

STRATEGY OF DIGITAL TRANSFORMATION OF THE ECONOMY





REPUBLIC OF SLOVENIA
MINISTRY OF ECONOMIC DEVELOPMENT
AND TECHNOLOGY

STRATEGY OF DIGITAL TRANSFORMATION OF THE ECONOMY

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INTRODUCTION



Foto: Nebojša Težić

Dear Madam, Dear Sir,

In recent years, Slovenia has been in the process of accelerated development and transition into a modern digital society and is getting recognized on its path towards the fourth industrial revolution as an advanced, innovative and technologically developed country. This is also shown by the results we achieve on European and global indices that measure digital economy and society.

The strategy of digital transformation of the economy is being prepared in the period of the Covid-19 pandemic, in which we are facing challenges and needs for substantial changes in key parts of the economy, if we want to maintain and enhance the efficiency, productivity and competitiveness of our economy and sustainable growth in the future decade. In order to achieve this objective after the pandemic, a linear economic growth trend is not sufficient anymore. The digital transformation of the economy is a »must be« condition to achieve accelerated growth of our companies in the future.

Therefore we have set ambitious objectives and with this Strategy we take a serious commitment to achieve them. Our vision is clear. By 2030, Slovenia will become the leading hub for advanced digital technologies in Europe. We have strong propositions for this: top companies in the field of advanced digital technologies, top-notch development knowledge and ambition to break into the European and world top. **By 2030 we have a goal to become one of the top 5 countries in Europe. Even more, by 2030 we have a goal to rank among the top 3 European countries in terms of the use of advanced digital technologies.** In some areas, especially in the field of Artificial intelligence and Blockchain technology, Slovenia is taking a pioneering role, which has been already recognized in Europe and at the global level.

To Slovenia's mission in the digital transformation of the economy: enhancing efficiency, productivity, competitiveness and resilience of Slovenian companies, we will add even more intensive use of advanced digital technologies, ensure sustainable transformation effects by strengthening knowledge and digital competences, develop digital public services, support

collaboration of companies at the international level and exploiting the advantages of the new digital environment in an inclusive and equitable way.

The strategy focuses on three key areas of digital transformation of the economy.

The first priority area addresses the positioning of **technologies** as a tool in the centre of the digital transformation of the economy. Advanced digital technologies on one hand enable the optimisation of business processes and greater efficiency of operation. On the other side, they enable greater competitiveness and adaptability of companies to new market requirements, including requirements arising from the new EU digital regulatory framework. The Strategy thus addresses key advanced digital technologies, increasing their utilisation in digital transformation processes in businesses, the convergence of technologies for a quicker digital transition and steps in the implementation of the digital transition.

The second priority area addresses the **efficient ecosystem** for a competitive economy, in particular factors of business and a supporting environment, access to the market, access to finance, digital public services for the economy, access to knowledge and results in the development of technologies and appertaining ecosystems. The strengthening of micro-ecosystems is also an important element. Therefore, we also consider infrastructure (hybrid cloud for optimising data transfers between businesses and institutions), as well as macro-ecosystems, which are addressed by international cooperation in cross-border multi-country projects.

The third priority area addresses the social aspect of digital transformation of the economy and defines an **open and sustainable society** as the basis for the growth of a digital economy. Here, one of the most important factors will be to use advanced digital technologies to create a trust-based environment, which enables the development of new knowledge and digital competences of employees in businesses, with their partners and stakeholders in value chains, empowering their buyers with the purpose of adapting products and services to buyers through their inclusion in the process of co-creating their products. The co-participation of different social groups in innovative processes of the economy's digital transformation will consequently enable the empowerment of society to use advanced digital technologies and together with additional digital knowledge also co-create an inclusive and sustainable society.

Therefore I invite you to join us on this journey in achieving goals of the digital transformation of the economy and together we will make this important leap, which will give us an opportunity to achieve the top of the European and global market and to remain there as well.

Ljubljana, January 2022

Zdravko Počivalšek, Minister of Economic Development and Technology



Strategy of Digital Transformation of the Economy

Vision: By 2030, Slovenia will have become the leading hub of advanced digital technologies in Europe.

Mission: Slovenia's mission in the digital transformation of the economy is to enhance efficiency and productivity, competitiveness and resilience of Slovenian companies by simultaneously increasing the use of advanced digital technologies and ensuring sustainable transformation effects by strengthening knowledge and digital competences, developing digital public services, supporting the collaboration of companies at the international level and exploiting the advantages of the new digital environment in an inclusive and just way.

Objectives: Preserving and strengthening the leading role in advanced digital technologies

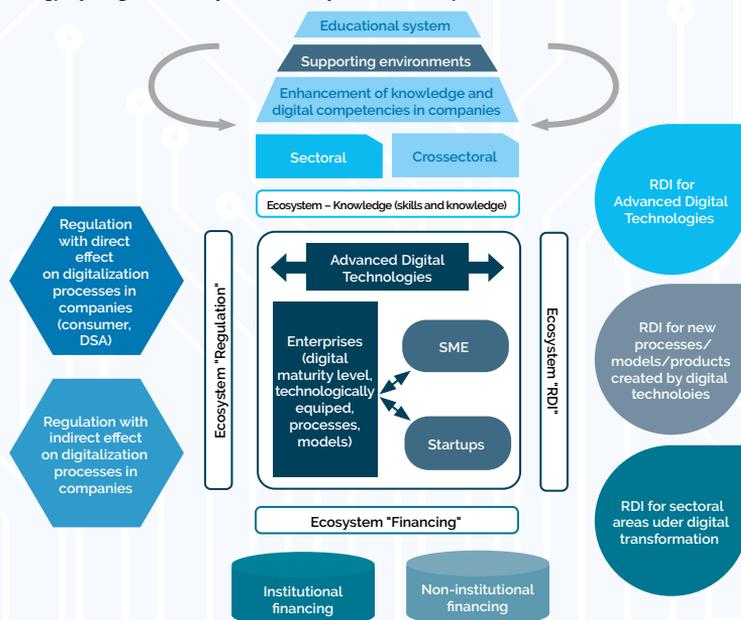
Automation and robotization	Artificial intelligence	Internet of Things	Data and data analytics	Blockchain	Quantum computing
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Ensuring a stable and developing environment for the economy's growth and strengthening society through digital transformation

Stable and development-oriented supportive environment	Digital infrastructure	Knowledge, competences and social inclusion	Systems and innovative regulatory environment	International inclusion
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Priority areas of the digital transformation of the economy

Figure 1: Strategy of Digital Transformation of the Economy



SUMMARY

Slovenia's future strongly depends on how well our businesses, employees, public administration and the society will adapt to the demands of advanced digital technologies and to their usage in the economy and society.

The Strategy of Digital Transformation of the Economy (hereinafter referred to as the Strategy) addresses the wide integration of advanced digital technologies in businesses, the challenges of the dynamics of introducing advanced digital technologies, especially linked to necessary knowledge and digital competences for a rapid implementation of such technologies in business processes. Due to the need for an intensive introduction of changes in the economy, we shall use the term “transformation”. The basis for transformation is also “Europe's Digital Decade” that determines the objectives by 2030 in four areas, related to competences, accessibility of digital infrastructure, accessibility of digital public services and a comprehensive digital transformation of businesses which are directly connected to the key areas of the economy's digital transformation.

The Strategy comprises the period from 2021 to 2030. It was prepared simultaneously with the initiated processes of digitalisation, informatization and EU's single digital market. The Strategy highlights the current advanced digital technologies like artificial intelligence (AI), Internet of Things (IoT), big data technology, blockchain technology (BC), high-performance computing (HPC), quantum computing and 5G technologies that will drive economic growth and competitiveness.

The Strategy of Digital Transformation of the Economy determines how Slovenia will guarantee the transition to a modern digital economy in the next decade. It is based on the existing digital technologies and initiatives, findings arising from the European Commission's recommendations and achieved indicators in digitalization, which are monitored by European and global (OECD) statistics.

The key areas of the Strategy of Digital Transformation of the Economy are:

1. Technology as the enabling tool for economy's digital transformation

Slovenia recognises the important role of key advanced digital technologies of the fourth industrial revolution and their usage, which is essential for the implementation of the economy's digital transformation. Advanced digital technologies on one hand enable the optimisation of business processes and greater efficiency of operation, on the other hand, they enable greater competitiveness and adaptation of companies to new market requirements, including requirements arising from the new digital regulatory framework of the EU. The Strategy thus addresses the key advanced digital technologies, increasing their utilisation in digital transformation processes in businesses, the convergence of tech-

nologies for a quicker digital transition and steps in the implementation of the digital transition.

2. Efficient ecosystem for competitive economy

The state's role is to shape policies for strengthening the factors that comprise the economy's digital transformation ecosystem. The Strategy thus addresses the factors of business and supportive environment, access to the market, access to financing (public/institutional and private), digital public services for the economy, smart cities and communities, inhabitants and other stakeholders, access to knowledge and results in the development of technologies and appertaining ecosystems. The strengthening of micro-ecosystems is also an important element, therefore, we also consider infrastructure (hybrid cloud for optimising data transfers between businesses and institutions), as well as macro ecosystems addressed by the international cooperation in cross-border multi-state projects.

3. An open and sustainable society as the basis for the growth of a digital economy

Slovenia wants to create a trust-based environment, enabling the upgrade of existing and the development of new knowledge and digital competences of employees in businesses, with their partners and stakeholders in value chains, empowering their buyers with the purpose of adapting products and services to buyers through their inclusion in the process of co-creating their products. The co-participation of different social groups in innovative processes of the economy's digital transformation will consequently enable the empowering of society for using advanced digital technologies and together with additional digital knowledge also the co-creation of an inclusive and sustainable society.

Complementarity of contents with other programmes and references

At the national level, the Strategy complements the **Slovenian Development Strategy 2030**¹, which determines that a highly productive economy is a strategic goal, creating added value and demanding lifelong learning and technological progress and development, innovation and the exploitation of digital potential, offered by digital technologies. It also complements the **Slovenian Smart Specialisation Strategy S4**² that emphasises the importance of digital focus and the collaboration of stakeholders and represents a platform for focusing developmental investments in areas, where Slovenia has a critical mass of knowledge, capacities and competences as well as innovation potential. Increasing the digitalisation level is important from the aspect of the "digital" horizontal criterion that directly tackles key verticals such as smart factories, smart cities and communities etc. The **Slovenian Industrial Strategy 2021-2030** sets the guidelines for the development of industry and economy under the common denominator "green, creative and smart development". The strengthening of digitalisation and smart solutions within smart development has been emphasised, since the modernisation of the economy must run in the direction of using the newest technologies, the highest process security level, increasing the level of automation and robotization, the use of digital

1 https://www.gov.si/assets/vladne-sluzbe/SVRK/Strategija-razvoja-Slovenije-2030/Strategija_razvoja_Slovenije_2030.pdf

2 <https://www.gov.si/assets/vladne-sluzbe/SVRK/S4-Slovenska-strategija-pametne-specializacije/Slovenska-strategija-pametne-specializacije.pdf>

technologies and artificial intelligence. Digitalisation should support the economy's green transition. The Strategy also complements the concept of the **Digital Public Services Strategy 2030** that defines strategic aspects for increasing the use of cross-border mobile digital public services, the basic starting points will be included in the umbrella national strategy titled **Digital Slovenia 2030**.³

At the European level, the Strategy complements the **Digital Europe** programme, which addresses technologies and their importance for the competitiveness of the European economy. At the start of 2020, the European Commission presented the strategy titled **A Europe fit for the digital age** to help Europe become a globally recognised stakeholder in the digital field by preserving high security and ethical standards. Within this scope, three documents were published to address individual areas of digital technologies, i. e. White Paper on Artificial Intelligence⁴, European Data Strategy⁵, Shaping Europe's Digital Future⁶. In December 2020, the European Commission presented the new **EU's Cybersecurity Strategy for the Digital Decade**⁷, which is also relevant for this Strategy. The Strategy also complements the **New Industrial Strategy for Europe**⁸, which puts green and digital transition to the forefront and it also highlights digital twins that have a key role in the optimisation of processes of various ecosystems and consequently in the green transition. It also complies with the European Skills Agenda for sustainable competitiveness, social justice and resilience. The vision, objectives and possibilities for a successful transformation of Europe by 2030 were presented by the European Commission in March 2021 in the **European Digital Decade⁹: Digital Objectives for 2030**, proposing the deal on a set of digital principles for a rapid introduction of multi-state projects and drafting of a legislative proposal, determining a solid framework for management and monitoring progress – digital compass. The latter is based on four main points: digitally qualified population and highly qualified experts in the digital sector; safe, efficient and sustainable digital infrastructures; digital transformation of businesses and digitalization of public services.

³ <https://www.gov.si/teme/digitalizacija-druzbe/>

⁴ <https://op.europa.eu/sl/publication-detail/-/publication/ac957f13-53c6-11ea-aece-01aa75ed71a1>

⁵ https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-data-strategy_sl#documents

⁶ https://ec.europa.eu/info/sites/info/files/communication-shaping-europes-digital-future-feb2020_en_4.pdf

⁷ <https://ec.europa.eu/digital-single-market/en/news/eus-cybersecurity-strategy-digital-decade>

⁸ <https://eur-lex.europa.eu/legal-content/SL/TXT/PDF/?uri=CELEX:52020DC0274&>

⁹ https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_sl

1. PURPOSE AND OBJECTIVES

The purpose of the Strategy is **to set the guidelines for supporting the further development and transformation of the Slovenian economy**, especially small and medium-sized enterprises, representing 99.8% of the Slovenian economy.¹⁰

The purpose of the Strategy is to strengthen Slovenia's ambition in achieving the objectives of the digital transformation of businesses, where the fundamental objective is for Slovenia to become known as

Slovenia - leading hub of advanced digital technologies

Slovenia is part of the global economy, where mutual collaboration is increasing and where advanced digital technologies in online and electronic business are changing the economic and social image. Business models are changing to ensure “customised” products and services, available to consumers, inhabitants and businesses at any given moment anywhere in the world. This creates new markets for innovative Slovenian businesses, while on the other hand it enhances competition in the domestic, regional and European market. Advanced digital technologies on the other hand lead to a new assessment of data, transforming them to value or assets used to guarantee better products and services for Slovenia's inhabitants.

A dynamic and open economy demands a comprehensive transformation of the economy to enhance its efficiency, productivity and competitiveness in European and global markets. Advanced digital technologies and new business models address the real challenges of today, create new jobs and enable future growth of businesses and industrial sectors as well as smart cities and communities by developing digital public services.

Starting points:

According to SURS (2020) data, Slovenia ranks third in Europe by the share of industry in economic activity. **Industrial businesses** include companies in activities of so-called traditional industries, where growth without technological upgrade and digital transformation in the future is quite limited.

Companies (most of them with up to 100 employees) in Slovenia mostly work in technological niches, especially in the electrical, mechanical and automobile industry. Such companies find digitalization a professional and implementational challenge, because it demands many changes in operations, investments in technology and upgrades of employee as well as management competences. Limited scope of funds for investments in equipment and implementation of advanced digital technologies and systems in companies, automation and robotization, including the needs for addressing the technologies of the fourth industrial rev-

¹⁰ Slovenian entrepreneurship observatory 2020: [SPO: monografije – IPMMP \(um.si\)](#)

olution – 4IR (Internet of Things or IoT, Big Data, artificial intelligence and machine learning or AI/ML, blockchain, cyber security, predictive analytics and smart prediction of decisions) presents an obstacle for companies on their way to a comprehensive digital transformation. Digitalization also demands the change in the entrepreneurial and business culture, since it demands adaptation to permanent changes in a short time. The risk for reduced operation efficiency in the long-term is increased in such business systems, including the increase of the cost of investments in the modernisation of business models with the purpose of preserving the level of responsiveness to market needs, and there is also a lack of qualified motivated human resources for the implementation of digitalization.

According to OECD¹¹ data, five years ago added value of digital services, installed in exported products (in percentage of the value of total export) was relatively low, barely exceeding 20% in Slovenia like in other OECD countries. After 2018, Slovenia also recorded a high drop in investments in digitalization and ICT, although it was already below OECD average (56%) in 2017 (46%).

On the other hand, **Slovenian ICT services and digitalization providers** also face challenges, since their activities are mostly based on supporting existing solutions in the market and current know-how, content support abilities are also based on obsolete systems and technologies. This results in a limited ability of mass implementation of new solutions with clients and payments for such services and solutions, including the e-shop solutions in the retail sale sector. Their feature is a relatively slow adaptation to the new regulations and competitiveness in the European market. The challenge of current ICT providers in the Slovenian market is the transition to new solutions that comprise new technologies, i.e. 4IR technologies, especially from the aspect of knowledge and competences, required by these technologies. HR issues in the ICT sector are also quite a big challenge.

According to OECD (2018) data, Slovenia (10) was deeply below the OECD countries' average (35) in the ICT product and services trade¹². The share of contribution of digitally intensive sectors to the growth in added value in Slovenia (45.2%) is lower than the OECD average (51.2%). The results of business expenditure in the information sector, earmarked for research and development in GDP percentage were quite concerning, since according to OECD data (2019), it amounted to 6 points for Slovenia and 16 points for the OECD average. On the other hand, Slovenia was above the OECD average in cross-border trade with digital services in 2017.

Micro and small companies face a lack of competences for designing digital content for presentation and entry in the market, since they have a relatively low digital intensity index compared to other EU countries. This is one of the main limiting factors in entering the market and financing, especially private financing, besides the lack of qualified human resources who do not have appropriate knowledge and digital skills. In the service sector with the prevailing share of micro and small companies, the largest share refers to labour-intensive companies in those parts of the service sector, where academic or other high technological knowledge is not typical, which limits micro and small companies in facing regulatory challenges and ensuring conformity with standards.

¹¹ <https://goingdigital.oecd.org/>

¹² <https://goingdigital.oecd.org/>

The share of small companies in e-trade in the past 12 months was 22.9% for Slovenia according to OECD data for 2020, where the OECD average amounts to 23.7%. According to DESI (2020) data, Slovenia lagged behind other countries in technology integration, measured by the digital intensity index, since we are in a group of countries with a low digital intensity index (for more than 40% of companies, the use of digital technologies is very low, meaning that companies use 0 to 3 digital technologies; whereas for more than 30% of companies, the use of digital technologies is low, meaning that companies use from 4 to 6 digital technologies).

The Slovenian business sector on one hand shows a relatively high digital intensity of jobs, including investments in training employees, and positive trends which have been found with regard to robotization and digitalization of operations, especially among large companies. On the other hand, UMAR 2020 data show that the business sector insufficiently invests in ICT, and there has been a lag in the integration of demanding technologies and in the introduction of smart factories.

Slovenia lags behind in investments in ICT equipment and software as well as databases, especially when it comes to processing activities.

The fact that the share of investments of processing activities in ICT equipment is only 9 per cent, which is quite less than in the Czech Republic (where the share is 50%) or in Sweden and Finland (where the share is around 20%), results in the fact that in 2018, public administration investments in ICT equipment were higher than in processing activities. The situation with regard to investments in software and databases, where Slovenia's investments present 1.1% of the GDP, is below average with regard to the OECD average, but a slightly increasing trend has been recorded. It does not suffice for the elimination of the lag behind countries like the Czech Republic or Austria, which invest relatively twice, and countries like the Netherlands, Sweden and France, invest almost three times of the share Slovenia invests. This is confirmed by EIB (2019b) data, where Slovenia according to all entrepreneurial investments in software, data, networks and online activities with 8% lags behind the EU average by 5 or even by 8 percentage points behind the leading innovators, whereas the situation is critical in processing activities, which earmark only 4% of total investments in this field.

DESI index data for 2021, which has been methodologically supplemented in comparison with the DESI index for previous years, show a relatively better image of the Slovenian digital economy and society in 2021, where in the advanced technologies integration sector, Slovenia ranks 8th, which represents the highest growth so far (from 15th place in 2020) and is above the European average. By measuring and adding new advanced digital technologies in the methodology (like artificial intelligence, use of cloud services, big data), Slovenia's position with regard to the European average is improving. We should emphasise that the data were collected within a separate research¹³, in the future they will be monitored by statistical offices¹⁴. We have also recorded growth in the human resources field, by 2 places to 13th place in 2021, especially due to the increase in the share of ICT experts and graduates. Detailed

¹³ <https://www.ipsos.com/sites/default/files/ct/publication/documents/2020-09/european-enterprise-survey-and-ai-report.pdf>

¹⁴ <https://www.ipsos.com/sites/default/files/ct/publication/documents/2020-09/european-enterprise-survey-and-ai-report.pdf>

presentation of the current situation is under point 2. The current situation in digitalization in Slovenia.

The objectives that we follow with the Strategy of Digital Transformation of the Economy

Slovenia's strategic objective in the digital decade by 2030 is to become the leading hub of advanced digital technologies in Europe and in the wider region of Central and Eastern Europe.

This objective has been realised through two basic strategic guidelines:

Strategic guideline 1:

Preserving and strengthening the leading role in advanced digital technologies (addressed by the key strategy field: 1. Technology as the enabling tool for the economy's digital transformation).

Strategic guideline 2:

Ensuring a stable and developing environment for the economy's growth and strengthening society through digital transformation (addressed by the two key strategy fields: 2. Efficient ecosystem for competitive economy and 3. Open and sustainable society).

The main strategic guidelines are further described under Chapter 3 Key areas of the economy's digital transformation, detailed objectives have also been summarised according to the OECD Going Digital Toolkit¹⁵ for Slovenia.

We will also follow concrete measurable objectives arising from current EU and national statistics, pursuing the main objective, i.e. to improve the position on the DESI index scale (Digital Economy and Society Index¹⁶), by adding new advanced digital technologies in the DESI index in the area of "inclusion of digital technologies", and **to be among the first three countries at the EU level by 2030**. Target values by 2030 in Table 3 follow the objectives of the EU Digital Compass.

¹⁵ <https://goingdigital.oecd.org/countries/svn>

¹⁶ <https://digital-strategy.ec.europa.eu/en/policies/desi-slovenia>

Table 1: Quantitative objectives and indicators in digital transformation

Objective	Indicator	Start value 2021	Target value 2030
Improvement of DESI index – inclusion of digital technologies	SME with online sales percentage	17%	more than 30%
	SME turnover percentage via e-sales	12%	more than 20%
	Percentage of companies with electronic information exchange	33%	more than 60%
	Percentage of companies using big data	7%	more than 75%
	Percentage of companies, using cloud services	26%	more than 75%
	Percentage of companies using artificial intelligence	33%	more than 75%
Improvement of DESI index – human capital	Percentage of individuals with minimum basic digital skills	55%	more than 80%
	Percentage of ICT experts	4.4%	more than 10%
	Percentage of companies implementing ICT training	26%	90%
Higher company productivity (AJ PES)	Added value per employee	EUR 47,161	EUR 65,000
Increase of digitalization in companies (SURS)	Digitalization level in companies with more than 10 employees (growth of the high and very high digital index (total))	23%	53%
Increasing the number of companies implementing digital transformation	Number of companies	300 companies	more than 5000 companies

2. CURRENT SITUATION IN DIGITALIZATION IN SLOVENIA

Considering the **Digital Economy and Society Index 2021**¹⁷ (hereinafter referred to as: DESI 2021), Slovenia ranks 13th among EU member states and has progressed with regard to the previous year:

- With regard to connectivity, it has ranked ninth in the EU. The number of households, covered with fixed and highly capable networks has increased. Broadband access networks of the next generation cover 88% of households.
- In human capital, it remains below the EU average. The Digital Education Action Plan (DEAP) by 2027 does not directly address the economy, but it addresses the youth at school, which can represent an appropriate potential for quicker digital transformation. The umbrella digital strategy for Slovenia, the Digital Strategy 2030, is complementary with DEAP.
- Slovenia ranks eighth among EU countries in the inclusion of digital technology in companies. High-performance computing is a national priority investment. Slovenia has adopted a national plan for responding to cyber incidents, which has been used to unify the procedures of managing cyber incidents and to provide guidelines for a harmonised response to stakeholders.
- Slovenia reaches the medium-low level of entry with an average digitalization level in public services (15th place among 27 EU member states). Therefore, the introduction of safe, unique and user-friendly solutions like electronic identifiers or electronic signatures will have to be expedited to promote the adoption of digital public services, increase trust in online transactions and enable mobile and cross-border access. Trends in digital public services are somewhat more encouraging, however, in the offer of such services (pre-filled forms, ability of online performance of services, open data), their usage remained low for individuals and companies, especially due to the complexity of usage of qualified digital certificates for the average user, and in companies due to the low trust and absence of safe and unique identifiers. The use of public digital services for companies remains problematic, since it only amounts to 78%, whereas the EU level is 84%. We aim to support smart cities, communities and their inhabitants with digital public services, therefore, additional investments in development are needed.

In the previous year, Slovenia ranked 16th according to the DESI 2020¹⁸, which was an average result. Greater lag behind was noted in the field of integrating technology, measured with

¹⁷ DESI - Slovenia | Shaping Europe's digital future (europa.eu)

¹⁸ Digital Economy and Society Index (DESI) 2020 – Slovenia, European Commission

the digital intensity index, since we are in the group of countries with a low digital intensity index (for more than 40% of companies, the use of digital technologies is very low, meaning that companies use 0 to 3 digital technologies; whereas for more than 30% of companies, the use of digital technologies is low, meaning that companies use from 4 to 6 digital technologies).

Please find below Slovenia's rank by individual components compared to the EU average.

Table 2: Slovenia's rank in DESI 2020 and DESI 2021

	DESI Slovenia 2020 (ranking and evaluation)	DESI Slovenia 2021 (ranking and evaluation)	DESI EU (evaluation)
DESI		13 (52.8)	50.7
Human capital	15 (48.3)	13 (47.8)	47.1
Connectivity	16 (50.2)	9 (53.2)	50.2
Inclusion of digital technology	15 (40.9)	8 (42.3)	37.6
Digital public services	17 (70.8)	15 (68.0)	68.1

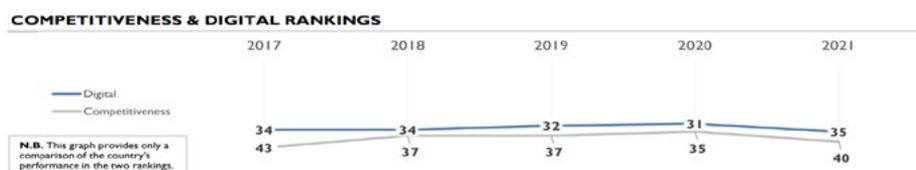
Source: DESI 2020 and DESI 2021

The **International Institute for Management Development report on digital competitiveness in 2021**¹⁹ (hereinafter referred to as the IMD) ranked Slovenia at the 35th place among 64 countries included in the report. Compared to 2020, Slovenia dropped by 4 places and by 3 down the scale compared to 2019. The first factor was education, followed by technology and the third factor was readiness for the future. The chart below shows that Slovenia's position has gradually improved since 2017; however, it has significantly backslid in the last year.

¹⁹ IMD report 2021: [si \(6\).pdf](#)

Table 3: IMG report for Slovenia 2021 – digital inclusion

OVERALL & FACTORS - 5 years	2017	2018	2019	2020	2021
OVERALL	34	34	32	31	35
Knowledge	26	26	27	29	30
Technology	40	38	35	35	39
Future readiness	36	35	36	37	40



Source: IMD report 2021, str. 5, [IMD 2021 Slovenia.pdf](#).

The chart above also shows that the competitiveness of the Slovenian economy is strongly connected to digitalization. Digitalization contributes to **greater international competitiveness of SMEs**²⁰, since it enables a simple and quicker entry in foreign markets or the expansion of operation in the existing foreign market, shorter time spent for various operations, processes, optimisation and effective search for resources or purchasing, lower costs of administration, increased transparency over business processes and consequently increased sales in foreign markets, improving competitive position, simplifying distribution channels, expanding the market and business reach resulting in higher revenue, improvement of interaction with clients, more accurate and easily accessible information about the company, suppliers, buyers, target markets, increasing the speed of operations, increasing the market share and rationalising the business model.

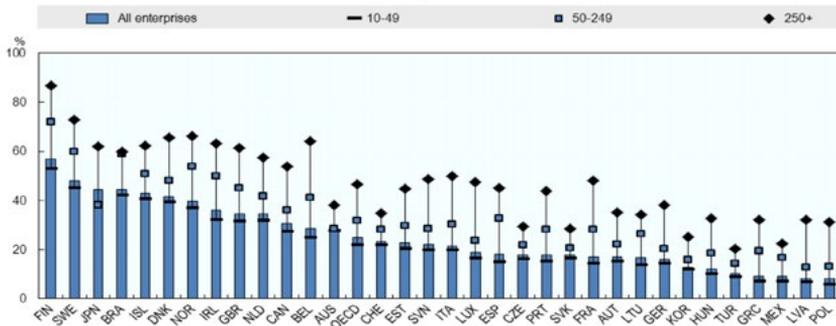
The percentage of companies with the highest digital index is the highest with major companies²¹, while in small and medium-sized companies, the digital index is significantly lower, which is also reflected in their productivity. Large systems still face a gap in the connectivity of business functions, thus reducing their efficiency.

Lack of knowledge of advanced technologies and lack of competences at companies are an obstacle for introducing such technologies. Companies also have a lack of modern technological equipment that would enable its optimal usage in the system of smart factories and also increase their productivity.

²⁰ Source: <https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Key-Issues.pdf>

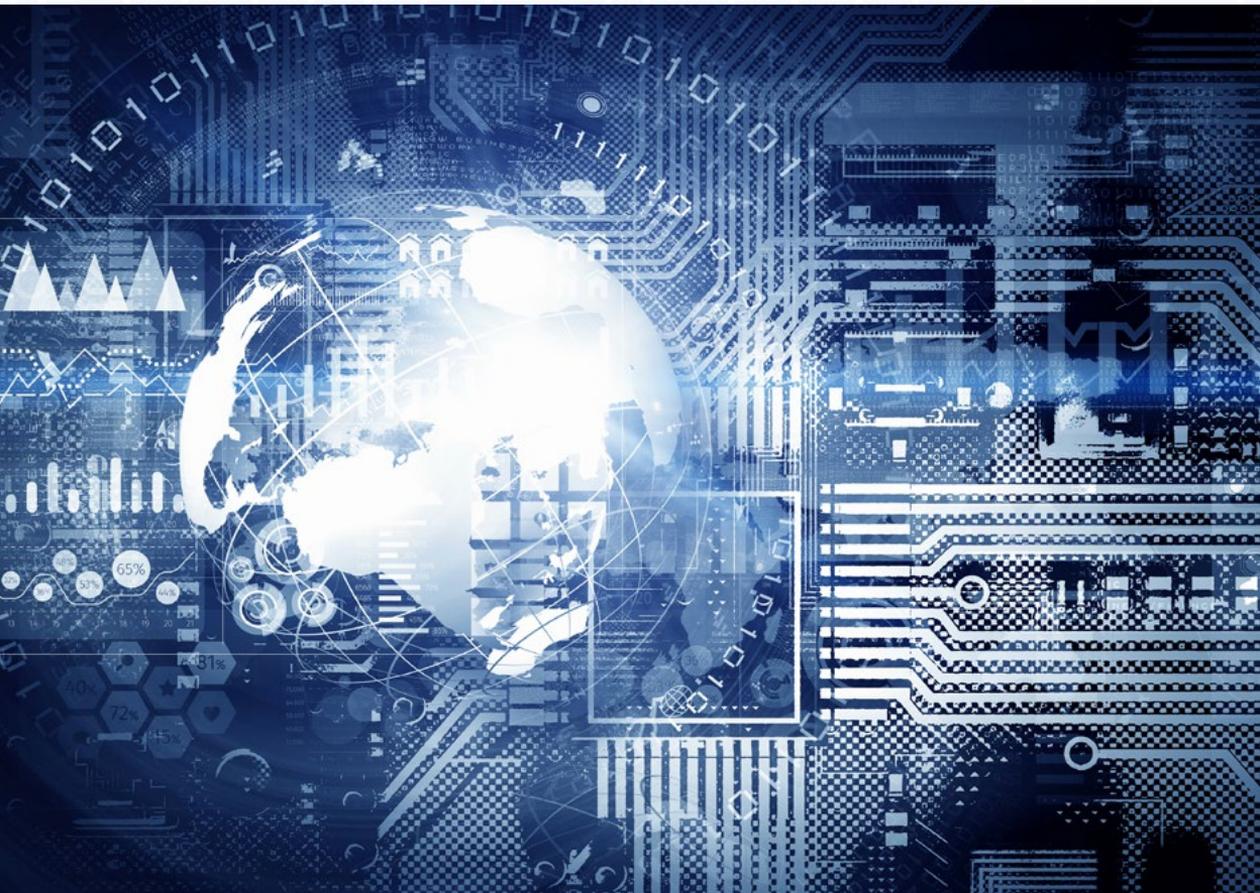
²¹ SURS data, Digital Entrepreneurship 2020: [Digital entrepreneurship, detailed data, Slovenia 2020 \(stat.si\)](#)

Figure 2: SMEs lag behind in the introduction of advanced digital technologies



Note: Cloud computing refers to ICT services used over the Internet as a set of computing resources to access software, computing power, storage capacity and so on. Data refer to manufacturing and non-financial market services enterprises with ten or more persons employed, unless otherwise stated. Size classes are defined as: small (10-49 persons employed), medium (50-249) and large (250 and more). OECD data are based on a simple average of the available countries.
Source: OECD (2017e).

Source: OECD ministerial conference 2018, page 14, Strengthening SMEs and entrepreneurship for productivity and inclusive growth (oecd.org).



3. KEY AREAS OF THE ECONOMY'S DIGITAL TRANSFORMATION

3.1. Advanced digital technologies as an enabling tool for the digital transformation of the economy

In technologies, Slovenia will strive to strengthen technological equipment of companies with advanced digital technologies and by stimulating companies to use a combination of such technologies (convergence) for greater efficiency of operations.

3.1.1. Description of key technologies for the economy's digital transformation

In its recommendation, the European Commission referred Slovenia to strengthen areas with advantages, i.e. in robotics, artificial intelligence and blockchain technology (CSR for Slovenia, 2020).

Technological equipment involves the availability of automated machinery and equipment as well as the use of technologies that enhance the efficiency of equipment utilisation and the improvement of process productivity in companies.

Key advanced digital technologies that contribute to business digital transformation:

1. Internet of Things (or Industrial Internet of Things – IoT or IIoT) and machine learning for operational system transformation (including automation, robotization, introduction of augmented reality – AR, virtual reality – VR, 3D printing and additional production)
2. Artificial intelligence and transformation of decision-making systems (including the method of collection – sensorics – and the processing of big data in companies, relevant for business functions, especially purchasing chains and processes which are of key importance for the transition to a sustainable and circular economy, distributed disposal of data, predictive analytics and on the basis of changes in the decision making systems at all levels, cyber security and super computers for such data processing;
3. Blockchain technologies and distributed ledger technologies (including the inclusion of internal (employees, business divisions) and external communities (partners), data records, digital company identity, products, smart contracts in the sense of work protocols for automated function implementation etc.).
4. Platforms for connecting advanced technologies and the synchronisation of their usage and optimum implementation of digital twins (internal and external integration platforms)

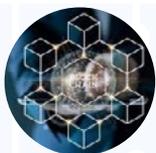
5. Big data and quantum computing
6. Virtual reality (VR), augmented reality (AR), extended reality (XR), 3D.



Artificial intelligence: collection of technologies that can be used for autonomous problem solving and implementation of tasks for achieving certain objectives, in some cases also irrespective of people.²²



Internet of Things: network of physical items that can be connected to the internet.



Blockchain: programme solution that enables the verification and storage of data in a distributed network and also reduces the number of common points where errors occur, it prevents fraud and enables automated implementation of smart contracts.



Data analytics: analyses of sets of primary data with the use of specialised computers and programmes.



Quantum computing: storage and processing of information by considering the action of individual atoms, ions, electrons or photons.

From the aspect of internal factors of operation, the use of such technologies in individual companies varies in dependence from the size of companies, the number of business functions in companies that carry out digital transformation, on the nature and type of business processes and achieved level of digital maturity of business processes. The use of such technologies depends on external factors of operation, i.e.: connectivity or level of coverage with fast speed broadband connections and the available knowledge and competences for an effective implementation of such technologies in companies.

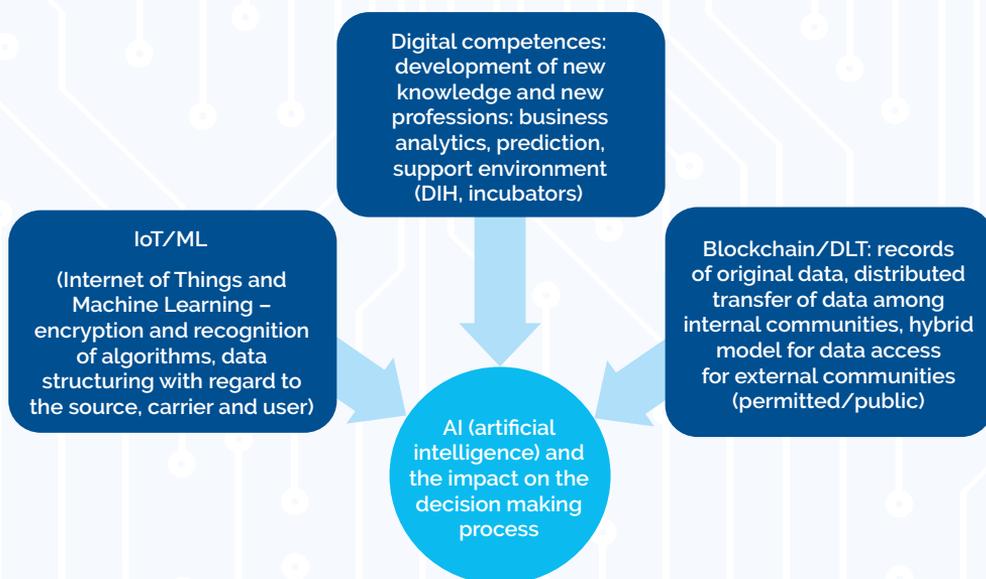
²² Detailed definition in the National Artificial Intelligence Programme: http://www.ds-rs.si/sites/default/files/dokumenti/npai_si_2021-03-10_cistopis_zdsma.pdf

3.1.2. Convergence of technologies

When advanced digital technologies are combined to enable one another to achieve the same objective, we speak of convergence of technologies. The above-mentioned technologies that can be combined in the process of preparation of digital transformation or used complementary, are called “convergence technologies”. Convergence technologies are those that can be combined or are complementary for the implementation of such technological solutions that will enable the optimum digital transformation of a company.

Convergence of technologies is very important for a comprehensive digital transformation of companies, especially those that have more business functions in the organisational structure. On one hand, this enables a more effective utilisation of advanced digital technologies, on the other hand it significantly impacts the efficiency and productivity of business processes and functions at the same time. It also enables the introduction of the system for measuring direct and indirect effects of technological strengthening at the level of an independent business function as well as across divisions or at the level of the entire company. In this way, a company can develop the methodology of measuring the efficacy and productivity of business functions that result from the convergent use of advanced digital technologies. Appendix 3 presents the possible indicators that companies can use to monitor the measurement of digitalization status.





Recent activities, important for supporting the introduction of advanced digital technologies in companies:

In 2018, Slovenia as the first country in the EU adopted the **Blockchain Technology Action Plan**²³ that was intended for promoting the use of technological solutions in development and investment projects by engaging technological and business knowledge, strengthening the supportive environment for creating the appropriate knowledge base for creating the ecosystem, promoting the emergence of new and innovative projects, entrepreneurial initiatives and blockchain technology-based companies, and promoting growth or transformation of existing business systems on the way to creating a new distributed economy. A public tender for demo pilot projects was also carried out, where projects that envisaged the use of blockchain technology to 65% and the use of artificial intelligence to 73% were selected.

In 2021, Slovenia adopted the **National programme promoting the development and use of artificial intelligence**²⁴ to express its interest in strengthening all activities in the field of artificial intelligence – comprehensively and in a coordinated way as well as within the scope of the entire innovation life cycle, i.e. promoting research, development, introduction and use of technologies and tools in AI at the national level. At the same time these activities would enable Slovenia and national stakeholders recognition and active participation in key European and international activities. Thus, Slovenia joined the EU initiative that on 10 April 2018 triggered the pan-European initiative on cooperation in the field of AI. Slovenia is increasingly positioning itself as an ambassador in artificial intelligence research and devel-

²³ [http://84.39.218.201/MANDAT14/VLADNAGRADIVA.NSF/18a6b9887c33a0bdc12570e50034eb54/eacf804b-fc2c9aa7c125829c002500ac/\\$FILE/AN_Blockchain_P.pdf](http://84.39.218.201/MANDAT14/VLADNAGRADIVA.NSF/18a6b9887c33a0bdc12570e50034eb54/eacf804b-fc2c9aa7c125829c002500ac/$FILE/AN_Blockchain_P.pdf)

²⁴ http://www.ds-rs.si/sites/default/files/dokumenti/npai_si_2021-03-10_cistopis_zdsma.pdf

opment, which is also confirmed by the wide international recognition and confirmation of the head office of the **UNESCO International Research Centre for Artificial Intelligence in Slovenia**²⁵.

The objectives, followed in connection to the implementation of advanced digital technologies for digital transformation at the level of policies and structural measures for the economy:

1. Enhancing efficiency, productivity and competitiveness of major companies by introducing digital innovation, automation, robotization and 4IR and 5IR technologies.
2. Increasing the use of advanced digital technologies in micro, small and medium-sized companies.
3. Designing new or upgrading existing digital products and services of companies.
4. Modified business models, process innovation and the development of new innovation platforms (core start-ups) in companies with the aim to design new products and services, including digital ones, for the market.
5. The development and introduction of standards in the development and use of new advanced digital technologies that represent the basis for ensuring the conformity of the technology with regulations or designing new regulatory bases, especially adapting business processes to new regulatory requirements and designing measures to reduce administrative obstacles with innovative solutions (digital identity of companies).
6. Increasing the use of digital public services for companies, smart cities, communities and inhabitants.

Slovenia's strategic guidelines in connection to the development and implementation of advanced digital technologies:

Slovenia will strive to encourage companies for digital transformation through strengthening the use of advanced digital technologies²⁶ and implementing digital services.

Strategic guideline:

Technological strengthening of companies for digital transformation with the purpose of strengthening technological capitalization of companies through investments in equipment and use of advanced digital technologies for greater productivity and competitiveness.

²⁵ <https://ircai.org/>

²⁶ Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Base-line and target values are given in the table in section 4.3. Action plan for the implementation of the strategy

In the next
2 years

- Increasing the scope of investments in advanced digital technologies in companies (large companies and SMEs)
- Increasing investments in RDI in companies in the field of IT
- **OBJECTIVE (1):** Advancement on the DESI index “Integration of digital technologies” to 5th place in the EU
- **OBJECTIVE (2):** Increase the share of RDI investments in IT companies by 10%

In the next
5 years

- Increase the capacity of production or operation of key national industrial sectors by using advanced digital technologies
- Increase the number of companies using cloud services
- **OBJECTIVE (1):** Increase the share of digitally intensive jobs as a % of total employees by 10%
- **OBJECTIVE (2):** Increase the share of companies using cloud services by 10%

By 2030

- Become the leading country in the development and implementation of advanced digital technologies
- **OBJECTIVE (1):** Advancement on the DESI index “Integration of digital technologies” among the top 3 EU countries
- **OBJECTIVE (2):** Advancement on the DESI index “Digital Public Services for Business” among the top 3 EU countries

3.2. Efficient ecosystem for competitive economy

Technology changes business models and reduces obstacles for company growth. Benefits of digital transformation are achieved with appropriate planning and investments from public and private resources. Since funds are limited, it is good to know which activities can reach the highest benefits. Global digital readiness of countries is monitored at the global level with the so-called Global Digital Readiness Index²⁷ which uses a multi-factor approach to monitor the advancement of countries in achieving digital maturity. From the economy's aspect, the components of (i) public and private investment, (ii) simplified access to operation, (iii) human capital, (iv) supporting environment for start-ups, (v) use of technology and (vi) technological infrastructure are very important. In 2018, Slovenia ranked 28th on the chart of 141 countries included in digital maturity index monitoring.

²⁷ <https://www.cisco.com/c/en/us/about/csr/research-resources/digital-readiness.html>

The digital maturity of a country greatly depends on the digital maturity of the economy, and on the promoted digital environment by the country. Company digital maturity assessment or self-assessment is therefore the first step for the economy's digital transformation. In the digital transformation process, the company performs at least 4 basic steps in the implementation of the digital strategy or development plan for digital transformation and its implementation, i. e.:

- description of the procedure (steps) for implementing the self-assessment of digital maturity;
- identification and description of advanced digital technologies used by the companies to carry out digital transformation;
- description of convergence models of complementary usage of technologies;
- description of dynamics and transfer of knowledge for the implementation of digital transformation in companies;
- determination of key performance indicators (KPI) to measure the performance of implementation of digital transformation in a company.

By determining the key performance indicators in business systems, it is possible to develop metrics that reflect the efficiency of the used technology and benefits gained by the company through digital transformation, i. e.:

- higher productivity and optimisation of technology utilisation is achieved through greater economies of scale in a shorter time frame, which is contributed by the integration of new technological solutions and better utilisation of advanced digital technologies;
- greater efficiency of processes, achieved through automation and robotization of processes and integration of advanced digital technologies;
- increasing added value by increasing savings and decreasing losses;
 - by tracing input (relevant for resources, materials, knowledge and information that serve as input for production/implementation of services, their planning and usage in the business process);
 - by adding value to products and services as outputs in each business process phase (relevant for designing the implementation of non-linear or circular business models and with the perspective of adding new user communities to achieve growth);
- quicker adaptation to new challenges of accessing new markets and adding new markets;
- greater scope of products or services, tailored to buyers;
- restructuring supply chains and value chains, quicker entry in value chains with higher added value
- will enable the creation of new value sources, the transition from conventional specialization into flexible adaptation to consumer needs processes, the production of different and complex products based on mass customization.

Strategic guideline:

To determine key performance indicators to the implement digital transformation of the economy, which are determined by the country to define the level of digital transformation performance (bottom-down), and indicators that are monitored by companies to measure the performance of digital transformation (and their bottom-up aggregation) as well as the methodology for their monitoring.

Objective:

In the next 3 years, the MGRT shall in cooperation with companies and SURS establish an effective system for monitoring digital transformation through the use of key performance indicators (KPI).

3.2.1. Strengthening a supportive environment for faster digital transformation of the economy

Besides the adaptation of business processes by strengthening technological equipment, two elements are important for an effective digital transformation of large companies, i. e. (1) strengthening digital competences of employees in large companies and SMEs by using advanced digital technologies and adapting to new needs that originate from them, and (2) connecting with innovative SMEs and startups. Due to the fact that digital knowledge and competences are transferred as quickly as possible and efficiently used in companies that enter the path to digital transformation, special emphasis will be put on strengthening digital competences and digital public services as well as the supportive environment with “pools” of specific knowledge in advanced digital technologies.

A supportive environment is an important part of the ecosystem to support economy’s digital transformation. A supportive environment is important for the transformation of traditional industries and conventional companies from the aspect of ensuring (1) continuing inflow of knowledge to strengthen digital competences, as well as (2) for an open innovation business environment according to the open innovation principle in cooperation with innovative SMEs and startups, which will (a) impact quicker integration of innovative solutions in traditional companies, (b) integration of the open innovation concept in the current business models, and on the other hand (c) increase innovation ability of SMEs and startups and their growth (transition to the scale-up phase), including the existing companies in IT, which can result in (d) a comprehensive change of business models, existing organisational structures in the direction of greater participation of employees in the process of innovation and transformation, which will also present the basis for designing future professions and the future of work. One of the main factors is to create the appropriate environment for startups, especially by ensuring access to financing, supporting the development of patenting innovation and creating a greater “density” of companies in advanced digital technologies. Special emphasis



will have to be put on the development and retention of young talented people within the digital ecosystem in Slovenia.

Slovenia (64) was in 2018 below the OECD average (69) in the share of startups (up to 2 years) in the entire population of companies; in the 2014–2017 period we also lagged behind the OECD average by the number of patents in ICT (12), the most critical was the field of venture capital investments in IT, since we achieved 0 points compared to the OECD average (16) in 2019.

The OURdata index compares the design and implementation of open data policies at the central level and emphasises the political relevance of this area of work for OECD member states and partner states as well as broader. In the area of openness, applicability and reuse of data of the public sector, Slovenia advanced from 19th to 10th place in the 2017–2019 evaluation period and is above the OECD average.²⁸

Data openness and availability is also important for companies, therefore, the primary objective to strengthen the ecosystem for the digital transformation of companies is to strengthen a supportive environment, promote the establishment of missing ecosystem elements (like

²⁸ (<https://www.oecd.org/gov/digital-government/ourdata-index-slovenia.pdf>) (Open, Useful and Re-usable data (OURdata) Index: 2019: <https://www.oecd.org/gov/digital-government/policy-paper-ourdata-index-2019.htm>)

private financing) and increase the efficiency of existing institutions of the supportive environment for designing adapted services for the digital transformation of companies.

The objectives that we follow in connection to the digital transformation of companies related to the supportive ecosystem factors:

1. Increasing the access of companies to appropriate supportive or testing environment, flexibility of technologies and business processes and premises for testing/designing prototypes.
2. Connecting large companies with innovative startups and scaleups for an open innovation business environment.
3. Promoting the growth of digital services markets by supportive ecosystems and promoting the export of high technological knowledge.
4. Increasing access to knowledge, digital competences and funds.
5. Expedited introduction of digital innovation for the flexibility of the market, leading to market openness, lower costs of entering the market, by connecting into platforms and for a more effective entry and positioning of companies in the market.

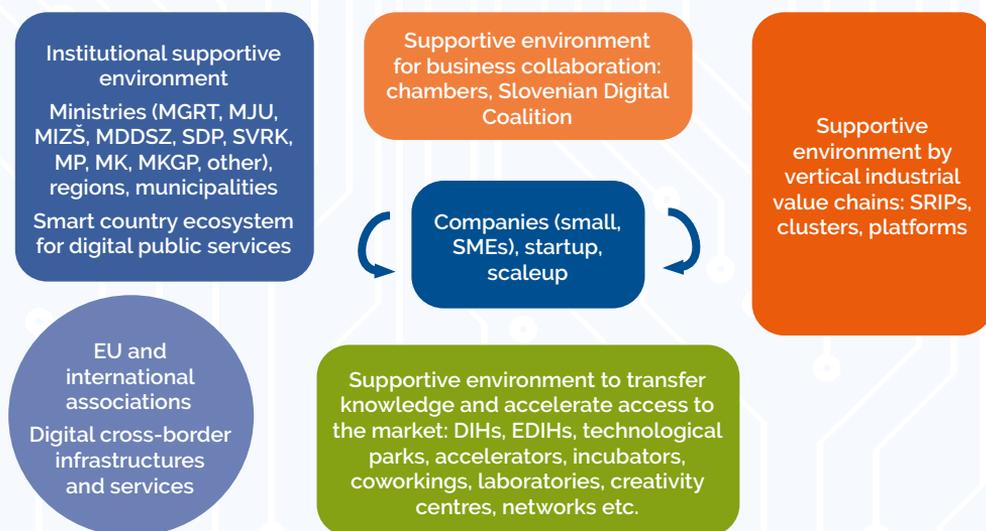
Supportive environments are considered with regard to their role in the ecosystem to support companies in their digital transformation and their contribution to designing and offering services and co-designing this ecosystem for a more stable, predictable and attractive business environment. Therefore, we differ between:

1. entrepreneurial supportive environments;
2. financial supportive environments;
3. supportive environments to access research, development and innovation;
4. smart country ecosystem for digital public services.

The country's task in connection to strengthening the supportive environment for an effective digital transformation of companies is (i) the creation **of an effective business environment** (legislative, supportive) and (ii) ensuring **proper financial resources**, not covered by the banking system and other private entities (e.g. venture capital funds, business angels etc.), (iii) strengthening a supportive environment for research, development and innovation and (iv) establishing a smart country ecosystem for digital public services. On the other hand, the country will support companies with free supportive environment services (technological parks, incubators, digital innovation hubs etc.) and direct (subsidies) and indirect (seed and venture capital, loans, warranties) financing and accelerated development of digital mobile public services (also across the border).

3.2.1.1. Entrepreneurial supportive environment

To achieve a successful digital transformation of companies and develop products and services, effective services of the supportive environment must also be ensured.



Supportive environment for the economy's digital transformation is differentiated with regard to the function in an individual phase of digital transformation, i.e.:

1. institutional supportive environment, represented by the public institutions in the function of development policy planners (ministries, other institutions at the state level, municipalities, regions),
2. entrepreneurial cooperation supportive environment, including chambers and initiatives within chambers (Slovenian Digital Coalition), associations, societies and other forms of collaboration,
3. supportive environment for knowledge transfer and for accelerating access to the market for innovative companies in digital transformation and the transition to the digital decade (DIH, EDIH, entrepreneurial incubators, accelerators, creative laboratories, learning production laboratories, networks etc.),
4. supportive environment by vertical industrial value chains (SRIPs, clusters, platforms etc.), the purpose of which is to strengthen value chains on industrial verticals of identified areas of smart specialisation,
5. European and international associations, connections and alliances can significantly contribute to strengthening the digital transformation of the economy and society,
6. smart country ecosystem for the development of digital cross-border infrastructures and public services

For accelerating the implementation of the digital transformation of companies, the following strategic guidelines are determined:

Strategic guideline 1:

Institutional support environments shape policies and strategic guidelines by horizontally incorporating elements of the digital transformation of businesses and related ecosystems into all policies and strategic documents. They horizontally include digitalization and digital transformation in all measures and instruments they design and implement.

Strategic guideline 2:

Supportive environment of entrepreneurial cooperation and supportive environment by vertical industrial value chains strengthen the upward cooperation, with institutional supportive environment and downward with companies for transferring knowledge and information, raising awareness of companies and their employees and stakeholders in their value chains about the need for digital transformation, dissemination of best practices and increasing the replicability of such practices in companies that have implemented digital transformation. They also strengthen the promotion of company collaboration for the transfer and integration of innovative startup ideas and SMEs in traditional business models of the industrial base for the purpose of opening the latter for innovation (open innovation), integrating innovation in the existing business processes and enhancing agility and productivity of operation.

Strategic guideline 3:

Strengthening supportive environment for knowledge transfer and accelerating access to the market for innovative companies in digital transformation and transition to the digital decade to promote the emergence of innovative entrepreneurial ideas with the use of advanced digital technologies, knowledge transfer in communities to strengthen digital competences, promoting open innovation in local value chains while focusing on professions of the future through digital social innovation and focusing on the function of technology for the people. Accelerating the formation of “teaching companies” within major business systems for a quicker digital transformation of companies and increasing digital competences of employees and greater use of digital mobile cross-border public services.

Strategic guideline 4:

Cooperation of Slovenian companies in European and international networks is of special importance on one hand due to the transfer of knowledge from the international environment to Slovenia, and on the other hand to present innovative solutions of Slovenian companies in digital technologies and implement them in the international environment, thus increasing the recognition of Slovenian high technology solutions contributing to a better inclusion of Slovenian companies in international value chains and accessing the wider European and global market

In the next
2 years

- **OBJECTIVE (1):** Develop a methodology for measuring effects of digital transformation resulting from the policies, strategies and actions of individual institutions. To this end, institutions shall define key performance indicators (KPIs).
- **OBJECTIVE (2):** To establish a platform for companies as a tool for companies to transfer knowledge, to connect (matchmaking) and to find available competencies and staff with specific knowledge in real time.

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In the next
5 years

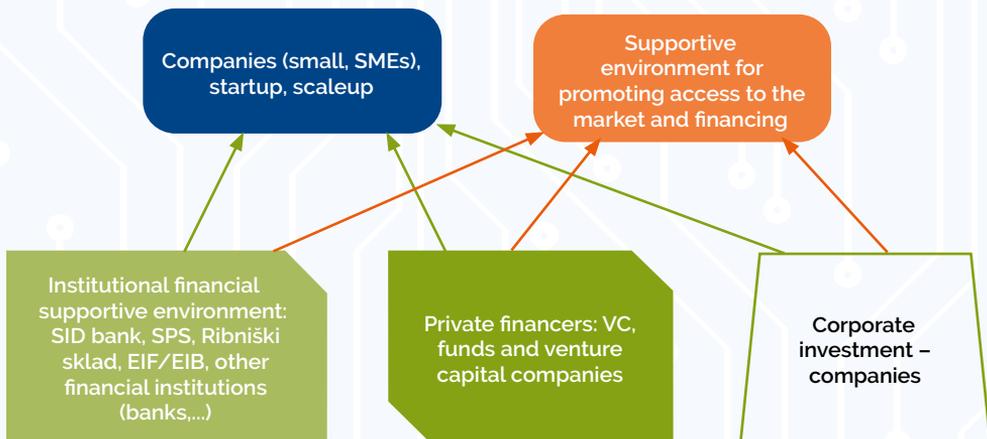
- **OBJECTIVE (1):** To increase share of start-ups in the total population of companies by 10%

By 2030

- **OBJECTIVE (1):** Slovenia becomes an internationally recognized and renown partner with an active role in international associations and federations.

²⁹ Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Base-line and target values are given in the table in section 4.3. Action plan for the implementation of the strategy

3.2.1.2. Financial support environment



Financial supportive environment for promoting economy's digital transformation in Slovenia include:

- institutional financial supportive environment
- supportive environment of private financing providers
- companies or major business systems in the role of corporate investors

We can identify two challenges that need to be addressed for a more effective digital transformation of the economy and society:

1. while the institutional supportive environment in Slovenia is relatively well developed, we face especially the lack of private investment, i.e. providers of alternative financing as well as venture capital companies (VC) and corporate investments in high technology companies that develop advanced digital technologies, and in the digital transformation of existing conventional companies, including SMEs that can be carried out directly from companies or as an activity of supportive environment that ensures the access to the market and financing,
2. the development of advanced digital technologies will inevitably impact the providers of financial services and their adaptation to new technological requirements in the field of digital technology integration in their systems.

Strategic guideline 1:

to further promote the existing providers of institutional financing by designing "smart financial instruments" that rapidly adapt to the needs in the field of advanced digital technologies and market requirements, designing "tailored" financing.

Strategic guideline 2:

to support financial instruments that have been co-created by the European financial resource providers (EIF/EIB) by ensuring a complementary financial source at the national level and by simultaneously promoting regional initiatives for addressing target technologies.

Strategic guideline 3:

to promote the establishment and operation of providers of (private) alternative sources of financing, which are derived funds of the institutional financial supportive environments, corporate funds of financing innovative startup projects or private venture capital funds that emerge and develop at the national level or with the cooperation with the established financial supportive environment at the EU level.

Strategic guideline 4:

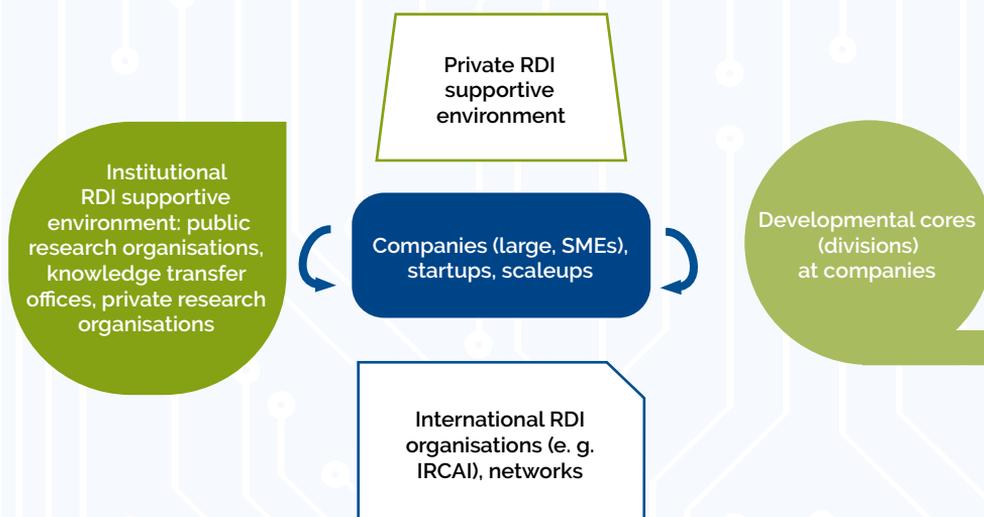
promote corporate financing (i) of innovative startups and projects, intended for developing and promoting the use of advanced digital technologies which can contribute to the digital transformation of their business systems or business systems in their value chains; (ii) of participation in the development of business projects of digital innovation through supportive environment, (iii) to promote internal innovation processes through "teaching companies" or "teaching divisions" that contribute to strengthening and rapid transfer of knowledge and the development of digital competences in companies.

Strategic guideline 5:

to promote the digital transformation of financial institutions and financing providers and the financial supporting environment through integration of advanced digital technologies and financial technological solutions (so-called FinTech) and their business processes; thus ensuring the conformity with the European regulatory framework in digital finances and the future solution for the digital Euro.

In the next 2 years	<ul style="list-style-type: none"> • OBJECTIVE (1): To increase the share of private funding for start-ups and scale-up companies that develop or use advanced digital technologies by 10%.
In the next 5 years	<ul style="list-style-type: none"> • OBJECTIVE (1): To increase the share of private and corporate financing of start-up and scale-up companies that develop or use advanced digital technologies by 30%.
By 2030	<ul style="list-style-type: none"> • OBJECTIVE (1): to develop a system of private and corporate financing of start-up and scale-up companies that develop or use advanced digital technologies.

3.2.1.3. RDI supportive environment



RDI supportive environment for promoting the digital transformation of companies is mostly comprised of stakeholders from:

- the institutional RDI supportive environment, including public research organisations (public universities with development and research divisions, public research institutions)
- Knowledge Transfer Offices (KTO), etc.,

³⁰ Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Base-line and target values are given in the table in section 4.3. Action plan for the implementation of the strategy

- private research organisations (private research institutes and private higher education institutions and universities),
- development divisions at companies and
- international RDI organisations and international networks that importantly impact the strengthening of the knowledge base on advanced digital technologies and the transfer of technological solutions and knowledge to companies.

Strategic guideline 1:

to facilitate the support to research and development as well as innovation projects and their access to the market (to shorten the so-called "time to market" by integrating advanced digital technologies in the phase of experimental development, pilot technological solutions, their demonstration and market application for accelerating digital transformation.

Strategic guideline 2:

strengthening the area of knowledge transfer and the Knowledge Transfer Offices by focusing on the development of technological solutions that are based on advanced digital technologies and at the same time promote cooperation with business and industrial verticals at the level of TRL 3-6 and 6-9 (SRIPs, clusters, other value chains), also facilitating market operations of university laboratories and their international activity (the development of digital infrastructures hubs, cross-border collaboration at the formation of digital services and the contribution to the development of digital competences for using such technologies etc.) and enhancing the attraction of innovative developmental and technological solutions for the market.

Strategic guideline 3:

to facilitate developmental divisions at companies and strengthen digital competences in the form of internal "teaching companies" or teaching divisions with the help of other supportive environments for companies and other relevant networks and at the same time focus on open innovation. Developmental divisions in major business systems dispose of the potential implementation of digital transformation in the entire value chain, and through their own transformation they contribute to the comprehensive digital transformation of business systems, where they operate.

In the next 2 years

- **OBJECTIVE (1):** To increase the share of new businesses or entrepreneurial team projects created within knowledge transfer offices and research institutions by 10%.
- **OBJECTIVE (2):** To increase the number of patents in the field of digital technologies by 10%

In the next 5 years

- **OBJECTIVE (1):** To increase the share of new businesses or entrepreneurial team projects created within knowledge transfer offices and research institutions by 30%.
- **OBJECTIVE (2):** To increase the number of patents in the field of digital technologies by 30%

By 2030

- **OBJECTIVE (1):** To increase the number of patents in the field of digital technologies by 50%

31 Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Baseline and target values are given in the table in section 4.3. Action plan for the implementation of the strategy



3.2.2. Cross-border and multinational cooperation

Strengthening the smart country's ecosystem for developing digital cross-border infrastructures and public services will be achieved by Slovenia by entering joint European projects in the field of advanced digital technologies, i.e.:

- through participation in innovative projects of common European interest in the field of quantum computing, common data infrastructures and services (European cloud and application of the edge-to-cloud concept), microelectronics or semiconductors and microchips as European Union guidelines for strengthening strategic autonomy,
- through participation in multi-country projects, such as the European Blockchain Infrastructure and Services (EBSI), and
- through participation in European initiatives in the field of data spaces, such as GAIA-X, where we are already one of the most recognizable and active countries in Europe, especially in the field of "Smart Cities and Communities".

3.3. An open and sustainable society as the basis for the growth of a digital economy

Slovenia's second strategic direction in the field of digital transformation of the economy is to ensure a stable and developmental environment for economic growth and strengthen society through digital transformation. At this point, we list those elements that are relevant to the digital transformation of the economy and are part of the broader digital transformation of society.

This means that Slovenia will strive to

1. increase access to digital knowledge and competences and technology for all its citizens and thus ensure their social inclusion. In this way, we will keep pace with the development of new advanced digital technologies and gain a workforce that will meet the demands of the modern economy, while ensuring the preservation and upgrading of knowledge through access to various and flexible education and training services relevant to individual industrial sectors. We will pay special attention to strengthening human resources in the field of advanced digital technologies, both through education and training of personnel in the field of information technologies, as well as by developing and retaining talents in the field of advanced digital technologies,
2. increasing confidence in advanced digital technologies, which will affect the quality of life of all citizens. In this way, they will be able to access these technologies and use them more confidently, both in their work and in learning, connecting with others, which will simplify their work,
3. improve the use of data for customized solutions (custom solutions), greater flexibility of work, greater choice for consumers and direct benefit from data ownership, add modern and efficient public administration services for faster market entry and company operation, support for Slovenian companies for easier entry into foreign markets, especially

within the digital single market. In this way, we will accelerate the use of digital identities for citizens, businesses and smart cities and communities based on trust, and securely enter digital platforms and cross-border digital services in the European digital single market.

3.3.1. Systems and innovative regulatory environment

A stable and predictable business environment for digital transformation is based on a clear and transparent legislative framework. The harmonization of national legislation for faster digital transformation of the economy is pursued in three directions:

1. legislative: adaptation of legislation in accordance with the identified needs at the national level and adjustments in relation to European legislation by transposing European regulations into the Slovenian legal system,
2. management: introduction of systemic innovation in management in the private sector as well as in public administration, through establishment of a hub for solving digital challenges through partnership of various stakeholders in co-design of policies and services and solutions and providing tools and techniques for policy and regulation to support digital transformation,
3. technological: adaptation to technological requirements of advanced digital technologies.

3.3.1.1. Adapting legislation to national needs and transposing European regulations for the digital transformation of the economy

The recommendations of the European Commission for the European Semester 2020 (CSR) state that Slovenia should continue to rapidly implement measures to provide liquidity and financing to companies and households and reduce administrative burdens, and in a concrete recommendation on digital transformation state, that improving workers digital skills could increase their employability relatively quickly and support economic recovery. The introduction of user-friendly eGovernment and digital public services would further reduce the administrative burden for businesses. The review of digitalisation of public administration for 2019³² follows the groups of services related to companies and the business environment, which we monitor according to the elements provided by Your Europe³³, a single digital portal defined by law (business, taxes, sales in the EU, human resources, requirements in product-related, financing, customer management).

According to the World Bank, Slovenia was ranked 37th out of 190 countries on the ease of doing business index in 2019, and the situation improved by 3 places compared to 2018, so we can see a growth trend. The value of the index of readiness of companies to disclose data was on the scale of 0-10 for Slovenia slightly above 5, while the results on the index of newly registered companies and new density of companies are slightly worse, where after 2018 there is a significant decline in this number. Despite the fact that, according to OECD data for 2018³⁴, Slovenia achieved results above the EU average in both relevant indices of

³² https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Slovenia_2019_0.pdf

³³ https://europa.eu/youreurope/business/running-business/index_en.htm, Regulation (EU) 2018/1724 of the European Parliament and of the Council of 2 October 2018 establishing a single digital portal to provide access to information, procedures and assistance and troubleshooting services, and amending Regulation (EU) No 1024/2012

³⁴ <https://goingdigital.oecd.org/countries/svn>

sales of digital services (cross-border e-commerce and digital services for the market), according to SORS³⁵ (2021) Slovenia had only a 24% share of companies that sell through their website. The improvement of these results will undoubtedly be influenced by the legislative framework that will enable certainty and security of operations, and on the other hand, it will respond to challenges of technology development with effective solutions.

Modern regulatory frameworks and systems are building blocks that influence and increase productivity and enable companies, society and the state to realize the positive effects and benefits of the digital economy. This will be achieved through key enabling systems, which on one hand will influence the transformation of management models in companies, while on the other hand they will enable companies to do business with the state more easily, and thus increase business efficiency and adaptability to new demands of the modern economy.

Key enabling components of the regulatory environment that Slovenia will implement to support the digital transformation of the economy:

1. In order to support the change of governance models, an amendment to the Companies Act (ZGD) is also envisaged, which will enable transposition of EU regulation on digital procedures and the directive on cross-border procedures³⁶. The integration of European legislation on the use of digital tools and procedures in the field of company law will have a significant impact on the digital transformation of companies in the direction of access to so-called trust and identity verification services, etc. This will be an important element, in particular in relation to the following reform measures:
 - a. in connection with the field of digitalization of public administration, the reform “Establishment of an environment for use of e-services of public administration” is envisaged, which will enable basic conditions for electronic business with the state, including solutions in the field of e-identity, simplifications in the use of public services, development of secure electronic mailboxes on the state portal, introduction of mandatory e-service for business between the state and business entities, establish a single entry point for business with the state for both citizens and business entities.
 - b. In connection to the integration of the EU Single Digital Portal Directive (SDG) by applying the basic principle of “once only” Once only (principle of cross-border exchange of evidence and information so that users do not have to submit the same data to public authorities more than once and that this data can also be used at the user’s request for cross-border online procedures involving cross-border users).
 - c. In connection with the change in registration law, the aim of which is for all business entities in Slovenia to be entered in one register, which together with the solutions of the e-Government for the Economy will significantly contribute to simplifying company procedures in relation to the external environment. By adapting and transforming internal business processes and functions, companies will operate more efficiently in relation to the external environment.

³⁵ <https://www.stat.si/StatWeb/Field/Index/25/8>

³⁶ Regulation (EU) 2018/1724 of the European Parliament and of the Council of 2 October 2018 establishing a single digital portal to provide access to information, procedures and assistance and troubleshooting services, and amending Regulation (EU) No 1024/2012

2. In order to facilitate market access and financing and the related data challenge and to adapt business systems to legal requirements, the following regulations are being transposed from European regulation:
 - a. **The Digital Market Act and the Digital Services Act**, which are particularly important in terms of defining the set of data that consumers make available to protocols and platforms, information on online markets, information on price adjustments on the basis of automated decision-making, prohibition of hidden advertising, etc. This will enable the transition to new business models through platforms that will offer easier market access, direct communication with customers and therefore lower marketing and sales costs, creating higher added value, which will further contribute to the functionality of platforms to connect large companies with small innovative companies and startups, the transformation of traditional business models on the principle of “outside-inside” and no longer “from inside to outside”, the connection to digital forms of market access (such as e-commerce, which also meets the CSR 2020 recommendation).
 - b. In addition, the digital transformation of companies will be influenced by the integration of elements from **the package of regulations in the field of digital finance** (MiCA, DORA, DLT pilot regime) mainly in the direction of adapting customer business processes also through the integration of digital forms of value in their financial operations and in e-commerce processes (e.g cryptocurrencies, tokens).



- c. By transposing EU directives 2019/771, 2019/770 and 2019/2161, a **comprehensive overhaul of consumer legislation in Slovenia will be carried out**. This will create an environment that will encourage companies through digital transformation to use those elements that such regulations highlight: the introduction of digital solutions in regulating relations between the parties (through the so-called contract for the supply of digital content and digital services), the introduction of elements of goods with digital elements (at this point mainly important elements are arising from intellectual property rights, patents, royalties)
 - d. The use of digital identity of consumers will therefore necessarily require the transformation of companies marketing and sales channels. Therefore, the effective **integration of regulatory requirements from European regulations into Slovenian legislation** (eIDAS regulations) is relevant, which will also provide the basis for preparing the e-identity of companies, which will significantly simplify the cooperation of companies with state administration and address the application of copyright rules accordingly.
3. With the aim of strengthening the innovation capacity of SMEs and start-ups, also through the acceleration of the implementation of the digital transformation of public administration through the strengthening of innovative partnerships. Promotion of innovative public procurement will be operationalized through **Guidelines for Innovative Public Procurement** by defining criteria and procedures that will address both elements of public procurement and the integration of innovative concepts into public procurement of public entities.

3.3.1.2. Introduction of systemic innovation in management in private sector as well as in public administration

Systems innovation, backed by advanced digital technologies, is essential for digital transformation from a management perspective. In addition to the already mentioned system of open innovation in companies, which necessarily influences the change of entrepreneurial and business cultures, it is important that through partnerships between public and private sectors there is systemic innovation and transformation of management models in the public sector. In the process of innovation and knowledge transfer, knowledge and digital competences are also being developed, both among stakeholders and in the public sector.

At this point, social innovations are of great importance, which are an important horizontal element in the process of systemic innovation, especially from the point of view of social sustainability. Therefore, it is necessary to promote social innovations aimed at solving social needs by developing new products, services and models (development of a supportive environment for social innovation, development of tools for measuring social impacts, platforms for social innovation or joint market presence etc.). Introduction of systemic innovation through social innovation is possible by establishing a meeting point for solving complex (digital) challenges through partnership of various stakeholders in the co-creation of policies and services and solutions. It is also important in both sectors to develop and strengthen competences of employees in the field of social innovation and system innovation.

On the other hand, for individual advanced digital technologies we can find that from the point of view of social change they mean digital social innovation, as with decentralized or distributed management they enable more efficient management systems and reduce the

risks of a Single point of failure, and thus significant savings in management processes. In addition, through transparency, they make it possible to reduce the risk of counterfeiting, thereby increasing the speed of data processing, especially for companies, and thus also savings, especially in the field of human resources. Owning data and copyrighted works with technologies that enable traceability also leads to positive societal effects. Despite the fact that some of these technologies are still at a stage where they have not yet reached the stage of maturity, they create opportunities to design a complete management system in a way that rules of ethical conduct and cyber security, which also have a major social impact, can be fully developed at this stage.

3.3.1.3. Adaptation of legislation to the technological requirements of advanced digital technologies

We will strengthen the innovation potential of high-tech SMEs and start-ups through innovative public procurement, especially in the segment of public services, including digital public services. In addition to operationalizing the provisions on innovative partnerships under the Public Procurement and Public Services Development Act, which will simplify procedures and reduce administrative barriers for companies through e-solutions for a single entry point, we will strive to create a resilient regulatory environment that fosters innovation. With provisions for experimentation and the establishment of regulatory sandboxes, we will enable safe testing of innovative technologies, products, services or approaches in a real environment. In this way, we will ensure cooperation of innovators and drafters of regulations, which will, on the basis of concrete experience from the field, facilitate the harmonization of legislation with regard to the development of technologies and services.

Strategic guideline 1:

encourage the earliest possible integration of European legislation into the Slovenian legal order, which will enable the elimination of administrative barriers, faster access to the market and financing for companies and greater financial involvement of companies.

Strategic guideline 2:

identify relevant data spaces according to industries (verticals), where the result of efficient use of data, taking into account the simultaneous introduction of trusted technological solutions and greater data security, will be able to create higher added value.

Strategic guideline 3:

promote innovative public procurement in the largest possible scope of public procurement of services of public entities by horizontal integration of innovative public procurement in the field of digital services.

Strategic guideline 4:

promote innovative ways of testing technologies in the form of test laboratories or sandboxes and their verification after the end of the testing period.

In the next
2 years

- **OBJECTIVE (1):** to increase the share of companies that sell through their website (e-commerce) by at least 10%
- **OBJECTIVE (2):** to establish at least 3 data spaces for industries using advanced digital technologies

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In the next
5 years

- **OBJECTIVE (1):** to increase the share of companies that sell through their website (e-commerce) by at least 30%.
- **OBJECTIVE (2):** to support technological solutions in at least 5 regulatory areas by accelerating the establishment of test laboratories

By 2030

- **OBJECTIVE (1):** to increase the number of patents in the field of digital technologies by 50%

3.3.2. Digital infrastructure

Digital infrastructure, which is relevant for the digital transformation of the economy and community, is important especially in terms of connectivity³⁸ and accessibility. We know several types of digital infrastructures. In addition to the importance of broadband connections and thus the growing importance of advanced 5G digital technology, we also discuss the digital infrastructure that enables the implementation of digital applications, digital data storage and access to real-time data, their efficient processing and tracking. In addition to the classic information infrastructure, today we are also talking about advanced digital infrastructures, such as blockchain infrastructures and data infrastructures for cloud services.

³⁷ Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Base-line and target values are given in the table in section 4.3. Action plan for the implementation of the strategy

³⁸ <https://digital-strategy.ec.europa.eu/en/policies/connectivity-toolbox>

While there is already national cloud computing at the state level, which supports the management and work processes of the state administration, we want to establish a hybrid cloud in the future, which will enable a pilot reorganization of the Ministry of Economic Development and Technology (MGRT), upon successful completion of the test period and the introduction of actual use, it is also transferred to other institutions (ministries, constituent bodies, etc.).

Strategic guideline:

encourage as many public institutions as possible to integrate their infrastructures and services into the hybrid cloud to ensure scalability, unification and simplification of procedures. The pilot implementation of the hybrid cloud computing at Ministry of Economic Development and Technology will enable replicability at other institutions (ministries, support environments) after the testing phase and the first practical application and thus enable the digital transformation of the processes in the field of public services provided by the state for the use of European funds in the period of the Multiannual Financial Framework 2021-2027. Funding for integrated solutions for the implementation of EU funds can be provided in the next programming period from the technical support or assistance of European cohesion policy.

In the next
2 years

- **OBJECTIVE (1):** integration of at least 3 subsystems at national level into the hybrid cloud (sectoral registers)
- **OBJECTIVE (2):** at least 1000 companies from the business register use the e-identity of companies

In the next
5 years

- **OBJECTIVE (1):** to develop at least 5 applications to simplify hybrid cloud administrative procedures
- **OBJECTIVE (2):** to reduce document processing time by 20%

By 2030

- **OBJECTIVE (1):** to reduce document processing time by 50%

³⁹ Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Baseline and target values are given in the table in section 4.3. Action plan for the implementation of the strategy

3.3.3. Knowledge, competences and social inclusion

Increasing digital skills will be key to active participation of everyone in the digital economy. In recent years, there has been a growing need for digital competences in almost all professions and businesses, including SMEs. Advanced digital technologies also require more advanced digital competences of people in all economic sectors. Lifelong learning is extremely important for the development of knowledge for future professions. This requires a high-quality level of education and training and strong cooperation between the state, employers and education and training providers.

Slovenia's future depends on inclusion. This means that citizens of Slovenia must be able to access and enjoy benefits of advanced digital technologies that are tailored to their needs. They also need to be able to use these technologies safely. A digitally inclusive Slovenia will strengthen the participation of employees in companies, as well as communities and individuals and their involvement in all areas of social life. We will increase the social sustainability of business models through digital social innovations.

3.3.3.1. Strengthening knowledge and digital competences in the process of digital transformation of companies

Strengthening digital competences and knowledge in the field of advanced digital technologies in companies can be divided according to the time dynamics of the introduction and implementation of this knowledge in business processes:

1. acquisition of knowledge and digital competences in the shortest possible time
 - a. the COVID-19 pandemic showed a great need to increase digital literacy of the entire population, acquire knowledge and digital competences, as many employees had to acquire additional knowledge and digital competences for this way of working from remote locations in a very short time,
 - b. the introduction of digital transformation processes in companies requires rapid adaptation of knowledge and acquisition of competences for working with advanced digital technology in a short period of time. In this case, a company has limited access to knowledge, so it either:
 - develops the knowledge and digital competences of employees with providers of the appropriate range of knowledge, which are also providers of advanced digital technologies and technological solutions, or
 - develops knowledge and digital competences using advanced digital virtual and augmented reality technologies, in the form of digital twins of real-time knowledge transfer. In this way, employees strengthen digital competences by increasing their knowledge and ability to use technologies in work processes,
 - c. strengthening this internal support environment in the direction of transferring knowledge and innovative ideas of individuals, inside and outside project teams throughout the company ecosystem, creating teams with different knowledge and competences, providing mentoring within companies and organizations. These environments in the company enable (i) identification of available knowledge in the company, (ii) the existence of internal capacity for retraining (additional training) for use of new and advanced digital technologies, (iii) the assessment of the need

for additional knowledge or personnel for the full implementation of these technologies.

2. acquisition of knowledge and digital competences in a relatively short time:
 - a. expanding the internal support environment outside the company in order to promote growth (scalability) through various ways of cooperation (mentoring, startup ecosystems),
 - b. strengthening the external support environment for generating, transferring and increasing competences - including open-source platforms for community building and generating new knowledge (mentoring, knowledge co-creation, digital competence development programs, digital process competence development programs and digital businesses). In cooperation with companies, these support environments enable: (i) identification of necessary skills at the level of industries, (ii) cumulation of sector-specific knowledge in the field of application of advanced digital technologies and (iii) preparation of targeted mentoring and counselling programs to strengthen digital competences,
 - c. support for external support environments by preparing a methodology for identifying the needs for knowledge and digital competences, creating a set of knowledge and certification of knowledge in companies and educational institutions in the field of advanced digital technologies in order to develop a standard of necessary knowledge and competences, with support platforms for recording competences and increasing access to specific skills and highly qualified personnel for the digital transformation of companies.
3. adapting lifelong learning systems by continuously increasing digital literacy, human resource capacity and digital competences for the digital transformation of the economy:
 - a. the state, in cooperation with companies, the supportive environment and educational institutions, prepares lifelong learning programs aimed at strengthening the digital capacities and competences of employees,
 - b. the state horizontally integrates the acquisition of digital knowledge and competences of employees in the programs for strengthening employability and resilience to changes in the labour market, by encouraging and involving employees in training and education, in order to prepare for future labour market needs, the acquisition of digital skills and competences is encouraged by their horizontal integration into active employment policies.
 - c. transformations of traditional education systems in the long run, where we distinguish:
 - integration of elements of digital knowledge and competences into curricula at different levels of education,
 - renovation of educational systems for the acquisition of formal and non-formal education by placing digital competences and computer and informatics content, which increases digital competences and staff capacity, as well as accelerating the preparation of educational programs for the use of advanced digital technologies in practice (renewal of curricula and examination catalogues of

knowledge in selected areas, which must be based on an analysis of needs for digital competences in companies, the establishment of a comprehensive support environment).

4. Strengthening the knowledge and digital competences of ICT staff and developing and retaining talent in the field of advanced digital technologies

One of the most important challenges we face in Slovenia is the lack of knowledge and digital competences for the use of advanced digital technologies for existing ICT staff. Therefore, special attention will be paid to raising competences, productivity and innovation of employees in this field, and thus strengthening competitiveness.

The rapid growth of the advanced digital technology market requires rapid adaptation of companies, products and solutions to customer needs; monitoring and knowledge of the latest standards, trends and technologies. The development of state-of-the-art solutions is extremely important to ensure global success and competitiveness of companies. Constant investment in staff is necessary. Most employees in the ICT industry have technical formal education, so the development of soft and entrepreneurial competences is crucial.

Advanced trained staff will thus:

- contribute to better adaptation to market needs,
- break in into new markets in the field of advanced digital technologies,
- contribute to faster introduction of new “smart” services for users,
- faster transformation of existing and introduction of new professions or professions of the future.

Therefore, special attention will be paid to:

- increasing the visibility of competences in the field of advanced digital technologies,
- providing of training and lifelong learning programs or lifelong training of staff through formal and non-formal education programs,
- the dissemination of knowledge along vertical value chains and horizontally for the main areas of advanced digital technologies.

Special attention will also be paid to the development and retention of talents in the field of advanced digital technologies, which is also one of the standards to be developed within the European Startup Nations Alliance (ESNA), of which Slovenia is a founding member.

Strategic guideline 1:

support for digital transformation processes in companies, which necessarily also provide for the acquisition of knowledge and digital competencies for faster adaptation to changes that occur due to the introduction of advanced digital technologies.

Strategic guideline 2:

promotion of programs for strengthening industry or industry-specific competencies in external support environments with prior identification of the necessary skills for future work.

Strategic guideline 3:

development of technological platforms for recording competencies and increasing access to specific knowledge and highly qualified staff, and reducing the risk of companies in the process of selecting new staff.

Strategic guideline 4:

horizontal integration of digital literacy and increasing digital skills in lifelong learning and active employment policies.

Strategic guideline 5:

strengthening the digital transformation of education systems to provide formal and non-formal education, which increases the digital competences and capacities of staff prepared in cooperation between the education system, the labour market and the economy.

In the next
2 years

- **OBJECTIVE (1):** at least 10% of employees in companies have upgraded knowledge and digital competencies as a result of direct support to companies
- **OBJECTIVE (2):** at least 20% of employees in supported companies attend training in the field of digital competences

In the next
5 years

- **OBJECTIVE (1):** at least 10% of employees in companies have upgraded knowledge and digital competencies as a result of Ministry of Labour, Family, Social Affairs and Equal Opportunities (MDDSZ) training programs
- **OBJECTIVE (2):** the share of employees in digitally intensive industries increases by 10%

By 2030

- **OBJECTIVE (1):** the number of people in tertiary education who obtained a diploma with competencies in the field of STEM increases by 20% in the total volume of people who obtained a diploma in tertiary education
- **OBJECTIVE (2):** modernization formal and non-formal education and qualifications with digital competence content in the form of their renewal or addition of content in an open curriculum for the creation of additional/optional modules and content

⁴⁰ Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Base-line and target values are given in the table in section 4.3. Action plan for the implementation of the strategy

4. IMPLEMENTATION OF THE STRATEGY

4.1. Resources for strategy implementation

Guidelines from the strategy will be implemented through the Ministry of Economic Development and Technology, the public agency SPIRIT Slovenia, the Slovenian Enterprise Fund and SID Bank.

The financial resources of the National Recovery and Resilience Plan 2021-2026 (NOO) and the Multiannual Financial Framework 2021-2027 (MFF) will be used for implementation. However, other sources are also possible, including combining with funds from EU Programs (e.g Horizon Europe, InvestEU, etc.).

Support for the digital transformation of companies will be provided through the use of (i) grants (subsidies), (ii) repayable funds (equity, seed, risk, (micro) loans and interest rate subsidies), and (iii) by combining different forms (for example, we combine seed capital with non-financial aid in the form of mentoring and training).

4.2. Action plan to achieve the objectives

Table 4: Overview of measures, sources, resources and timeline

Measure	Content	Source of funds	Amount of funds	Deadline for implementation
Digital transformation of the economy	Implementation of a public tender for subsidies for companies, especially large and large medium-sized companies, which also cooperates with SMEs.	NOO	EUR 44 million	4Q 2021 publication JR 4Q 2021 adoption of the Strategy by the Government of the Republic of Slovenia 2Q 2022 adopted Guidelines for Innovative Public Procurement

Measure	Content	Source of funds	Amount of funds	Deadline for implementation
Hybrid cloud ⁴¹	The pilot implementation of the hybrid cloud computing at MGRT will enable replicability at other institutions after the testing and first practical application phase, enabling digital transformation of processes in the field of public services provided by the state for the use of European funds.	NOO	EUR 2,5 million	4Q 2021 publication of the innovative JN, 2Q 2022 hybrid cloud selection
Multi-country project 1: IPCEI Common European Data and Services Infrastructure	It is a related project of common European interest of the next generation of data and services infrastructure, the purpose of which is to develop the European cloud, which aims to establish the next generation of energy-saving infrastructure and services from Edge (increased capacity, fast data transfer) to Cloud (access to data without installing applications) technology.	NOO	EUR 5 million	2Q 2024 second-generation cloud infrastructure
Multi-country project 2: European Blockchain Service Infrastructure (EBSI)	The EBSI project aims to introduce an energy-efficient and secure infrastructure based on a chain of blocks to provide cross-border public services in the EU. The nodes in the network will be upgraded and the BC infrastructures of at least 3 EU Member States will be connected to the EBSI.	NOO	EUR 2,5 million	4Q 2022 implementation of EBSI services
Multi-country project 3: IPCEI Low power processors and semiconductor chips	The purpose of the project is to strengthen planning capacity and increase the autonomy and resilience of semiconductor value chains in the EU and Slovenia. The main focus will be on digital data processing and communication by achieving energy efficiency towards sustainable goals.	NOO	EUR 2,5 million	2Q 2023 start of project implementation

⁴¹ More in Annex 4.

Measure	Content	Source of funds	Amount of funds	Deadline for implementation
Support and business environment for digitization	Support for DIHS, EDIH, chambers services etc.	VFO 2021-2027	In conciliation	2022 – 2027
Subsidies for digital transformation of SMEs	Supporting SMEs in digital transformation	VFO 2021-2027	In conciliation	2022 - 2027
Loans for digital transformation	Co-financing SME investments in digital transformation	VFO 2021-2027	In conciliation	2022-2027
Seed and venture capital fund for startup and scaleup companies	Providing seed and venture capital for companies	VFO 2021-2027	In conciliation	2022-2027
Circular and digital business models	Subsidies to SMEs to change business models towards circular and digital transformation	VFO 2021-2027	In conciliation	2022-2027
Subjects of innovative environment	Co-financing services of technology parks, incubators, etc.	VFO 2021-2027	In conciliation	2022- 2027
Start-up subsidies	Subsidizing the start-up of innovative startup companies	VFO 2021-2027	In conciliation	2022-2027
Content support for companies	Financing of services (accelerator, mentoring, training) for companies receiving a subsidy or seed capital	VFO 2021-2027	In conciliation	2022-2027
"Digital" vouchers	Small forms of support for SMEs to raise digital competences, digital marketing, develop digital strategies and improve cyber security	VFO 2021-2027	In conciliation	2022-2027

4.3. Action plan for the implementation of the strategy

Table 5: Strategic orientations through goals⁴² of sectoral strategies

Strategy area					
Advanced digital technologies as an enabling tool for the digital transformation of the economy					
Strategic orientation	Indicator/source/baseline	Baseline (year)	Objective (descriptive and target value)	Timeline	Responsible authority/participating stakeholders
Technological strengthening of companies for digital transformation, on one hand, means strengthening the technological capitalization of companies by investing in equipment and the use of advanced digital technologies.	DESI area: Integration of digital technologies	8 (2021)	Advancement on the DESI index “Integration of digital technologies” to 5th place in the EU	In the next 2 years	Responsible people: MGRT Participants: MPA, SDP, other ministries
	OECD* Share of RDI investments in companies in the field of information technologies	6 points (2019)	Increase the share of RDI investments in IT companies by 10%	In the next 2 years	Responsible people: MGRT Participants: MIZŠ, SDP
	OECD Share of digitally intensive jobs as a % of all employees	86 points (2016)	Increasing the share of digitally intensive jobs as a % of total employees by 10%	In the next 5 years	Responsible people: MGRT Participants: MDDSZ, SDP
	OECD: Proportion of companies using cloud services	51 points (2020)	Increase the share of companies using cloud services by 10%	In the next 5 years	Responsible people: MGRT Participants: MJU, SDP
	DESI area: Integration of digital technologies	8 points (2021)	Advancement on the DESI index “Integration of digital technologies” ⁴³ among the top 3 EU countries	By 2030	Responsible people: MGRT Participants: MPA, SDP, other ministries

⁴² Objectives reflect metrics from the OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>. Baseline and target values are given in the table in section 4.3. Action plan for the implementation of the strategy

⁴³ OECD Go Digital Toolkit <https://goingdigital.oecd.org/countries/svn>

	DESI area: Digital public services for businesses	78% (2021)	Advancement on the DESI index “Digital Public Services for Business” among the top 3 EU countries	By 2030	Responsible people: MJU Participants: MGRT, SDP, other ministries
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Efficient ecosystem for competitive economy

Identify key performance indicators in the implementation of digital transformation	The indicator will be defined over a 3-year period	-	ensure an effective digital transformation monitoring system using key performance indicators (KPIs).	In the next 3 years	Responsible people: MGRT Participants: MPA, SDP, other ministries
	The indicator will be defined over a 3-year period		“Encourage share of companies that have introduced an integrated and default digitized entire procurement process”	In the next 3 years	Responsible people: SVRK, participating MGRT

Subsection 2.1. Strengthening a supportive environment for faster digital transformation of the economy

Institutional support environments shape policies and strategic orientations by horizontally incorporating elements of digital transformation of companies, the state and society into all policy and strategic documents	The indicator will be defined over a 2-year period	-	developing a methodology for measuring the effects of digital transformation resulting from the policies, strategies and actions of individual institutions. To this end, institutions shall define key performance indicators (KPIs).	In the next 2 years	Responsible people: MGRT Participants: MJU, SDP, other ministries, implementing bodies
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Supportive environments of entrepreneurial integration and supportive environments along vertical industrial value chains strengthen cooperation upwards, with institutional support environments and downwards with enterprises.	The indicator will be defined over a 2-year period	-	to establish a platform for companies as a tool for companies to transfer knowledge, connect (match-making) and find available competences and staff with specific knowledge in real-time.	In the next 2 years	Responsible people: MGRT Participants: MDDSZ, SDP, SPIRIT, SPS, chambers, supportive environments
Strengthening supportive environments for knowledge transfer and accelerating market access for innovative companies in the field of digital transformation and the transition to the digital decade	OECD: Share of start-ups in the total population of companies	64 points (2018)	to increase the share of start-ups in the total population of companies by 10%	In the next 5 years	Responsible people: MGRT Participants: SPIRIT, SPS, chambers, supportive environments, SDP for start-up companies in the field of digital technologies,
The participation of Slovenian companies in European and international connections is of special importance on the one hand due to the transfer of knowledge from the international environment to Slovenia, and on the other hand because innovative solutions of Slovenian companies in the field of digital technologies are presented and implemented in the international environment.	The indicator will be defined over a 2-year period	-	Slovenia becomes an internationally recognized and renowned partner with an active role in international associations and federations.	By 2030	Responsible people: MGRT Participants: MJU, SDP

Subsection 2.2. Financial support environment

further strengthening existing institutional funding providers by creating “smart financial instruments”	The indicator will be defined over a 2-year period		Quantitative targets that can be defined over the next 2 years: e.g. number of smart financial instruments	In the next 2 years	Responsible people: MGRT Participants: SPS, Slovenian Regional Development Fund from Ribnica, SID bank etc.
support for financial instruments co-created by European Financial Resource Providers (EIF/EIB) through so-called blending	The indicator will be defined over a 2-year period		Quantitative targets that can be defined over the next 2 years: e.g. number of financial instruments	In the next 2 years	Responsible people: MGRT Participants: SPS, Slovenian Regional Development Fund from Ribnica, SID bank etc.
encourage the establishment and operation of providers of (private) alternative sources of funding	OECD Share of private funding for start-ups that develop or use advanced digital technologies	0 points (2019)	to increase the share of private funding for start-ups and scale-up companies that develop or use advanced digital technologies by 10%.	In the next 2 years	Responsible people: MGRT Participants: SDP, chambers, implementing bodies, support environments
encourage corporate financing	OECD Share of private funding for start-ups that develop or use advanced digital technologies	0 points (2019)	to increase the share of private and corporate financing of start-up and scale-up companies that develop or use advanced digital technologies by 30%	In the next 5 years	Responsible people: MGRT Participants: SDP, chambers

to promote digital transformation of financial institutions and funding providers and financial support environments	The indicator will be defined over a 2-year period		Quantitative targets that can be defined over the next 2 years: e.g. the number of financial support environments that have embarked on the path of digital transformation	In the next 2 years	Responsible people: MGRT Participants: MF, SDP, BS, ATVP, FURS
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Subsection 2.3. RDI supportive environment

to encourage support for innovative development projects and their access to the market (shorten so-called “time to market”)	The indicator will be defined over a 2-year period		to increase the share of new businesses or entrepreneurial team projects created within knowledge transfer offices and research institutions by 10%.	In the next 2 years	Responsible people: MIZŠ Participants: MGRT, SDP
	OECD number of patents in the field of digital technologies	12 points (2014 – 2017)	to increase the number of patents in the field of digital technologies by 10%	In the next 2 years	Responsible people: MGRT Participants: MIZŠ, SDP, UIL
Strengthening knowledge transfer offices by focusing on the development of technological solutions	The indicator will be defined over a 2-year period		to increase the share of new businesses or entrepreneurial team projects created within knowledge transfer offices and research institutions by 30%.	In the next 5 years	Responsible people: MIZŠ Participants: MGRT
	OECD number of patents in the field of digital technologies	12 points (2014 – 2017)	to increase the number of patents in the field of digital technologies by 30%	In the next 5 years	Responsible people: MGRT Participants: MIZŠ, SDP, UIL

to encourage enterprise development departments to strengthen digital competences in the form of in-house “learning companies” or learning departments	OECD Number of patents in the field of digital technologies	12 points (2014 – 2017)	to increase the number of patents in the field of digital technologies by 50%	By 2030	Responsible people: MGRT Participants: MIZŠ, SDP UIL
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An open and sustainable society as the basis for the growth of a digital economy

Subsection 3.1. Systems and innovative regulatory environment

to encourage the integration of European legislation into the Slovenian legal order as soon as possible	The indicator will be defined over a 2-year period		Quantitative targets that can be defined over the next 2 years: e.g. the number of transposition regulations in the field of digitization into national law	In the next 2 years	Responsible people: MGRT, MF, MJU, SDP Participants: regulators
to identify relevant data spaces according to industries (verticals)	OECD Share of companies selling through websites (e-commerce)	93 points (2017)	to increase the share of companies selling through websites (e-commerce) by at least 10%	In the next 2 years	Responsible people: MGRT Participants: chambers
			to establish at least 3 data spaces for industries using advanced digital technologies	In the next 2 years	Responsible people: MGRT Participants: SDP, chambers
			to increase the share of companies selling through websites (e-commerce) by at least 30%	In the next 5 years	Responsible people: MGRT Participants: chambers
to promote innovative public procurement	OECD Number of patents in the field of digital technologies	12 points (2014 – 2017)	to increase the number of patents in the field of digital technologies by 50%	By 2030	Responsible people: MGRT Participants: MJU, SDP

to promote innovative ways of testing technologies in the form of test laboratories or sandboxes	The indicator will be defined over a 2-year period		to support technological solutions in at least 5 regulatory areas by accelerating the establishment of test laboratories	In the next 5 years	Responsible people: MGRT
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Subsection 3.2. Digital infrastructure

to encourage as many public institutions as possible to integrate their infrastructures and services into the hybrid cloud to ensure scalability, unification and simplification of procedures	The indicator will be defined over a 2-year period		integration of at least 3 subsystems at national level into a hybrid cloud (sectoral registers)	In the next 2 years	Responsible people: MGRT Participants: MJU, MF, MP, AJPES, FURS, other holders of registers
			at least 1000 companies from the business register use the e-identity of companies	In the next 2 years	Responsible people: MGRT
			to develop at least 5 applications to simplify administrative procedures with hybrid cloud	In the next 5 years	Responsible people: MGRT
			reduction of document processing time by 20%	In the next 5 years	Responsible people: MGRT Participants: MJU, MP, SDP, AJPES, FURS, others
			reduction of document processing time by 50%	By 2030	Responsible people: MGRT Participants: MJU, MP, SDP, AJPES, FURS, others

Subsection 3.3. Knowledge, digital competences and social inclusion

support for digital transformation processes in companies, which necessarily also provide for the acquisition of digital knowledge and competences for faster adaptation to change	OECD Share of employees in companies attends training	77 points (2015)	at least 10% of employees in companies have upgraded knowledge and digital competences as a result of direct support to companies	In the next 2 years	Responsible people: MGRT Participants: SDP, supportive environments, chambers
			At least 10% of employees in companies participate in training in the field of acquiring digital competences	In the next 5 years	Responsible people: MDDSZ Participants: MIZŠ, MGRT, SDP, chambers
promoting programs to strengthen industry- or branch-specific competences in external support environments	OECD Share of employees in companies attends training	77 points (2015)	at least 10% of employees in companies have upgraded knowledge and digital competences as a result of MDDSZ training programs and participants	In the next 5 years	Responsible people: MDDSZ Participants: MIZŠ, MGRT, SDP, chambers
developing technological platforms for recording competences and increasing access to specific skills and highly qualified personnel	OECD Share of employees in digitally intensive industries	86 points (2016)	share of employees in digitally intensive industries increases by 10%	In the next 5 years	Responsible people: MGRT Participants: MDDSZ, SDP, chambers
to strengthen the digital transformation of education systems to provide formal and non-formal education	OECD Number of persons in tertiary education who obtained a degree in STEM from the total number of persons who obtained a diploma in tertiary education	75 points (2017)	number of persons in tertiary education who obtained a diploma with competences in the field of STEM increases by 20% in the total volume of persons who obtained a diploma in tertiary education	By 2030	Responsible people: MIZŠ Participants: MGRT, SDP, chambers

Annexe 1: Possible indicators for companies

The direction of the Strategy for Support of Digital Transformations of Enterprises is to develop appropriate indicators in the next 2 years, which will be able to be monitored by both companies and the state, and thus monitor the state of digitalization of the economy.

Taking into account the fact that due to specifics of each company we cannot define uniform key performance indicators (hereinafter KPI - Key Performance indicators), here we define KPIs that companies can use in planning and monitoring digital transformation, and represent the starting point for the study development of indicators.

Key performance indicators can be divided into at least 3 groups, namely:

1. indicators focused on the organization or company
2. consumer-oriented and business-oriented indicators (management)
3. innovation-oriented indicators

Ad (1) organization-oriented indicators:

- the volume of costs allocated to marketing through digital sales channels
- level of positioning and presence of the organization in the market
- level of digital maturity, training of partners, employees and management structures,
- employee experience,
- added value per employee
- productivity,
- value of machine clock (in case of automation - the amount of savings due to automation)
- amount of waste,
- utilization rate of machinery, equipment (OEE or other measurements on machinery),
- share of sales revenues through digital sales channels,
- the involvement of individual departments in the company and their contribution to the steps of digital transformation,
- continuous realization of business values
- savings in hours (efficiency),
- operating costs - contribution-based margin
- revenue from new digital services,
- performance in external markets (use of business intelligence technology for market research and analysis),

- operational improvements (business improvements - e.g purchasing a new SW to improve productivity, digital support of processes to achieve green/sustainable goals, e.g implementation of PRO commitments),
- labour productivity (value creation by improving employee productivity and business efficiency through automation, including the field of services, e.g back-end processes) - higher revenue per employee,
- level of digitalisation in the field of e-business implementation (e-documents, e-invoices) in order to reduce costs, increase productivity and contribute to green/sustainable goals;
- team morale - focus on change of culture (steps towards transforming the “culture” of the company),
- measuring key values (ROI, cost control, quality, productivity and agility).
- Inventory of business processes and monitoring of the indicator % of digitized business processes in an individual department/company in relation to all processes.

Ad (2) consumer-oriented and business-oriented indicators (management):

- value of the product or service during lifetime for the user (retention of users)/ cost of acquiring new customers (or we pay less than we get)
- share of newly acquired customers or users (direct-to-customer commerce experience),
- customer or consumer awareness (customer reach)
- change in customer/user behaviour,
- improved consumer experience,
- increasing customer participation in digital sales channels,
- shortening the time to market for new innovative products,
- volume of re-use of innovative products, branded services (customer conversion rate)

Ad (3) innovation-oriented indicators:

- implemented innovative ideas and the level of their success,
- new products or services offered to the market (percentage of revenue),
- new business models for different markets,
- new applications, technologies and new solutions used,
- innovative methodologies and adaptation to new conditions or markets,
- proportion of processes that are designed and adapted for use in the cloud,
- use of cloud services (percentage of new enterprise applications or greenfield applications - in production using cloud technological solutions - micro-services, containerization)
- share of business processes made possible by the use of artificial intelligence,
- sustainability indicators (technological footprint in relation to infrastructure, applications and data),
- business sustainability (minimizing the risk of dependence on individual workers/employees as co-creators in the process),

- level of innovation: technologically supported changes in business models, product offering, system processes to increase value for the user, reduce costs, secure growth).

Key performance indicators can also be combined, combining external performance criteria based on consumers or customers and internal performance criteria based on digital workforce productivity (flow efficiency, repair time, fault detection time)

- In particular, for the digital transformation of small and medium-sized enterprises (SMEs), it is important to increase the digital intensity index, which according to the DESI definition consists of a set of indicators, namely:
 - application of ICT security measures,
 - awareness of employees of their obligations in relation to matters concerning ICT security measures - maximum leased download speed of the fastest internet connection materials is at least 30 Mb/s,
 - use of an ERP software package for information sharing,
 - use of any social medium,
 - use of social media for any purpose,
 - use of CRM software,
 - more than 50% of employees use computers and the Internet,
 - more than 20% of employees have portable devices for business use,
 - at least 1% of sales are realized online,
 - e-orders obtained from customers from other EU countries
 - at least 1% of total revenue is generated through online sales and B2C,
 - more than 10% is realized through online sales.

In addition to the above, the following indicators may be used horizontally to emphasize the green dimension:

- reducing the use of materials, water, energy,
- reduction of generated waste and emissions,
- valorisation of waste raw materials,
- optimization of logistics and distribution and/or at the level of the product/service (e.g: change of the business model in terms of selling the service instead of the product),
- extending the life of the product, including changing the design to facilitate maintenance and/or breakdown,
- reducing energy/water/material consumption during operation of the product/service,
- reducing the amount of materials used in the product,
- use of innovative materials, rare materials and/or recyclable/secondary raw materials,
- use of renewable materials and energy,
- reduction of packaging quantities.

Annexe 2: Hybrid cloud

The Ministry of Economic Development and Technology will set up **hybrid cloud computing** to provide information support to simplify processes and optimize access to the Ministry of Economic Development and Technology funds. Modern business requires more powerful tools and equipment, but also optimization and digitization of work processes and their approach to different users who come into contact with the ministry.

Results of the analysis prepared by the Ministry of Public Administration on the basis of the Basics for the Reform of State Informatics (adopted by the Government in 2014) also have some findings, namely that:

- resources (applications, data, technology) are too dispersed, duplicated, inconsistent;
- the development of application solutions is duplicated;
- the solutions are unrelated;
- funds for providing information support are dispersed and irrational, without a comprehensive overview, strategies and objectives...

It follows that the goal of setting up hybrid cloud computing at the Ministry of Economic Development and Technology is also:

- to offer users comprehensive service coverage (implementation of the Once only principle, which provides for the cross-border exchange of evidence and information in order to ensure that users do not have to submit the same data to public authorities more than once and that this data can be used at the user's request for procedures involving cross-border users),
- to simplify the use of electronic services and digital communication channels for end-users (individual users, companies, municipalities, institutions) (support for mobile devices - applications, effective help for users, contact centre),
- to enable companies the possibility of cross-border business, with modern and simple solutions for electronic identification,
- actively acquainting and informing about the existence of electronic services and the advantages of digital communication,
- unified management of data infrastructures for different types of users,
- greater degree of digitalization of internal business processes and promotion of the development of digital competences at the Ministry of Economic Development and Technology,
- effective use of the potential of modern digital concepts (e.g open data, data analytics, cloud and mobile technology),

- flexibility, reliability, security, long-term business by encouraging the construction and use of horizontal building blocks and functionality,
- comprehensive management of digital security and privacy risks.

Governance of information technology (governance) takes place through four basic pillars:

- information and communication infrastructure;
- application solutions;
- data management;
- information security.

Figure 5: Information technology management



At the concrete level, the proposed measure means transition to cloud computing, less administrative burden and optimization of analytics, measurement, decision-making, reporting, planning and implementation processes.

Hybrid cloud computing (HRO) is a computing infrastructure prepared in accordance with recommendations and standards of the state, whereby the Ministry of Economic Development and Technology will monitor the security and compliance of HRO operations. The cloud will be provided by a commercial provider, and in accordance with the planned business model, service users will pay for the use themselves.

The project of establishing HRO envisages a pilot reorganization of the processes of the Ministry of Economic Development and Technology, which can be transferred to other institu-

tions (ministries, constituent bodies, etc.) upon successful completion of the test period and introduction of actual use, in order to optimize existing resources at the Ministry of Economic Development and Technology, relieve existing resources, the economy and citizens. It provides connectivity and cross-border electronic services, which is also in line with the principles of the European Union's single internal market.

The project envisages investment in information architecture and related services, which will enable the Ministry of Economic Development and Technology, together with public and private partners: (1) to define basic elements of information architecture for the establishment of a hybrid cloud, (2) define basic related services and their functionalities and usability for public and private cloud users, (3) establish an appropriate environment for integration of these services into the processes of implementation of the Ministry's policies and activities related to administrative procedures in the field of publishing, implementation and monitoring of public tenders, which will pilot test their full digitization, (4) establish appropriate integration of legislative solutions in the field of registration legislation (digital identity of companies or digital card) also in connection with the unified business register, (5) develop a solution for connection to other digital systems in the field of public administration, environment, etc.

Much attention will be paid to cyber security, which will be ensured in accordance with the security standards used by public administration for information infrastructures. Solutions will be sought in the direction of establishing a secure environment for operation of the cloud, in the form of DMZ (demilitarized zone) and the allocation of IP addresses that are in the domain of HKOM (Communication Network of State Bodies). While this will be provided by the state (including the acquisition of additional IP addresses and related costs), the procurement will address in particular: basic infrastructure elements, services, environment for integrating services into processes and integration into existing information infrastructures). There are already some supporting conceptual and technological solutions in Slovenia - infrastructure providers (such as telecom providers, companies offering system integration solutions, blockchain infrastructure, other related infrastructure and services). In addition to the basic functionalities of the hybrid cloud, the aim will also be to find convergence between different technologies, whose properties will contribute to the realization of the optimization of procedures and processes in the public sector.

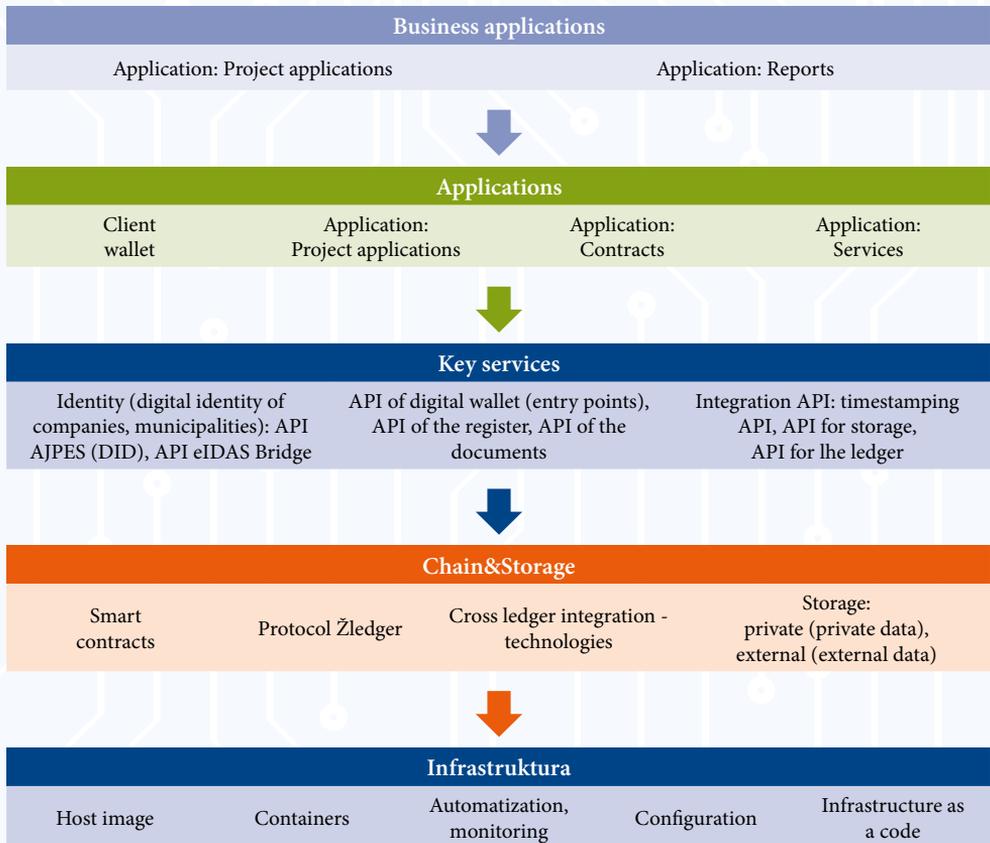
Intended benefits: :

- easier access of companies through the use of digital identity for public services, especially in the direction of simplified system processes in the implementation of program instruments (simplified application for tenders, processing of applications, tracking and monitoring of implementation and costs, verification of expenditure),
- administrative relief for businesses and reduction of bureaucratic obstacles, which will affect the timely implementation of programming documents and the EU and other sources of funding,
- administrative relief for employees working in areas of these programs and EU funding in the public sector,
- increase of digital capacities and knowledge of all people involved in implementation processes and consequently efficient use of resources (especially human and material,

the latter especially in a way that will enable access to local communities for further realization of the concept of smart cities and communities cohesion policy) and additional knowledge will also be gained through involvement in the implementation of cross-border projects, especially in the field of data and blockchain infrastructures

- strengthening transparency, clarity, equal access and equal opportunities, while maintaining high levels of security in processing of data in accordance with the law,

Figure 6: Hybrid cloud



https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_sl