

National Strategy for Digital Skills

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Foreword

The report of the Digital Economy and Society Index (DESI) 2020 states: "Italy is launching initiatives to strengthen digital skills and address digital inclusion. Intensifying and focusing efforts would help to reduce the digital divide between the population and ensure that the majority of people have at least basic digital skills. Another important step in this area would be a comprehensive approach to upgrading skills and retraining among the workforce, including the enhancement of advanced digital skills." In the DESI 2020, in the Human Capital area, Italy is among the worst performing countries..

The lack of digital skills - the reason why Italy among the European countries ranks so poorly in the Human Capital dimension - is one of the most severe obstacles for the social and economic development of the country and for its recovery from the current crisis. This is why the issue of digital skills needs to become a strategic priority for our country.

In "Italy 2025 Strategy" of the Minister for Technological Innovation and Digitization (December 17, 2019), the initiative "Repubblica Digitale" has an important role on the assumption that the digital transformation of the country is rooted in the growth and diffusion of digital culture. The dramatic impact of the epidemic made even more evident how important is the use of digital technology for social and economic life, as well as for education. Within this framework, "Repubblica Digitale" which aims to represent an organic and comprehensive response on the issue of digital skills, is growing significantly:

- *on 7 April the drafting of the "National Strategy for Digital Skills" and its "Operational Plan" started; in the weeks after, proceeding from the existing initiatives, it was completed;*
- *on 8 April, the multi-stakeholder alliance within the framework of "Repubblica Digitale" joined the National Coalitions within the European Digital Skills and Jobs Coalition;*
- *Within the National Coalition, more than 120 organizations have promoted more than 130 initiatives, the value of which is very significant.*

This Strategy has been drafted jointly with the help of Ministries, Regions, Provinces, municipalities, universities, research institutes, companies, professionals, the National Public Broadcasting, associations and the various public sector organizations, the organizations belonging to the National Coalition, and with the informal exchanges with the European Commission, under the direction of the Technical Steering Committee of "Repubblica Digitale", and the coordination of the Department for Digital Transformation - Presidency of the Council of Ministers on behalf of the Minister for Technological Innovation and Digitization. (List of all the stakeholder <https://repubblicadigitale.innovazione.gov.it/en/>).

This "Strategy", together with the "Operational Plan", will be submitted by the Technical Steering Committee at the end of the current year for an initial review based on the analysis of 2020 data and experiences, and subsequently updated and reviewed each year.

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Overview

National and international data on the development of the digital economy and society indicate that the Italian population suffers from a significant lack of digital skills.

According to Eurostat, only 42% of Italians aged between 16 and 74 years have basic digital skills (58% in the EU), with a significant impact on the use of digital services. Among the European countries, Italy ranks last for the use of the Internet (Eurostat 2019 data), with 17% of people between the ages of 16 and 74 who have never surfed the net (almost double the EU average of 9%). The data also indicate that only 1% of Italian graduates have an ICT qualification (the worst position in the EU) and that the percentage of ICT specialists - although it has increased over time and reached 3.6% of total employment - is still way behind the EU average (4.2%).

As for the number of ICT graduates, the gap between supply and demand is growing, with a shortage of 5,100 graduates e.g. 35% of the total (data from the Digital Skills Observatory 2019).

The lack of digital skills is among the main obstacles to the development of the country. Overcoming this limit should be a priority since:

- it has a negative impact both on the provision of digital services by the public and private sectors, and citizens' access and use;
- condemns a significant part of the population to the risk of social and labor market exclusion;
- hinders access to public participation and consultation;
- increases the risk of citizens' exposure to large-scale misinformation.¹

An inadequate level of e-skills not only affects individuals' privacy - as they are not aware of their digital footprint and how it may be used- but it negatively acts on their chances for employment, and limits their possibility of taking full advantage of the knowledge and skills that are offered within the digital environment. Another aspect worth noting is that only 20% of workers whose job is at risk of automation benefits from continuous training.

Vision and goals

The Strategy *Italy 2025* sets out a clear horizon for "inclusive and sustainable development" as it defines a course of action that moves towards the challenge of an ethical, inclusive, transparent, and sustainable innovation for social well-being. This vision entails:

- an effort to improve people's digital capabilities;
- an ethical, responsible and non-discriminatory technological development which is guaranteed by the state;
- affording citizens the possibility of life-long training so as to access the jobs of the future.

Repubblica Digitale, the national strategy for digital skills, is at the heart of this challenge.

Digital skills are the pivot for social and economic growth but they need the fulfillment of **three sustainable and long-lasting changes**:

- **the population is acquiring more and more digital awareness** and is, therefore, able to make the most of digital technology by developing an "ethical awareness" in the use of technologies;

¹ The European Commission is committed to promoting actions to address the spread and impact of online misinformation in Europe and ensure the protection of European values and democratic systems. (Source: <https://ec.europa.eu/digital-single-market/en/tackling-online-disinformation>).

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- **public administrations and enterprises are compelled to improve the services** that they provide. The user is at the center, as a responsible actor. This change of perspective requires a radical transformation of production processes, which, on the other hand, demands both specialized digital skills and widely common digital skills, starting, for instance, from the e-leadership of managers who have both "business" and digital transformation skills.
- **the educational system is built to meet the needs of (digital) skills development** following an ongoing training path according to the various phases of one's personal and working life.

The growth, that is strictly linked to the development of digital skills, can occur only within a **virtuous cycle** where all the stakeholders and in particular, all the public institutions and the public sector, by leading as a driving force, **raise the level of expectations in terms of quality needs** and commit themselves to the change and the "leap" that the digital transformation requires. The implementation of a virtuous circle on e-skills development creates the conditions for the implementation of **Agenda 2030**, not only in terms of delivering quality education for the whole population but also in terms of policies to reduce inequalities and ensure sustainable cities and decent jobs.

Repubblica Digitale and the *National Strategy for Digital Competencies*, together with the Operational Plan, are conceived to support the achievement of these objectives.

The establishment of the "National Coalition for Digital Skills and Jobs", which is part of the [Digital Skills and Jobs Coalition](#) of the European Commission, was an important step in this direction.

These are the basic principles of the *National Strategy for Digital Competencies* (hereafter *Strategy*):

- **Digital Education:** computer culture and digital skills are essential requirements for full citizenship. The public and private sectors must invest to foster skills development as they are determining factors for growth, competitiveness, creation of public value, and the well-being of the country. Also, schools, universities, and the media should contribute to fighting all forms of digital illiteracy.
- **Digital Citizenship:** digital technology can foster the development of a new form of citizenship based on quality information, participation in deliberations, civic engagement, and a more effective relationship between citizens and public administration; digital technology centered around citizens' rights may become the common language in the dialogue between citizens, public administrations and businesses, and contribute to reducing inequalities.
- **Ethical, human and non-discriminatory digital:** digital can become an opportunity for equality and the growth of communities and individuals; public and private should contribute to the removal of all social, economic, geographical, technological, and cultural obstacles that can foster inequality between citizens not only in the use of public and private digital services but also in the access to the opportunities offered by the digital era.

Accordingly, in order to support the social and economic development achieved through the digital transformation of the country, the *Strategy's* objectives are:

- combatting the cultural digital divide affecting the Italian population through supporting real digital inclusion;
- supporting the development of e-skills throughout the higher education and training cycle;
- promoting the development of key competences for the future and increase the percentage of ICT specialists, especially in emerging technologies;
- ensuring that the entire working population has basic digital skills for the new needs and ways of working.

The *Strategy* is complemented by an *Operational Plan* with a roadmap and specific actions for:

- improving, supporting and promoting a synergistic approach to all e-skills initiatives;

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- communicating the importance of digital skills and digital culture to all sectors of society;
- promoting and implementing national initiatives to retrain and equip with e-skills the students, workforce, and all citizens.

Both the *Strategy* and the *Operational Plan* are periodically updated based on the changing context and effectiveness of the actions undertaken.

Lines of intervention

Based on the strategic goals, and within a comprehensive framework, four lines of intervention have been identified, in line with the four pillars of the *European Coalition for Digital Skills and Jobs*:

1. **Higher Education and Training** - for the development of e-skills for young people within the mandatory education cycles; the initiative is coordinated by the Ministry of Education (MI) and the Ministry of University and Research (MUR).
2. **Active workforce** - to ensure adequate e-skills in both the private and public sectors, including e-leadership skills; the initiative is coordinated by the Ministry of Economic Development (MISE) and Minister for Public Administration (MIPA).
3. **ICT specialist skills** - to enhance the country's ability to develop skills for new markets and new jobs, with a specific focus on emerging technologies and key competencies for future jobs; the initiative is coordinated by the Ministry of University and Research (MUR) and the Ministry of Economic Development (MISE).
4. **Citizens** - to develop the digital skills needed to exercise citizenship rights and promote active participation in the democratic life; the initiative is under the coordination of the Minister for Technological Innovation and Digitization (MID).

The owners of each line of intervention are in charge of the development of this *Strategy*, the monitoring of the indicators, the coordination of the *Operational Plan*, and the achievement of the goals.

Interventions promoted within each line must be systemic, transversal, coherent, widely-impactful, agile, and rapidly implemented.

Consequently, as highlighted by the vision and objectives of this *Strategy*, the lines of intervention share common strategic features such as an innovative training model, a work organization that privileges agile work, a relationship with the public administration that favors the full implementation of the principles of open government and the centrality of the citizen, in the spirit of the *Digital Administration Code* and the right to access digital services, including through the use of open data and open licenses.

Also,

- where there are **consolidated frameworks** (DigComp for basic digital competences, DigCompEdu for teachers' competences, e-CF for ICT specialist competences, etc.), it is necessary to leverage on what has already been achieved, taking into account the limits of an approach exclusively based on self-assessment and moving towards the use of evaluation and qualification systems;
- **for each line** of interventions and actions, there is a clear identification of **indicators, measurable results, and impact objectives**.

In promoting and monitoring the actions, attention is therefore paid not only to the 'extensive' aspects (the coverage of the interventions) but also to the 'intensive' aspects (their depth and quality); also the impact that each action has on the target audience is clearly indicated.

Expected results

The *Strategy* aims to close the gap with other European countries, and to reduce the digital divide that characterizes the Italian context, with respect to each line of intervention,. In order to monitor progress and evaluate the effectiveness of the *Strategy*, a dashboard of performance indicators is provided in the *Operational Plan*, starting from the indicators of the *Digital Economy and Society Index* (DESI) and the *Digital Maturity Index* (DMI) developed by the 'Digital Agenda Observatory' of the Politecnico di Milano. In particular, we draw on the latter, to distinguish between:

- *enabling factors*: the elements that enable citizens and workers to participate in the digital economy and society;
- *results to be achieved*: the elements that measure the effective participation of citizens and workers in the digital economy and society.

Thus, it is possible to adequately gauge the various actions of the *Operating Plan*, especially those that will be defined in the *Plan's* subsequent versions, by monitoring if and after how long the investments are translated into concrete results. As shown in Figure 1, there are specific indicators for each line of intervention and transversal indicators across the various lines.

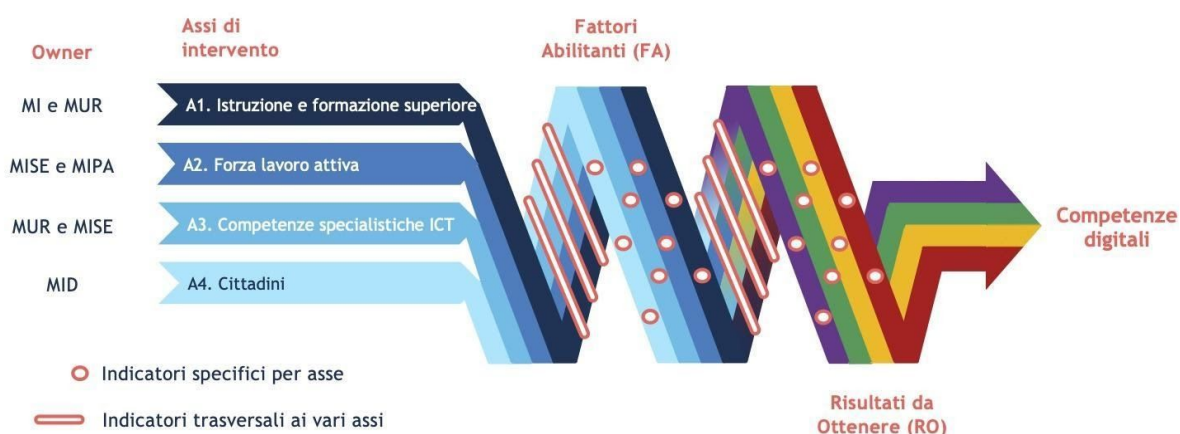


Figure 1. Interconnections between the lines of the intervention of the strategy

All indicators are defined in the *Operational Plan* as objectives that will progressively reduce the gap with the other EU countries by 2025 and reach, within each year, one of the top three positions as compared to the EU countries most similar to us in socio-economic and demographic terms (Germany, France, Spain, and Poland), and the United Kingdom.

1. Digital competences in higher education and training cycle

The current situation

Education

The most recent data concerning the development of digital skills and technologies in the educational system, while showing the persistence of some critical areas, shows a significant effort to the implementation of measures aimed at developing digital skills among Italian students.

From the findings of the European Commission's Survey *2nd Survey of Schools: ICT in education* (2019) the percentage of Italian schools using state of the art digital equipment is above the European average for primary and secondary schools, while it remains slightly lower for secondary schools. However, the OECD 2018 *Teaching and Learning International Survey* (TALIS) shows that on average - in Italy - 31% of school leaders believe that the quality of education in their school is held back by the inadequacy of digital technology for teaching (compared to an average of 25% of OECD TALIS countries).

As far as the level of connectivity is concerned, within the 30-100 Mbps range, in Italy, all Primary and Secondary schools are in line with the average for European countries, while there is still a critical situation as for broadband access which is below the European average in all Primary and Secondary schools.

In the use of digital tools during lessons, there is a substantial converge of the Italian performance with the EU average. With regard to the use of personal devices, however, we would like to point out the lower number in the use of smartphones for educational purposes as compared to the European average.

The security rate in the use of digital technologies is also in line with the European average. According to the findings of the Ministry of Education's "Permanent Observatory for Digital Schools"; 78.34% of schools carry out educational projects for the development of digital skills, while 86.44% of schools carry out projects on digital citizenship.²

However, as the Eurydice network's report *Digital Education at School in Europe* (September 2019) shows, the lack of a structured system of evaluation and certification of digital skills remains a critical issue, yet, common to other large European countries.

As far as teacher training is concerned, the number of Italian teachers trained in the use of digital technologies and their applications is higher than the European average. There is, however, a widespread need for ICT training: the Italian teachers who feel confident in using digital tools is slightly below the European average.³

This data is confirmed by the "OECD TALIS 2018 Survey", from which it emerges that ICT training is one of the topics of professional development for which teachers express the strongest need (17% in Italy vs. 18% OECD average).

Also, the OECD survey *Measuring Innovation in Education 2019* shows that in Italy, there is a moderate level of innovation in learning practices, slightly below the OECD average. The Italian growth rate is higher than the OECD average for the indexes relating to educational resources and IT tools, the use of ICT in teaching, and the use of active learning practices in scientific disciplines. The overall index of educational innovation, on the

²The data refer to the a.y. 2018-2019 (the update to the a.y. 2019/2020 is in progress)

³ See European Commission survey "2nd Survey of Schools: ICT in education" (2019)

other hand, is held back by the training processes for teachers, which remain more tied to traditional methodologies.

University and Higher Education

The lack of digital skills, both basic and advanced, results in a reduced availability and use of online services. Consequently, it is necessary to increase the resources of the school and the university system so as to make digital skills an essential element for the digital transformation of the public and private sector.

- In 2018/2019, there were 320 courses of study (CdS) in the ICT sector out of a total of 10,260. There are almost no training courses integrating ICT and specific areas of knowledge; there is a very low demand for Vocational Training degrees. Although the number of enrollments shows a positive trend in constant growth, the gap between graduates and the job market demand is very high: according to the estimates of the "Digital Skills Observatory" 2019; in the ICT sector there is a shortage of about 15,000 graduates. It should also be emphasized the need to encourage and support women to undertake training in the technical and ICT sectors so as to ensure inclusive and diverse development of our society.
- With regard to the IT environment outside the specialist CdS, IT culture is absent from the teachings in 60% of the business CdS and 70% of the humanistic CdS. Regardless of the academic/disciplinary area of these courses, when evaluating the contents, IT area covers 7% of the courses in mathematics, physics, statistics, 3.4% of those in business, 10% of those in digital communications, and 2% of all other scientific, humanistic and legal courses.

Ongoing initiatives

Education

The main strategy for enhancing students' digital skills is the *National Digital School Plan* (PNSD). The *Plan* is made up of 35 actions divided into three areas of intervention:

1. tools: actions aimed at equipping schools with new learning environments based on new digital technologies, where innovative teaching methods can be tested and implemented;
2. skills and content: actions aimed at promoting and enhancing students' digital skills and fostering the development of quality content for digital education;
3. training: actions designed to support learning and digital innovation through training courses for school staff.

In addition to the actions of the NSDP, a further contribution to the initiatives aimed at enhancing students' digital skills comes from the resources available under the European Structural Funds PON "For School - Competences and learning environments" 2014 - 2020.

The Programme - which gives all schools access to European financial resources - is divided into 4 lines, each with its own specific objectives:

- Line 1-Education: aims to invest in skills, education, and lifelong learning.
- Line 2-Education Infrastructure": aims at enhancing school infrastructure and technological equipment.
- Line 3 -Institutional and administrative capacity": concerns the strengthening of institutional capacity and the promotion of an efficient Public Administration.
- Line 4-Technical Assistance: aims to improve the implementation of the Programme by strengthening the capacity to manage the Funds.

Further experience in promoting innovative teaching methods and enhancing the skills - including digital skills - of teachers and students comes from joining Erasmus Plus projects, the European Union's program under which all schools have the opportunity to join international mobility projects for the professional development of teaching staff and transnational partnerships. The program offers Secondary school students the opportunity to visit partner schools in other countries, through short stays or longer exchange periods.

One of the initiatives with the greatest impact is the eTwinning project: the largest European community of teachers active in e-twinning between schools, which, through an IT platform, involves over 45,000 teachers in Italy; the project fosters collaboration and aims at promoting new teaching approaches based on exchange and collaboration.

Finally, the strategic approach of the Ministry of Education, also with the goal of enhancing school autonomy, has long favored the promotion of initiatives aimed at enhancing students' digital skills, supporting the development of both soft skills and basic digital skills and specific skills related to the ICT sector, through partnerships that are virtuous examples of collaboration between schools, universities, non-profit associations, and business.

University and Higher Education

Among the institutional initiatives that seek to introduce training paths that integrate ICT and specific areas of knowledge, we note that:

- there is a low demand for vocational training degrees, which currently are not considered suitable and cannot be compared to other degrees;
- within some companies, in some IT departments, CdS were established in which IT and economic culture are combined together;
- three-year degree courses in the corporate economic sector with a strong ICT and AI focus were recently announced or are in the process of being launched.

In recent years, alongside the curricular training offer, numerous training initiatives have been developed in the universities, in close collaboration with the private sector. These initiatives, often grouped under the **Academy** label, tend to take the form of learning organizations in which students and teachers are encouraged to create, for the duration of the training course, real communities of practice which are capable of enhancing everyone's specific skills and inclinations, and transforming them into resources for the common cultural growth.

A first survey conducted as part of the work of the *Repubblica Digitale* has surveyed more than 25 Academies, in 14 Regions, with the involvement of the national and multinational industrial and service sectors, both ICT and non-ICT related. In addition, there are a significant number of initiatives aimed at spreading digital culture among particular segments of the population (for example, initiatives aimed at bringing female students closer to computer science and engineering studies) and observatories aimed at classifying best practices, projects, and experiences of digital innovation.

Priorities and lines of action

Education

In order to promote the diffusion of digital culture through training courses, the following macro-areas of intervention were identified as the basis from which to proceed with developing an innovation process.

Digitalization of the school system

It is essential to continue to promote initiatives for the digital modernization of schools.

It is proposed, therefore, to continue to invest in digital educational resources and in improving school connectivity through broadband and ultra-broadband, also through measures aimed at reducing connectivity costs which represent real barriers to the digital infrastructure and, thus to students training.

Development of students' digital skills and culture

It is essential to invest in developing students' digital skills from primary school, supporting the development of both soft skills and basic digital skills (including coding) and, depending on the grade and the areas of studies, of specific ICT sector-related skills, through measures aimed at:

- promoting collaborative supply chain networks as acceleration models for strengthening e-skills, and initiatives aimed at offering students the opportunity to experience active entrepreneurship;
- making the development of digital skills part of the curriculum, for example, by introducing the study of computational thinking and coding in the primary school curriculum;
- evaluation and certification of pupils' e-skills within the school system by applying DigComp, the framework for citizens' e-skills which has been developed by the European Commission's Joint Research Centre;
- fostering initiatives aimed at learning new teaching methodologies which, going beyond the traditional classroom lesson, are also useful to translate the potential of technology into innovative educational paradigms;
- in light of the needs that emerged during the 2019/2020 school year and the COVID-19 national health emergency, foster the use of digital tools and platforms for teaching and learning, both in attendance and at a distance.

To ensure the overall soundness of the Minister's strategy, there are two pre-conditions which go beyond the relationship between students and teachers, and require multi-level governance that integrates all the actors involved in the educational process:

- the teachers' knowledge of the basics of information security as an essential component of the development of digital skills;
- the promotion of media education projects, aimed at promoting the responsible use of new information and communication tools, in order to contain the risks most commonly associated with the use of technologies.

Digital training of teachers

It is necessary to introduce specific action to promote the teachers' digital skills with particular attention to the differentiation of the training offer while promoting more specialized training for teachers with a strong interest in digital culture.

Teachers' training can become more effective with the adoption of structured training programs on digital skills; the European DigCompEdu⁴ framework represents a good reference for the measurement of digital skills among teachers and educators.

Strengthening ICT training as part of transversal skills and pathways

In the context of the transversal skills and training paths (previously "school-work alternation" paths), it is possible to further enhance, also through partnerships with industrial sectors - large and SMEs - as well as

⁴ <https://ec.europa.eu/jrc/en/digcompedu>

associations and public bodies, schools participation to innovative projects which are based on the use of advanced technologies for the development of students' digital and transversal skills.

Strengthening orientation programs for high school graduates

Finally, there is a strong need for introducing orientation programs for students graduating from high school secondary school. These initiatives should constitute virtuous examples of collaboration between school, university, and the ICT sector.

University and Higher Education

Cooperation between School and University

The orientation programs must provide young people with greater support both in terms of the ability to analyze and learn more about scientific and technological fields and in terms of awareness of the centrality of 'digital thinking'. This requires investing to improve teachers' digital culture, regardless of specific subjects, and to make 'digital thinking' a structural component of the educational process.

Greater collaboration between school and the university must be established on the basis of joint initiatives that favor growth and the exchange of knowledge and experience in a more immediate and structured way.

Adaptation of teaching delivery methods

Within the training system as a whole, there is a need for closer collaboration in order to adapt the programs and methods of teaching and to promote and support the continuity of training courses.

Definition of a digital portfolio

We plan:

1. to define a digital portfolio, with horizontal and vertical (professional) paths, with different levels of maturity;
2. to define and implement training paths (with reference to the digital portfolio) that can be used online, *blended learning* and flexible paths;
3. to integrate the digital portfolio into existing training courses.

The connection between universities and the private sector

We plan:

- to strengthen professional courses, in synergy with industry and the school;
- to increase training paths strongly oriented towards industrial research and innovation, and to train highly qualified profiles able to promote and accompany the new productions;
- to promote university-industry partnerships aimed at creating innovative training paths for specific business scenarios.

Strengthening human capital and infrastructure

We plan to act to:

- strengthen the human capital in terms of researchers engaged in educational and scientific activities in the ICT sector, taking into account the results that emerge from the analysis of the private and public sector's needs.

In particular, considering the overall results emerging from *Repubblica Digital*, the data of the “Digital Competence Observatory” and the “National Research Plan”, which implements the strategic lines of the next European plan, two major areas of interventions stand out:

- strengthening and integrating specialist skills in the fields of information technology and computer engineering (data science and big data, artificial intelligence, cloud, cybersecurity, software development technologies, the architecture of processing systems), statistics, modeling, technologies and management techniques to support digital transformation and Industry 4.0 (Internet of things, embedded systems for the integration of Information, Telecommunications and Electronics technologies), robotics, high-performance computing applications, connectivity, service science, management of technological systems and their integration within the industry and public sector;
- greater integration between the degrees courses and technologies, and introduction of methodologies used in computer applications that are common to many course studies;
- creating laboratories and, more generally, workspaces in which to foster the interaction between researchers, students, and professionals of different cultural and disciplinary backgrounds, encouraging the development and incubation of innovative entrepreneurial projects. These spaces should see the collaboration between the academia and industry and should be designed for classroom and distance learning;
- a constant interaction between the school system and the private sector to improve the overall training cycle, orientation, and continuous training, developing, also through university-industry partnerships, new forms of classroom teaching with the integration of advanced telematics services;
- the Observatories should expand their analysis - now focused on the identification of the required skills - to measure the actual proficiency and review the ways in which non-curricular training courses are developed.

Interventions on the current training offer

The intervention will focus on:

- revision and strengthening of the fundamental and transversal IT culture necessary for the digital transformation, in academia as a whole and in the specific disciplines;
- reorganization and strengthening ICT disciplines enabling digital transformation;
- alignment of specialist training courses with the needs of the new jobs required by the digital transformation of the economy and society.

Impact and indicators

Education

As part of the strategy for the enhancement of students' digital skills, an *Operational Plan* of short, medium, and long term actions is envisaged. Furthermore, a new set of indicators will be identified to measure the impact of the planned initiatives. These actions will take into account the new processes and training needs that have emerged during the Covid-19 pandemic.

Consistent with the objectives set out in the *Strategy*, the expected impacts will be:

- raising the level of digital skills among teaching and educational staff;
- raising the level of digital skills among students graduating from the primary and secondary cycle of education;
- increasing the number of high school graduates taking ICT university courses;
- reducing the gender gap within STEM;

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- increasing the number of students in e-skills development initiatives, including in transversal skills and cross-sectoral courses;
- increasing the number of students who routinely use digital technologies and content for learning activities.

University and Higher Education

The educational system and advanced digital education are essential elements of the digital transformation of the public sector and the economy as a whole.

The training system must contribute to support the processes of investment in human capital, which require new organizational and production processes through innovative methodologies and technologies. 'Digital thinking' should be combined with fostering the skills that are needed to develop cutting-edge technologies.

The impact can be measured on the basis of:

- qualification of incoming and outgoing orientation paths;
- innovation in pedagogy through ICT technologies and delivery of new services for students (cooperative work, availability of online materials, support for student assistance, support for classroom delivery of lessons);
- modification and adjustment of the current training offer to the needs of the jobs affected by digital transformation;
- strengthening training courses strongly oriented towards industrial research and innovation;
- strengthening human capital and infrastructure in terms of researchers involved in ICT teaching and scientific activities and its applications;
- adjustment of analysis models of the Observatories.

Overview

Education



University and Higher Education



2. Digital skills in the active workforce

The current situation

Private sector and unemployed

Together with the environmental transition, the digital transition of the enterprises is one of the greatest challenges of European industrial policy. It is a challenge that at its roots, has not only the human capital but also the integration of technologies into the companies' processes to foster productivity, innovation and sustainability.

The development and integration of emerging technologies such as Blockchain, IoT, AI, Quantum Computing, Embedded Systems, Data Mining, Cybersecurity, High-Performance Computing, and development of certified software systems should become part of the production system. Significant emphasis should also be placed on the positive connection between digital technologies and the green economy. These are very important issues in light of the implementation of new, more sustainable and inclusive production systems. Some elements of the assessment:

- In the coming years, in Italy, 30% of the new workforce will be employed in jobs related to digital technologies or circular economy. Already today, companies that focus on innovation and seek to expand their market, leveraging exports as well, require digital skills in data analysis, programming and management of innovative solutions;
- in a constantly evolving technological scenario, traditional professions will require upskilling and reskilling regularly; it will be increasingly so in the future. At the same time, new players in the ongoing digital revolution such as artificial intelligence specialists, big data analysts, cloud computing experts, business intelligence analysts or social media marketing managers are entering the market, driven by demand;
- it is important to underline the important contribution of women to the technological development of the country and the importance given by Italy to the declaration "Women in Digital" signed at EU level on 9 April 2019 during the Digital Day 2019;⁵
- in this changing context, the Digital Economy & Society Index (DESI) 2020 ranks Italy at the lowest level as far as the "Human Capital" dimension is concerned; this dimension includes the use of the internet and basic and advanced digital skills. It is not an encouraging situation both for the efficiency of the public sector and for the competitiveness of the economic system, as a whole. Poor digitalizations profound effects on growth and productivity;
- if we consider that, at present, ICT employees represent 4% of the workers, Italy's greatest challenge will be to support the new players, specialists, and their strategic skills, in their market success and, at the same time, to enhance digital skills for the remaining 96% of non-ICT workers, strengthening the broad spectrum entrepreneurial fabric. This figure is even more significant when one considers that only a fraction of those employed in the ICT sector carry out technical development activities and even fewer are employed in sectors that develop or use frontier technologies;
- there is a clear need to support companies to adopt the technological transformation of their business models, train their human resources, at all levels, and raise awareness that they may help all stakeholders to identify the path of digitization closest to their needs, using the best and most effective tools.

⁵ <https://ec.europa.eu/digital-single-market/en/news/eu-countries-commit-boost-participation-women-digital>

Public sector

Embracing digital culture and innovation at all levels of the administration are the key factor for accelerating the transformation process of the Italian public administration and for improving the services offered to the citizens. To date, the lack of digital skills is evident at all levels - from decision-making to operational- of the public administration:

- the majority of public administrations have not yet appointed the Digital Transition Manager (Responsabile Transizione Digitale - RTD), provided for by art. 17 of CAD (leg. decree 82/2005). In addition, many of those who were already appointed do not have the appropriate technological, legal and managerial skills required. This delay, - which has been highlighted in the Final Report of the "Parliamentary Committee on the Status of Digitisation of the Public Sector" approved in 2017- is even more dramatic if one considers that, although the latest wording of Art. 17 of the CAD goes back to 2016, the appointment, at least in the central administrations, of a single center digital expertise has been required since 1993;
- the excessive focus - especially in the selection process - on legal-administrative skills has contributed over time to the emergence of a managerial class often lacking the necessary skills to understand the opportunities that digital technologies have for innovation and change in processes. A 2018 "National School of Administration"'s study points out the prevalence, among public managers, of operational IT skills rather than skills related to ICT management;⁶
- The human capital of the Italian public administration as a whole is poorly equipped; 45% of Italian civil servants are over 54 years old compared to 22% of the OECD average;⁷ their qualifications are low as only 38% of public servants have a university degree and 3% a postgraduate degree.⁸ Over the years, this situation has not been solved with appropriate investments in training, especially in the digital area; in 2017, only over 126,000 or about 5% of the total, took part in digitalization training.⁹

Ongoing initiatives

Private sector and not employed

As part of an overall effort aimed at supporting the country's entrepreneurial fabric in taking advantage of the opportunities provided by technological innovation, the public administration introduced measures aimed at

- enhancing digital skills;
- directing enterprises towards technological transformation;
- spreading innovation at all levels;
- connecting research with the private sector;
- supporting the demand for innovative technological solutions.

Similarly, in the private sector, more and more attention has been paid to issues related to training and process or product innovation. Also:

- The Ministry of Economic Development (MiSE) plays an active role in accompanying companies in the digital transformation of their business processes, through a close public-private synergy. The *Competence Centers*, support technology transfer, experimentation of new enabling technologies, and

⁶ FPA Annual Report 2018, Skills (<https://www.forumpa.it/riforma-pa/fpa-annual-report-2018/>)

⁷ OECD (2017). *Government at a glance 2017*. OECD Publishing Paris

⁸ <https://www.contoannuale.mef.gov.it/struttura-personale/titoli-di-studio> (data updated to 2018)

⁹ Istat, Permanent Census of Public Institutions 2017 (<https://www.istat.it/it/archivio/236856>)

high technology training. The *Digital Enterprise Points*, *Digital Innovation Hubs*, and *European Digital Innovation Hubs* help companies with experimentation, technology transfer, training, information and digitization and constitute the framework with which the 4.0 policies are offered and tested.

- The information and support process has also a strong training component, both internal and external. The system of ITS - schools of high technology that prepare the specialized middle managers who help companies to exploit the potential of Enterprise 4.0 solutions - is a part of this context.¹⁰ In the wake of digital transformation and as evidence of a constantly growing demand, in recent years, the training offer has expanded, both in the public administration and the private sector, to increase the rate of specialization in the ICT sector,¹¹ to enhance digital skills for work,¹² to strengthen the capacity for innovation and digital culture of the Public Administration,¹³ and to certify the degree of competence achieved.¹⁴
- In a context of necessary and continuous technological development, there are numerous initiatives aimed at helping companies thorough incentives -tax credit, vouchers, and other similar measures- for the introduction of enabling technologies,¹⁵ for the development of workers' digital skills,¹⁶ for projects aimed at implementing the enabling technologies mentioned in Plan 4.0 and digital technologies for the supply chain, and finally for ultra-broadband connectivity.
- The "House of Emerging Technologies" -which will be discussed in the chapter "ICT skills and key competencies of the future"- will act as a technology transfer center issues involving the use of *Blockchain*, *IoT* and *Artificial Intelligence*,¹⁷ in the municipalities where the 5G experimentation is taking place; it will support research and innovative projects, startups and technology transfer to SMEs.
- The "National Smart Specialisation Strategy 2014-2020" (MIR/MUR) will support demand.¹⁸ It leverages public demand to promote innovation (innovation and pre-commercial procurement). In line with the above Strategy, MiSE has launched a new program "Intelligent Public Demand Calls", with the help of the Agenzia per l'Italia Digitale (AgID), through the Memorandum of Understanding signed by MiSE, MUR, and MID (April 2020).¹⁹

Public sector

The public sector is carrying out a number of initiatives to improve the civil servants' digital skills aimed at:

- identifying sets of key competences according to the different professional profiles and roles: IT specialists, managers, and civil servants;
- initiatives to identify skills and training needs;
- strengthening digital skills through turnover.

¹⁰ <https://www.miur.gov.it/tematica-its>

¹¹ Higher school of specialization in telecommunications <http://www.isticom.it/index.php/ssstlc>

¹² Digital skills enhancement programme for work

<http://www.unioncamere.gov.it/P42A3807C1895123/potenziamento-delle-competenze-digitali-per-il-lavoro--il-progetto-di-unioncamere-tra-le-best-practices-della-digital-skills-and-jobs-coalition.htm>

¹³ EID-Digital Excellence Project <https://www.pd.camcom.it/progetti-innovazione/eccellenze-in-digitale>

¹⁴ See <http://www.isticom.it/index.php/nuova-ecd> e <http://www.isticom.it/index.php/eucip>

¹⁵ Tax credit 4.0, <https://www.mise.gov.it/index.php/it/incentivi/impresa/credito-d-imposta-r-s>

¹⁶ Training tax credit 4.0 <https://www.mise.gov.it/index.php/it/incentivi/impresa/credito-d-imposta-formazione>

¹⁷ Home of emerging technologies

<https://www.mise.gov.it/index.php/it/27-comunicazioni/2040058-programma-di-supporto-alle-tecnologie-emergenti-5g>

¹⁸ National strategy for smart specialisation

http://www.ponricerca.gov.it/media/387008/strategia_nazionale_di_specializzazione_intelligente_italia.pdf

¹⁹ <https://appaltinnovativi.gov.it/smarter-italy>

AgID plays an active role in defining the public sector e-skills through the updating of the *Guidelines for the quality of e-skills in ICT professions* and the publication of the *Guidelines for the harmonization of professional qualifications*. The issue of mapping the skills and training needs of the Digital Transition Manager (Responsabile della Transizione Digitale-RTD) is one of the main points of the MOU that AgID signed with CRUI in 2019, to identify targeted development paths.

With the *eLeadership Guidelines*, AgID is committed to address IT specialists (totaling about 32,000 employees, of whom about 18,000 in central public administrations and 14,000 in local public administrations²⁰) and lays the foundations for the systematization of key competences for public managers in support of digital transformation. With the *Syllabus Digital skills for the Public Administration*, the Department for Public Administration addresses the 'administrative' employees e.g. one-third of the total Italian civil servants. The *Syllabus Digital Skills for Public Administration*, structured in five areas of competence and three levels of mastery, represents the benchmark for an online self-assessment tool (www.competenzedigitali.gov.it); it allows to detect training needs, targeted and for course offer, and measure progress. The e-learning training will be offered through a 'Course Catalogue' and will be made available with the self-assessment tool to all administrations in Fall 2020.

Also:

- A wide range of training courses has recently been developed, mainly focused on the Digital Transition Manager (Responsabile della Transizione Digitale-RTD) and specialist skills, in line with the provisions of the Three-Year IT Plan in the 2019-2020 PA. The initiatives, promoted by the Department for Digital Transformation, AgID and SNA also in collaboration with other central administrations, are complemented by additional schemes addressing specific needs both at regional/local level, and at sectoral level. Finally, universities offer a wide range of master's degrees, modules or specialist courses, particularly in key sectors, such as cultural heritage and health, as well as focusing on the Digital Transition Manager (Responsabile della Transizione Digitale-RTD). However, all these initiatives of high qualitative impact, are insufficient to meet the overall demand for digital skills to support specialists and public managers' decision making, or specific sectoral needs. When fully operational, there will be 22,000 Digital Transition Managers (one per administration) and over 38,000 managers are currently in service.²¹ In addition, there are officials who increasingly find themselves governing innovation processes as well as investing in training in order to achieve career progress.
- Smart working proved to be a key solution during the COVID-19 epidemic. Article 1, paragraph 2, of Legislative Decree no. 165"; art. 87, paragraph 1, Leg. Decree no. 18 of 17 March 2020, converted from L. no. 27 of 24 April 2020 defines smart working as "the routine way of performing work in public administrations". Smart working has made possible two achievements: the containment of the spread of contagion and the continuity of the administrative work. However, there is no doubt that the favourable outcome was also possible thanks to the availability of workers' personal equipment and their ability to use the necessary technological, IT and digital devices. This experience shows that smart working, digital skills and the digitalization of the public sector are, ultimately, factors that should coexist in synergy. The most recent provisions, as set out in Decree-Law no. 34 of 19 May 2020, currently in the process of conversion, further refine the use of smart working, in particular for the public management, with a view to maintain the continuity of services for citizens and businesses:

Furthermore, in the Directive of the Minister for Public Administration no. 3/2020, training is recognized as necessary for accompanying staff in adopting smart working and as the basis for the development of the skills required to accelerate innovation. It is not just a matter, therefore, of

²⁰ [Plan for IT in the Public Administration 2017-2019, 1.2 Background](#)

²¹ [Total non-medical executives year 2018, Source Annual Account \(https://www.contoannuale.mef.gov.it/struttura-personale/occupazione\)](https://www.contoannuale.mef.gov.it/struttura-personale/occupazione)

increasing *tout court* the use of smart working, but also of increasing the awareness of its potential, especially among public management. The aim of smart working is to combine the promotion of organizational efficiency with the improvement of administrative action in terms of effectiveness and efficiency, as well as implementing the digitization of procedures and services for citizens and businesses.

- The increase of digital skills in the public sector through turnover has been expressly promoted since Law no. 56/2019, which provides that the administrations should take into account the recruitment of highly-skilled professionals, with a priority for those skilled in digital technologies.
- The Minister for Public Administration and the Minister for Technological Innovation and Digitalisation have signed an agreement to promote a more systematic approach to the promotion of digital skills which are not only required for in-service training of employees but they are also a prerequisite for candidates to enter into the civil service.

Priorities and lines of action

Private sector and not employed

As highlighted in the previous sessions, **there is a strong need for a strategy** to improve the entire workforce's technological skills through targeted actions, and establish a stronger connection between training and business to respond to the **challenges** of **digital transformation**. Innovation should be a 'must have' to strengthen Italy's position in the global competition.

Therefore, through effective training, **the digital skills, both basic and specialized**, of all staff and at all organizational levels should be **improved**, with particular attention to the fight against the digital gender gap.

The issue of e-skills for the future of the Italian business requires joint action with the contributions of all the stakeholders: ministries, territorial public bodies, large private actors, trade associations, chambers of commerce.

This action will involve public and private actors committed to measurable objectives within a strategy led by a *task force* within the MiSE and in full compliance with Europe's indications and the #NextGenerationEU strategy. The different interventions will be monitored in order to understand strengths and weaknesses and, where necessary, implement corrective or strengthening actions. In parallel, new actions and programmes will be launched to:

- introduce more innovation and business into schools;
- launch the Startup competition in both schools and universities;
- introduce training modules dedicated to Small Enterprises to facilitate their access to digital technologies;
- strengthen 4.0 training;
- bring digital enterprises closer to traditional enterprises through joint projects;
- establish the Italian Centre for Artificial Intelligence.

Collaborations will be strengthened:

- between the central administrations, in order to develop more coordinated actions and measures (each for their own competences) both at operational level and in terms of monitoring and evaluating effectiveness;
- with the Committees and Observatories in order to improve the above analysis tools and to immediately intercept the new needs that may arise from an extremely dynamic framework such as the digital transformation.

Public sector

Adequate skills in support of digital transformation require complementary interventions for the benefit of IT specialists, public management and all public sector staff.

The priorities to be addressed are:

- encouraging the recruitment of managers prepared to welcome and manage the digital transformation of the public administration;
- making the public administration more attractive to high skilled resources in the area of innovation and digitalization;
- encouraging a shared culture of innovation and digitalization at all levels of administration and improving the skills of the in-service public sector employees.

The priorities highlighted are reflected in the following lines of action:

- recruitment of managers who, in addition to the usual requirements, have digital and transversal skills and the ability to solve complex problems;
- career guidance in the public sector and specialist digital training in collaboration with the university system;
- hiring procedures for non-managerial staff that provide for the verification of the necessary skills to work in an increasingly digital public sector, with particular attention to specific professional needs and sectoral areas (e.g. health, justice, infrastructure and transport, etc.);
- planning, management and evaluation of targeted digital training programmes applied for the public sector;
- establishing closer interaction with research and business on the different aspects of digital transformation, in order to create opportunities for organizational learning and talent *retention*.

Impact and indicators

Private sector and not employed

As far as the private sector is concerned, the intended impact, consistent with the expected results of the Strategy, can be summarised as follows:

- increase in the number of private employees with basic digital skills;
- increase in the number of private employees with specialised digital skills;
- modernisation of production processes;
- increased technology transfer to enterprises;
- greater interaction between business and education;
- increase interaction between digital and traditional enterprises;
- increase national initiatives on emerging technologies such as *Blockchain*, *IoT* and *Artificial Intelligence*;
- facilitating access to and use of ultra-broadband networks and digital technologies.

The specific reference indicators are linked to the priorities and lines of action to be pursued and, as highlighted above, in particular to:

- improving the technological skills of the workforce;
- improving the production processes through technology;
- strengthening the link between education and the private sector;
- improving access to ultra-broadband networks and the use of emerging technologies.

Public sector

As far as the public sector is concerned, we expect the following results:

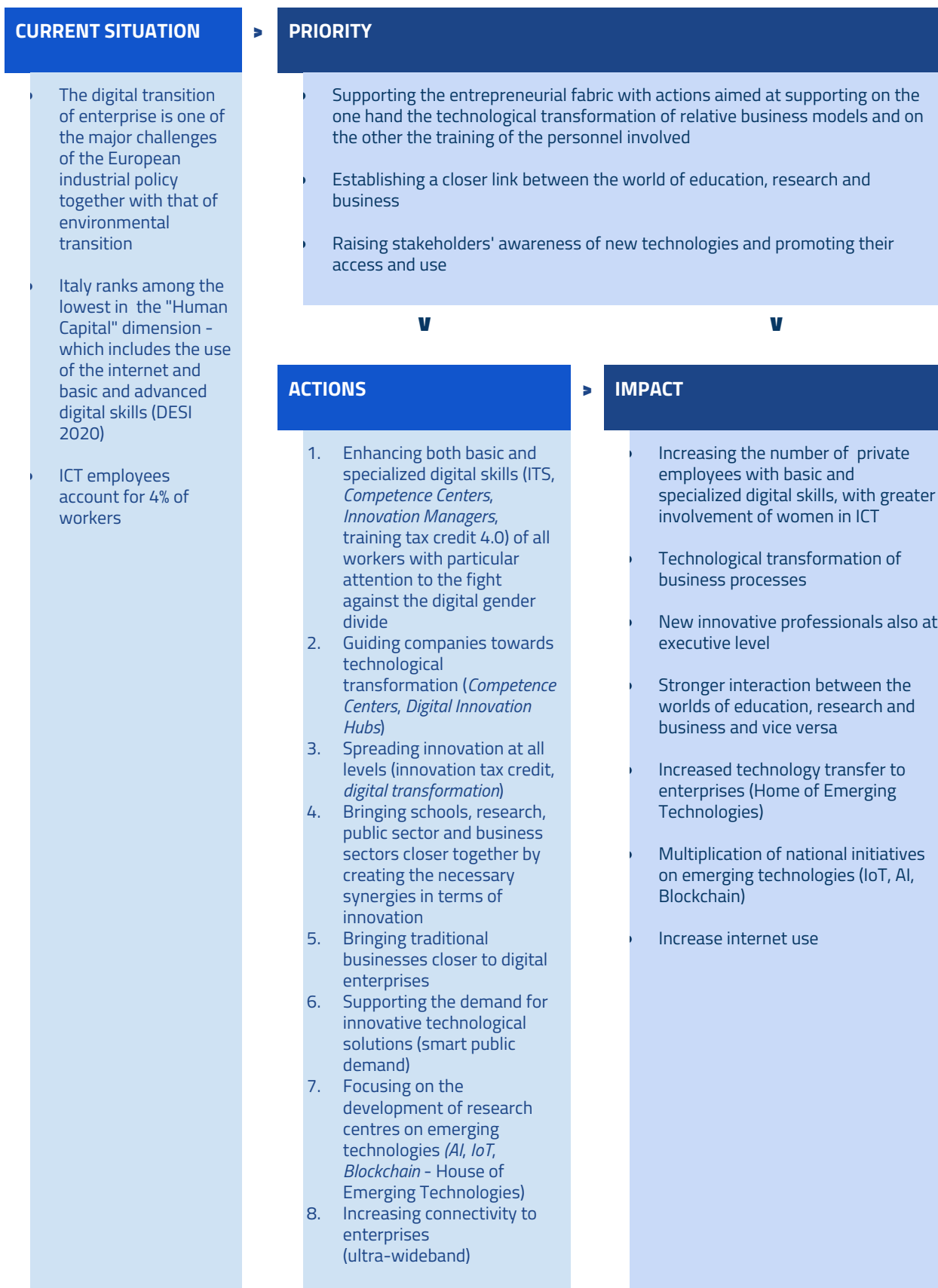
- increasing the number of civil servants with at least basic digital skills;
- increasing the number of civil servants with specialised ICT skills;
- increasing the number of digital public services for citizens and especially businesses.

The specific indicators are linked to the priorities of intervention and to the pursued actions, in particular:

- to future civil servants recruited through paths that enhance the role of digital skills applied to the public sector;
- to civil servants who are not IT specialists and who benefit from targeted training to support digital transformation, starting from the identification of training needs at organizational, professional and individual level;
- IT specialists who benefit from dedicated selection tracks and highly qualified training in order to strengthen their specialist skills and recognised role in the public sector.

Overview

Private sector



Public sector



3. ICT specialist skills and key competences for the future

The current situation

The development of the country, closely linked to the digital transformation processes, will not be sustainable without an investment in human capital with specialized expertise in both technological and applicative skills in the ICT sector. The lack of digital skills is one of the main factors negatively affecting Italy development. Despite some progress, the “Digital Skills Observatory” survey on policy priorities in companies confirms the gap between resources supply and demand. There is a dramatic need to foster domain application skills (public sector, transport, health, social services, cultural heritage, security, professions, etc.) so as to renew all countries’ sectors through ‘digital thinking’, ‘digital planning’, and ‘digital organization’. New and qualified jobs need the training of these key figures. To get a picture of the current situation, there are some areas that are particularly significant:

- The quality of our research system on ICT is quite high, and the collaboration between industry and Universities and Research Institutions is very strong. However, there is still a lack of a stable network for the rapid development of innovative products and processes as this is a sector where technological applications are rapidly becoming obsolete. Today's technology transfer should be supported and strengthened with a constant training cycle so as to provide support to our industry that is characterized by a high percentage of SMEs.
- Our ICT graduates are highly qualified and quickly employed, but there are too few compared to the market demands. There are too few women in technical sectors, which still limits their employment opportunities; training support of women in technical sectors is of primary importance.
- Young people use information and computer technologies a lot. However, they are often just basic and end users. Teaching must be timely and carried out in a new way aimed at the design and integration of technologies in each discipline.
- Digital Technology culture must be integrated into our public sector with a significant investment in human capital.
- Support for innovation should be sustained by adequate investment on both the supply and demand of new technologies, and must be combined with the ability to develop adequate knowledge in cost/benefit analysis.

In the context of digital transformation, there is a strong need for significant collaboration and sharing between ICT technology and business. ICT managers must work together to develop a new management approach to support the public sector and the industry.

There is also a strong need to combine two crucial elements of development: digital transformation and green economy. There is a challenge to strike the right balance between the sustainability of production, product innovation and management and sales systems. In this context, investment in human capital is essential to ensure the competitive and inclusive development of our country.

Ongoing initiatives

The policies already in place are yielding their first results, but they are often still insufficient. Since 2018, job applications for the ICT professions have exceeded the 100,000 mark, more than half of which are in the ICT sector.

The number of initiatives aimed at the development of ICT professionals in the sector are high and well structured in Ministries and at territorial level (Regions, Provinces, Municipalities). These interventions are focused on classroom training courses, as well as on initiatives in the workplace to promote training and exchange of projects. Among the most significant initiatives there are public/private laboratories,

technological and industrial districts, competence centres and different initiatives carried out by business associations.

The range of the course of studies that are offered by universities and the various initiatives supporting ITS and the jobs of the future is described in the training axis. CONPER has surveyed a significant number of interventions to support the development of digital skills both in enabling technologies and in their applications in different domains.

With regard to technology transfer to SMEs and the creation of startups, significant results are expected from the implementation by the Ministry of Economic Development's initiative, the so-called "Emerging Technology Houses" (Blockchain, IoT, AI, Quantum Computing, Embedded Systems, Data Mining, Cybersecurity, High Performance Computing Systems and development of certified software systems) in the municipalities which are part of the 5G trial. Furthermore, The Ministry of Economic Development has launched an initiative that in order to develop managerial skills, introduces the *Innovation Manager* to support business innovation processes, promote the enhancement of excellence at national level, enhance up-to-date skills, and disseminate the culture of *business innovation*

The *Competence Centers*, *Digital Enterprise Points*, the *Digital Innovation Hubs* and the *European DIHs* should also have a positive impact and represent an opportunity to concretely apply the competencies and skills within a European perspective (see the chap. "Digital skills in the active workforce").

Priorities and lines of intervention

From the other axes analysis, emerge the following strategic priority measures::

- identify support and promote interventions to increase the number of graduates and IT experts with ICT skills; regularly update ICT curricula with a particular attention to business innovation;
- strengthen update training and retraining with particular attention to technological development;
- establish closer connection between research and business with particular attention to new emerging technologies (*IoT, Blockchain, Artificial Intelligence*);
- encourage the diffusion of highly innovative executive-level professionals;
- create new models of supply-demand within the ICT labour market, with the identification and addition of new elements;
- reduce the research time of ICT professionals and make the ICT training of current graduates more competitive by widening their knowledge spectrum.

Within this area of intervention, there are some actions to be rapidly implemented:

- remodelling training courses to encourage, at all levels, the study and use of ICT methodologies, approaches and technologies within the different areas of study and disciplines;
- reinforcing business and management models based on ICT technologies and introducing managerial skills able to steer the digital transformation in the private and public sector;
- re-qualifying the workforce with programmes dedicated to technological development;
- supporting field training and promoting technical training carried out in schools;
- encouraging companies to offer field training;
- encouraging technology transfer and start-ups also through "laboratories of excellence" at the service of companies, startups and *policy makers*;
- allowing company employees to spend time in universities and research centres to promote the exchange of knowledge.

The diagram below summarizes a possible scenario of interventions.

LE POLICY PER LE PROFESSIONI ICT

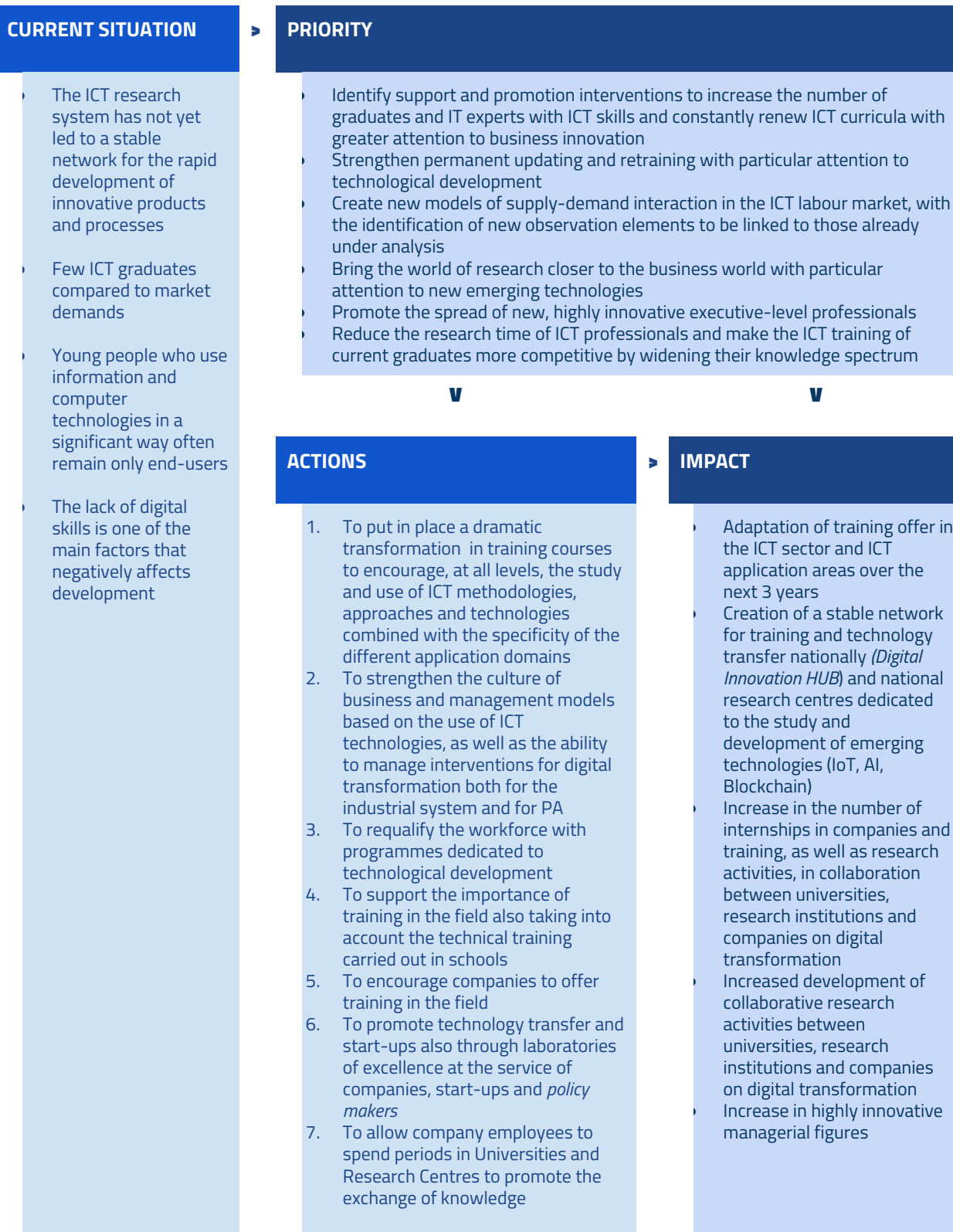


Impact and indicators

The impact can be measured on the basis of:

- reshaping ICT courses and the areas of application of the ICT sector;
- creation of a stable network for training and technology transfer for digital transformation on the national territory (*Digital Innovation HUB*);
- increasing the number of internships in companies and improving training initiatives among companies, academia and research institutions;
- increasing joint research initiatives on digital transformation among universities, research institutions and companies;
- increasing highly innovative managerial roles;
- introducing measures to support joint training between research institutions and industry;
- implementing initiatives to support the specialization of current graduates in the digital transformation area, and to retrain staff.

Overview



4. Digital skills of citizens

Include everyone, leave no one behind

The current situation

According to the ISTAT 2019 data, the level of digital skills of the Italian citizens is low and raises alarms. 42% of citizens do not have basic skills and more than one million Italians (3.4%) do not have any digital skills at all. 29% of internet users aged 16-74 have high digital skills, while 26% reach basic skills.

The percentage of the population with at least basic digital skills reaches a maximum of 67% in the 20-24 age group and 70% among all graduates, while it stops at 15% in the 65-74 age group. Even among young people aged 20-24, 28% of the population has lower than basic skills; the same is true for the graduate population, where just over half have advanced digital skills (52%). 51% of the working age population do not use the Internet, do not have digital skills, or do not reach the basic level.

Less than 70% of the population had access to the Internet in the 3 months preceding the ISTAT "Citizens and ICT" 2019 survey, but only 54% access it daily. The gap between the areas of the country reflects the gap in broadband access, with large differences between the Centre-North (71% have daily access) and the South (63%). There is still a gender gap in favour of men (72% versus 64%), but up to the age of 44 these differences are very small and disappear among the people under 19 years olds.

Compared to the services used, the use of the Internet for messaging (91%) and calls and video calls prevails, while banking services (46%) and payment services (40%) are below 50% penetration. The level of interaction with the public sector is still very low (29%), with considerable gaps between Regions and Municipalities of different sizes. 45% of Internet users over 18 years of age have made online purchases in the last year.

Ongoing initiatives

No structured training courses are currently active, but there are already several projects of national scope. Among the main ones:

- In 2014 the MIUR launched the [National Plan of Activities for Innovation in Adult Education \(PAIDIA\)](#) which supports the activities of the Territorial Networks of Lifelong Learning and promotes within them, the experimentation of the [PIAAC online](#) (ANPAL lead partner), providing the Provincial Centres for Adult Education (CPIA) with a self-assessment tool - which has been developed by the OECD - to measure adult skills.
- Since 2017, [FIERIDA](#) national fair has also been held; this is a major event dedicated to adult education that is promoted by MIUR and the Italian Network of Adult Education (RIDAP). Since 2019, the fair has been linked to [Visionary Leonardo](#), a training project on innovative teaching and digital technologies in education that provided over 60,000 hours of training in one year.
- The ANG inRadio network of the National Youth Agency has been active since 2019. It is a digital radio aimed at young people, social inclusion and strengthening digital skills through dealing with social and cultural issues.

Many of the active projects are collected within the National *Repubblica Digitale* initiative and the National Coalition for Digital Skills, which since May 2019 has been joined by numerous subjects (including schools, universities, administrations, companies, associations and bodies).²²

²² An updated picture of all member bodies and initiatives can be found at: <https://repubblicadigitale.innovazione.gov.it/>

There are numerous training initiatives in non-formal contexts: itinerants around the country, delivered in specific locations, delivered online, or related to specific projects or events.

There are also many initiatives of digital facilitation and training throughout the territory promoted by Regions (such as [Pane e internet](#) in Emilia-Romagna and [DigiPASS](#) in Umbria), municipal administrations, in-house IT, libraries and associations.

In order to strengthen the role of young people as digital facilitators and to promote access to digital skills, the Minister for Technological Innovation and Digitization and the Minister for Youth Policy are launching an experimental intervention, the so-called "Digital Civil Service".

Priorities and lines of action

The data call for actions in three priority main areas:

1. internet access among the working age population with little or no digital skills and low level of education;
2. digital literacy of the working age population already using the Internet;
3. digital inclusion/access of older people, women not in employment or in disadvantaged conditions, immigrants, people with disabilities and disadvantaged groups with a low level of education.

These priorities are translated into five lines of action:

- A. Education **paths for adults within schools**, in synergy with schools that open up to the territory and promote digital literacy initiatives, especially within the CPIA permanent education activities.
- B. **Training paths within the non-formal educational circuit**, based on the enhancement of lifelong learning, with online learning platforms that accompany the growth of the level of competence.
- C. **Street Route - Training in digital skills and awareness campaign**, with the help of neighborhoods, local communities and public spaces, such as libraries, creating networks of assisted access points and digital facilitation stations, and where it is possible, supporting access to the network and public digital services.
- D. **Communication initiatives**, based on the assumption that literacy and awareness-raising need a continuous communication activity, also with the constant support of the media, with an educational and not merely promotional goal.
- E. **Initiatives of digital inclusion**, with measures dedicated to disadvantaged social groups such as the elderly, people with low education or low income, people with disabilities, also with the help of widely available and easy to use tools such as radio and television and specific digital facilitation interventions.

The evaluation of the current initiatives and the experience gained shows the need to:

- 'leverage' experiences (both public and private sector and civil society) that have reached a level of maturity so to serve as a reference;
- address the problem of the lack of integration (at territorial level as well as between different actors and between administrations) and the sporadic nature of interventions and initiatives.

The *Operational Plan* should introduce national, structured and integrated interventions:

- enhancing experiences and initiatives that have proven to be effective at local and national level, also taking into account the comparison with other key players in the EU and the Commission's own e-skills development initiatives and plans;
- addressing the issue of digital skills development in a 'customized' way according to the starting level, so as to identify gradual objectives and targeted actions; engaging 'mediators' and 'facilitators' who can work with citizens in different areas and who can better accompany them towards the

digital path (librarians, operators of employment centres, senior citizens' centres, social assistance centres, etc.);

- integrating the availability of skills and places in the territory (e.g. schools, libraries, associations, digital facilitation points, etc.) as well as the opportunities offered by radio, television and the network, in a hybrid approach, in a general logic of putting the available resources into a system. Within this framework, by the end of 2020, MID is launching the initiative of 'digital gymnasium' with the aim of supporting the citizens' acquisition and strengthening of digital skills;
- from an organizational point of view, all the initiatives should share the multi-stakeholder approach and vision of the National Coalition, optimizing integration and collaboration between the different actors.

In particular, for the CPIA, in addition to the training of teachers, priority is given to interventions aimed at encouraging the use of technological instruments and laboratory spaces not only in projects to expand the training offer, but also in the first level courses, as well as in the Italian language. With reference to the latter type of training offer, the availability of teaching modules to be carried out with the support of technological tools would prove to be particularly effective, also in consideration of the target size.

Impact and indicators

The intended impact, consistent with the expected results of the *Strategy*, can be summarised in:

- increasing the number of citizens and working population with at least basic digital skills;
- increasing the number of disadvantaged individuals (including older people) with at least basic digital skills;
- increasing the use of the internet, with particular reference to certain core activities (including *eGovernment* services) and to disadvantaged groups.

The specific indicators in this axis are linked to the lines of intervention and actions, and in particular:

- to the population involved in online self-assessment and training actions to reach the basic level of digital skills;
- to the population benefiting from digital facilitation activities for the use of the Internet and the main digital services;
- to the population of the two previous areas included in the disadvantaged categories;
- to the gender balance in the population involved in the interventions and its distribution among the age groups.

The mid-term objective to be achieved by 2025, is to involve a certain percentage of the target population in the digital facilitation and training activities, and all the initiatives developed within the *Repubblica Digitale*, including those of the *National Coalition*. The objective is to improve Italy's ranking so as to be in the first three positions with the EU countries with similar socio-economic and demographic characteristics (Germany, France, Spain and Poland) and the United Kingdom.

Overview

