DIGITAL TRANSFORMATION OF BULGARIA FOR THE PERIOD 2020-2030

Sofia
2020

CONTENTS

PREAMBLE

The development of the digital technologies and their penetration into all spheres of the economic and social life enforces a rethinking of the approach to exploiting their exceptional potential to increase the competitiveness of the Bulgarian economy, increasing demand and supply and efficiency of public services and successfully overcoming the main social challenges in the period up to 2030.

Digital transformation is a process characterized by the widespread implementation and combining of digital technologies in all spheres of public and economic life. FIG. 1 presents schematically the digital transformation, with the main participants and their interconnectedness.

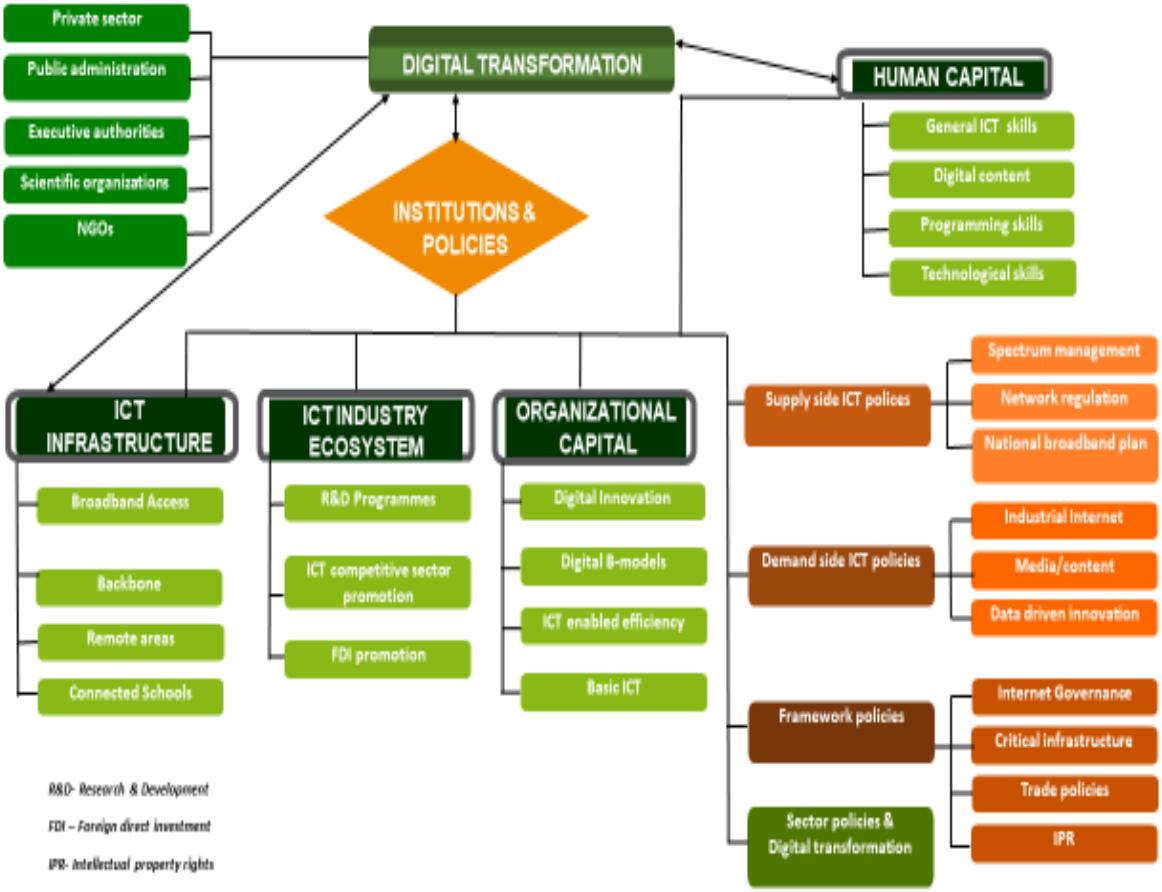

Fig. 1

The accelerated digital transformation is a prerequisite for the anticipated development of industry production, for economic growth, and increasing incomes. The development of this process requires adequate and timely measures to increase the knowledge and skills of citizens, to acquire new skills and qualifications and to create a culture of lifelong learning that corresponds to the increasingly dynamic nature of the labor market.

The digital transformation, along with the European Green Deal, is also a key priority at European level. The European Commission reports annually on digital progress in the EU Member States through indicators that compose the Digital Economy and Society Index (DESI). Unfortunately,

Bulgaria ranks last under this Index. There is also a significant lagging behind the average European levels of digital connectivity, the use of digital skills online, the digitalisation of enterprises and digital public services.

The COVID-19 crisis has also confirmed the need to accelerate the digital transformation in practically all economic and social sectors and proved that large-scale efforts for exploiting the potential of digital technologies are not only necessary but also mandatory. The economy will increase its competitiveness and sustainability through them, as well as will create new sources of revenue from new business models and services that create jobs. Investments in digital technologies are also investments in achieving the ambitious goals of the European Green Deal, such as building a clean and circular economy, intelligent mobility, energy integration, precision agriculture and others. The pandemic has demonstrated the growing importance of digitalisation to all aspects of the economy, society, and government. It also reaffirmed the need to build high-speed digital connectivity and data potential utilization by removing barriers to data sharing. This complex environment has shown that artificial intelligence and robotics can provide many solutions to improve healthcare. Undoubtedly, the benefits of e-education and training and their social effect have been proven.

In these changed realities, the public sector, and in particular public institutions, will play an increasingly important role in establishing the necessary legal and regulatory environment promoting the innovation by facilitating business access to finances and attracting investment, incl. through European Union funds. The private sector can benefit from the new conditions for creating efficient supply chains, opening up new markets and creating innovative business models that are also in line with the goals of the digital transition.

The economic and social consequences of COVID-19 are unprecedented and call for strong, collective, and urgent measures to restore Bulgaria's economy to sustainable and inclusive growth.

This document defines the vision and goals of the policy for digital transformation of the Republic of Bulgaria for the period until 2030, as a generalized policy framework where the National Program "Digital Bulgaria 2025", the priorities of the "National Development Program BULGARIA 2030" and a number of other national strategy papers with a technological component (listed in the Annex to this document) covering the period 2020-2030 take place. It takes into account the goals of the UN Agenda 2030 for Sustainable Development and the use of new technologies to achieve them, as well as the European Commission's Strategy Papers "A Europe Fit for the Digital Age", "Shaping Europe's Digital Future ", "A New Industrial Strategy for Europe" and others.

VISION

The digital transformation is a necessary process of technological development of Bulgaria in order to create conditions for innovation and business growth, increase the efficiency of the workforce, a competitive digital economy, and a high citizens' standard.

Guided by the strategic goals of our country for accelerated economic development, demographic growth and reduction of social inequalities, set in the "National Development Program of Bulgaria 2030", by 2030 Bulgaria should build a functioning and secure environment to unlock the full potential of digital technologies for the digital transformation of all key sectors, reaching the average European values under the Digital Economy and Society Index DESI.

PRINCIPLES

- **User-oriented approach and access to all digital services**

In the times of digital transformation, consumers are the engine of change. The process of digital transformation should be carried out together with people pursuing their benefit by targeted implementation of new models, solutions and applications for inclusion and development of human potential based on building a digital culture and thinking to achieve concrete results and enrich the life of citizens. The provision of affordable digital services to all citizens, including to those in the

small settlements of economically disadvantaged areas where there is no business interest, should be supported by public funds.

- **Ethical and socially responsible access, use, sharing and management of data**

Every day, the administration and business generate a huge amount of digital data, the processing and use of which require responsibility, security and confidentiality. Digital data should be used in the public interest to adapt products and services, analytical tools and behavioral marketing in order to improve the digital services and decision-making process.

- **Technology as a key factor**
- Technology is a means, not a goal in the digital transformation. The integration of modern technologies with simple solutions is the ideal combination that will make our country intelligent, competitive and sustainable. The adherence to technological neutrality trough regulatory actions ensures citizens and consumers interests protection **Cybersecurity at the design stage**

Applying a system of standards and norms for ensuring the security of network and information resources at all stages of projects' implementation, in order to avoid prerequisits and conditions for vulnerability and compromising of private data.

- **Cooperation**

The success of the digital transformation lies at the multistakeholder model in making socially significant decisions and in building business platforms for cooperation.

GOALS

I. Deployment of secure digital infrastructure

Deploying networks with a very high capacity to ensure that no part of the country or a group in society is left without adequate digital connectivity, is fundamental for developing a dynamic and innovative economy and provides better access of the enterprises to diverse, high-quality and innovative digital services. Digital connectivity contributes to providing access to all major drivers of socio-economic development, such as schools, hospitals, transport centers, major public service providers, etc.

The infrastructure that integrates physical and digital aspects is crucial to deliver the next wave of innovation and economic growth. The secure, high-speed connectivity will stimulate data centers building, as well as cloud computing, which will ensure data security and an advanced open approach to the technology and a high degree of scalability.

II. Providing access to adequate technological knowledge and digital skills

Digitalisation has a major impact on society's transformation and related changes in the labor market. The lack of competences in the field of information and communication technologies (ICT) and the need to improve the technological knowledge and digital skills of the workforce is one of the most important challenges facing education and training systems at all levels. Both are needed to deal with this transition - the change in the education system and adequate measures in the social sphere. First of all, we need to help everyone to develop basic digital skills, as well as skills that are complementary by nature and cannot be replaced by any machine - such as critical thinking, creativity, management. Secondly, urgent measures and targeted efforts should be made to include technological disciplines and digital skills in curricula at all levels of education and vocational training and retraining systems. Thirdly, access to social protection should be guaranteed for people whose jobs are likely to undergo the strongest transformation or disappear as a result of the economic consequences of the pandemics, automation, robotics and artificial intelligence.

III. Research and innovation capacity strengthening

Digital technologies are a means to stimulate and support research and innovation and define the shape of the future digital economy. At the same time, technological progress would not be possible without research and development. Therefore, providing support for research organizations focused on fundamental and applied research, start-ups and small and medium-sized enterprises (SMEs) involved in the creation and implementation of innovative solutions and technologies, as well as supporting and promoting the use of existing technologies and innovation by these organizations is one of the main goals of the digital transformation policy. The main emphasis in this situation is put on improving the coordination and institutional framework in the field of science, research and development, innovation and stimulating the cooperation with business and industry, as well as the international cooperation.

The effective and efficient support for research and innovation in the field of information and communication technologies and their application is expected to have a horizontal effect on the digitalisationof the other policies and sectors.

IV. Unlocking data potential

The digital transformation should be built on a sustainable, competitive and human resources-based data economy, in which data quality and respecting privacy are essential. Linked data will be a main source which will feed the digital economy, including when using smart technology tools with analysis and decision-making capabilities. Big data generated by equipment, machinery and people provide significant opportunities for innovation, new business models and smart products and services, and have huge potential both to provide competitive advantages to companies from all sectors of the economy and to develop new quality services of the public sector.

Further actions are needed to stimulate the collection, storage and highly efficient processing of data and their efficient use and re-use. The main emphasis is put on expanding the volume of open data generated and processed by state institutions and businesses and facilitating the sharing of data between private entities. This is essential for the increasing knowledge accumulation policy and strengthening the sustainability policy, as well as promoting the economic competition.

V. Digitalisation in favor of a circular and low-carbon economy

The digital transformation will strengthen the export orientation and competitiveness of the economy and the transition to a circular and low-carbon economy. Enterprises should be encouraged to contribute by modernizing their technological base, adapting their business models to future changes, implementing the principles of sustainable development and taking advantage of innovation based on digital technologies.

The industry is the innovation's engine. It undergoes a profound transformation, driven by digital technologies and new business models. Therefore, modernization efforts are needed to ensure that our industry is competitive. For this purpose new technological changes should be accepted, and new products and services should be integrated. It is necessary also to develop and implement technologies that use less energy reduce waste and avoid pollution, and to invest in a workforce with adequate skills. Particular attention should be paid to the support for start-ups and small and medium-sized enterprises (SMEs), which comprise a significant share of the Bulgarian economy. The implementation of products, technologies, business models and processes from Industry 4.0 in order to achieve modernization, automation and competitive positioning of the Bulgarian economy in medium to long term can turn Bulgaria into a regional center of the digital economy.

Wider implementation of intelligent and sustainable transport solutions will contribute to optimizing the transport processes and increasing the attractiveness and safety of the transport system, while reducing the development and maintenance costs of transport networks and the negative impact of the transport on the environment. The intelligent mobility is about moving people and goods in an easier, more efficient and more environmentally friendly way, which builds on the use of physical transport infrastructure by implementing new technologies and using large datasets. The implementation of intelligent transport systems in the different modes of transport, the gradual implementation of electronic communication in the transport of goods and the establishment of conditions for implementation of autonomous vehicles will help to achieve this goal.

Digitalisation will allow the agricultural sector to realize its high potential by achieving increased productivity, added value, improved quality and safety, and thus to increase the incomes and quality of life, to reduce drastically the pollution to sustainable levels, to response in flexible and quick manner to market trends. The main goal of the digitalisation of Bulgarian agriculture and related agricultural business is to turn it into a high-tech, sustainable, highly productive and attractive sector of the Bulgarian economy, which in addition to improving the living conditions of farmers also improves rural areas as a whole.

Digitalisation in the energy sector is also of a strategic importance. The actions to decarbonise the energy sector in line with the European energy policies, including new energy storage solutions and smart grids, are key ones; development of intelligent metering systems or intelligent metering devices and energy management systems in near real time; the active involvement of consumers in supporting the energy balance through energy management measures; the development of energy efficiency measures based on digital solutions for managing energy consumption at home; the digitalisation of the electricity transmission system and the implementation of data management, cybersecurity and data protection systems.

VI. Improving the public administration efficiency and the quality of public services

The digital transformation in terms of public administration will be focused mainly on the transformation of processed and stored data into society's fundamental capital. By developing and implementing interoperable interfaces and models for processing, storing and providing access to data, opportunities for the transition from data to linked data will be created. The same will play a key role for the purposes of public administration, including in the preparation of analyzes, forecasts and informed management decisions. Linked data and their competent use will be the main tool through which the public administration will be able to regulate the public relations in accordance with the rapidly changing requirements dictated by their development in the digital environment. These relations concern each of the public life sectors and are of a key importance to its development. By providing access to quality and up-to-date data, additional opportunities will be available to citizens and businesses.

The process of digital transformation, if the state manages it in a timely, adequate and competent manner will change the model of interaction with citizens and businesses regarding the provision of public services and will increase the public administration efficiency. Efforts will be focused on reducing the number of administrative services and transforming them into internal administrative ones, making the electronic interaction between citizens and business with the state the main and preferred way, eliminating the use of paper documents at the expense of electronic documents and increasing the maturity and trust of society in electronic interactions.

AREAS OF IMPACT

1. Digital infrastructure

The digital infrastructure is the basis and is a necessary prerequisite for the digital transformation. The digital infrastructure includes both communication networks and devices, equipment, systems, protocols, data, places for their storage and other tools that enable connectivity, exchange of information, data sharing, service delivery, application usage, process management, etc.

The digital infrastructure, as shown in fig. 2, is the core of the digital ecosystem.

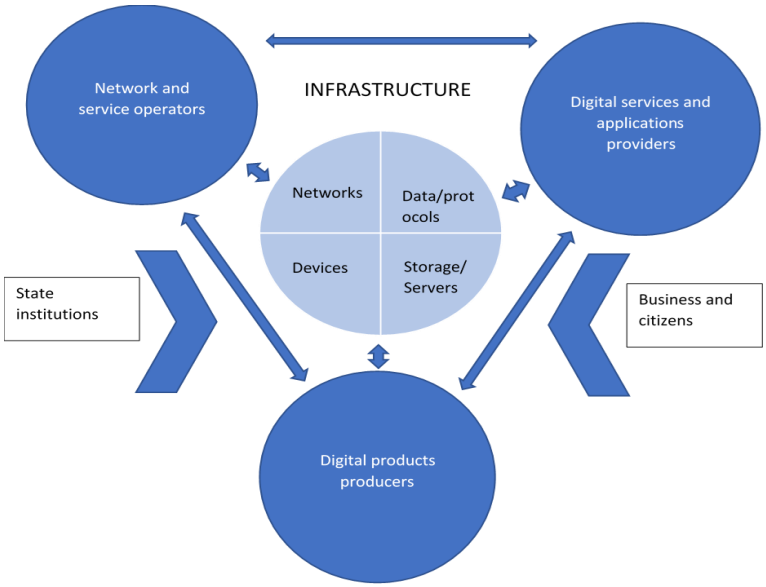

Fig. 2

The availability of modern infrastructure is an important prerequisite for sustainable growth, innovation and provision of a wide range of digital services based on the rapid exchange of large volumes of data. This infrastructure should be able to support the rapidly increasing traffic, providing coverage of a sufficient capacity and the ability to transmit data in the volume, speed and reliability needed to meet the needs of modern life. The improved connectivity will play a crucial role in increasing the innovation and productivity, as well as enabling everyone, regardless of the location, to make full use of digital services and benefit from participation in the digital economy.

Broadband Internet access is one of the cornerstones of the digital revolution. Non-discriminatory, safe and effective access to the Internet should be provided as a public interest service so that everyone can participate in economic and social life. Without a high-quality and steady digital infrastructure, the use and operation of services are limited and/or significantly hampered, and so are the technologies use and development. Broadband Internet access is recognized by the European Commission as one of the main tools for improving the economic and social well-being of the population. It becomes an increasingly important factor not only for the competitiveness of enterprises but also for supporting social inclusion and enables the development and use of digital governance services.

The mobile use of the Internet significantly increases due to the growing digital implementation in social and economic processes. The fifth-generation 5G digital network is a key future technology in this field. Higher data rates, low latency and high density of connected devices will allow the development of a wide range of new business models in areas such as autonomous driving, Industry 4.0, digital agriculture, trade and crafts, energy, digital learning, digital governance, digital healthcare and logistics. Bulgaria can remain competitive on the international stage only if it has an appropriate digital infrastructure.

The digital transformation requires significant improvement of the existing infrastructure. The full economic and social benefits of the digital transformation will be achieved if a wide deployment and use of very high-capacity networks are ensured. That's why 5G networks and optical networks will be among the most important building blocks of our digital economy and society over the next decade. In addition, the digital infrastructure should be secure, sustainable, reliable and interoperable in order to support a huge range of applications and services. This type of high-tech networks and services requires the adoption of measures to ensure the required level of security, incl. prevention of the consequences of accidents. Security measures should take into account at least physical and environmental security, security of supply, networks access control and their integrity.

Market development requires a consistent and coordinated government policy to establish the appropriate conditions for the successful deployment of new generation networks and services and to achieve sustainable development of a strong, competitive and dynamic electronic communications sector. It is important to continue establishing conditions that encourage investments in the infrastructure. Balanced regulation and regulatory predictability are at the heart of sustainable

competition and good consumer interests protection. The competition, in turn, helps to ensure that the sector meets the consumers' needs in line with the technological change.
Simplifying regulation and reducing business costs are essential aspects for building infrastructure and deploying new very high-capacity networks. Providing flexibility to operators to develop new approaches to reducing the cost of implementing and managing risks and active public investment in the infrastructure are effective measures that will stimulate the deployment of digital networks, especially in sparsely populated areas where there is no market interest.
Legislation, in accordance with European Union law should ensure fair and reasonable conditions and promote the competition, further efficient use of existing infrastructure and investment in new very high-capacity infrastructure, including in remote regions. More predictable rules on the infrastructure access, joint investment and promoting risk-sharing will facilitate the deployment of new very high-capacity networks.
Expectations of 5G networks are definitely high. However, their deployment poses also challenges in terms of the availability of free radio spectrum for civil needs, the application of standards, the building of short-range wireless access points (small cells), the facilitation of innovation and new use cases, investment mobilization and digital separation risk mitigation. By 2030, the government is ambitious to provide gigabit connectivity for all major socio-economic drivers such as schools, transport hubs and major public service providers, as well as digitally intensive enterprises. The support for connecting these digital growth drivers will significantly improve the business situation for operators by stimulating demand and lowering network deployment costs.
The support for high-speed connectivity will be accompanied by measures to increase the digital skills of citizens and to stimulate the demand for Internet-based services by the population and business. The widespread use of digital technologies will direct the population to take advantage of opportunities to reduce the use of energy and resources. This will reduce personal energy costs and support the energy policy for climate protection. The intelligent technologies and applications will increase the energy efficiency and reduce the energy dependence.
Efforts will be focussed on building an efficient cloud infrastructure, data exchange tools, architectures and mechanisms for managing thriving data sharing ecosystems and artificial intelligence. The transformation of data and their models can lead to huge cost savings for any society's group, as the main problem is not technological - they are available. We need a change in our thinking regarding the way we interact. The investments should cover actions with a significant impact on the data spaces, covering data sharing architectures (including data exchange standards, best practices, tools) and governance mechanisms, as well as energy-efficient and reliable cloud infrastructures and related services in order to facilitate the combined investments.
Ensuring internet access for all users, regardless of their location or income, is a top policy priority in the area. The modern and predictable legislative framework, which will implement the requirement to include adequate and financially acceptable Internet access in the scope of the universal service, will allow every citizen, every business and every public institution to use the opportunities for digitalisation under equal terms throughout the country. The quality broadband internet access at an affordable price is vital for the society and the economy as a whole. It provides the basis for participation in the digital economy and society through important online services.
The universal service guarantees the availability of a minimum set of services for all end-users and at affordable consumers prices when the risk of social exclusion arising from the lack of such access prevents citizens from fully participating in economic and social life. This area of impact corresponds to priority 8 "Digital Connectivity" of the National Program "Bulgaria 2030". *The priority will play a significant role in the implementation of Goal 11 " Make cities and human settlements inclusive, safe, resilient and sustainable" and Goal 9 " Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" from the UN Sustainable Development Goals.*

2. Cybersecurity

Cyberspace is characterized by vulnerabilities unknown in nature and potential impact, which require raising the cyberculture and cybersecurity of the whole society, implementing active measures to prevent known types of threats and preparing for the unknown ones to achieve cyber resilience in

all areas. This includes protection against cyber attacks and efficient and high-quality cyberinfrastructure, as well as the protection of privacy, personal and business data, as a key component of the digital economy.
Cyberattacks extend their scope and tend to escalate enormously. That's why taking action to prevent them becomes a primary goal of the state for the next ten yearsThe main tasks are to ensure security in cyberspace, data security, and security of information systems in public structures. The state clearly and purposefully follows international and European methods and practices regarding the building of cybersecurity. The Cyber Security Act, which transposes Directive 2016/1146 / EU on the measures for a high overall level of network and information systems' security in the Union, requires the national legislation to establish a "Cyber Security Center", which carries out the detection and investigation of criminal activities in the field of cyberspace, interacts with all stakeholders and performs adequate risk analysis in the field of cybersecurity. An important goal is to conduct training and certification of knowledge and skills in the field of cybersecurity, which will contribute to increasing the general cyberculture and cybersecurity of both society and state. The cybersecurity policy is aimed at timely and adequate informing the public about possible and suspected internet vulnerabilities thus aiming timely prevention.
With the growing number of digital services and levels of risk, strengthening trust and security in the use of information and communication technologies is the basis for economic growth and prosperity. The national cybersecurity policy implies development in several key areas: development of the national cybersecurity and sustainability system; network and information security; strengthening the fight against cybercrime; cyber defense and protection of the national security; raising awareness, knowledge and competencies and developing a stimulating environment for research and innovation in the field of cybersecurity and international cooperation. Critical infrastructuresrepresenting a particularly important part of the national economy and society and main environment of cybersecurity activities are defined. The cyber resilience achieving requires security and reliability of hardware and software devices, technologies, information, people, connectivity and interoperability of the communication channels, systems and services and specific requirements for their design and implementation.
This area of impact corresponds to priority 10 "Institutional framework" of the National Program "Bulgaria 2030". The priority will play a significant role in the implementation of Goal 16 "Promoting peaceful and inclusive societies for sustainable development, ensuring access to justice for all and building effective, accountable and inclusive institutions at all levels" from the UN Sustainable Development Goals.

3. Research and innovation

Research, technological development and innovation are the basis for achieving dynamic and sustainable economic growth. Bulgaria needs an effective system for research and innovation, based on close cooperation between the academic organizations and business and being internationally connected, so that the economy and society can benefit from the generated knowledge and the innovative products and services based on it.
Efforts will be focused on establishing and or continuing support for research centers of excellence and centers of competence, institutes of the Bulgarian Academy of Sciences, public universities and research infrastructures with the potential to connect to European networks by upgrading the research infrastructure and equipment, including IT connectivity and supporting infrastructure, encouraging the participation of supported organizations in the European Union's "Horizon Europe" Framework Program for Research and Innovation and ensuring the interdisciplinarity of their research programs.
It is also necessary to provide for, on a competitive basis, additional funding for specific market-oriented applied research at a level of technological readiness (TRL 4-6) in the field of digital technologies. The support for the development of the Bulgarian Open Science Cloud as a part of the European Open Science Cloud will allow and foster open access to scientific results, as well as storage, analysis and reuse of data generated during research.
Efforts will continue to be put on creating conditions for attracting young scientists and internationally renowned highly qualified scientists and accordingly to ensure support for transfer of

scientific results to the industry and the public sector and for establishing start-ups developing innovation based on them.
Support is needed to develop the ICT sector capacity for research and innovation. With an average annual increase of 17% since 2007, our ICT sector is one of the fastest-growing in the economy, and the software industry is the fastest-growing segment. The software industry's export potential is particularly strong, which requires investment only in human resources. Bulgaria establishes itself more and more as a destination for the development of R&D intensive innovative technologies not only in software but also in hardware. An example for this is the growing presence in the country of production bases and R&D centers of multinational leaders in the automotive industry and especially the part of microelectronics and IT products. It is a R&D high-intensity sector. There is a steady trend towards establishing highly innovative start-ups and developing SMEs, mainly in areas such as financial technology, the Internet of Things, data analysis and artificial intelligence. They are the ones who need support through easier access to financial instruments and schemes, consultancy services, infrastructure for testing innovative products and services in real conditions, and participation in European research and innovation programs.
Priority should be given to strengthening the cooperation between academic institutions, enterprises, especially those in the ICT sector for joint participation in research and innovation projects within the programs of the National Research Fund and the National Innovation Fund, as well as in the new European programs such as "Horizon Europe" and "Digital Europe". The National Development Program Bulgaria 2030 envisages a fund for development of Industry 4.0 at NIF to be established, as well as to finance project proposals of enterprises that have won the "Seal of Excellence" under the programs "Horizon 2020" and "Horizon Europe". It is particularly important that small and medium-sized enterprises and start-ups and public organizations wishing to develop and implement innovation to have easier access to the technology and research infrastructure of the academic institutions. Providing state support for the establishment of Digital Innovation Centers (Hubs), which will be funded in part but not entirely by the "Digital Europe" program, will give opportunities for businesses to access the technological expertise and experimental facilities to support the digital transformation of the industry and the public administration.
"Informatics and ICT" and "Mechatronics and Clean Technologies" are priority thematic areas in the Innovation Strategy for Smart Specialization 2014-2020, in which it is identified that Bulgaria has the capacity to build new technologies, leading to competitive advantages of our national products and services. "Informatics and ICT" is a vertical priority under operational Goal №1 and a horizontal priority under operational Goal №2 of the Strategy.
Thematic area "Informatics and ICT" will be a priority in the new Innovation Strategy for Smart Specialization 2021-2027 as the scope of measures to foster the digitalisation of enterprises through the technologies of Industry 4.0 will expand. The applying will be fostered through integrated projects for financing innovation in enterprises, which will combine both priority thematic areas - "Informatics and ICT" and "Mechatronics and clean technologies".
This area of impact also corresponds to priority 3 "Intelligent Industry" in the National Program "Bulgaria 2030". The actions envisaged will contribute to the implementation of certain aspects of Goal 8 "Stimulating lasting, inclusive and sustainable economic growth, full and productive employment and decent work for all", as well as Goal 9 " Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation"from the UN Sustainable Development Goals.

4. Education and training

According to the Ministry of Education and Science, the national education system currently includes more than 2,600 educational institutions of various levels (schools, colleges, universities, etc.), in which more than one million students receive their education. The educational process is provided by more than 85,000 teachers and lecturers. All these institutions use ICT of different types and kinds, at all levels of their activity. Both the availability of modern ICT infrastructure, modern educational content and the knowledge and skills to handle them are essential for the training effectiveness.

An adequate and modern management vision presumes the massive use of all new trends for technological renewal of the educational institutions, which is able to qualitatively change the process of educational development. The priority areas in the field of education and training are related to the provision and maintenance of high-speed and secure basic communication connectivity, as a basis for offering educational services, digital governance and network interaction between the participants in the educational and scientific process. It is also necessary to build and maintain a cloud learning environment for service delivery, including software as a service (SaaS), infrastructure as a service (IaaS) and platform as a service (PaaS).

To have a modern quality education, modern flexible content platforms should be implemented and developed in support of pre-school, school and higher education, as well as lifelong learning, which use modern ICT equipment and software and provide distance learning and knowledge control and management of the learning content. This inevitably requires the development, adaptation, implementation of digital educational content, as well as the identification and validation of valuable interactive multimedia e-learning resources, enabling blended, distance learning (both synchronous and asynchronous) for learning purposes.

Providing an appropriate environment for the development, research and implementation and maintenance of data management, control and analysis systems, including big data, artificial intelligence systems and augmented and virtual reality, is also crucial, as they open up a number of new opportunities for the educational system development.

From a technological point of view, information and network security should be ensured by building and maintaining accident recovery centers, as this security is a condition without which the existence of any large information system storing and processing personal data is inconceivable.

The success of the education and training digitalisationis inconceivable without the development of the "human factor" - participants in the educational process will be encouraged to acquire and improve digital skills and the use of innovative teaching and learning methods, including by supporting and promoting the lifelong learning process. In this regard, the priority are the pedagogical staff qualification , as well as the possibility for additional education, distance learning, networking and lifelong learning.

The technologies development requires also building and updating of an appropriate legal framework, including with respect to digital learning content and a framework for ICT competences of the teachers at all levels of education and training, in line with the Digital Competence of Teachers Competence (DigCompEdu) published by the European Commission which identifies and describes the skills that digital educators need to teach and innovate through the use of digital technologies.

This area of impact corresponds to the priority "Education and Skills" in the National Program "Bulgaria 2030". The actions envisaged will contribute to the implementation of certain aspects of Goal 4 "Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all" from the UN Sustainable Development Goals.

5. Adaptation of the labor market - education, training and social protection

As digitalisation spreads in all economic and social sectors, the digital skills are becoming more and more necessary. In fact, most jobs already require basic digital skills. This trend will increase in the future, and it can be argued that all participants in the labor market will need these skills to stay working. However, much of the workforce (employed, self-employed and unemployed) does not even have basic digital skills. There is a need to improve considerably the understanding and definition of the needs of digital skills, as well as to work actively to upgrade the digital skills of the workforce. It is a continuous process that requires people to acquire digital skills through a modern education system that provides the knowledge and skills needed for adaptation to the digital economy. A quality workforce is a product of a quality and effective lifelong education and training system, , a system that is required to be related to the needs of the economy and employers.

The digitalisationrequires implementation of both preventive and follow-up measures to adapt the workforce. The prevention to enable new employment and transition from one employment to another with minimal or no period of unemployment, which can be implemented in the form of support for the acquisition of new knowledge and skills, individual approach to the vulnerable persons in the labor market and their need of skills and more high-quality career consulting and information

services. It will also be important to provide reliable, up-to-date information on future trends in labor supply and demand. The follow-up measures will include training to acquire new or improve existing key competencies and professional qualifications and the acquisition of new skills for specific new jobs, as well as the full use of modern forms of learning and more opportunities for mobility.
Investment in further training and retraining should be fostered, particularly in the field of digital skills acquisition. Every effort should be made to reduce the differences in competencies between the different age groups in terms of information and communication technology skills, as well as the skills of the STEM group (science, technology, engineering and mathematics). It is of a paramount importance to identify the groups of people with the lowest digital and STEM skills and to take into account the need to include them in training in order to compensate for this deficit and improve their employability.
On the other hand, the demand for highly qualified specialists in the field of information and communication technologies is growing strongly, both for the needs of the rapidly developing ICT sector and for the needs of the economy, social sectors and public administration. To meet this challenge, a complete modernization of the education system at all levels is needed, and this is especially important for higher and secondary vocational education. It is necessary to timely update the training disciplines and add new courses, corresponding to the rapid development of ICT and the dynamic changes in the business organizations IT environment . The training of teachers, the availability of appropriate material base and the provision of better interaction of the educational structures with the business environment in ICT education are of a paramount importance. The focus will be on expanding the career consulting and building an innovative learning environment to enable better career choices. This can be supported by setting quality standards for digital literacy training. Employers should be encouraged to provide non-formal digital on-the-job training, labor market intermediaries will be relied on to reduce structural qualification skills gaps, especially for workers at risk of losing their jobs due to automation, robotisation, and other similar work processes. The employment offices will foster inclusion in digital training and promote employers to hire trained workers.
One of the major transformations in the world of work over the last decade has been the appearance of online digital work platforms. Working through digital platforms gives workers the opportunity to work from anywhere, at any time and to take a job that suits them. However, there are risks for employees from participating in such work in terms of their employment status, adequate income, social protection and coverage of the necessary social and health benefits. These new challenges should be addressed in the period 2020-2030.
Fostering investment in human capital is crucial to meeting the challenges of globalization and digitalisation and their impact on the workforce. Single-hearted support is needed to ensure quality employment, incl. self-employment and other forms of employment, to ensure the development of human capital and the building of an inclusive labor market. In a world of rapid technological change, the market will go where the skilled workforce is. The key challenge is to strike a balance between supply and demand as the workforce is equipped with the right skills to master the opportunities that new technologies provide.
This area of impact corresponds to the priorities "Education and Skills" and "Social Inclusion" in the National Program "Bulgaria 2030". The actions envisaged will contribute to the implementation of certain aspects of Goal 4 "Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all" and Goal 8 "Promoting inclusive and sustainable economic growth, full and productive employment and decent working conditions for all "from the UN Sustainable Development Goals.

6. Digital economy

The digital transformation has huge potential for economic growth. Bulgaria can build on its strengths in advanced digital technologies and its strong presence in traditional sectors, to take advantage of the opportunities offered by technologies such as 5G networks, Internet of Things, big data, robotics and artificial intelligence, blockchain, 3D printing, and others. This will enable us to take a share of emerging markets for the products and services of the future.

Currently, companies in Bulgaria do not take full advantage of new digital technologies and innovative business models. The state of industry digitalisation varies in different sectors, especially between high-tech and traditional sectors. In order to ensure rapid digitalisation of the economy, every enterprise should be able to implement solutions that support the development, testing and experimentation of new products and services based on digital technologies, including artificial intelligence. Particular attention should be paid on improving the access to advisory services and financing for high-risk innovative start-ups, both in the early stage of their development and in their scalability /growth.

The Bulgarian industry's future is in the digital transformation, which is the essence of the current industrial revolution. The digital technologies enter in an intensive manner in all sectors of the world economy and society, and traditional relationships in the physical world are largely characterized by a digital dimension. The rapid development and innovation in the digital field create economic opportunities for innovation, growth and employment and make people's lives easier.

Industry and its interaction with the services sector occupies a large share and plays an important role in the development of Bulgaria's economy. This synergy should be supported by facilitating investment in new technologies and accepting the changes that have taken place as a result of the increased digitalisation and the transition to a low-carbon and circular economy.

The concept for digital transformation of the Bulgarian industry (Industry 4.0), as well as other documents under development such as the National Strategy for Small and Medium Enterprises (SMEs) in Bulgaria for the period 2021 - 2027, provide goals and measures to support industry and small and medium enterprises for implementation of products, technologies, business models and processes from Industry 4.0.

In the draft National Strategy for Small and Medium Enterprises (SMEs) in Bulgaria for the period 2021 - 2027, one of the 6 priority areas in it is "Digitalisation and skills". The envisaged measures are focused on supporting the digitalisation of enterprises, including onmastering advanced digital technologies and related technologies. SMEs should also be supported to digitize their products and services, to develop new ones, to train the entrepreneurs and employees to develop digital skills. The indirect measures for digitisation of enterprises are the support for builging and development of the environment and infrastructure for SMEs, such as incubators, accelerators, hubs and clusters.

The main directions for reaching the average European level for the penetration of digital technologies in the Bulgarian economy and society, set in the draft Strategy for Digital Transformation of the Economy are:

- ✓ - Improving the cooperation between businesses in the field of ICT, industry, science and government, by orienting research to the Industry 4.0 technological trends and fostering opportunities for participation in various international initiatives in the field of digitalisation;
- ✓ - Technological renewal of the Bulgarian industry, by establishing models for exchange of experience, good practices and implementation of new business models;
- ✓ - Building human, scientific, organizational and institutional capacity for the development of Industry 4.0 in Bulgaria, by increasing the digital skills and adapting the qualification systems to the new technological challenges;
- ✓ - Fostering the use of artificial intelligence technologies in the Bulgarian industry.

This area of impact corresponds to priority 3 "Intelligent Industry" in the National Program "Bulgaria 2030". The actions envisaged will contribute to the implementation of certain aspects of Goal 8 "Stimulating sustainable, inclusive and sustainable economic growth, full and productive employment and decent work for all", as well as Goal 9 " Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" from the UN Sustainable Development Goals.

7. Agriculture

The rapid digitalisation of Bulgarian agriculture and rural areas is a necessary process for reducing bureaucratic burdens, optimizing production processes, increasing incomes and yields of farmers, achieving sustainable bio-industry, maintaining food safety in conditions of increased industrialization and new immature technologies, drastic increase of competitiveness and increased demand for Bulgarian products on the single European and world market.

The strategy for digitalisation of agriculture and rural areas of the Republic of Bulgaria envisages the following areas of activity to develop the Bulgarian agricultural economy potential: building and development of appropriate digital infrastructure for communication and connectivity; investments in modernization and technologies for precision agriculture; development of digital networks and use of software applications in business management and decision making; awareness, training and advisory services for the development of digital skills and qualifications, research and innovation, partnership for exchange and transfer of innovation, development of experimentation infrastructure and access to it.*This area of impact corresponds to Priority 6 "Sustainable Agriculture" in the national program "Bulgaria 2030" and Goal 2 "End of hunger - achieving food security and better nutrition, promoting sustainable agriculture" from the UN Sustainable Development Goals*.

8. Transport

Digital technologies provide huge potential for optimization of the transport system and open up new opportunities for manufacturing and services. They support the integration of transport with other systems of the economy, such as energy, and significantly increase the efficiency of the sector. For the full use of the potential of digitalisation in the field of transport, it is necessary to create conditions (also regulatory frameworks if necessary) to stimulate the development and market penetration of such technologies, as well as to follow common standards to ensure interoperability of systems and enable the exchange and analysis of data, while ensuring their protection and cybersecurity.

The wider use of digitalisation in transport is an area with great potential for lower-emission mobility, as well as the possibility of rapidly introducing relatively cheap and easy measures with a measurable effect, such as electronic cargo handling ("e -Freight "). Accelerating the already started implementation of intelligent transport systems, grouping different vehicles and expanding autonomous vehicle management policies can be an important resource for improving transport efficiency in the road, rail, maritime and air transport sectors.

The implementation of the European Rail Traffic Management System (ERTMS) is carried out in accordance with the European Plan for implementation of European rail traffic management system and the national strategic documents.

In the field of railway transport, it is also planned to implement a system for management of the train operation, including a system for monitoring and control of the parameters of the rolling stock in motion. The priority will continue to be the improvement and development of services to consumers such as building modern passenger information systems, achieving full functionality of the new ticketing and reservation system and wireless (Wi-Fi) connectivity.

The implementation of intelligent transport systems in road transport is in line with the framework adopted at European level for the implementation of intelligent transport systems in the field of road transport and for interfaces with other modes of transport, as well as its complementary legislation.

The implementation of an intelligent transport system within the scope of a part of the national road network and building national points for user's access to data on : roads and road traffic (in real time), areas for safe and secure parking for trucks and commercial vehicles, road safety, multimodal travels. Information and communication technologies applying in the road transport sector and its interfaces with other modes of transport will make a significant contribution to improving environmental performance, efficiency, including energy efficiency, road safety and security, including the transport of dangerous goods, public transport, security and mobility of passengers and cargo. In terms of increasing the environmental and energy performance of road transport, our efforts are aimed at promoting the use of cars running on alternative fuels by building optimal charging infrastructure, covering the settlements and the trans-European transport network, allowing a long-distance travel.

Automated and connected mobility will play an increasing role in the transport sustainable development in Europe. With the increasing automation and connectivity, mobility is moving to a whole new level of cooperation between road users, enabling communication between vehicles, the vehicle and the road infrastructure, and the vehicle and other road users. This field of activity is about todevelop in our country. In 2018, a letter of intent was signed on cooperation in the field of automated and connected driving between Bulgaria, Greece and Serbia. The main and most important objectives identified in the document are assessment of the existing and necessary technologies, analysis of opportunities for unleashing the potential of autonomous vehicles, fostering their use, raising public

awareness, sharing experiences and good practices, coordinated policies and autonomous driving regulations. It is necessary to amend the current regulations in order to create conditions for implementation and facilitation the operation of automated and connected driving.
A system for electronic exchange of information in Bulgarian ports (Port Community System) is to be built and implemented, which will allow intelligent and secure electronic exchange of information between stakeholders, including electronic processing of customs declarations and all information on import and export of cargo, as well as data on passengers from cruise ships. The upgrading of the implemented traffic management systems - River Information System (RIS) and Vessel Traffic Management and Information System (VTMIS) will continue, as well as the provision of maritime situational awareness at national level, through a system based on the European Common Information Sharing Environment (CISE).
In air transport, work is underway to deploy the Single European Sky Air Traffic Management Research Program (SESAR), which aims to ensure highly efficient air traffic management for the Union by 2030, enabling safe and environmentally sound operation and development of air transport. The work on the timely and synchronized implementation of the functionalities of the Program will continue.
Work will also continue on programs related to competitiveness and environmental friendliness in the European aviation sector, aimed at designing aircraft and engines with greater efficiency and less noise; use of remotely controlled flight systems; contactless solutions and one-stage inspection systems in connection with airport security; digitization and multimodal solutions such as computer ground handling services and an integrated ticketing system.
One of the main problems facing the realization of the digital single market is the continued use of paper documents by a large number of freight transport operators and other stakeholders in the EU transport business due to the lack of a single legislative framework for the cross-border acceptance of electronic freight information by public authorities. By mid-2020, the adoption of an EP and Council Regulation on electronic freight information (eFTI) is expected, through which the mandatory acceptance of electronic freight information is aimed by all relevant public authorities, achieving interoperability of various IT systems and solutions used for the exchange of freight information and the uniform application of this obligation by the authorities.
The implementation of a single legal framework will significantly contribute to increasing the transport operations efficiency by expanding the scope of digitalisation of information and the gradual elimination of paper in the organization of the logistics chain.
This area of impact corresponds to priority 7 "Transport connectivity" in the national program "Bulgaria 2030" and will play a significant role in the implementation of Goal 3 "Ensuring a healthy life and promoting the well-being of all at all ages" and Goal 11 " Make cities and human settlements inclusive, safe, resilient and sustainable" from the UN Sustainable Development Goals.

9. Energy

The development of innovative projects connecting ICT technologies and the energy infrastructure are key to providing secure energy supplies and modernizing the sector to the evolving needs of dependent by it economic activities. Ensuring fast, reliable and secure data exchange and the building of smart metering and real-time data tracking systems are key for the development of the digital transformation in the energy sector. The proportional involvement of electricity distribution companies, district heating companies, the electricity system operator and suppliers in these processes has a key role in fostering the use of ICT technologies and the implementation of sector digital transformation.
Essential elements in preparing energy networks for the needs of the energy transition and for their future sustainability are the development of approaches for managing "smart grids" and ensuring cybersecurity in the context of Bulgarian electricity systems, as well as the needs of producers and consumers in Bulgaria and providing opportunities for regional and European cooperation.
It is also essential to use technologies such as the Internet of Things and artificial intelligence for electricity networks to integrate renewable energy sources and new loads such as electric mobility and energy storage facilities. The same applies to the implementation of flexible grid management solutions, including cross-border cooperation in energy transmission.

The digital technologies and solutions should find their wide application in the Bulgarian electricity market, incl. by implementing electronic data exchange between the various market participants according to the model already defined in the national regulatory framework.
The digital transformation in the energy sector is also related to the application of technological solutions in the field of smart homes, digital governance in national methodologies for energy efficiency models and the implementation of a unified model for building classification, register of certified buildings and preparation of efficiency criteria.
This area of impact is in line with Priority 4 "Circular and Low Carbon Economy" in the national program "Bulgaria 2030" and will contribute to the implementation of Goal 7 "Ensuring access to affordable, reliable, sustainable and modern energy for all" from the UN Sustainable Development Goals.

10. Environment and Climate

The area of impact contributes to the implementation of Bulgaria development priorities until 2030 in terms of increasing the resource, and in particular the energy productivity, following the principles of the circular economy and stimulating the implementation of low-carbon, resource-efficient, and waste-free technologies, improving the air quality, protecting and maintaining rich biological and landscape diversity of the country and its regions, addressing local problems and challenges, especially in relation to disaster risk management, including floods, landslides and fires.
The information and communication technologies play an essential role in tackling environmental, climate and resource efficiency challenges and in building a sustainable natural, social and economic environment. In this sense, digitalisation should be considered as one of the stimulating factors of the circular economy and resource efficiency.
The implementation of water cycle management systems ensures their high energy efficiency and sustainability. Reducing waste and improving its management leads to more efficient use of resources and transition to a circular economy.
Digital technologies can accelerate the balancing of the energy system through faster implementation of renewable energy sources. Together with smart energy management networks and intelligent traffic management systems, they will help to reduce the greenhouse gases and will be an important factor in achieving the objectives set out in the European Commission's European Green Deal.
Technologies can have an impact on protecting the environment and reducing emissions into the atmosphere and by creating the so-called "smarter" products that control the energy they consume.
Digitalisation can also help to improve the availability of information on product characteristics - an electronic passport of the product by providing information on the origin, composition, possibilities for repair and dismantling operating period. One of the highlights of business models based on the circular economy is that instead of the usual sale, durable products are leased, rented or shared and used whenever possible. Therefore, the transition to product-service systems is recommended as one of the key solutions to accelerate the transformation to the circular economy.
An immediate priority in the national environmental policy is to increase the capacity for prevention and natural disasters risk management and their forecasting. To this end, projects are being implemented to establish centers for increasing the readiness of the population for adequate response to floods, building a National Water Management System in real time and an information system (platform) integrating the existing local systems for prevention, readiness and response of risks of natural origin.
Digitalisation also presents new opportunities for remote monitoring of air and water pollution or for monitoring and optimizing the use of energy and natural resources.
Providing timely, purposeful, relevant and reliable information on the environment in order to implement the policy in this area and raise public awareness is a key task. The continuous process of improvement, modernization and rationalization of the existing information systems allows management of the information as close as possible to its source, ensuring immediate accessibility for public authorities, which facilitates the implementation of legal obligations related to data reporting, timely assessment of the state of environment and policy effectiveness, as well as accessibility to the general public.

As a key tool for environmental and climate policy governance, the National Environmental Monitoring System (NEMS) provides both the legislative and the executive authorities with basic information on the state and risks to the environment and natural resources, to serve as a basis for decision-making on the effectiveness and appropriateness of environmental policies. Its development is aimed at the complete provision of up-to-date and reliable information, which will ensure fast and accurate management decisions, as well as the continuous expansion of the scope of the provided public information. The system covers all components of the environment - atmospheric air, water, soils, forest ecosystems and biodiversity, as well as factors affecting them. For its modernization, activities will be carried out mainly aimed at further development of the spatial data infrastructure in the environmental sector, use of applications and services related to remote and ground monitoring and environmental monitoring, and improvement of the portal(s) for providing timely and applicable environmental information. This will ensure even greater electronic access to environmental information, taking into account the requirements of personal data and critical infrastructure protection. Summarizing existing environmental data would facilitate localized and cross-thematic data analysis.

The provision of integrated and interoperable geoinformation systems is also an important direction for improving the information provision and monitoring of environmental protection activities based on modern digital technologies. Bulgaria actively participates in the European initiatives - the Shared Environmental Information System for Europe (SEIS), the Infrastructure for Spatial Information in Europe (INSPIRE) and the European Earth Observation Program - Copernicus.

The combination of cyber-physical systems, big databases, data mining, data analysis, the Internet of Things, can create great opportunities for more sustainable management of components and environmental factors. Digitalisation allows communication with the interested public through virtual networks and platforms, which contributes to the decision-making process and active public participation in this process. We have to mention the penetration,in Bulgaria, of the innovative monitoring and control systems based on crowdsourcing, allowing the collection of a large volumes of data on the status of the environment, environmental damage and crime with the help of people, e.g. via mobile applications. But the role of information platforms is far from limited to this - they are a means of successful cooperation between public administration, science and business in the practical implementation of innovative technologies and products, but also for partnerships between enterprises - in implementing joint environmentally friendly business models such as industrial symbiosis, for example in the management of specific waste streams, the exchange of information on the availability and characteristics of raw materials in supply chains.

Building an Information System for protected areas of the NATURA 2000 network, which should combine information on the available technical infrastructure and protected species included in Directive 2009/147 / EC on the protection of wild birds and Directive 92/43 / EEC on the protection of natural habitats and wild flora and fauna, subject to the protection in NATURA 2000 protected areas, is another essential element of the possible contribution of digital solutions in the "Environment" sector.

Development and promotion of the information and digital technologies implementation in the municipalities when executing the air quality improvement municipal programs will be another measure, which will contribute to overcome the air pollution.

The proactive application of the possibilities of digital technologies is a chance to achieve real results in providing a cleaner and healthier living environment for the public and a more favorable business environment in more and more segments of the environmental sector. The higher levels of connectivity that information and communication technologies foster also lead to greater awareness and erudition and have a positive effect on promoting environmental responsibility among stakeholders, including citizens and academia. This, in turn, contributes to overcome some of the most pressing environmental and climate change challenges.

This area of impact corresponds to priority 4 "Circular and low-carbon economy" of the National Development Program Bulgaria 2030. The relevant UN Sustainable Development Goals are Goal12 "Ensuring sustainable consumption and production patterns", target 12.5 " By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse" and target 12.8 " By 2030, ensure that people everywhere have the relevant information and awareness for sustainable

development and lifestyles in harmony with nature.“; Goal 11 “ Make cities and human settlements inclusive, safe, resilient and sustainable” and target 11.6 “ By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management."

11. Healthcare

Digital healthcare is a natural field of applying the products and services created by the digital economy. Similar to the term used in the industry - Industry 4.0, in healthcare the term Healthcare 4 is defined, describing a model in which patients and health professionals are electronically connected to the organization, methodology and health technologies. This model puts the patient at the center of the health system, creating conditions for him to actively participate in the treatment process defined by health professionals. Innovative solutions in the field of digital healthcare support disease prevention and the promotion of healthy lifestyles, lead to improvements in the quality of citizens' life and enable more effective ways of organizing and providing health services and care.

The Ministry of Health develops a National Health Strategy 2030 and a Digital Health Strategy 2021-2027, in which the main priority is the digital transformation in the health sector as a means to improve the quality of life and change radically the way of providing medical and health care.

Key to the development of digital healthcare will be the efforts to develop and upgrade the National Health Information System (NHIS), through the development and implementation of modern technological solutions focused on risk prevention of chronic and non-infectious diseases, in order to ensure effective and efficient care and achieve better health results. As a result, the basis for integration with all systems serving health and administrative processes will be laid, an opportunity will be provided for achieving transparency in the management of financial costs, as well as activities on the organization, control, planning and forecasting in the health care system, possibility for assessing the quality and safety of medical care.

The NHIS implementation and the development of digital healthcare will contribute to reducing the time for patient care and improving the quality of healthcare services, as well as increasing the opportunities for providing various remote healthcare services.

The efforts to implement the set priorities will be focused on ensuring interoperability of the health systems and technologies in order to overcome the existing fragmentation. Secure access to digital health solutions and better health data will be ensured, creating trust in citizens. By deploying the effectiveness of the national health information system, nomenclatures and classifications will be introduced, mandatory for use in the health sector, as well as mandatory standards for the exchange of health information and statistics.

As a part of the digitalisation process, the real-time connectivity of the information systems of medical and healthcare facilities will be ensured. Key registries and services will be transformed into electronic ones by creating and implementing a digital medical record for all citizens with secure access to it by both the citizens themselves and by the health professionals involved in the treatment process, and electronic prescriptions and e-referrals to ensure effective use of healthcare resources. These processes will be monitored by a healthcare monitoring and control system that will support the management decisions.

It is planned to develop and implement a concept for the development of telemedicine, especially for patients living in hard to reach and remote areas, as well as for patients with special needs - patients with chronic diseases, the elderly, etc., as well as the implementation of innovative applications for patients' follow-up mobile services. The process of implementing telemedicine services will start in areas where the provision of general practitioners and specialists is below the national average. The implementation of telemedicine services will improve the efficiency of health care in the country.

It is envisaged that the National Health Information System will implement an environment for unified access and storage of the patient's imaging testing and its integration with his electronic health record in NHIS, which will allow processing and archiving, providing a comparative assessment of all tests performed and access to information from all physicians, eliminating the patient's responsibility to store and provide imaging testing. The development of an effective mechanism for control and analysis of data sources and flows, as well as an applied algorithm for defining potential risks at process level will ensure the efficiency of the used solutions.

The application of new technologies for monitoring the individual health of each citizen will provide monitoring of critical health indicators and will create opportunities for conducting population and screening programs. This will ensure an opportunity to assess the quality and safety of health care, monitoring health care providers, cross-border exchange of EU citizens health data , analysis of activities and results of the state health policy based on large volumes of health data. It is envisaged to build and/or upgrade and integrate the information systems in the digital healthcare with information systems in other areas in order to improve the prevention and the quality of citizens' life.
It is necessary to upgrade the software applications of the health care providers and pharmacies related to the new reporting models that will be imposed by NHIS and to ensure interoperability in the exchange of medical data and take measures to improve the knowledge and skills of health professionals to collect, analyze and protect health data, including by setting requirements for digital health curricula for health professionals and creating lifelong learning programs covering specific sets of digital skills.
It is also envisaged to develop rules, procedures and measures to ensure the cybersecurity of NHIS and other e-health systems, as well as those to comply with personal data protection legislation, including on anonymised and pseudonymised health data. A platform for monitoring, analysis and control of logs, network traffic, system files and incident management will also be built.
It is planned functionalities for analysis of the activities and results of the state health policy on the basis of large volumes of health data to be created. An opportunity will be created for better use of health data in research and innovation in order to support personalized healthcare, better health interventions and a more efficient health and social care system. The implementation of NHIS and other digital healthcare systems will enable the cross-border exchange of health information of EU citizens, based on regulated electronic information exchange.
The successful development of these projects should be supported by investments in building and/or upgrading information systems in digital healthcare; in the cross-border exchange of EU citizens health information; in providing a cyber-resistant environment for medical data storage; in increasing the capacity to implement digital healthcare systems.
This area of impact corresponds to priority 12 "Health and Sports" in the national program "Bulgaria 2030" with a major contribution to improving the health characteristics of the population ensuring equal access for all to quality health services and corresponds to Goal 3 " Ensure healthy lives and promotewell-being for all at all ages" from the UN Sustainable Development Goals.

12. Finances

The digitalisation in the field of financial management achieves a unified and systematic approach, which will facilitate the work of institutions engaged in the management and monitoring of national investments. The system will build a unified information environment that will provide a clear picture and an adequate tool for compliance monitoring with one of the main principles of the Structural and Investment Funds - the principle of additionality. In this regard, it is planned to establish a National Investment Management System (NIMS), which will allow tracking the effect of the implementation of relevant policies, using functionalities and program code developed for MMIS 2020. In this way, the functionalities available in MMIS 2020 will be adapted to the specific requirements of projects financed through public national funds. The implementation of NIMS common interactive environment of interoperability with MMIS will be achieved, which will provide full information on investments in the country and investment policies.
Recently, a large number of payment service providers in the country offer their customers the opportunity to electronically initiate payment transactions via the Internet or mobile application. They stimulate customers to use these new channels, and the fees charged for electronically initiated payment transactions are many times lower than those for transactions initiated on paper.
It should be borne in mind that the use of internet banking is not the only indicator of the level of use of non-cash and digital payments and the efficiency of the payment infrastructure. It is a Eurostat indicator whi is not based on data collected by payment service providers or central banks, asked to a sample of the population of questions, usually by telephone.
Digitalisation in the field of payment services is also related to the organization and development of efficient payment systems and mechanisms. Bulgaria has a reliable and efficient payment

infrastructure for large-value and small-value payments, both in BGN and in EUR. The second is possible through the participation of BNB and the banking community in the Trans-European Automated Real-Time Gross Express Transfer settlement system TARGET2. In this way, earlier convergence with the European payment system and market has been achieved. In this regard, from November 2021, the Eurosystem plans to implement a new consolidated platform for TARGET services, which will integrate the TARGET2 payment system, the TARGET2-Securities settlement system and the instant euro transfer processing service TIPS at technical and functional level. With the launch of ECMS in November 2022, the consolidated platform will also cover the collateral management system. The development of a new consolidated platform is driven by technological innovation in payments, regulatory requirements and changing of consumers' needs, as the existing systems and increasing overall efficiency and security will be modernized. BNB and the participants in the national system component TARGET2 – BNB have started the preparations for joining the consolidated platform for TARGET services.

The harmonization of the legal framework and rules regulating the payment systems and payment service providers, at a European level, is aimed at actively promoting non-cash payments, which are also an important element of the fight against the shadow economy, money laundering and terrorist financing. According to data from the statistics of payments in Bulgaria (preliminary data as of the end of 2019), prepared under Regulation (EU) 1409/2013 of the European Central Bank, the number of credit transfer orders made electronically is 32% of the total credit transfers, and their value is respectively 59%, which represents two thirds of the total value of all credit transfers. On the other hand, for the period 2017-2019, the number of payments made by cards has increased by 55% and their value by 22%. During the same period, the number of card payments made through a virtual terminal device POS (via Internet) has increased by 49%, and the value of these payments, respectively, by 37%.

13. Culture

The digitalisation of movable and immovable cultural heritage achieves many goals in different areas. It breathes a new life into the cultural heritage and allows the general public to become acquainted with its objects, which are located in physically remote or even inaccessible places - thus every citizen has the opportunity to access culture and knowledge in the digital age. Digitalisation fosters the richness and diversity of Bulgarian and European cultural heritage, contributes to its active involvement in pan-European cultural exchange and cultural diversity, including by enhancing the Bulgarian element in the European digital portal "Europeana".

Digitalisation allows building virtual museums and digital libraries with elements of semantic access, in which all objects are annotated according to the standard for virtual presentation of museum exhibitions.

It is also important common standards to be implemented in the field of digitalisation of cultural and historical heritage and museum exhibitions in order to be compatible with the digitalisation methods and forms . The implementation of such standards will increase the effectiveness of measures in this area, funded by various sources, incl. the financial mechanism of the European Economic Area.

The cultural heritage digitalisation stimulates the growth of the creative sectors. When transformed into digital form, the materials can also be useful for commercial and non-commercial purposes, such as developing study and educational content, documentary films or travel applications. Thus, the cultural heritage can become an important economic resource, creating additional employment.

The main goals of the future cultural digitalisation policy are: to foster the display of Bulgarian cultural heritage richness and the creation of content and new online services, including such for entertainment, education and tourism. It will help to improve the quality and diversity of digitized cultural materials and foster the development of new methods for restoration and preservation of cultural heritage through information technologies, as well as the quality and technical standards for the content. Digitalisationwill provide an opportunity to foster and support voluntary agreements on digitalisationat a large scale and to make active efforts to enrich and access the online content of cultural goods in compliance with copyright. An important goal is building digital centers in cultural institutes and universities, which will ensure the sustainability of the projects on digitalisation of the

cultural heritage in the future and the expertise increasing of the employees in the digitalisation in the digital centers.
Libraries in Europe and all around the world are centers for information, non-formal learning, culture, creativity, communication and integration. They can support the development of ICT and information skills, the ongoing digitization and personalization of information, as well as solving problems directly related to the educational, social and demographic development of the society. They foster the digital inclusion of citizens and the society economic well-being and social well-being, as the measures aim to help the unemployed and jobseekers or those who start a new business; give support to small businesses and small enterprises; provide opportunities to build key competencies; help to overcome social isolation, inequality, segregation of communities and improving the health of citizens.
The measures for public libraries development require a new approach to the library sector in the country, promoting their importance and value for the local community development through advocacy among all stakeholders and public factors. The aim is to create an effective library network for providing quality library services, closely related to the needs of citizens, providing opportunities for easy and wide access to library service, appropriate technological and technical equipment and creating conditions for the transformation of the public libraries into places for communication, cultural events and creativity.
While implementing the National Development Program Bulgaria 2030, the digitalisation of cultural heritage will contribute to cultural diversity and its preservation and utilization as a resource for sustainable development of the country and its regions. Measures will be taken to promote it at national and international level, including through the exchange of information and the implementation of good practices. In addition, actions will be taken to build the necessary material and technical infrastructure for building key registers and digitalisationof cultural goods and for the cultural heritage management.
This area of impact corresponds to priority 13 "Culture, Heritage and Tourism" in the national program "Bulgaria 2030", which aims to develop and preserve the cultural richness and exploit its potential as a tool for social cohesion, stimulating the creative and innovative thinking, as well as and to generate economic benefits.

14. Disinformation and media literacy

The digital technology revolution has brought great changes in our lives. New media and communication platforms have changed social relations and the communication landscape, especially in the cultural and creative industries, and also have changed the way we produce, distribute and consume content. The technological progress, digitalisation and media exponential growth pose a significant challenge to the media industry and audience. Europe's highly fragmented media landscape and cultural and creative industries face an increasing global competition, making the international content easily accessible to the European audiences. In the new media ecosystem, citizens have problems understanding news and finding accurate information, as well as high-quality content in general. Moreover, today's society increasingly confronts with disinformation, manipulation and hate speech. It is, therefore, necessary to continue to strive to create conditions that preserve diversity and enhance the quality, innovation and competitiveness of the content.
The content is increasingly generated by algorithms that cannot distinguish hate speech, disinformation or terrorist propaganda from journalism, parody and other forms of legitimate content. Machine learning techniques use big datasets that typically contain biases inherent in human society. Algorithms are directly designed by humans or, if they perform self-teaching, develop their logic based on biased and/or human-controlled data. They are neither "objective" nor "neutral" and are a projection of a certain interest.
It is essential to find a model that fosters quality journalism and enables the civil skills for media literacy through the concept of lifelong learning. It is important to foster media, as well as cultural and creative industries, to develop innovation and use new technologies to understand and maintain their audience, to develop high-quality and engaging content and dissemination platforms, and to combat the disinformation effectively as much as possible.

Today's digital ERA presupposes the acquisition of a great volume of individual and social knowledge and skills that will enable citizens to access, understand and use the modern media and new technologies. All of these skills represent media literacy, including the ability to critically evaluate and understand the media industry and its content. The constant development of new media and communication technologies increases the demand for new approaches to media education. We should strive to develop new models of lifelong learning in media literacy in order to provide people of all ages with the skills needed to understand and work within the very complex media-communication landscape. These skills are important for the democratic societies' sustainability and for strengthening the democratic participation.

The disinformation should be considered in a broader context, in the interconnectedness of economic, technological, political and ideological reasons. It is necessary to increase the resilience and counteraction to the hybrid threats and a comprehensive approach.

The lack of responsibility in the online environment, fact-checking procedures and selection of information, which are often overlooked, proves to be a favorable environment for the dissemination of disinformation.

Therefore, strengthening professional journalism, providing citizens with access to high-quality and diverse information sources and building public confidence are crucial for democracy protection.

Technology companies and digital platformsshould include ethical standards and a commitment to the core social values in all content and communication. It is important for citizens to understand the logic behind algorithms and artificial intelligence. Strengthening media literacy skills and combating disinformation requires a systematic, coordinated and common approach at national and European level, as well as cross-sectoral cooperation between different stakeholders. The new media environment requires a fundamental change in policies for communication, education, regulation and new practices.

The Bulgaria 2030 Development Program provides key guidelines in its "Education and Skills" priorities, as well as "Digital Connectivity". Efforts will be made, on the one hand, to implement a clear, comprehensive and broad set of actions to tackle the spread and impact of online disinformation and to ensure established democratic values, and, on the other hand, to increase the level of the necessary digital skills and media literacy of the population at all ages.

15. Territorial development

Successful territorial development is based on clear mechanisms focused on interventions, which will allow the local potential to be used in the best way, as well as to address local problems and challenges through an integrated approach. The realization of these integrated territorial investments, as well as the implementation of the local development carried out by the community, will allow the respective synergy effects to be achieved.

Taking advantage of information technologies and innovation, modern settlements have the opportunity to optimize their governance, become more efficient and improve many aspects of their development.

As the urban population grows, so does the demand for services, which leads to an increased pressure on natural resources, ecosystems and environment. This demand puts a strain on the energy system, water supply and sewerage systems, municipal waste management, urban transport systems and all other services that would be essential for the city's prosperity and sustainability. In this aspect, applyinginnovative technologies and digitalisation can contribute to the regions' integrated development, achieving sustainable urban development of the most important urban municipalities in respect of the development of a balanced polycentric model by creating competitive urban centers offering attractive opportunities for investment, employment, education, recreation, life career.

The "Smart" settlements use their strengths and unique assets to meet the specific needs of urban development such as the digital transition, sustainable urban mobility, smart grids, energy efficiency, climate adaptation etc. All these elements come together in an integrated approach as a part of a smart development plan and contribute to reducing the climate change and making the area sustainable, socially inclusive and green.

Investments will be aimed at improving and developing sustainable urban mobility, digital and safe transport connectivity, as well as health and social services, education, vocational training, culture,

sports and tourism, circular economy, energy efficiency, access to adequate housing, access to quality public services, measures to improve the quality of the environment (including green infrastructure), measures to foster economic activity (including investment in industrial zones or other infrastructure for the development of economic activities and support for SMEs' innovation and development).
A specific focus is put on building and/or rehabilitation of technical infrastructure in locations that still fail to offer the population quality living conditions. Measures and activities will be financed related to urban and suburban transport on the territory of municipalities, namely the connections between settlements, including modal points, innovative security systems and intelligent traffic management. The implementation and use of environmentally friendly modesof transport will be fostered, including rolling stock.
In order to maximize the digital technologies effect in terms of spatial and administrative planning, conditions will be created for using the potential of the investment process. In this regard, the building and implementation of public registers in the field of spatial planning, investment design and construction, cross-border e-services, including implementation of e-servicesavailable to citizens of other Member States, will be launched. In order to maximize the potential of the data created by the administrations, as well as the high value-added data generated by the private sector, a public web-based information system will be built, guaranteeing access to investment projects, development plans, their amendments, issued construction permits, etc.
In accordance with the European Green Deal, the construction sector is identified as the main resource-intensive sector and in this connection, steps are taken for its digitalisation. In order to ensure energy efficiency and sustainable use of resources, a single market for specific products, effective certification, etc. is being created. The sustainable construction plays a key role in improving the environment and climate impact, resource and energy efficiency, reducing and managing construction waste, more efficient use of resources and the transition to a circular economy.
The digitalisation of the construction sector should ensure the application of the principles of circular economy, sustainable construction, energy efficiency, reduction of carbon emissions. It will contribute to the energy system balance through faster deployment of renewable energy sources and smart grids for managing energy consumption in buildings and facilities, to reduce greenhouse gases and is an important factor in achieving the objectives of the European Green Deal, including the increase of the energy efficiency in manufacturing construction products, improving the information on product characteristics by introducing electronic passports for products and buildings.
The digitalisation of the construction sector should cover the entire construction works life cycle: design, f digital databases building on the characteristics of construction products, construction sites 3D models, electronic passports of buildings and facilities and their respective databases, management of constructions' operating costs, their repairs, renovations and demolition.
This will optimize the design process, reduce the cost of construction products, increase the attractiveness and competitiveness of the sector and create conditions for attracting foreign investment. It will increase the public administration efficiency and the quality of public services in the field of construction.
Legislative changes are needed to implement the obligation in all new buildings or in the renovation of existing, including constructional activities, communication pipes to built with the possibility of buildings' subsequent connection to the relevant digital infrastructure such as cables/modernization of broadband networks, central heating and/or cooling, electrical mobility installations at a later stage and other solutions for smart building management. This would create an opportunity to form smart settlements and build communication and digital infrastructure with the ability to be managed smartly.
Another key sector which is essential for environmental protection and the efficient use of natural resources is the water supply sector. Cross-sectoral cooperation initiatives will be fostered; creating a favorable environment for the implementation of innovative projects by an active increase of the water sector importance and the effective control in it. Efforts will be focused on creating a unified information system that allows tracking and ensuring the efficient operation of the facilities, water losses reducing and consumer awareness raising.

This area of impact corresponds to priority 9 "Local Development" in the national program "Bulgaria 2030" and contributes to addressing some aspects of Goal 11 " Make cities and human settlements inclusive, safe, resilient and sustainable" and others from the UN Sustainable Development Goals.

16. Digital governance

The digital governance is an integral part of the digital transformation and is the main factor for making electronically technological means for interaction between citizens and businesses on the one hand and the state administration on the other hand.

There are several major challenges to the digital governance that require the efforts of all stakeholders. The main role here will be played by state institutions, including municipalities, which should develop their open data capacity by taking measures to build the European digital single market and its four elements - investments in greater and better connectivity; strengthening the EU's industrial and technological presence, i.e. its technological sovereignty; investments in recovery, made in digital capacities, facilities, technologies - 5G / 6G, artificial intelligence, quantum technologies, etc.; a real data economy and the origination of data spaces. The data and their transformation into main society capital are of a key importance. There is a need to move from fragmented, unstructured and non-standardized data to data processed according to pre-developed interoperable models, as for each dataset used for administrative services, there is a pre-developed model of their structure, enrolled in the interoperability registers. This will ensure the transition from basic data formats used for visualization and human perception to such that are interoperable between systems. The standardization will provide the opportunity for establishment of sets oflinked data, the access and processing of which will drastically reduce the need of traditional authentication of facts and circumstances for individuals, including for the purposes of authentication, proof of certain rights, etc. The key role is that of the public administration transformation data and the use of intelligent technological solutions for the administrative management purposes .

The development and enfocement of standardized models use of interaction between participants in digital governance is the next challenge. The models determine both the rights and obligations between the participants from the different target groups, and the accompanying technological and functional resources necessary for the functioning of the models. The models standardize key processes for digital governance, and such are the models for centralized ordering, payment and provisioning of services, the model of debts payment, the model for electronic authentication. It is of a particular importance to provide the opportunity to use cross-border electronic services, incl. the implementation of services by Bulgarian institutions that can also be used by citizens of other Member States by default. The owners of a process and those who are responsible for its development and provision with the required quality are to be determined. Such are the processes of authentication and identification, requesting and paying debts, requesting an electronic service, access to data and electronic verification of facts and circumstances enrolled in registers. The models and their applying isolate the participants from the different target groups to inherent necessary and predetermined interfaces for interaction. The models ensure provision and implementation of the defined processes, regardless of the individual participants' degree of technological security.

The digital transformation of the public sector is conducive to the development of cross-border e-services, which citizens and businesses need when traveling, working, studying or doing business within EU. In accordance with Regulation (EU) 2018/1724 of the European Parliament andthe Council from October 2, 2018, establishing a single digital platform for access to information, procedures and services for assistance and problem solving and for amendment of Regulation (EU) № 1024/2012, by 2023 EU Member States should ensure that 21 key administrative procedures are to be provided entirely online for both consumers in their own countries and for cross-border consumers, applying the principle of "only once". This means the Bulgarian institutions to implement e-services that can be used by citizens of other Member States by default.

The opening of public sector data for re-use in a machine-readable format is another key factor contributing to the development of the economy and society. The open data have a huge potential for creating innovative services and value-added products for citizens and businesses. Increasing the number and quality of datasets published on the Open data portal, as well as developing the capacity

of public authorities to create and publish data in an open machine-readable format, is essential for achieving a digital society and developing innovation.
The innovative technologies and digitalisation are a key approach in creating a system for the elaboration of personal documents with a built-in electronic identifier as a proof of identity, as well as the ability to use a smartphone or other device for storing electronic identity certificates for achieving a higher degree of convenience compared to the ID card. Applying the European legislation requirements on electronic identification, the main goal is to remove existing barriers to the cross-border use of electronic identification means used in the particular EU Member States to authenticate at least when public services. Solving the problems with the individuals e-identification is a priority task in the implementation of the envisaged measures related to the increase in citizens' use of electronic services. The use of the identity document as a means of electronic identification will create preconditions for the rapid development of digital technologies, for the elaboration of a large number of administrative and social services. It will change the way citizens think as consumers and will stimulate their desire to improve their knowledge and skills. At the same time, the Regulations on the implementation of the Electronic Identification Act obliges the electronic identification centers to allow identification using a mobile device for reading electronic media, in order to achieve a higher degree of convenience for users.
The activities in this area of impact will contribute to the achievement of the goals of priority 10 "Institutional Framework" in the National Program "Bulgaria 2030" and contribute to addressing Goal 16 "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels" from the UN Sustainable Development Goals.

17. Security and participation of citizens in the democratic process

The main government goal concerning the digital transformation of the services and processes of the state administration for the period up to 2030 is to increase the efficiency of the state administration, effectively deal with the main social challenges and increase the security of the citizens. The digital transformation, as a process of integration of digital technologies, is a prerequisite for a complete transformation of the processes and models of functioning of the systems for protection of the population, state's critical infrastructure objects, systems for prevention of domestic crime, systems for monitoring the residences of a large group of people, road safety systems. As a rule, the digitalisation of the processes and models for protection of the population is a longterm process, based on the established basal information and communication infrastructure, and continuity in respect of the priorities. The building of a national wireless communication network for mobile devices and data terminals / TETRA of MoI/ is important for the responding units, taking care of the citizens' security. The government's efforts will focus on increasing the capacity and speed of the network by building a unified broadband communication system for population protection and disaster response. The effect of the upgrade will be increased capacity of data transmission over secure channels and a released frequency resource that will be provided by the regulatory body to other users.
The digital technologies play an important role in building and developing a national early warning system in the event of danger or disaster. The efforts of the institutions responsible for the protection of the population will be focused on the use of digital technologies for the development and modernization of the early warning system, as well as on the renewal of the information and communication infrastructure for the use of GPS data, 4G and TETRA mobile networks.
Increasing the population level of security in urban areas and improving the processes of crime prevention requires the building of a high-tech environment related to the processes of digitalisationand data processing from various sources. In addition to the safety of people, law enforcement agencies should ensure the safety of public and private buildings and road safety. In the next ten years, efforts will be focused on installing video surveillance systems based on new technologies to obtain color and clear picture even in complete darkness. The digital data from the cameras, together with the data entered in the geographic information systems will be the main information source for crime prevention and road safety.
In order to update the data, expand their scope and resilience of the systems, it is necessary to focus efforts on the development of geographic information systems, expanding the scope of the processed

and stored information, creating and maintaining data which to be interoperable with the other EU Member States. In this regard, the geographic information systems and the digitalisationof data from independent sources of information obtained from remote sources for high-resolution monitoring are of a great importance. The use of innovative technologies for digitalisation, data processing and exchange, including from satellite systems, as well as the implementation of standards on data exchange between stakeholders at national level, is crucial to increase the disaster risk management effectiveness, through prevention, preparedness, response and recovery measures.

The effectiveness of ensuring citizens' security and the infrastructure is directly dependent on the huge amount of information structured in extremely big datasets that can be analyzed, modeled, and can allow detection of trends and associations, especially those related to human behavior. It is crucial to build a Coordination Center, which will process the large volumes of data received from both independent sources and specialized information systems, set up by government agencies in the implementation of relevant laws. The aim is while using optimal financial resources, highly qualified staff and innovative technologies to achieve efficiency in ensuring the protection of the population, interoperability of information, realization of cross-border connections with EU Member States and establishment of a fast and reliable connection with the Point of Single Contact for providing easily accessible services to the administration and citizens at national and European level.

The citizens' participation in the democratic process includes a wide range of opportunities and practices, which can be divided into two groups: those related to direct democracy - referendums, civil initiatives and general meetings of the population, in which decisions are voted; and the ones related to participatory democracy - public consultations and discussions with citizens on important issues, as the final decision always belongs to the institutions.

Bulgarian citizens should have the opportunity to freely express their political will, incl. by exercising their political and civil rights. Elections and referendums are just such an instrument of democracy. They have a pivotal role in the public impact on the political process.

Digital technologies play a significant role in exercising citizens' rights in the democratic process. The electronic remote voting, as well as the possibility of holding national and local electronic referendums, are a modern form of ensuring the democratic right to vote. Electronic voting will provide Bulgarian citizens who have been living abroad for a long time (according to the Ministry of Foreign Affairs they number about 2 million people), with easy access to participation in elections and referendums. Electronic voting will also attract young people from the so-called generation of information-technology era to participate in elections and referendums. Another effect of e-voting will be greater voter turnout, due to the convenience that will be provided to the above-mentioned groups of the population to participate in voting and will reduce the costs of organizing elections, which will facilitate and simplify the election process and the processing of results.

The participation of citizens in the democratic process at local level is guaranteed by their right to access clear and complete information on various issues affecting their lives, as well as by their right to participate in key decisions relevant to the future. In this regard, the civil associations and groups play a particularly important role as key partners both in developing a culture of participation and improving the process of democratic participation.

Public debates need to be intensified and improved, enabling citizens to participate directly in the decision-making process by making policy proposals on municipal budget issues and regulations. It is also necessary to introduce opportunities for conducting electronic consultations by collective bodies of the local and central government.

Digitalisation is at the heart of future development for both the economy and politics and the whole public life.

This area of impact corresponds to priority 9 "Local Development" and priority 8 "Digital Connectivity" in the National Program "Bulgaria 2030". The actions envisaged will contribute to the implementation of the various aspects of Goal 11 "Make cities and human settlements inclusive, safe, resilient and sustainable" and Goal 9 "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" from UN Sustainable Development Goals.

CONCLUSION

The digital transformation affects all aspects of the economy, society and government. Its success and full opportunities utilization depend on the existence of a comprehensive state approach in the making, implementation and monitoring of the policy in this area. The coordination of efforts between state institutions at all levels of government, as well as the active involvement of all key stakeholders, including the business community, trade unions, civil society and the technical Internet community, in this process, is crucial.

The sectoral and horizontal policies affected by the digital transformation and the relevant strategic documents concerning their implementation should be linked, updated where necessary and closely coordinated in order to ensure their mutual assistance and maximum synergy. This document offers an effective policy framework for the development of the digital transformation in Bulgaria.

During the COVID-19 pandemic, digital technologies proved to be a global solution to support vital sectors of the economy, the proper functioning of public services, trade and the health and education systems. The pandemic has forced governments and societies to rediscover existing digitalisation policies and tools to respond to the crisis. The implementation of innovative digital technologies needs to be accelerated in long term, and investment in these areas can greatly support the future sustainability of the economy, the health system and public services. All these innovative technologies are an integral part of this document.

The virus crisis has changed us and served as a catalyst for innovation. The pace of digitalisation has been accelerated, bringing indisputable benefits to a significant share of the economic and social sectors during this unprecedented period. We should make these benefits permanent by accelerating the digital transformation of business, state government and public services.

Enclosure

SECTORAL REFERENCE DOCUMENTS BY AREAS OF IMPACT

- **DIGITAL INFRASTRUCTURE**
  - Law on Electronic Communications Networks and Physical Infrastructure *(https://www.mtitc.government.bg/sites/default/files/zesmfi_dv_br2109032018.pdf)*
  - Ordinance on the data formats, terms and procedure for granting access to information in the Single Information Point *(https://www.mtitc.government.bg/sites/default/files/naredba_formati.pdf)*
  - Infrastructure for Next Generation Access (NGA) *(https://www.mtitc.government.bg/upload/docs/Bulgarian_Plan_for_NGA__2013_Final.pdf)*
  - Electronic Communications Act *(https://www.lex.bg/laws/ldoc/2135553187)*

- **CYBER SECURITY**
- Cyber security law *(https://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=131638)*
- National Cyber Security Strategy "Cyber Sustainable Bulgaria 2020" *(http://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1120)*

- **RESEARCH AND INNOVATION (ICT)**
  - National Strategy for Research Development in the Republic of Bulgaria 2017 - 2030 *(http://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1231)*
  - National Roadmap for Scientific Infrastructure (2017-2023) *(https://ec.europa.eu/research/infrastructures/pdf/roadmaps/bulgaria_national_roadmap_2017_bg.pdf)*

- Framework Program for Research and Innovation "Horizon 2020" *(http://horizon2020.mon.bg/)*

- **EDUCATION AND TRAINING**
  - Strategy for effective implementation of information and communication technologies in education and science of the Republic of Bulgaria (2014-2020) (https://www.mon.bg/bg/143)
  - Implementation plan on the Strategy for effective implementation of ICT in education and science (2014-2020) *(https://www.mon.bg/bg/143)*

- **ADAPTATION OF THE LABOR MARKET - EDUCATION, TRAINING AND SOCIAL PROTECTION**
  - National Employment Action Plan (NEAP) being adopted annually by the government *(https://www.az.government.bg/pages/planove-i-programi/)*

- **DIGITAL ECONOMY**
  - Innovation Strategy for Smart Specialization of the Republic of Bulgaria 2014-2020 *(https://www.mi.government.bg/bg/themes/inovacionna-strategiya-za-inteligentna-specializaciya-na-republika-balgariya-2014-2020-g-1806-287.html)*
  - National Strategy for Small and Medium-sized Enterprises 2014-2020 *(https://www.mi.government.bg/bg/themes/nacionalna-strategiya-za-nasarchavane-na-msp-v-balgariya-2014-2020-small-business-act-11-285.html)*
  - Draft National Strategy for Small and Medium Enterprises (SMEs) in Bulgaria for the period 2021 - 2027
  - Digital transformation concept of the Bulgarian industry (Industry 4.0) *(https://www.mi.government.bg/bg/themes/koncepciya-za-cifrova-transformaciya-na-balgarskata-industriya-industriya-4-0-1862-468.html)*

- **AGRICULTURE**
  - Strategy for Digitalisation of Agriculture and Rural Areas of the Republic of Bulgaria *(https://www.mzh.government.bg/bg/politiki-i-programi/politiki-i-strategii/strategiya-za-cifrovizaciya-na-zemedelieto-i-selskite-rajoni-na-/)*

- **TRANSPORT**
  - Integrated transport strategy till 2030. *(https://www.mtitc.government.bg/bg/category/42/integrirana-transportna-strategiya-v-perioda-do-2030-g)*
  - National Development Program: Bulgaria 2020 - Priority 8 of the Program is focused on "Improving the transport connectivity and access to markets“ *(https://vomr.bg/национална-програма-за-развитие-бълг/?gclid=EAIaIQobChMIyIT48pyV6gIViYSyCh2jsQAwEAAYASAAEgLK7fD_BwE)*
  - National Development Program: Bulgaria 2030 - Priority № 7 “Transport Connectivity“ *(https://www.minfin.bg/bg/1394)*

- Operational Program "Transport and Transport Infrastructure" 2014 -2020. *(https://www.eufunds.bg/bg/optti)*
- Strategy and national plan for implementation of the European Rail Traffic Management System (ERTMS) in the Republic of Bulgaria *(http://www.iaja.government.bg/IAJI/wwwFWRAEA.nsf/f8c6e36331ccea9d0025728b005cd1fd/c2a94f609c9d2cffc22574b1003da5d4/$FILE/NIP%20TSI%20CCS%202017%20final-s%20track.pdf)*
- Strategy for implementation of the technical specifications for interoperability for the conventional rail system of the Republic of Bulgaria 2013 - 2030. *(www.iaja.government.bg/IAJI/wwwFWRAEA.nsf/f8c6e36331ccea9d0025728b005cd1fd/c2a94f609c9d2cffc22574b1003da5d4/$FILE/NIP%20TSI%20OPE%20final%2031.01.2018.pdf)*
- National plan for implementation of the technical specifications for interoperability concerning the subsystems "Control, management and signaling" of the railway system in EU *(http://www.iaja.government.bg/IAJI/wwwFWRAEA.nsf/subcontents.htm?ReadForm&cat=FBB2A120749BACFF002573D3003FCD3C&subcat=BFEB7B538D1C3870C22574B1003CE237)*
- Strategy for development of the road infrastructure in the Republic of Bulgaria 2016 - 2022 and Medium-term operational program for implementation of the strategy *(http://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1005)*

- **ENERGY**
  - European Strategic Energy Technology Plan (SET-Plan) from November 22, 2007 *(https://eur-lex.europa.eu/legal-content/BG/TXT/PDF/?uri=CELEX:52007DC0723&from=LT)*
  - Integrated plan in the field of energy and climate of the Republic of Bulgaria 2021-2030 *(https://www.me.government.bg/bg/theme-news/integriran-plan-v-oblastta-na-energetikata-i-klimata-na-republika-balgariya-2021-2030-2823-m374-a0-1.html)*

- **ENVIRONMENT AND CLIMATE**
  - National Strategy for Adaptation to Climate Change and Action Plan till 2030. *(https://www.moew.government.bg/bg/reshenie-eo-4-2019-g-za-nacionalna-strategiya-za-adaptaciya-kum-izmenenieto-na-klimata-i-plan-za-dejstvie-za-perioda-do-2030-g/)*
  - National Development Program: Bulgaria 2030 *(https://www.minfin.bg/bg/1394)*

- **HEALTHCARE**
  - National Health Strategy 2020 *(http://www.mh.government.bg/bg/politiki/strategii-i-kontseptsii/strategii/nacionalna-zdravna-strategiya-2020/)*
  - Action plan for implementation of the National Health Strategy 2020 *(http://www.mh.government.bg/bg/politiki/strategii-i-kontseptsii/strategii/nacionalna-zdravna-strategiya-2020/)*

- Digital Healthcare Strategy 2021-2027 - The project is implemented within the Program for Support of Structural Reforms (PSSR) in EU
- National Development Program Bulgaria 2030 - Goals for Sustainable Development / Health and Sports/ *(https://www.minfin.bg/bg/1394)*

- **FINANCES**
  - National Development Program Bulgaria 2030 *(https://www.minfin.bg/bg/1394)*

- **TERRITORIAL DEVELOPMENT**
  - Regional Development Act (RDA) *(https://www.mrrb.bg/bg/zakon-za-regionalnoto-razvitie/)*
  - National Concept for Spatial Development 2013-2025 *(https://www.mrrb.bg/static/media/ups/articles/attachments/d747ca682ac1a70380428fd1dc664fb3.pdf)*
  - Regional schemes for level 2 regions' spatial development *(http://www.ncrdhp.bg/регионални-схеми-за-пространствено-р/)*
  - Documents for integrated development of a municipality *(https://www.mrrb.bg/bg/utvurdeni-metodicheski-ukazaniya-za-razrabotvane-i-prilagane-na-planove-za-integrirano-razvitie-na-obstina-piro-za-perioda-2021-2027-g/)*

- **DIGITAL GOVERNANCE**
  - The updated strategy for e-government development for the period 2019-2023 *(https://e-gov.bg/wps/portal/agency/strategies-policies/e-management/strategic-documents)*
  - Updated Roadmap for implementation of the Updated Strategy for Development of electronic governance in the Republic of Bulgaria 2019-2023 *(https://e-gov.bg/wps/portal/agency/strategies-policies/e-management/strategic-documents)*
  - Electronic Government Act *(https://www.lex.bg/laws/ldoc/2135555445)*