/press%20release_trilateral-cooperation.pdf



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About the Digital Transformation Monitor

The Digital Transformation Monitor aims to foster the knowledge base on the state of play and evolution of digital transformation in Europe. The site provides a monitoring mechanism to examine key trends in digital transformation. It offers a unique insight into statistics and initiatives to support digital transformation, as well as reports on key industrial and technological opportunities, challenges and policy initiatives related to digital transformation.

Web page: <https://ec.europa.eu/growth/tools-databases/dem/>

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