
DIGITAL SOCIETY,
HUMAN CAPITAL
SECTORAL DIGITALISATION,
SME DEVELOPMENT
JOINING
FORCES FOR
A DIGITAL HUNGARY
IVSZ
DATA ECONOMY, INNOVATION,
START-UP ECOSYSTEM
INTERNATIONAL
COOPERATION

JOINING FORCES FOR A DIGITAL HUNGARY

Proposals to accelerate the technological development of our country

Last autumn, IVSZ – The ICT Association of Hungary submitted a dramatic appeal to digital professionals, economic actors, policy makers, and in fact the entire Hungarian public, to raise awareness that the development of modern technology for businesses and competitive skills for workers is a historic opportunity for Hungary. Technology and the knowledge and skills needed to use it form a complex system, most often described by the term digitalisation or digitisation. Digitisation will significantly change the lives of every Hungarian individual, every Hungarian company and institution, and will shake up our everyday lives in the coming years. If we are not consciously at the forefront of this fundamental change, we can be easily swept away.

In our Alliance for a Digital Hungary manifesto, we pointed out the basis of international and domestic research that if a technology-driven growth path is implemented, the Hungarian economy could generate a GDP surplus of HUF 4 thousand billion within 3 years, and the acquisition of high-level digital competences will ensure the efficient operation of the Hungarian economy and society in the long term.

The manifesto identified four pillars on which to build to achieve rapid and effective change:

- digital society, human resources
- sectoral digitalisation, technological development of SMEs
- data economy, innovation, start-up ecosystem
- digital region, international cooperation

The time for calls for action is regrettably over; it is now time to act. For each of these critical areas, we have prepared a set of proposals based on detailed peer-reviewed evidence – we have built our Digital Agenda for Change around four strong pillars. I would also like

to take this opportunity to thank all those who contributed with valuable suggestions to deepen and clarify the technical discussion materials. This publication is an excerpt in which you can read about the main features of the proposals of our association on, for example, the essential digitisation of education, sectoral digitisation programmes, the development of the innovation ecosystem or closer international cooperation.

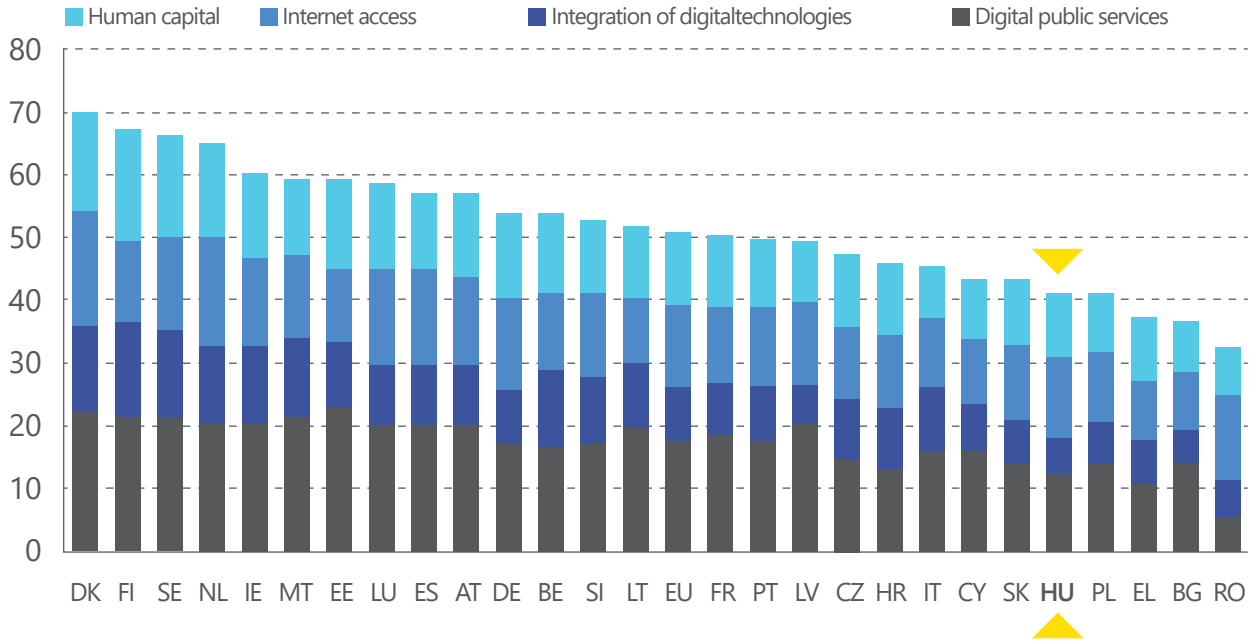
Dear Reader,

I look forward to welcoming you as a supporter of our initiative, because we cannot delay; we need a step change in technology and knowledge development, as digital transformation can overcome decades of disadvantage, and give us a long-term advantage. This opportunity should not be missed.

dr. Balázs Vinnai
IVSZ – ICT Association of Hungary
President

INTRODUCTION

In recent years, Hungary has failed to close the gap with its competitors in the development of the digital economy and society, which now threatens the competitiveness not only of businesses but of the entire national economy. According to the latest DESI (Digital Economy and Society Index) report, published in November 2021, Hungary has dropped two places (from 21st to 23rd) in the overall ranking compared to the previous year. In the years to come, the country's performance, the success of Hungarian businesses and the quality of life of the population will all depend on whether we can turn the results of technological progress and innovation to our own advantage.



DIGITAL SOCIETY, HUMAN CAPITAL

Ensuring the digital transformation by preparing workforce

Equipped with the skills and knowledge to use technology effectively, workers and businesses can become drivers of competitiveness at the level of the national economy.

However, according to the DESI (Digital Economy and Society Index) report published in November 2021, less than half (49%) of the Hungarian population aged 16-74 have basic digital skills, compared to an average of 56% in EU countries, whilst the number of digital illiterates is in the millions, estimated at 1.5-2 million.

To improve this result, we need to improve the digital skills of the population and employees, and ensure the availability of a highly skilled IT and digital workforce, as the proportion of jobs requiring high digital skills is growing every year.

An education system that adapts the content, methods and technologies of education and training to labour market requirements can meet this need. In addition to knowledge transfer, the public education system needs to strengthen the development of competences, including digitalisation, critical thinking, problem solving, creativity, communication and teamwork. In addition, there is a need to increase the development of basic skills, in particular reading, reading comprehension and maths, where the underperformance rate is steadily rising.

In the school of the future, students will solve problems independently and in groups, using technology-intensive tools, in a process of learning and competence development supported by the teacher as mentor, with empirical and practical reinforcement.

Besides traditional school-based education, a strong adult education system, supported by various incentives - tax credits, refundable and non-refundable subsidies - is needed to

give the adult society, today's employees, the opportunity to acquire the digital competences needed for the jobs of tomorrow, in digitalising companies, and to avoid being excluded from the labour market by the emergence of increasingly robotised and automated processes.

As well as motivating workers, businesses should be encouraged to develop the digital skills of their employees to boost their own competitiveness.

It is essential to make the process of digitisation of education and the development of digital competences measurable, accountable and certifiable, based on the fully developed and implemented DigKomp framework.

IVSZ, together with its member companies and experts committed to the digital Hungarian society and economy, has put together its human resources development proposals to ensure that the ideal operation outlined above is not just a goal to be achieved in the distant future, but a reality of the near future. We are in the last moment, we must act.

Our proposals

For the digital renewal of the education system:

- immediate and significant digital education reform across all parts of the education system, with the update of the Digital Education Strategy (DOS_2.0);
- the introduction of a minimum level of digital competence in all elements of the education system, without which students would not be able to progress from a given level of education;
- introducing training and living allowances and tax credits for the duration of training to significantly increase participation in adult learning.

To accelerate the development of digital literacy at primary and higher levels:

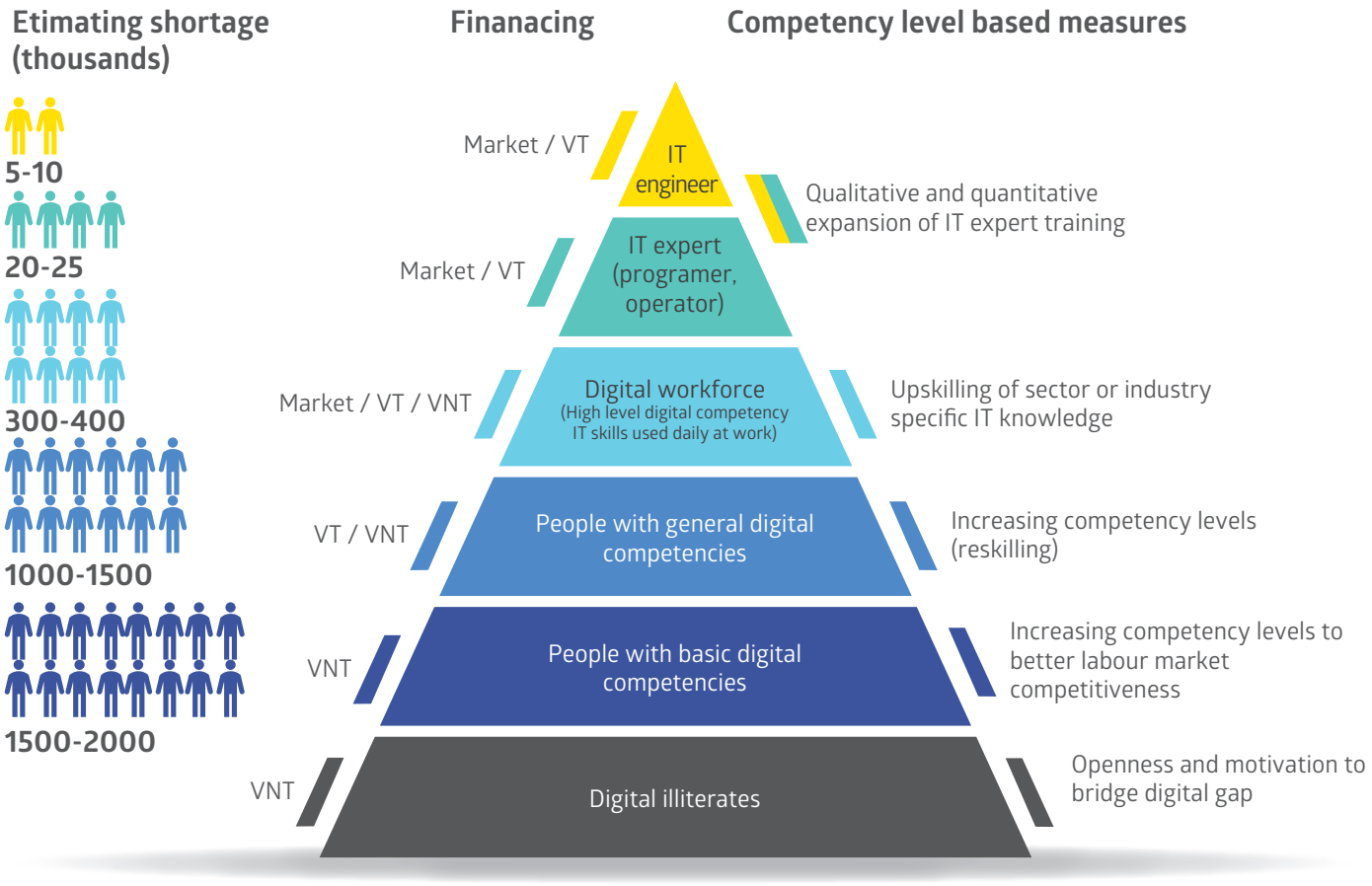
- creation and implementation of a single measurement and certification system for digital literacy based on DigKomp;
- new types of mass programmes (free or heavily subsidised) are needed, reaching more people than ever before;
- the introduction of a „digital training voucher" as a non-repayable subsidy, which would allow for demand-driven funding of different types of programmes and training. As a repayable grant (e.g. a loan), the voucher could even give access to a

commercial bank loan facility, with a state guarantee;
- encouraging micro-enterprises and SMEs to develop the digital skills of their employees.

To expand training for IT and digital professionals:
- launch a large-scale STEM/ICT scholarship programme in higher education;
- increase the demand for IT training, reduce drop-outs and strengthen the labour market relevance of training, the launch of the Program your Future 2030 programme, by extending the soon-to-be-closed GINOP 3.1.1 scheme;
- training loan scheme for professionals and/or their employers with high level IT and digital skills;

To promote employment:
- developing and introducing measures to facilitate access to employment for foreign, female and older workers;
- informing employees more widely about the employment potential of the domestic IT sector and the digitalisation processes in other sectors, and launching specific programmes to encourage employees and promote the employment.

"Alongside traditional school-based education, we need strong adult learning, backed up by incentives, to give workers the digital skills they need for the workplace of the future."



Horizontal measures

Introduction of a digital training account / voucher system

Introduction of a single measurement system (DigiKomp)

Accelerating educational system digitalisation

Communication social sensitisation, motivation

SECTORAL DIGITALISATION, SME DEVELOPMENT

Increase the competitiveness of domestic companies by promoting digital transformation

Almost half of the Hungarian population is directly dependent on the competitiveness of Hungarian industry, with 20% of Hungarian workers employed in industry and 25% in service enterprises directly linked to industry. The competitiveness of firms is fundamentally determined by the labour productivity characteristics on which digitalisation has perhaps the most intensive impact.

Businesses that use digital technologies, Industry 4.0, robotisation and automation solutions for efficiency and productivity are more competitive in all sectors of the economy than their lagging competitors. We need to act now to get SMEs and individual sectors on the digital path, or we could be left behind. Worrying signs of this lag were also shown in the latest DESI report, where Hungarian firms rank 26th as far as the integration of digital technologies by SMEs is concerned. It is also a warning sign that only 1% of SMEs in Hungary have a digital strategy.

For the Hungarian economy to remain competitive in the digital age, we need businesses that use cloud solutions, artificial intelligence and Big Data technologies, and in which even the majority of SMEs have reached a basic level of digitalisation. As many firms as possible need to be able to transform physical changes in the workplace into data, and then make data-driven decisions about production, production processes and services, preferably through automation and robotisation, thus increasing efficiency.

This requires bridging generation gaps, providing the digitally literate workforce mentioned above, opening up management to digital technologies and creating the

right infrastructure to do so.

IVSZ, together with its member companies and experts committed to a digitised Hungarian society and economy, has also put together its proposals for accelerating sectoral digitisation and SME development to support the digital transformation in Hungarian industry.

Our proposals:

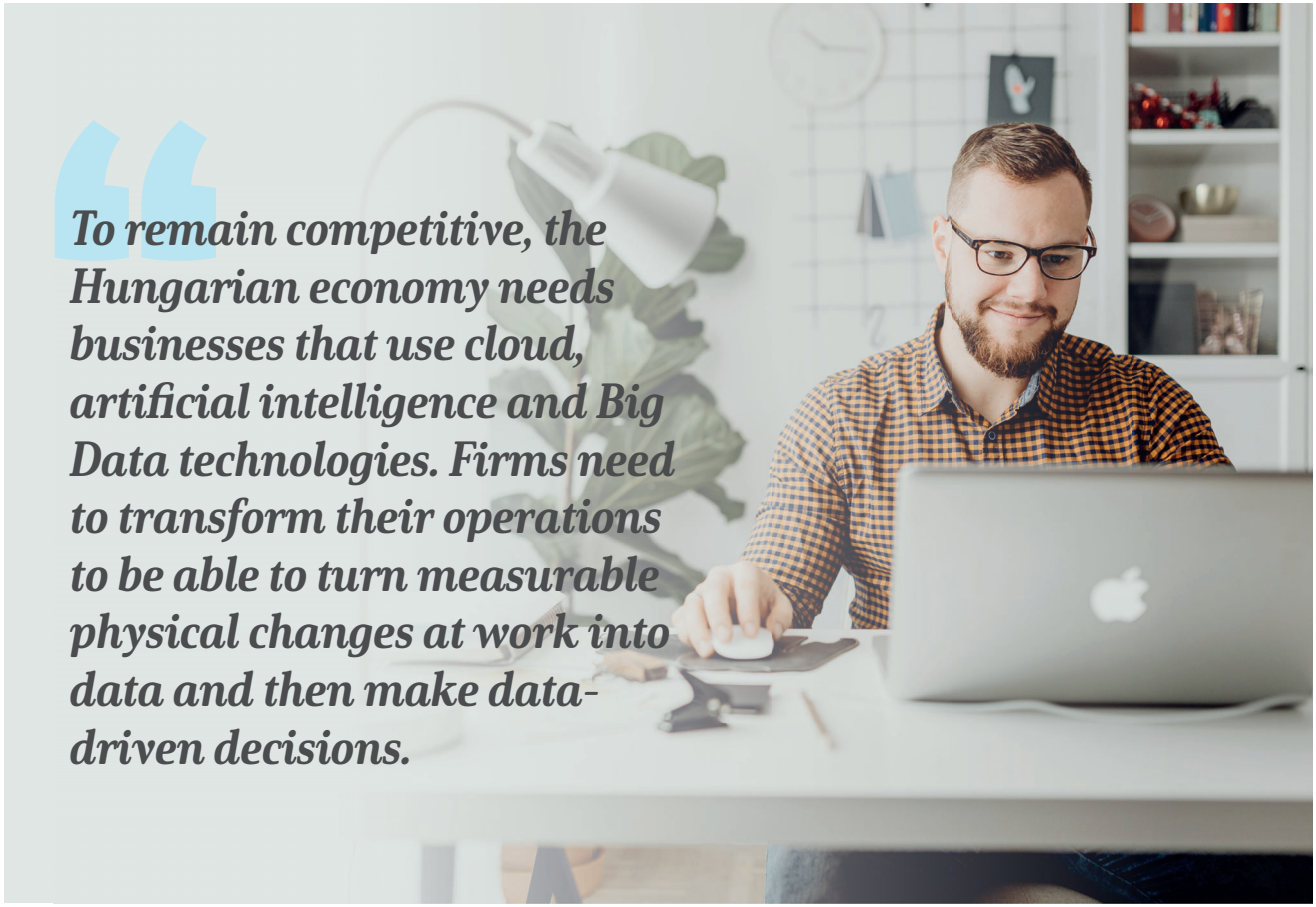
To accelerate the digitisation of sectors and value chains:

- systematically assessing the digital readiness of sectors and benchmarking them against international benchmarks;
- preparing sectoral digitisation strategies with a common methodology and structure, involving industry associations, leading companies and representatives of related industries;
- making electronic data exchange between businesses more efficient by establishing electronic data communication chains (e.g. food from producer to consumer; furniture from forestry to customer);
- the ICT sector is already the second largest export sector after the automotive sector - to develop it, targeted support should be provided to encourage digital firms to enter and expand internationally.

To facilitate the digital transformation of micro-enterprises and SMEs

- targeted programmes to promote the digital inclusion of micro-enterprises;
- encourage and support e-commerce activities of domestic SMEs;
- developing a certification scheme for digitisation experts and making the use of certified experts compulsory/eligible in the context of tenders;
- cataloguing and continuously updating the range of products and services that facilitate digitisation, in order to provide businesses with quality and reliable professional information;
- on the one hand, to reduce the administrative burden of tendering to the minimum necessary through a fast and customer-friendly tendering system; on

the other hand, to ensure the professional follow-up of winning tenders and the publication of results;
- making small grants available through normative schemes;
- support for digital training of employees, either as a stand-alone scheme or by including training as an eligible activity, an eligible cost (or even a compulsory element) in all business development schemes;
- set up a nationwide, low-cost advisory service to help with the legal, economics and technological aspects of generational change;
- the development of an enterprise development portal (e.g. supported by AI solutions) based on the realities and development needs of enterprises.



To remain competitive, the Hungarian economy needs businesses that use cloud, artificial intelligence and Big Data technologies. Firms need to transform their operations to be able to turn measurable physical changes at work into data and then make data-driven decisions.

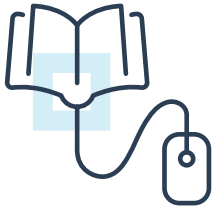
What is needed for the digital transformation of SMEs?

Targeted programmes to promote digital inclusion

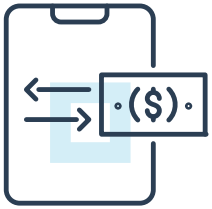
Promoting and supporting e-commerce activities of SMEs

Developing a certification scheme for digitisation experts

Cataloguing products and services that facilitate digitisation



Reducing tender administration to the minimum necessary



Making small grants available through normative instruments

Supporting digital training for workers

Setting up a national, low-cost counselling service

Developing an enterprise development portal based on the development needs of enterprises

DATA ECONOMY, INNOVATION, START-UP ECOSYSTEM

From trend-followers to trendsetters with pioneering start-ups and digital innovations

In Hungary, a professional consensus seems to be emerging that the proper development of the ecosystem around the data economy (cloud services, human competences, digital and regulatory environment) is a prerequisite for competitiveness. It is only when the data are processed and analysed on the basis of your own expertise that valuable information is obtained, sometimes to the irreplaceable advantage of those who can use the data properly (companies, researchers, decision-makers).

The development of the institutional framework for the exploitation of data to support the development of an advanced national data economy has already started in Hungary. Within the framework of the Digital Wellbeing Programme, the National Data Asset Management Agency has started its work to ensure the efficient and responsible management of public data, i.e. the national data assets. The National Data Economy Knowledge Centre (NATUK) workshop is exploring sectoral opportunities, access to data of all kinds, and the legal and other technological conditions for usability, among other things, through various pilot projects.

An important next step will be to clarify the definition of data and the associated concepts, in parallel with EU legislation. The GDPR has already established a clear framework for personal data, but there is also a need for clear rules for non-personal data generated in the private sector. The easy portability of personal data between different service providers should also be promoted to ensure consumers' freedom of choice. In line with relevant EU strategies, to catch up, we consider it essential to harness the transformative power of cloud solutions in both the business and the government sector.

Innovative technological solutions can reduce our exposure to economic and

social crises, increase our country's resilience and ability to respond, and contribute to a sustainable and long-term successful economic environment.

We need to accelerate the processes already underway by linking government and public „systems", university knowledge labs, research centres and the business community, and create the individual demand from each actor to develop and apply innovative solutions.

EU and national resources must be made available to actors in the innovation ecosystem, but they must also be used for business exploitation and internationalisation. It also requires a cultural and attitude shift towards innovative entrepreneurs, creating a supportive environment that recognises successes as a learning process and encourages innovative entrepreneurs to learn from their failures, to identify mistakes and to use the experience to launch new projects.

This risk-taking is essential, especially for start-ups and scale-ups, which are key drivers of innovation and digitalisation. These businesses are important to the economy not only because of their exponentially increasing tax payments, but also because they can reduce the brain-drain. So special attention must be paid to creating the right environment for them to work.

By encouraging start-ups through regulatory reliefs, tax breaks and incentives for large companies to adopt innovative solutions and by bringing public and market investors closer together, this sector could flourish and produce a larger number of internationally renowned companies such as Prezi, Ustream or GoTo (formerly LogMeIn).

IVSZ, together with its member companies and experts committed to a digitalised Hungarian society and economy, has put together its proposals for strengthening the data economy, increasing innovation potential and boosting the start-up scene, because we are convinced that the key to Hungary's digital competitiveness lies in the hands of innovative start-ups that use data effectively.

Our proposals:

To develop the data economy

- clarifying the definition of data and the associated concepts;
- building a cloud-friendly ecosystem, e.g. adopting a government cloud-first policy, developing a data classification system, a

hybrid cloud (public and government on-prem) solution and developing a cloud-compliant public procurement system.
- clearing rules for non-personal data generated in the private sector, in parallel with current EU rules;
- supporting easy portability of personal data.

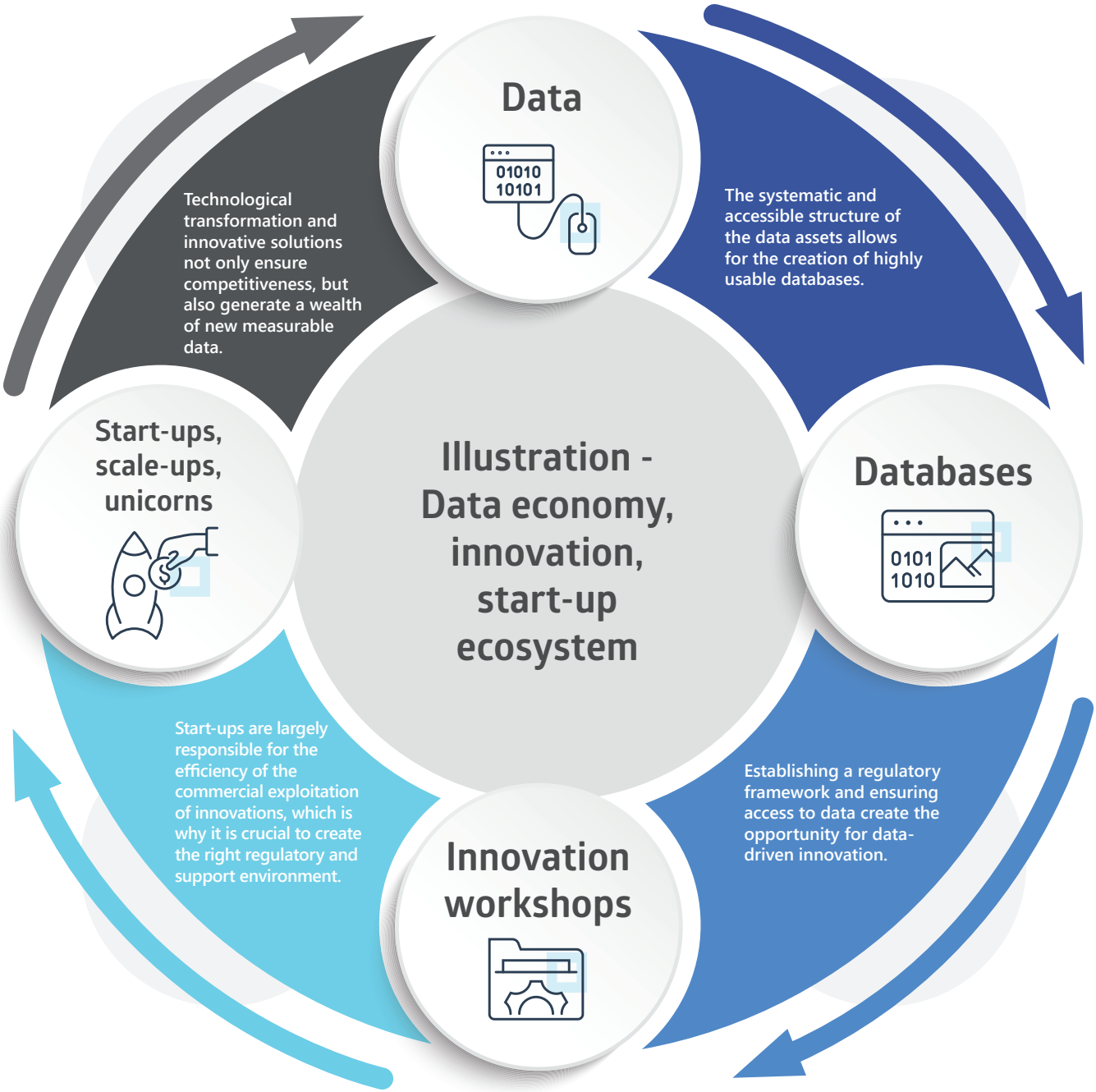
To better exploit the domestic innovation potential

- extensive, ongoing facilitated consultations with stakeholders in the field;
- legislation to develop the innovation ecosystem;
- improving access to direct EU funding, reforming the tendering system;
- developing and making available an up-to-date inventory of competences and research resources.

To develop the start-up ecosystem in Hungary

- launching the complex Startup Hungary Programme;
- company law and regulatory relief;
- creating a startup-friendly ESOP regulatory framework;
- favourable tax rules for employees and start-ups (tax liability only after a liquidity event);
- introduction of SAFE and Convertible Note;
- social contribution credits for early-stage start-ups;
- tax credits for angel investors, private and institutional investors funding VCs;
- fine-tuning of public and parastatal VCs (bringing their practices closer to market operations, changing success criteria/KPIs);
- start-up database and reports (to continuously measure the development of the start-up ecosystem and increase the visibility of the industry).

> ***Innovative solutions can reduce our exposure to economic and social crises, increase our country's responsiveness and resilience, and contribute to a sustainable and long-term successful economic environment.***


Data
01010
10101
The systematic and accessible structure of the data assets allows for the creation of highly usable databases.
Databases
0101
1010
Establishing a regulatory framework and ensuring access to data create the opportunity for data-driven innovation.
Innovation workshops
Start-ups are largely responsible for the efficiency of the commercial exploitation of innovations, which is why it is crucial to create the right regulatory and support environment.
Start-ups, scale-ups, unicorns
Technological transformation and innovative solutions not only ensure competitiveness, but also generate a wealth of new measurable data.
Illustration - Data economy, innovation, start-up ecosystem

INTERNATIONAL COOPERATION

Make the Central and Eastern European region the engine of digitalisation in the pan-European area

Despite its specific characteristics, a national economy and a national market cannot be isolated from the international economic space, from the system of markets, it is inextricably linked to them, it is integrated into them, it is bound to them by a thousand strands. This is especially true for international technological trends, digitalisation and its integration, which are factors that fundamentally determine the development, competitiveness, modernisation and efficient functioning of a country or economy, as well as the government and the state.

Of course, digitalisation also brings with it a complete change and transformation of society, of social existence, of the life and functioning of individuals, of communities and communities at large, significantly reorganising social structures, bringing to the fore digital skills and capabilities, and the importance of their wider adoption, acquisition and application, not only within a nation but also in an international dimension.

In the digital space, there are no borders, so the importance of international relations is amplified. Continuously following, studying, analysing and understanding international trends and developments is essential for developing appropriate digital strategies, development paths, development directions and the modernisation of the economy and society. In the future, and even in the present, only those regions, countries, societies, economies and businesses will be successful that are technologically advanced and belong to the forefront of digital development, develop and strengthen digital skills and competences at all levels, and effectively integrate and connect with the international environment, and it will also matter how

strong their international connections and associations are.

In Hungary, for example, the export of digital services and products is already economically significant: the ICT manufacturing sector, more narrowly defined, is the second largest exporter in the economy, accounting for 7.9% of total export in 2018, while the ICT services sector accounted for 9% of total services export in the same period. A continued and dynamic increase in export is essential for competitiveness.

Nothing is better proof of the key role that digitalisation plays in shaping our economies and societies than the increasing share of EU funds going to such developments. In the biggest financial stimulus package in Europe's history (comprising the EU's long-term budget

In the digital space, there are no borders, so the importance of international relations is amplified. Only those countries can succeed that connect to the international environment while developing digital skills."

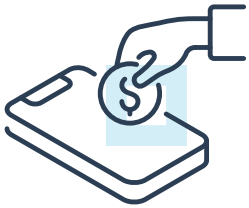
- MFF 2021-2027 and the EU's NextGeneration recovery programme, adopted at the end of 2020), digital transformation goals are given a bigger role than ever before, and the EU is prioritising support for cross-border, multi-country programmes and projects. This is a huge opportunity for digital transformation to become an economic driver in our country and in the region.

The first steps to facilitate this have already been taken, when in 2020 the national interest groups representing the countries of the „3Seas" region, including IVSZ, founded the CEE Digital Coalition, or when V4 Prime Ministers in February 2021 included digital cooperation in the system of common political-economic cooperation between the countries.

These associations, or European stakeholder organisations such as DIGITALEUROPE, of which IVSZ is a member, provide an important platform for the countries and businesses of the region to take a leading role in the digital economy, based on common priorities, taking advantage of each other's good practices and synergies.

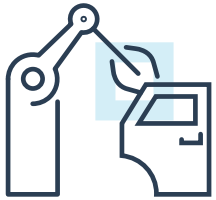
Together with its member companies and experts committed to the digital transformation of society and the economy, IVSZ has also put forward proposals to strengthen international cooperation so that these regional alliances can become living, working drivers of digital transformation.

Cooperation at regional level needs to be strengthened



by effective use of EU financial resources to support digitisation

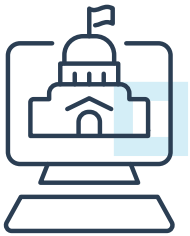
by developing sustainable R&D&I cooperation between academic and university research centres



projects and programmes in priority areas (data infrastructure, artificial intelligence, robotics, block chain)

developing cross-border links through the promotion of innovative SMEs and start-ups

building common knowledge bases, knowledge centres, supporting joint international events and exchanging best practices;



preparing legislation at EU level;

in taking joint action against challenges at a global level.

About IVSZ

IVSZ – ICT Association of Hungary is a common platform for the IT, telecommunications and electronics industries, as well as for the digitalising sectors, promoting and evangelising the development of the digital economy. It acts as a representative of issues, industrial and societal interests above direct business objectives. The association is a compass, a knowledge repository and a communications organisation to support businesses and policy makers and raise the profile of the IT sector.

As the professional representative of more than 350 member companies, IVSZ has been working for more than 30 years to alleviate the shortage of IT specialists in Hungary, to accelerate sectoral and SME digitalisation, to create the right regulatory environment and to establish dialogue between stakeholders. In addition, IVSZ has also set as its flagship the catalysing of the increase of software and services export, and the improvement of the global market access of domestic ICT companies, and by participating in European Union and regional projects, it brings our country's ICT sector into the international mainstream.