



Connectivity in the Digital Age. Digital Futures of Trade and Economic Cooperation in Eurasia

**Challenges and Opportunities of Economic Integration
within a Wider European and Eurasian Space**



BACKGROUND PAPER

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Disclaimer

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Preface

This paper is produced in the framework of the research project **“Challenges and Opportunities of Economic Integration within a Wider European and Eurasian Space”**, coordinated by the International Institute for Applied Systems Analysis (IIASA).

The project focuses on plausible futures of economic cooperation in the Greater Eurasian space and interplay between different integration processes in the region covering the European Union (EU), the Eurasian Economic Union (EAEU), Eastern Partnership, Central Asia, and their neighbors.

Despite currently tensioned EU-Russia political and economic relations, operating within its science diplomacy mandate, through this project IIASA successfully facilitates a de-politicized dialogue between stakeholders across all relevant domains and regions based on solid scientific facts and assessments. Since the project launch in 2013, IIASA served as a unique platform for discussions between high-level policymakers, business representatives, and renowned experts from the EU and EAEU member states, other European and Asian countries, as well as officials from the European Commission and the Eurasian Economic Commission. The project strives to prepare scientifically well-grounded analyses, options, scenarios, and policy recommendations on the subject of economic cooperation in the Greater Eurasian space. It provides inputs to various high-level political forums, including OSCE and their annual Ministerial Council meetings.

All publications and information about current project activities are available on IIASA website at:



Introduction

There is significant potential to enhance strategic partnership of countries and unions across Eurasia. Cooperation is viable when it is mutually beneficial in increasing competitiveness of national economies and when improves well-being of citizens. Arguably, a more pragmatic approach aiming at expanding practical cooperation to create new sources of innovative economic growth may be a more preferred option to political cooperation at the highest level and even to traditional economic integration focused on eliminating trade barriers.

The notion of Greater Eurasia attempts to encompass countries and regions of Europe, Caucasus, Central, North and East Asia, which together constitute a large portion of the global economy with China, the European Union (EU) and the Eurasian Economic Union (EAEU) being major economic players in the region.

This paper aims to review the current level of digitalization and technological development of China, the EU, and the EAEU, analyze digitalization strategies of China, the EAEU, the EAEU countries, the EU and the EU countries, and give preliminary recommendations on prospects of cooperation in the field of digitalization in Greater Eurasia.

As digital solutions have the power to connect people and businesses directly and independently from national borders, traditional approaches to regional economic integration may not be effective in the future. The present generation of international agreements governing trade and investment flows routinely omits their changing character. Thus, it is necessary to formulate new policy and regulation. To design new policies, it is necessary to analyze strategic interests of major players behind their foreign economic policies and programs on technological and digital development as well as compatibility of interests and potential areas of conflict.

Digital economy

Broadly speaking, digital economy is all economic activities based on digital technologies, connected with electronic business and e-commerce, as well as electronic goods and services produced and sold by the new technologies. There is no one single conventional way to define and measure the digital economy. However, there are some estimates concerning its size in the countries relevant for this analysis. At the end of 2018, China's digital economy reached about 1/3 of the national GDP.¹ In the European Union, the value of the data economy in 2016 was worth nearly 2% of its GDP.² The share of the digital economy in the EAEU 2.8% of the total GDP of all member states.³

E-commerce, the economic sector, which includes all financial and trade transactions carried out through computer networks and the business processes associated with such transactions, is gaining popularity. Retail e-commerce sales are expected to double from 2018 to 2023. E-commerce share in the total global retail sales is expected to increase from 12% in 2018 to 22% in 2023. The main winner is the Asia-Pacific region. The largest e-commerce market in the world is the Chinese market. The UK, Germany, France and Russia are in the top 10.⁴ 94% of Chinese, 78% of Polish, 71% of Russian, 64% of Swedish, 39% of British, 36% of Italian and 31% of French internet users are likely to use mobile

¹ <http://global.chinadaily.com.cn/a/201904/04/WS5ca576a7a3104842260b473d.html>

² European Data Market SMART 2013/0063. Final Report. IDC and Open Evidence, 2017

³ Analysis of the world experience of industry development and approaches to digital transformation of industry of the Eurasian Economic Union member states. Information and analytical report, 2017

⁴ eMarketer, May 2019

payments on their smartphone.⁵ The biggest online shoppers are Chinese (83% penetration rate), German (81%) and Polish users (75%).⁶

Artificial Intelligence (AI) is the ability of intelligent machines to perform creative functions that are traditionally considered the prerogative of a human being. AI includes, for example, text processing in natural language, machine learning, expert systems, virtual agents, recommendation systems. Worldwide spending on artificial intelligence systems will grow to nearly 35.8 billion U.S. dollars in 2019, 5.2 billion U.S. dollars will come from Europe and 5.5 billion U.S. dollars from Asia and Pacific.⁷ Russian spending on artificial intelligence is to grow to 380 million euros in 2020.⁸

The fifth-generation mobile communications standard (5G) is a new stage in the development of technologies, which is designed to expand the possibilities of access to the Internet via radio access networks. China is forecast to spend 134 billion to 224 billion U.S. dollars on 5G network construction from 2020 to 2025.⁹ The cost of providing 5G networks in Europe is estimated 370 billion to 615 billion U.S. dollars.¹⁰ The cost of developing new generation networks in Russia will amount to 9.64 billion U.S. dollars.¹¹

Blockchain technology authenticates the ownership of assets, makes them traceable, and facilitates their digital transfer. It therefore allows direct trading of assets by providing trust in the transaction and reducing uncertainty. Thus, blockchain technologies are forecast to revolutionize trade. Europe is estimated to spend 815 million U.S. dollars on blockchain in 2019 and China – 319 million U.S. dollars.¹² As for the EAEU, Russia launched 50% of all initial coin offerings in the world¹³, and Belarus is the first government in the world to legalize blockchain, cryptocurrencies, smart contracts, and ICO¹⁴.

The Internet of Things (IoT) is a concept of a network of physical objects equipped with built-in technologies to interact with each other or with the external environment, considering the organization of such networks as a phenomenon that can restructure economic and social processes, excluding from part of the actions and operations the need for human participation. China is one of the global leaders for IoT spending at an expected value of 182 billion U.S. dollars in 2019 and 300 billion U.S. dollars in 2022; Europe's expenses are to increase from 171 billion U.S. dollars in 2019 to 241 billion U.S. dollars in 2022.¹⁵ The Russian IoT market is projected to reach USD 74 Billion by 2023.¹⁶

It is expected that some technologies will, on the contrary, reduce trade. This is particularly the case with 3D printing technology. It is asserted that in case of preservation of current rates of investments into the 3D printing volumes of world trade will be reduced by a quarter, and in case of investment increase – by 40 % by 2040 already.¹⁷ Auto parts, electronic components, furniture, prosthetics,

⁵ CIGI-Ipsos Global Survey on Internet Security and Trust. CIGI-Ipsos, 2018

⁶ GlobalWebIndex, Q2 2017

⁷ Worldwide Semiannual Artificial Intelligence Systems Spending Guide. IDC, 2019

⁸ Artificial Intelligence. Holland Innovation Network, 2018

⁹ <http://www.chinadaily.com.cn/a/201903/04/WS5c7ce029a3106c65c34eca61.html>

¹⁰ <https://www.handelsblatt.com/today/companies/200-300-billion-mobile-carriers-next-challenge-finding-the-money-for-5g/23581238.html?ticket=ST-1665775-Pd94BYhgqUHhZld3cmn-ap5>

¹¹ 5G in Russia: Prospects, strategies for developing the standard and the networks. PwC, 2018

¹² Worldwide Semiannual Blockchain Spending Guide. IDC, 2019

¹³ <https://medium.com/@alexstargame/russia-and-china-to-disrupt-the-market-of-cryptocurrencies-in-2019-1795db85950e>

¹⁴ <https://medium.com/@smartym.pro/belarus-became-the-first-country-in-the-world-to-legalize-blockchain-cryptocurrencies-smart-1ff309054122>

¹⁵ Worldwide Semiannual Internet of Things Spending Guide. IDC, 2019

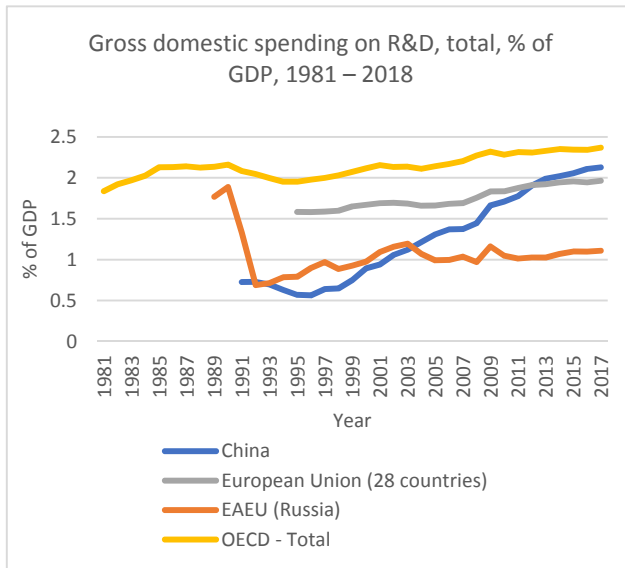
¹⁶ Russia Internet of Things (IoT) Market Demand Analysis & Opportunity Outlook 2023. Research Nester, 2019

¹⁷ 3D printing: a threat to global trade. ING Report, 2017

equipment elements can be printed on a 3D printer. The global 3D printing market is expected to grow by 4 times from 2018 to 2024.¹⁸ In 2019, China is about to spend 2 billion U.S. dollars¹⁹ and Europe roughly 5 billion U.S. dollars²⁰.

Cross-country/union comparison

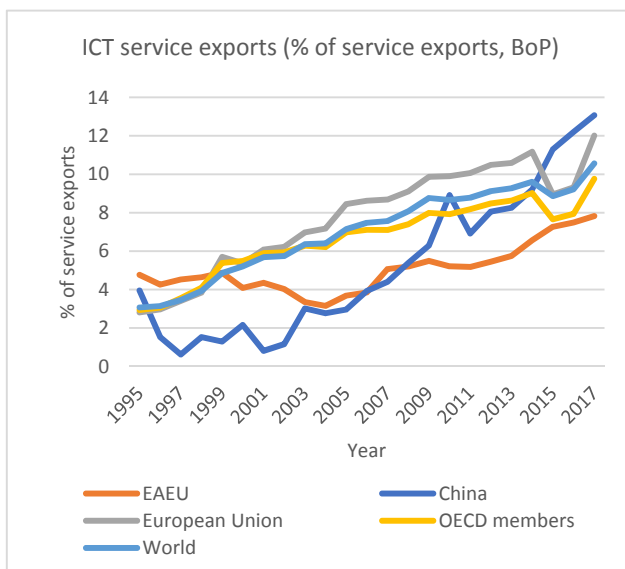
To compare the overall level of digitalization, different indicators can be applied.



Gross domestic spending on R&D is defined as the total expenditure (current and capital) on R&D carried out by all resident companies, research institutes, university and government laboratories, etc., in a country. Over the past 20 years, China has achieved the highest growth in the gross domestic spending on R&D, from 0.5% to almost the OECD average of 2.5%. The share of R&D expenditure in the EU increased from 1.5% to 2%, but at a noticeably slower rate of growth. The relative gross domestic spending on R&D varies across the EU countries: from 0.5% of GDP in Latvia and Romania to more than 3% in Germany and Austria (2018). The share of the

EAEU expenditures declined after the collapse of the Soviet Union, then stabilised at 1%. So in terms of the gross domestic spending on R&D, the EAEU is behind the EU and China in relative figures, not to mention the absolute backlog of R&D investments. There is also a risk of the EU lagging behind China

in the future if the EU's R&D expenditure does not continue to increase.



The information and communication technology (ICT) market includes communication and information technology services (computers, network equipment, software, IT services). *ICT service exports* include computer and communications services (telecommunications and postal and courier services) and information services (computer data and news-related service transactions).

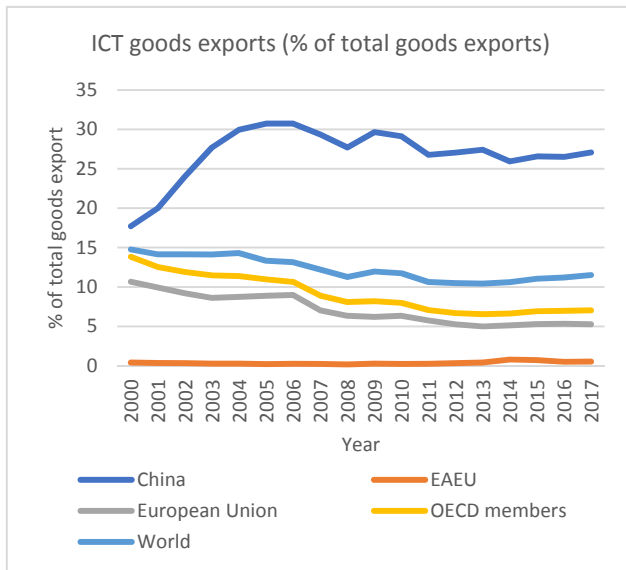
The most noticeable growth is observed in China: from 0.5% in 1997 to 13% in 2017. The EU was able to double the share of ICT services exports to 12%. This is higher than the global average (10.6%) and the OECD average (9.8%). The EAEU with a share of 7.8% lags behind. Looking closer at individual EAEU countries, the share ranges from 1.8% in Kazakhstan to 18.6% in Belarus. In the EU the

¹⁸ 3D Printing Market by Offering (Printer, Material, Software, Service), Process (Binder Jetting, Direct Energy Deposition, Material Extrusion, Material Jetting, Powder Bed Fusion), Application, Vertical, Technology, and Geography - Global Forecast to 2024. Market Research Report. MarketsandMarkets™ INC., 2019

¹⁹ Worldwide Semiannual 3D Printing Spending Guide. IDC, 2019

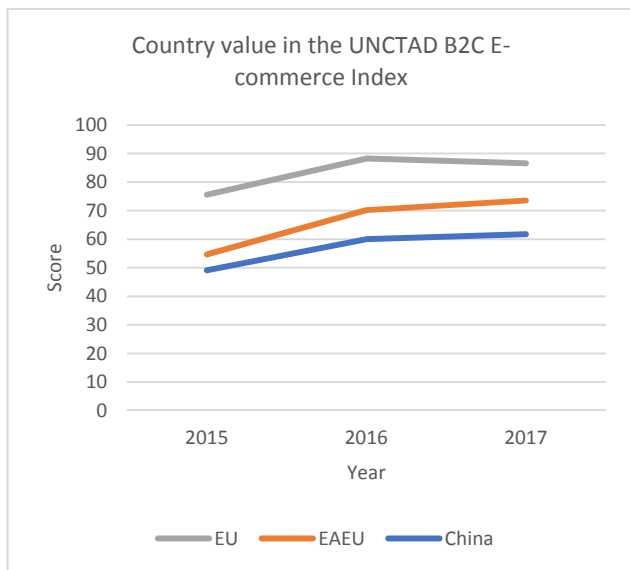
²⁰ Worldwide Semiannual 3D Printing Spending Guide. IDC, 2018

share of Ireland reaches almost 50%, the one of Malta 0.6%. Differences between the countries of the Unions can be explained by comparative advantages and specialization in certain areas.



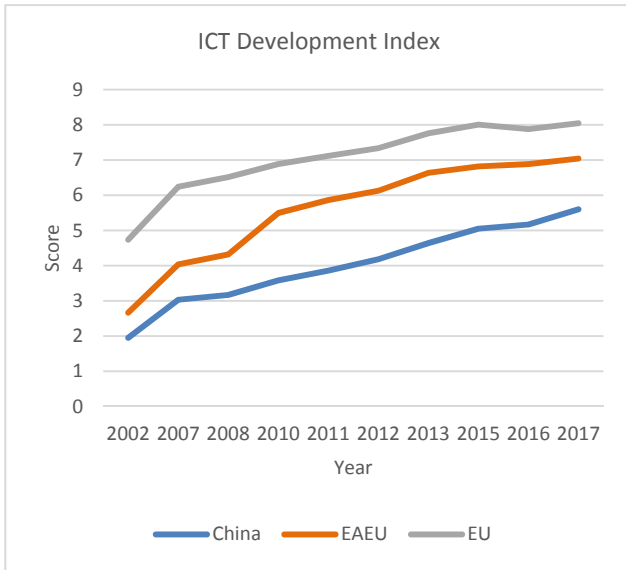
Information and communication technology goods exports include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous). The share of ICT exports in total goods exports fell to 5% in the EU, 12% on average worldwide and 7% in OECD countries. In the EAEU, the share remains stable at 0.5%. In China, the share rose to 27%. Within the EAEU, the share varies from 0.1% in Kazakhstan to 0.7% in Belarus. There is great potential for growth for the EAEU countries in this area. Within the EU, the share varies from

1.5% in Spain to 16% in the Slovak Republic. Many EU countries also have growth potential. The big difference can be explained by the comparative advantages of individual economies and specialization.

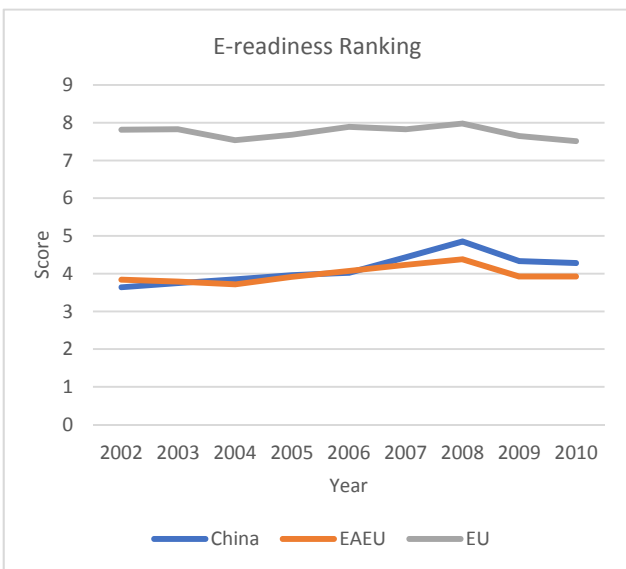


The United Nations Conference on Trade and Development Business-to-Consumer E-commerce Index (UNCTAD B2C E-commerce Index) measures an economy's preparedness to support online shopping. The index consists of four indicators that are highly related to online shopping and for which there is wide country coverage. The extent to which people shop online in a country is highly correlated with the value of the index, with an adjusted R squared value of 0.8. While the EU is performing well, the EAEU is in the middle of the ranking, China is still lagging behind. In 2017, the EU saw a decline, while the EAEU and China showed growth. The

general trend towards higher Internet penetration and increased network security will sooner or later level the countries.

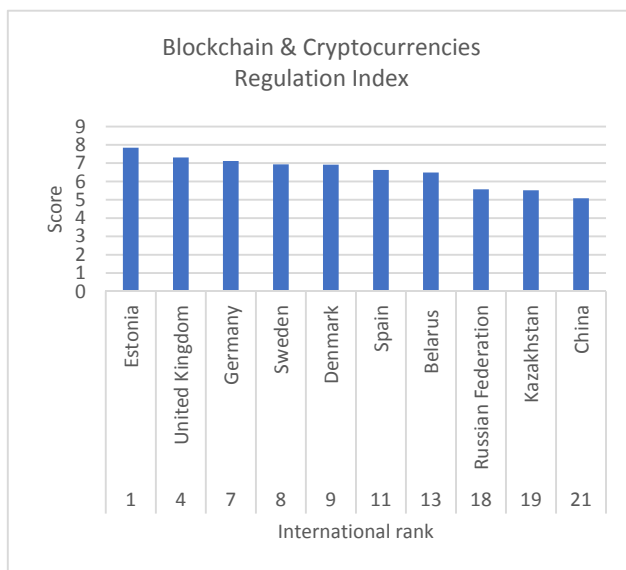


The *ICT Development Index (IDI)* is an index published by the United Nations International Telecommunication Union based on internationally agreed information and communication technologies (ICT) indicators. The distribution of countries in this ranking is similar to that in the e-commerce ranking. The EAEU countries have widened the gap with China and narrowed the gap with the EU.



The Economist Intelligence Unit has published an annual *e-readiness ranking* of the world's economies since 2000. It is a weighted collection of nearly 100 quantitative and qualitative criteria, organized into six distinct categories measuring the various components of a country's social, political, economic and of course technological development. The underlying principle behind the rankings is that digital business is at its heart business, and that for digital transactions to be widely adopted and efficient they have to thrive in a holistically supportive environment. According to the rating, the EAEU countries and China were about

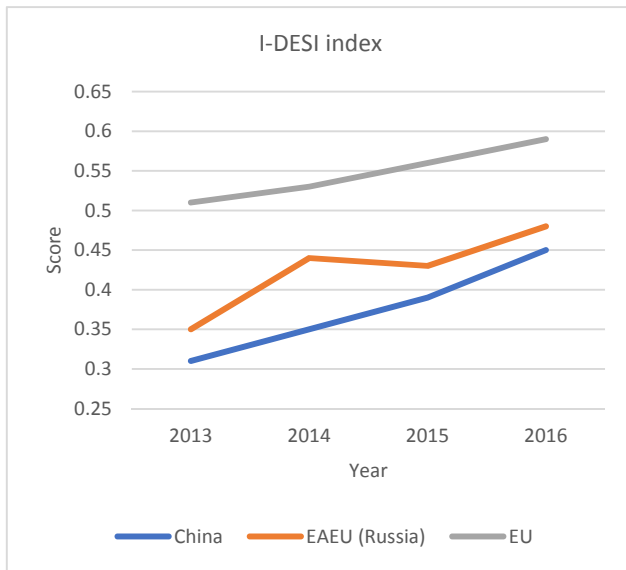
the same level with a little lead of China, the EU was much ahead.



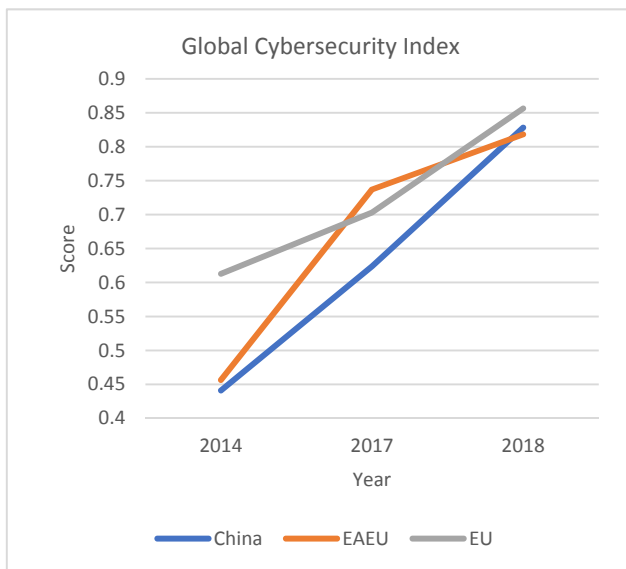
The *Blockchain & Cryptocurrencies Regulation Index* developed by the Flying University in Belarus is designed to answer the question, which countries of the world offer the most enabling conditions for the implementation of business projects associated with blockchain and cryptocurrencies. An enabling environment for the implementation of business projects related to blockchain consists of several dimensions: political environment, legal environment, and infrastructure environment. The given countries of the European Union offer a rather enabling environment for blockchain, the given countries of the EAEU offer a rather

enabling (Belarus) or a neutral environment (Russia and Kazakhstan), and China offers a neutral

environment.

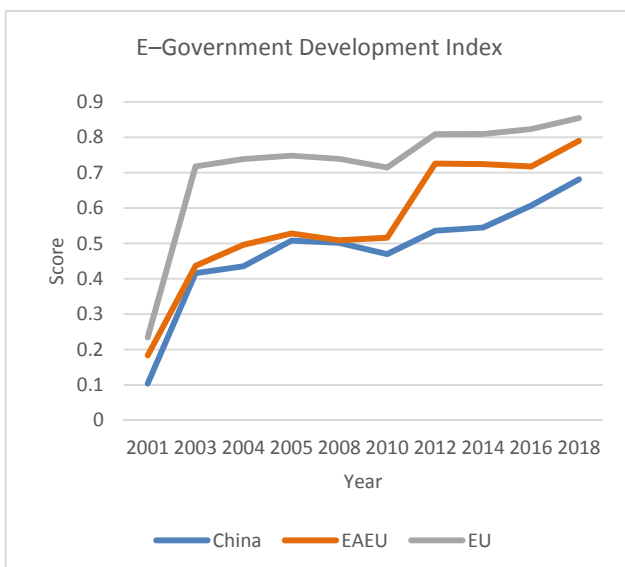


The *International Digital Economy and Society Index (I-DESI)* provides an overall assessment of where the EU stands, compared to non-EU economies, in its progress towards a digital society and economy. It measures performance in five dimensions or policy areas: connectivity, human capital (digital skills), use of Internet by citizens, integration of technology and digital public services. China reduces the cleft with the EAEU, but remains equidistant from the EU.



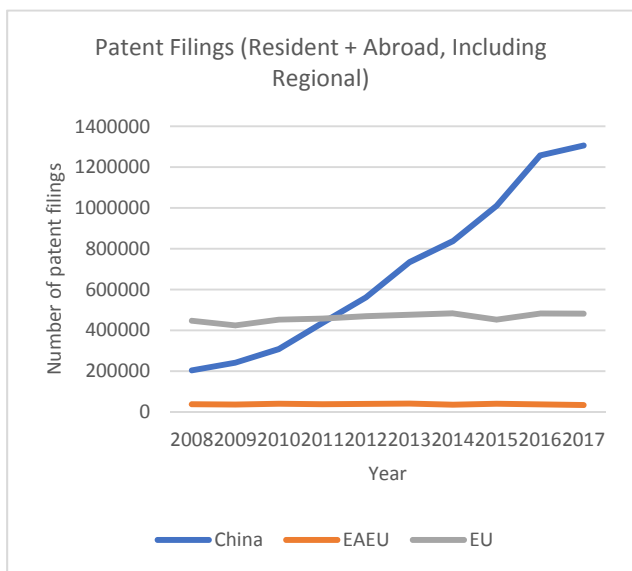
The *International Telecommunication Union Global Cybersecurity Index* measures the commitment of countries to cybersecurity at a global level. As cybersecurity has a broad field of application, cutting across many industries and various sectors, each country's level of development or engagement is assessed along five pillars – (i) Legal Measures, (ii) Technical Measures, (iii) Organizational Measures, (iv) Capacity Building, and (v) Cooperation – and then aggregated into an overall score. China's lagging behind the EU and EAEU was reduced, and the EAEU overtook the EU in 2017, but then slowed down its growth rate and moved back to

the third place in cyber security.



E-Government Development Index assesses e-government development at the national level. It is a composite index based on the weighted average of three normalized indices. One-third is derived from a Telecommunications Infrastructure Index (TII) based on data provided by the International Telecommunications Union (ITU), one-third from a Human Capital Index (HCI) based on data provided by the United Nations Educational, Scientific and Cultural Organization (UNESCO), and one-third from the Online Service Index (OSI) based on data collected from an independent survey questionnaire, conducted by the United Nations Department of Economic and

Social Affairs (UNDESA), which assesses the national online presence of all 193 United Nations Member States. The survey questionnaire assesses a number of features related to online service delivery, including whole-of-government approaches, open government data, e-participation, multi-channel service delivery, mobile services, usage uptake, digital divide as well as innovative partnerships through the use of ICTs. This data is collected by a group of researchers under the supervision of UNDESA through a primary research and collection endeavor. The EU and the EAEU are converging to the same level. China is catching up the level of both Unions.



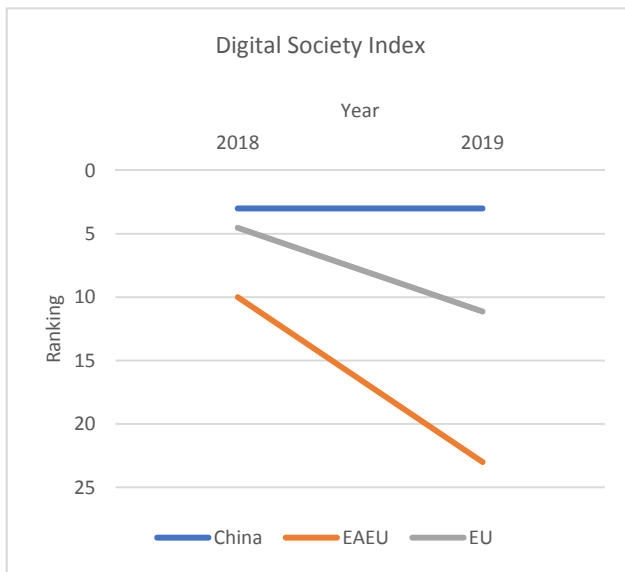
Intellectual property statistics are an important tool in understanding trends in policy, business, and technology worldwide. A comparison of patent filings reveals a significant increase in China's patents, a stable average position in the EU and a low number in the EAEU.



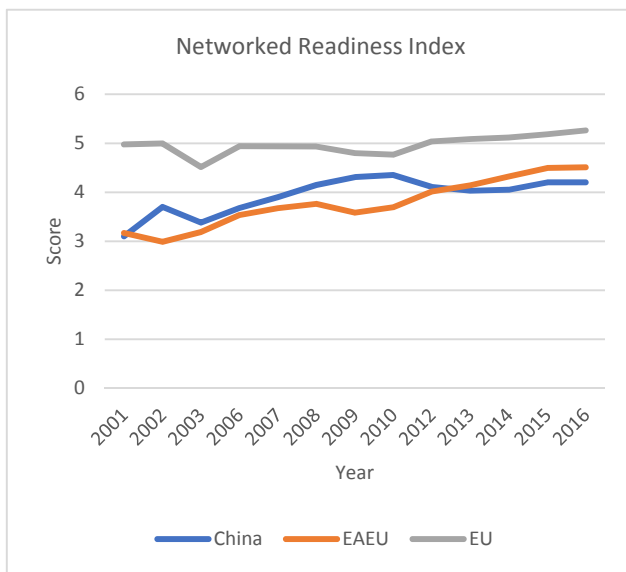
International Institute for Management Development (IMD) World Digital Competitiveness Ranking is focused and assesses the capabilities and readiness of economies to undertake the process of digital transformation. The objective of the digital competitiveness ranking is to assess the extent to which a country adopts and explores digital technologies leading to transformation in government practices, business models, and society in general. The final ranking incorporates three factors, which reflect the standing of a country in the dimensions of Knowledge, Technology and Future Readiness. Knowledge measures the know-how necessary to

discover, understand and build new technologies. These elements are captured by criteria that measure the availability of talent in a country, the level and quality of education and training as well as the production of scientific knowledge. The second factor measures the Technology environment of an economy, i.e. the overall context that enables the development of digital technologies. It assesses how supportive the regulatory environment is, how advanced the technological framework is and whether an economy provides capital to invest in technology. The final factor reflects the Future Readiness of an economy, that is, the level of country preparedness to exploit digital transformation. This element of preparedness is calculated by taking into consideration how adaptive a particular economy is, the level of agility exhibited in the country as well as the level of integration of digital technologies in the

economy. The EU is leading the ranking, being 7 positions ahead of China and 15 positions ahead of the EAEU. However, while the EU lost almost one position in the ranking, China and the EAEU are catching up.

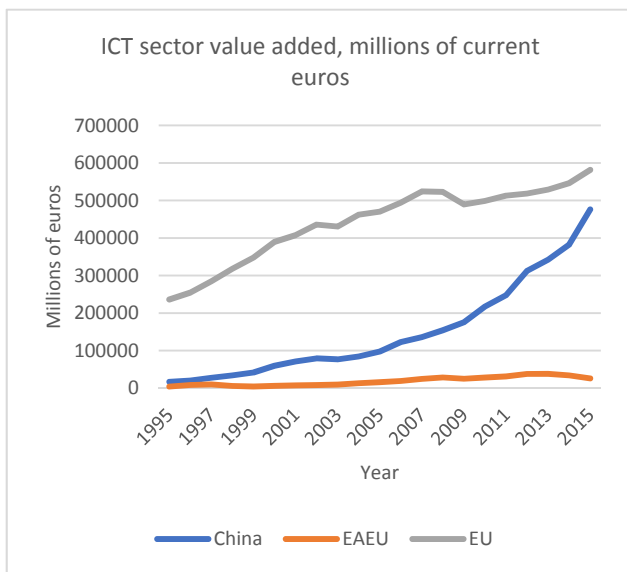


Dentsu Aegis Network and Oxford Economics analyze the development of global digital growth in the *Digital Society Index*. The index has three key dimensions of the digital economy: dynamism, inclusion and trust. China remains at the third-highest position in the ranking, the EU and the EAEU lost dramatically from 2018 to 2019. It is, however, necessary to take into account, that in 2018 only 10 countries were considered in the ranking and in 2019 these were 24 countries.



The Global Information Technology Report series published by the World Economic Forum in partnership with INSEAD and Cornell University measures the drivers of the ICT revolution globally, using the *Networked Readiness Index* (NRI). The Index has evolved over time and is currently based on the pillars: A. Environment subindex: 1. Political and regulatory environment (9 indicators); 2. Business and innovation environment (9 indicators); B. Readiness subindex: 3. Infrastructure (4 indicators); 4. Affordability (3 indicators); 5. Skills (4 indicators); C. Usage subindex: 6. Individual usage (7 indicators); 7.

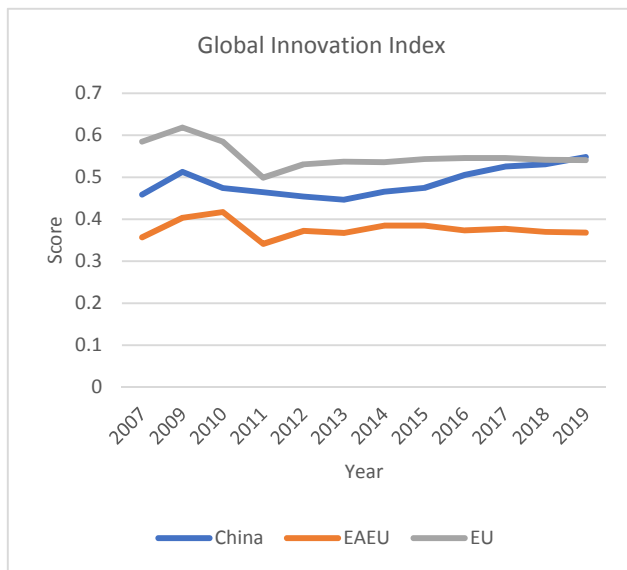
Business usage (6 indicators); 8. Government usage (3 indicators); D. Impact subindex: 9. Economic impacts (4 indicators); 10. Social impacts (4 indicators). The EU remains stable in the first place, with China and the EAEU competing for the second place.



The European Commission publishes data on *ICT sector value added*. Operational definition of ICT sector allows making an international comparison with non-EU countries over a longer period of time, as some of these countries do not have the necessary disaggregated information to estimate all the ICT subsectors included in the comprehensive definition.

The operational definition takes into account the standard distinction between manufacturing and services but does not include the following sectors: Manufacture of magnetic and optical media and ICT trade industries. Finally, ICT

services industries are grouped in two sub-sectors: Telecommunication and Computer and related activities. The EU started at a high level and demonstrated growth, remaining the leader in terms of the ICT value added. China started at a very low level and almost caught up with the EU in 2015. The EAEU remains at a relatively low level, with only slight growth.



The *Global Innovation Index* (GII) by the World Intellectual Property Organization provides detailed metrics about the innovation performance of countries and economies around the world. Its 80 indicators (2019) explore a broad vision of innovation, including political environment, education, infrastructure and business sophistication. The GII relies on two sub-indices—the Innovation Input Sub-Index and the Innovation Output Sub-Index—each built around pillars. Three measures are calculated: Innovation Input Sub-Index: Five input pillars capture elements of the national economy that enable innovative activities.

Innovation Output Sub-Index: Innovation outputs are the result of innovative activities within the economy. In 2019, China overtook the EU in the ranking. The EU and the EAEU are equidistant from each other, demonstrating stagnation.

Digital strategies

It is not enough to simply acquire new digital technologies and so respond to digitalization. A digital strategy is defined as a strategic plan that focuses on the application of digital technologies. It is part of the overall development strategy. The digital strategy will therefore become increasingly important in the future as most states integrate digital technologies into national strategies.

Competent authorities should continuously monitor developments and assess whether the deployment of digital technologies is appropriate. The digital strategy is then a common solution for making adequate use of digital technologies while at the same time respecting the interests of individual stakeholders. States with a digital strategy ensure that they remain competitive and adapt to dynamic market conditions and changing power constellations. In order to develop the digital vision, certain core questions should be addressed, and concrete milestones set:

- What makes the state unique?
- What is the core competence?
- Which digital technologies can underline this?
- What are potentials that can be used and developed?
- What are possible hurdles? How can they be eliminated?
- What needs do people have?
- What is technologically possible and reasonable?
- What makes sense from an entrepreneurial point of view?

China



Key strategic documents: National Informatization Development Strategy (2006-2020, updated in 2016 with goals up to 2025) + 13th Five-Year Plan for National Informatization 2016-2020; China Internet Plus Action Plan 2015-2025; Made in China 2025 (2015-2025)

Summary

Chinese digitalization strategies are ideologically colored. The uniqueness of Chinese development is emphasized. Bright epithets praise China. There are many large-scale common goals, but fewer concrete steps and indicators to measure success or failure to achieve a particular goal.

The aim of the strategies is to make China's informatization the leading driver of modernization, promote information reform and create new advantages for international competition. The ultimate goal is to make China a cyber power. To achieve this goal, the country needs to go through three stages. The first stage should be completed in 2020, when the country should reach the world's leading edge in some key technologies. By this time, the Chinese IT industry should become much more competitive in the global market, and informatization should become the leading driver of modernization. The second stage – until 2025 – will be characterized by the formation of the world's leading mobile communications network. In the third phase, which will last until the middle of this century, informatization should become the driving force in China's transformation into a cyber power.

The multi-facetedness of strategies is remarkable. They contain economic, cultural, social, military and other aspects. The topic of poverty is addressed separately, the role of digital technologies in promoting the Chinese position in the world is noted, and their use as a soft power tool is emphasized. Strategies also aim to support talented people. They involve the creation of platforms and incubators for young people from different countries. China is taking a set of measures to prevent brain drain abroad and to return talented people home. In addition to measures aimed directly at digital technologies, the

strategies contain monetary and fiscal policies that should support technology development. Special attention is paid to rural development and equitable regional development. Strategies address the development of information and communication infrastructure in cities and villages. It is supposed to provide access to broadband communication, having carried out a full transfer of cities on a fiber-optic communication for what it is necessary to improve a network infrastructure in old municipal areas. In rural areas, it is planned to provide access to broadband Internet at the level of rural municipalities.

Internet Plus should integrate mobile and cloud technologies, the concept of the Internet of Things and big data processing technologies into modern production. Broadly speaking, it is the integration of the Internet and traditional industries through online platforms and IT technologies. Implementation of the strategy in production will create more opportunities for entrepreneurship, innovation, agriculture, energy, finance, logistics, e-commerce, biology, artificial intelligence, transport and services. By 2025, Internet Plus will become a new economic model, as well as the main incentive for economic and social development and innovation. The government will fully support the introduction of innovative platforms and networks in enterprises. Industrial standards will serve the integration of the Internet and industry, as well as the protection of intellectual property rights.

Made in China 2025 identifies ten priority sectors: next-generation information technology, high-end numerical control machinery and robotics, aerospace and aviation equipment, maritime engineering equipment and high-tech maritime vessel manufacturing, advanced rail equipment, energy-saving and new energy vehicles, electrical equipment, new materials, biomedicine and high-performance medical devices, agricultural machinery and equipment. The strategy has a special role for the state. The state occupies an important place in planning, in providing subsidies worth hundreds of billions of yuan, in establishing state-owned companies and funds. Accurate funding of the funds is not disclosed, but estimates show an amount exceeding 630 billion U.S. dollars to achieve the goals of the program Made in China 2025. Much attention is paid to increasing the share of domestic producers in various industries to a maximum (up to 90% in a number of industries), market access for foreign companies is limited through licensing, regulation and standards. China aims to promote its standards in the world and actively participate in the creation of world standards. At least along the Silk Road, Chinese standards should prevail. The task of becoming a world leader in the production of high quality and high-tech products in China is also enshrined. More specific goals, benchmarks and timelines of the program are contained in various road maps, notices and plans.

China's position is to take a leading role in all sectors of the world, but at the same time China is ready for cooperation and dialogue. The strategies envisage the formation of the world's leading mobile communication network in China, which will make it possible to finally move away from the use of foreign technologies. In this period, a group of transnational corporations with global competitiveness should appear in China. Strategies should promote innovative development, foster cooperation in advanced areas such as the digital economy, artificial intelligence, nanotechnology and quantum computing, and help to develop big data, the cloud and smart cities to make them the digital Silk Road of the 21st century. China's economy is growing at a slower pace every year, and under these conditions, China is relying on qualitative rather than quantitative growth, which can be achieved through the development of innovations and their implementation in all spheres of society.

International cooperation

The strategies devote a significant part of their attention to the topic of international cooperation and interaction. On the one side, these are steps that are aimed at providing China's leading position in the

world. These are among other measures strengthening digestion and absorption of imported technology, building an internationally leading comprehensive information infrastructure, strengthening the dissemination of the international influence of the Chinese culture, strengthening national defense and fighting capacities, strengthening Internet foreign propaganda and cultural exchange, encouraging operational and manufacturing enterprises to expand international markets, aiming at the forefront of international innovation, preferencing the procurement of domestically produced information technology products and services, reaching international advanced levels of crucial technological component areas, achieving international competitiveness of the information industry, building an internationally leading mobile telecommunications network, consolidating a globally leading position in next-generation telecommunications, next-generation Internet and others, importing foreign talents, encouraging foreign scholars to participate in national informatization construction, building large-scale multinational Internet information enterprises with strong international competitiveness, having a position of a strong cyber power.

On the other side, the strategies also have a major cooperative aspect. China aims at participating in the formulation of international norms and standards, promoting the establishment of international Internet governance mechanisms on the basis of sovereignty and fairness, strengthening international exchange and cooperation in informatization on the principles of equal cooperation and mutual benefit, interconnecting networks and exchanging information with neighboring countries, building the China-ASEAN information port, building large international information passages to link up countries and regions, building an online Silk Road, developing cross-border e-business, stimulating the development of investment and trade on a global scale, promoting the development of the digital economy.

European Union



Key strategic documents: A Digital Agenda for Europe 2010-2020; A Digital Single Market Strategy for Europe 2015-2020; Digital Europe Programme (proposal) 2021-2027

Summary

The EU strategies begin with identifying problem areas and propose concrete measures to address them. It is worth noting that the EU strategies have significantly fewer goals than the Chinese ones, but these goals are formulated more clearly and accompanied by benchmarks.

Action areas seen by the EU are fragmented digital markets, lack of interoperability, increase in cybercrime and low trust in networks, lack of investment in networks and cybersecurity, insufficient research and innovation efforts, lack of digital literacy and skills, missed opportunities in addressing societal challenges, lack of coordinated EU actions in the digital area, insufficient supply of the latest technologies, underdeveloped artificial intelligence market, unfilled highly skilled technical expert jobs.

To address these issues the EU focuses on the development of an EU-wide digital single market, the promotion of interoperability and common standards, the instigation of trust and security, the introduction of fast and ultra-fast internet access, the increase in digital literacy, skills and inclusion, on

the extraction of ICT-enabled benefits for EU society, on the provision of a better access for consumers and businesses to online goods and services across Europe, the support of research and innovation, the maximization of the growth potential of European Digital Economy, the modernization of public administrations and services through digital means, the reinforcement of Europe's capacities in high performance computing, artificial intelligence, cybersecurity and advanced digital skills and ensuring their wide use across the economy and society, the creation of the right conditions for digital networks and services to flourish, the investment in the digital single market.

The EU distinguishes several parameters to estimate the success of strategy realization: basic, fast and ultra-fast broadband coverage, share of population buying online and cross border online, share of small and medium-sized enterprises purchasing and selling online, difference between roaming and national tariffs, average price per minute for all calls in the EU, regular internet use, share of citizens using eGovernment, online availability of the key cross-border public services, public investment into ICT R&D, low energy lighting, the Digital Economy and Society Index, number of high-performance computing infrastructures jointly procured, usage of the exascale and post-exascale computers in total and by various stakeholder groups, total amount co-invested in sites for experimentation and testing, number of companies and organizations using AI, number of cybersecurity infrastructure and/or tools jointly procured, number of users and user communities getting access to European cybersecurity facilities, number of ICT specialists trained and working, number of enterprises having difficulty recruiting ICT specialists, take-up of digital public services, enterprises with high digital intensity score, alignment of the National Interoperability Framework with the European Interoperability Framework.

International cooperation

The strategies of the European Union aim at making it a powerhouse of smart, sustainable and inclusive growth on the global stage and a first mover in acquiring common digital capacities.

Cooperation on digitalization with third countries is considered as possible. Study of foreign experience will help to benchmark European progress against the best international performance. It is also seen as important to promote growth of EU companies beyond the EU internal market and to make the EU a more attractive location for global companies

Free trade agreements are seen as one of the instruments to promote European trade values. Digital services and intellectual property should find their reflection in new international trade agreements. They should also be used to promote openness of the European market in the digital sphere and to press openness and effective enforcement of intellectual property rights from the EU trading partners. They envisage the creation of favorable external trade conditions for digital goods and services, in particular, development of a stronger partnership to deliver market access and investment opportunities, reduction of tariff and non-tariff barriers at global level, improvement of private international law protection, avoidance of market distortion.

Another channel are the EU standards. The strategies intend to promote interoperability, European standards and regulatory solutions recognized at the world level and based on the principles of opportunity equity, government and governance transparency, market openness to competition.

As for the security issues, the EU addresses cyber security threats and emphasizes the necessity to conclude security agreements between the EU and third countries, if some strategic activities are carried out outside the EU. The strategies also foresee restricted participation in the digitalization projects for legal entities controlled from third countries.

Promotion of the governance of the Internet as open and inclusive as possible takes an important place in the EU strategies. It is crucial to work out a sustainable approach to Internet Governance through the multi-stakeholder model with the aim of keeping the Internet free and open.

Eurasian Economic Union



Key strategic documents: Statement on the EAEU Digital Agenda (2016); Main directions of the EAEU Digital Agenda implementation until 2025

Summary

Following the statement by the presidents of the EAEU member states on the need for the development of the digital economy and the formation of the digital agenda of the EAEU in 2016, strategic directions and general approaches to the formation of the digital space of the EAEU were developed.

The strategy is proposed to contribute to the accelerated transition to a new economy, enhance qualitative and sustainable economic growth, create an enabling environment for innovation development, form new industries and markets, update the mechanisms of integration, improve economic efficiency and increase competitiveness.

The potential economic effect of the implementation of the digital agenda is expected to increase the EAEU's total GDP by 2025 by about 11 percent of the total expected growth. It's about twice as much as without a joint digital agenda. Implementation of the joint digital agenda could increase ICT employment by 66.4% and total employment by 2.46%, lead to an additional growth in ICT services exports by 74%.

The directions contain rather general and vague proposals. First of all, they focus on the need to develop recommendations and joint projects and requirements. Several key initiatives can be identified: interoperability, data turnover, digital traceability, digital trade, regulatory sandboxes, digital transport corridors, digital technology transfer, digital industrial cooperation, digital industry and cross-industry transformation, digital markets for goods, services, capital and labour, digital transformation of management processes and digital infrastructure and security. The strategic directions call for the development of concrete solutions and regulation for these initiatives, and for the promotion of harmonization for the benefit of integration.

It is expected that by 2025 the share of the digital economy will be at least 20%, the share of employed in the high-tech segment will be at least 20%, the share of exports of digital goods and services and traditional goods through digital channels will be at least 20%. Given the comparative analysis in the first part of the paper, these goals seem very ambitious.

International cooperation

The international aspect has a special role in the development of the EAEU digital strategy. It is necessary to use international experience and best world practices and borrow successful projects from the digital transformation programs of other countries and integration associations. The importance of projects ensuring harmonized digital interaction with other integration associations is also noted. The

EAEU should be ready for painless digital international integration with interested states and international associations. The possibility of involving the world's leading institutions and organizations in the forecasting and analysis of the digital economy is being considered. The need to amend the existing memoranda and agreements with third countries and organizations in terms of building mutually beneficial mechanisms for the use of data or restricting their use is stressed. It is recommended to actively participate in the discussion of international IT standards and to increase participation in the work of international standardization institutes.

At the same time, global risks are also considered: loss of digital sovereignty, control by global players, loss of competitiveness, suppression and absorption, and cyberthreats. The main challenges are related to the lack of involvement of the Union's countries in global, macro-regional and regional processes of change related to digital transformation, the formation of new industries and markets, as well as the lack of a strategically aligned and coordinated position on transformation. Another potential threat are the global digital platforms, which, using the accumulated data on different areas of human life, human needs, interests, demands and preferences, business processes, and up-to-date retrospective statistics, have been able to make more accurate forecasts and scenarios in many areas of the economy and social life than the countries and individual governments of the member states of the Union. Global digital players have been able to take advantage of the monopoly position in the automation (digitalization) and “packaging” of processes, in the regulation of activities with reference to best practices. It is also noted that member states should not lag behind the global digitalization of the world market.

Prospects for cooperation: preliminary conclusions

Most obviously, mutually benefits are to be expected from cooperation in the field of exchange of experience and know-how. Sharing best practices and successful cases would transfer knowledge and enhance common understanding. For this purpose, establishment of international research teams and expert platforms, formation of joint competence centres and think tanks, joint development of industry science, joint development of promising areas of the digital economy and their implementation in production can be recommended.

It is important to formulate clear and common definitions of digital technologies, digital economy and their metrics. A thorough comparison between countries and unions is useful to diagnose successes and failures.

It is important to take into account cultural traditions. Essentially, countries and unions in Eurasia have a similar ultimate goal – to become competitive in terms of the digital economy – but formulate it using different rhetoric. The difference in rhetoric between Chinese and European strategies is immediately noticeable. The Chinese approach: “We have done so much and will do more”, while the European approach: “We are lagging behind, we need to catch up”. However, the existing metrics show the contrary.

Finding an optimal and feasible financing is of foremost importance for the success of any digital strategy. In the EU, for example, relatively small amounts of public funds are allocated for digitalization compared to China, but both private and individual country investments need to be mobilized.

Another field of cooperation could be work on convergence of regulatory standards in the digital environment. In its strategic document, China advocates for creation of international standards (with

China's active participation in their development), while the European Union insists on promoting its standards.

It is important to develop cooperation in individual sectors. Creating common rules for cross-border e-commerce, protection of intellectual property should become one of the priorities. The agreement between China and Austria on the development of e-commerce can be indicative. The aim of the agreement is to strengthen cooperation and a regular exchange of experience between cross-border e-commerce platforms in both countries. Austrian companies, in particular SMEs, will benefit from the facilitated establishment of contacts to major e-commerce platforms and will thus be more quickly present on the Chinese market. Support will also be provided for the import and export of products and services via e-commerce platforms.

Since China aims to increase domestic production of key industries to the maximum extent possible, one of the few opportunities for companies from other countries and unions to stay in the Chinese market is their localization in the Chinese market (albeit on Chinese terms) and participation in joint ventures, where possible.

In order to test the projects of interstate cooperation, it is possible to create interstate and interunion regulatory sandboxes, i.e. a special legal regime allowing legal entities engaged in the development of new digital products and services to conduct experiments on their implementation in a limited environment without the risk of violating the current legislation.

The use of digital technologies in cross-border e-governance is promising, for example, at customs or by issuing e-visas via the Internet, as Russia has started to do. Another direction could be the movement to abolish or reduce roaming fees. For example, in Skolkovo (Russia), a virtual telecom operator was launched, working on an intellectual platform and providing roaming services at a cost of a few cents per minute, as opposed to a few euros by traditional telecom operators.

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The International Institute for Applied Systems Analysis (IIASA) is an independent, international research institute with National Member Organizations in 22 countries in Africa, the Americas, Asia, and Europe. Through its research programs and initiatives, the institute conducts policy-oriented research into issues that are too large or complex to be solved by a single country or academic discipline. This includes pressing concerns that affects the future of all of humanity, such as climate change, energy security, population aging, and sustainable development. The results of IIASA research and the expertise of its researchers are made available to policymakers in countries around the world to help them produce effective, science-based policies that will enable them to face these challenges.

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