
Serhii Hrytsai¹

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DIGITIZATION OF GOVERNMENT AS A GLOBAL TREND OF THE FUTURE: IMPLEMENTATION OF THE “ELECTRONIC STATE” POLICY (ON THE EXAMPLE OF UKRAINE)

Keywords: GovTech, government technology, e-governance, digital services, PaperLess, CashLess, DIJA, FinTech, virtual assets, cryptocurrency

ABSTRACT: Digitalization of public services is a global trend throughout the civilized world. Progressive governments of developed countries are actively implementing initiatives that have been given a very young acronym – GovTech. These are the latest digital technology solutions that make the work of the state more efficient and the lives of citizens easier. Implementation of the GovTech policy is a priority for many international projects and programs: Lisbon Council, Digital Europe, European Blockchain Partnership (EBP), International Association for Trusted Blockchain Applications (INATBA), DT4UA. The *purpose* of the article is to form a general vision of the current trend of GovTech policy implementation, using Ukraine as an example for the period of 2020-2023. In order to achieve the goal and formulate reasonable results, the study was structured in three sections: 1) Digitalization of Ukraine: introduction of modern digital technologies; 2) Ukraine’s participation in international digital projects; 3) Sharing Ukraine’s digitalization experience with other countries. The study has led to a number of *conclusions*. The ideology of GovTech is a two-vector message to humanity about the future: where instead of analog officials and certificates, “PaperLess” will work, and instead of cash currency “CashLess” – CBDC / cryptocurrency in a smartphone. Digital public services in a smartphone, and even a citizen’s passport, are already GovTech realities confirmed by the Ukrainian digital project “DIJA”. Ukraine’s successful experience in forming a GovTech e-state has begun to spread actively in other European Union

¹ Ph.D., Associate Professor at the Department of Sectoral Law and General Legal Disciplines, Institute of Law and Social Relations of the Open International University of Human Development “Ukraine”; ORCID ID: <https://orcid.org/0000-0003-0051-6149>; frick1745826@gmail.com.

countries (code name: “DIJA”). This shows a trend towards the development and formation of a precedent for the international GovTech format, in the form of a certain future standard (we are sure that this will be developed and researched). However, this study has shown that there are legal difficulties on the way to creating a precedent for the formation of the international GovTech format in Ukraine. The introduction of the intergovernmental GovTech format requires separate legal regulation and consideration of the issue of a fair balance of bilateral state agreements when it is introduced, which also lack relevant legal developments.

INTRODUCTION

At the Kyiv International Economic Forum 2022, the Deputy Prime Minister and Minister of Digital Transformation of Ukraine outlined the mission of his department:

Our mission is to make the most convenient country in the world in terms of public services, so that all services are just a click away. The team of the Ministry of Digital Transformation of Ukraine (hereinafter referred to as the Ministry of Digital Transformation) focuses on two trends: GovTech (making your solutions buyable by other countries) and military tech (defense). These are the two areas we are focusing on, and we will do everything to be the first in the world and to make it happen in the shortest possible time (*V Ukrajinii mozhutj...*, n.d.).

In the same year, but at a different event, at the Ukrainian Recovery Conference in Lugano, the Deputy Prime Minister and Minister of Digital Transformation of Ukraine presented the Digital4Freedom initiative as a project for the digital recovery and development of Ukraine. The presentation was intended for international partners and top global technology companies, including: Microsoft, Rakuten, Apple, Amazon, Google, IBM, Palantir, Mastercard, Visa, etc. Among the main points in the speech of the Vice Prime Minister – Minister of Digital Transformation of Ukraine, in the context of our study, the following deserve attention:

[...] Digital4Freedom will help create a new Ukraine – the freest and most digital country in the world, where paperless is used instead of analog

officials and certificates, cashless is used instead of cash currency, the IT sector accounts for 40% of the gross domestic product, and the country itself is becoming the largest IT hub in Eastern Europe with a focus on security solutions. [...] Digitalization is not only our foundation for recovery, but also our vision of how the country should work. In no other country in the world will you have such a chance to get involved in the implementation of the most advanced technologies at the state level. This is both an experiment, a digital revolution and a modernization of the existing system. This is a chance for you, for your companies, and for the whole world [...] (Ministerstvo cyfrovoji transformaciji Ukrajiny, 2022b).

During the Kyiv Tech Summit 2022, the Deputy Minister of Digital Transformation for IT Development emphasized that the development of the Ukrainian cryptocurrency and IT community and the development of industry regulation are among the priorities of the Ministry of Digital Transformation. This will contribute to the development of the Ukrainian IT community. The Ministry of Digital Transformation is developing various ways to raise funds for startups, both at the level of support from the government and private institutions. “We have realized how influential the crypto community is. The things that Ukrainians are fighting for – independence, freedom, openness – coincide with the values of the cryptocurrency community”, said the Deputy Minister (*U Mincyfri Rozpovily...*, n.d.).

LITERATURE REVIEW

According to the results of a study conducted in 2023 by Kreston Ukraine with the support of the Ministry of Digital Transformation of Ukraine, the Ministry of Economy of Ukraine, the Reform Office of the Cabinet of Ministers of Ukraine and the ISE Corporate Accelerator: “The global market of GovTech solutions”, new trends in the field of GovTech can be noted: 1) Digital currencies (Hrytsai, 2022i). The use of cryptocurrencies will increase operational efficiency and help fight corruption (Hrytsai, 2022g, 2022h); 2) Digital identification. Some countries already have

a simple identification process and have introduced digital IDs, which sometimes include biometric verification; 3) Cybersecurity. Government agencies must maintain the security and trust of citizens in the digital space; 4) Hyper-automation. According to Gartner, 75% of governments will have at least three hyper-automation initiatives in place over the next three years; 5) Modernization of government IT infrastructure to improve efficiency; 6) Artificial intelligence technologies for interaction with citizens. Governments will increasingly use AI-based applications to automate public services (*The Global Market...*, n.d.).

In 2023, Kyiv hosted the CDTO Annual Forum (Chief digital transformation officer), which brought together digital transformation leaders, in the form of deputy ministers and deputy heads of regions, who are working on implementing digital changes. The event was organized by the Ministry of Digital Transformation of Ukraine jointly with the United Nations Development Program in Ukraine with financial support from the governments of Japan and Sweden as part of the DIJA Support Project. At the CDTO Annual Forum, digital transformation leaders discussed: the development strategy for 2023; the role of open data; development of registries; implementation tools; raising funds from international partners for digital projects; the digital transformation index of Ukrainian regions (*Telegram: Contact @mintsyfra, 2023i*).

The Digital Transformation Index was developed by the Regional Digitalization Team of the Ministry of Digital Transformation of Ukraine to assess the level of digital transformation of Ukraine's regions. It will measure informatization and digitalization in all 24 regions of Ukraine. In general, this analysis determines the effectiveness of regional authorities in digitalization and demonstrates how e-services are being implemented. The Digital Transformation Index of Ukraine's Regions includes 8 sub-indices, 31 indicators, and 76 indicators. Based on this methodology, the index of Ukraine for 2022 was calculated, which amounted to 0.651 points out of 1 possible (maximum). And the additional main 3 categories in the direction of digitalization were assessed as follows: development of administrative service centers 0.771 points; "paperless" regime 0.691 points; Internet development 0.683 points (*Indeks cyfrowoji transformacji...*, 2023).

The experience of developing e-governance in different countries is considered a valuable source of knowledge for this research. Sharon S. Dawes in “The Evolution and Continuing Challenges of E-Governance” the author defines this field of knowledge as “the use of information and communication technologies (ICTs) to support public services, government administration, democratic processes, and relationships among citizens, civil society, the private sector, and the state.” His paper bridges the complex matter of technologies to social science: law, governance, and economics. Sharon S. Dawes emphasized that given the nature and pace of technological change, ICT strategies, tools, and innovations will continue to shape the information environment of governance (Dawes, 2008).

BACKGROUND (LEGISLATIVE ACTIVITY OF THE PARLIAMENT OF UKRAINE)

In 2022, the Committee on Digital Transformation of the Parliament of Ukraine held 26 meetings, as well as hearings, roundtables, and working groups. In 2022, the Committee had 14 working groups. The Committee was designated as the lead committee for consideration of 23 draft laws, 10 of which were adopted by the Verkhovna Rada as laws of Ukraine, while the rest are still in progress. The Verkhovna Rada also adopted 7 resolutions (*Komitet z pytanj...*, 2023).

The main legislative initiatives of the Committee in 2023, in the context of our study, include: 1) Providing citizens with quality communication (work on the draft law on amendments to the Law of Ukraine “On Electronic Communications”); 2) Completion of the reform of state registers (bringing legislation in line with the Law of Ukraine “On Public Electronic Registers”); 3) Development of digital infrastructure in the regions, their rapid post-war recovery by combining the resources of local governments and business entities (work on the draft law on joint financing of digital infrastructure development) (*Komitet z pytanj...*, 2023).

In order to bring Ukraine closer to the EU digital market, the Committee ensured the adoption by the Verkhovna Rada of Ukraine of two key

European integration sectoral laws: 1) the Law of Ukraine “On Electronic Communications”, which established European approaches to the regulation of electronic communications and radio frequency spectrum, taking into account the provisions of Directive 2018/1972 of the European Parliament and of the Council of 11 December 2018 implementing the European Electronic Communications Code; 2) the Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine to Ensure the Conclusion of an Agreement between Ukraine and the European Union on Mutual Recognition of Qualified Electronic Trust Services and the Implementation of Legislation (*Komitet z pytanj...*, 2023).

Issues related to the implementation of Ukrainian legislation with EU legislation in the field of digital transformation remain prerogative in the Committee’s work in its plans for 2023.

According to the presentation, in September 2022, the Ministry of Digital Transformation set up a special working group to accelerate the implementation of blockchain in Ukraine and prepare a regulatory framework for the regulation of cryptocurrency companies. In addition, a separate working group has been formed together with the inter-factional association of MPs of Ukraine “Blockchain4Ukraine” to launch the national crypto ecosystem. A program is currently being prepared to develop a concept for the development of the digital economy and the use of virtual assets in it. The program is expected to last about a year, and the final concept will be approved as a government strategy.

On November 14, 2022, the inter-factional association of the Verkhovna Rada Blockchain4Ukraine and the public union Virtual Assets of Ukraine (VAU) signed a roadmap for the introduction of blockchain and Web3 technology in the public and private sectors of Ukraine. The main goal is to use blockchain and Web3 tools to implement a “decentralized paradigm of the digital economy in Ukraine”.

The main components of the roadmap implementation include: 1) Ukraine’s integration into the European Blockchain Partnership on the basis of a public-private partnership mechanism; 2) creation of a regulatory sandbox for launching blockchain and Web3 projects at the national level; 3) development of a blockchain property register to implement a mechanism for tokenizing real estate and land in Ukraine; 4) enhancing

cybersecurity to protect public resources and data in times of war; 5) preparation of a “blockchain recovery plan” after Ukraine’s victory.

Other projects include the introduction of technologies in the areas of healthcare, medical data storage and protection, education, including the digitalization of diplomas, and developments in the field of digital personality based on self-sovereign identity.

The coordinator of Blockchain4Ukraine and head of the supervisory board of the VAU noted that the project sets ambitious goals that “have no analogues in the world”. And one of the members of the board of directors of VAU added: “For me, as a scientist, the project to develop and implement a decentralized blockchain register of real estate and land at the national level in Ukraine is a huge challenge and at the same time the realization of my scientific work” (*V Ukrajinii Pidpysaly...*, 2022).

AIMS AND METHODS

The *purpose* of the article is to analyze Ukraine’s achievements in the period 2020–2023 in the field of digitalization of public services, governance, finance and other government initiatives related to the implementation of the GovTech policy. To achieve this goal, the following tasks are *set*: to review the aspirations and real achievements in the field of digital technologies in Ukraine declared by the State; to trace Ukraine’s participation in international digital projects; to study the exchange of Ukraine’s experience with other States in the field of digital technologies; to outline the trend of digitalization of the public sector of management and control as a promising one in the near future for implementation in developed countries, using Ukraine as an example.

The methodological basis of the study includes a combination of philosophical, general scientific and special legal methods of scientific knowledge. The chosen research methodology meets the tasks set and contributes to the creation of an optimal structure of the conclusions obtained and allowed to identify the main problems.

The structure of the article. In order to achieve the goal and formulate reasonable results, the study was structured in three sections: 1) Digitali-

zation of Ukraine: introduction of modern digital technologies; 2) Ukraine's participation in international digital projects; 3) Sharing Ukraine's digitalization experience with other countries.

RESULTS

1. DIGITALIZATION OF UKRAINE: INTRODUCTION OF MODERN DIGITAL TECHNOLOGIES

The digitalization of government processes not only makes life more convenient for Ukrainians, but also fights billions of dollars of corruption in various areas. In 2020–2021 alone, the anti-corruption and economic effect of the digitalization of public services amounted to UAH 16.3 billion. And the potential anti-corruption and economic effect of digitalization over two years is UAH 48 billion (*eAkcyz. Navishho...*, 2023). For example, the digitalization of the construction sector has saved the state over UAH 11.2 billion (V Ukrajinii Pidpysaly Dorozhnju Kartu z Rozvytku Blokchejnu, Web3, 2022).

1.1. Legalization of cryptocurrency (virtual assets). On February 17, 2022, the Parliament of Ukraine adopted the Law of Ukraine “On Virtual Assets” No. 2074-IX (hereinafter – Law 2074) (Pro virtualjni aktyvy, 2022), which was signed by the President of Ukraine on March 15, 2022. This law fully legalizes the circulation of cryptocurrencies in Ukraine at the legislative level. According to Clause 1 of Section VI “Final and Transitional Provisions” of Law 2074, the law itself will enter force: a) from entry into force of the Law of Ukraine On Amendments to the Tax Code of Ukraine, regarding the specifics of taxation of operations with virtual assets; b) implementation of the State Register of service providers related to the turnover of virtual assets, which is additionally specified in Clause 2 of Chapter VI of the Final and Transitional Provisions, as a limitation in the possibility of applying sanctions provided for in Article 23 of Law 2074. To fulfill Clause 1 of Chapter VI of Law 2074 and to put it into effect, the Parliament of Ukraine registered draft law No. 7150 with amendments to

the Tax Code of Ukraine (Podatkovyj kodeks Ukrajinjy, 2010) on 13.03.2022 (*Proekt Zakonu Pro vnesennja...*, 2022).

Since the adoption of the Law 2074 by the Parliament of Ukraine on February 17, 2022 and until the period of 2023, significant events have taken place. They have significantly affected the plans of the Parliament of Ukraine to launch mandatory amendments to the Tax Code of Ukraine provided for in the Draft Law 7150 and simultaneously enact Law 2074 starting from October 1, 2022.

Among such influential events is the fact that on June 23, 2022, Ukraine became a candidate for membership in the European Union. At the same time, the European Union has significantly updated the Crypto Asset Market Regulation (MiCA) (*Digital Finance*, 2022). Therefore, the relevant Law 2074 regulating virtual assets needs to be adapted to existing European regulatory mechanisms, including the Markets in Crypto Assets Regulation (MiCA) (Hrytsai, 2023).

The first edition (and based on the existing new European trends, we are sure that there will be subsequent ones) of the Law of Ukraine “On Virtual Assets”, has become an indicator that in the future Ukrainian companies and international investors will be able to work legally in Ukraine (Hrytsai, 2023).

1.2. State educational programs: cryptocurrency literacy. For the effective functioning of the cryptocurrency market, an important task of the state is to increase the level of literacy among the population. In 2021–2022, the team of experts of the Foresight “Virtual Assets 2030” also implemented a closed pilot project of the basic course with the support of the Ministry of Digital Transformation, which formed the basis for subsequent courses.

In 2023, a new training course from the Ministry of Digital Transformation in cooperation with WhiteBIT, the Filecoin Foundation for the Decentralized Web, and Atlantis.world has been prepared. It will allow Ukrainians to learn how to use virtual assets. The course program will include more than 100 hours of theoretical and practical information. The course topics cover the following educational areas: 1) history of money and technology development, blockchain and the first ever cryptocurrency

– bitcoin; 2) mining and Proof-of-Work and Proof-of-Stake consensus algorithms; 3) Ethereum and smart contracts; 4) cold and hot crypto wallets 5) exchange of crypto assets; centralized (CEX) and decentralized exchanges (DEX); 6) opportunities and risks of trading in the digital asset market; 7) basics of cyber hygiene; 8) decentralized protocols: such as IPFS and Filecoin, etc.

The educational process will take place in a simulator format. This will include practical work on specific cases on the platforms of the partner enterprises of the Ministry of Digital Transformation. At the same time, experts from various products and eco-systems are actively involved as co-authors of topics and tasks (Ministerstvo cyfrovoji transformaciji Ukrainy, 2022c). There are two formats of the educational process: for self-study on the Diia. Digital Education platform and as an elective in higher education institutions. As of the beginning of 2023, four online training modules have already been implemented (Osvitnij Projekt z Kryptogramotnosti Ta Blokchejnu, 2023).

1.3. Acquiring with virtual assets. Without looking at the process of forming the legislative framework in Ukraine, it is impossible not to mention the absence of a transparent legal framework. According to the global analytical online publication Chainalysis, as shown in Table 1, Ukraine ranks third among the world leaders in the use of cryptocurrencies.

Table 1. Chainalysis global index ranking of cryptocurrency adoption by countries in 2022

Total # of rating	Countries	No. by volume of DeFi transactions	No. by volume of Ce-Fi transactions	No. by trading volume on P2P exchanges
1	Vietnam	5	2	7
2	Philippines	4	66	13
3	Ukraine	6	39	10
4	India	1	82	1
5	USA	3	111	3

Source: Chainalysis, 2022.

As can be seen from Table 1, Ukraine is ahead of the tech giants in terms of the sum of indicators: USA – 5th place, China – 10th place, UK – 17th place (Chainalysis, 2022).

This is not the first time that Ukrainian businesses have picked up the crypto payment trend. The previous wave took place in 2017–2018, but payments did not become widespread. Currently, businesses have picked up the trend of introducing cryptocurrency payments again. This is because over the past 5–6 years, infrastructure solutions for crypto payments have caught up with market demands. “Five years ago, everyone wanted to make payments with crypto, but they did not understand how and what”, WhitePay CEO said in his interview with Forbes.

In 2019, major cryptocurrency players appeared on the Ukrainian market. Whitebit, a cryptocurrency exchange with more than 3.5 million users, launched WhitePay crypto processing. Binance, one of the world’s largest crypto exchanges, started testing crypto payments through its BinancePay crypto processing in 2021. The services developed by these crypto market players helped to accept payments from the buyer and send them to the seller of services or goods – the retailer. WhitePay has developed a payment terminal for offline outlets, having invested more than \$1 million, and BinancePay has introduced payment in stores via QR code. The director of the Ukrainian office of the cryptocurrency exchange Binance notes that they are preparing integration with 10 retailers in the near future: “We plan to announce a new partnership every month”. At the same time, WhitePay is negotiating integration with 45 companies (Meljnyk, 2022).

We assume that all of the above examples of the use of virtual assets are carried out through a banking service – acquiring, which takes place automatically. And this is despite the fact that virtual assets remain unregulated in Ukraine, as Law 2074 has not yet entered into force (Hrytsai, 2022e).

The widespread use of acquiring would be more logical after the entry into force of Law 2074 (Hrytsai, 2022a), when such a scheme will work through official service providers (Hrytsai, 2022f) on the turnover of virtual assets that have received the appropriate authorization (Hrytsai, 2022d) from the relevant market regulators in Ukraine (Hrytsai, 2022b, 2022c).

In 2020, Ukraine ranked tenth in the ranking of 25 countries with the highest profits from bitcoin transactions. The average profit of Ukraine from bitcoin transactions in 2020 reached USD 400 million. The Netherlands, Canada, and Vietnam had a similar level of profit. The top places in the ranking were taken by the United States with USD 4.1 billion, and China with USD 1.1 billion. USA, second – China with 1.1 billion USD, third – Japan with 900 million USD. The third place was taken by Japan with USD 900 million, followed by the United Kingdom with USD 1.1 billion. They are followed by the United Kingdom, Russia, Germany, France, Spain, and South Korea. (Chainalysis, 2021).

1.4. Digital hryvnia (CBDC). On January 13, 2023, TASKOMBANK announced the results of its pilot project to issue electronic money denominated in hryvnia. The report contains information for the National Bank of Ukraine and the Ministry of Digital Transformation of Ukraine on the benefits of issuing electronic money on the blockchain (Taskombank, 2023a, 2023b).

The basis for launching the pilot project in 2021 (Mincyfra z partneramy zapuskajutj pilotnyj proekt, jakyj dopomozhe v rozrobci e-ghryvni, 2021) were the innovations in Ukrainian legislation on electronic money, namely the adoption of the Law of Ukraine “On Payment Services” (Pro platizhni poslughy, 2021). Regulatory changes implemented in 2022 also played a significant role, allowing the NBU to improve the model and use the existing bank account system. The NBU submitted changes to the structure of customer payment accounts and e-wallets in accordance with ISO 13616 (hereinafter referred to as the IBAN standard). From now on, each payment account number of Ukrainian financial services companies consists of 29 characters (letters and numbers), as well as a bank account number. This will help unify all types of accounts and e-wallets. The main advantages of this approach include: acceleration of domestic transactions; users of payment accounts will be serviced on virtually the same terms as bank account holders (Goshovatyuk, 2022).

Thus, it can be argued that the pilot project was built on the basis of electronic money. This is confirmed by the commentary of Oleksiy Shaban, Deputy Chairman of the NBU Board, to the report submitted by Tascom-

bank: “Of course, due to the need to comply with regulations, certain functionality of the two systems was duplicated [...]”.

Taskombank has carried out an experimental issue of hryvnia in the form of electronic money issued on the blockchain network (hereinafter referred to as “Electronic Money” and “Pilot Project”). It is assumed that such form, method of issuance, distribution and circulation will have all the features and functions of electronic money, complying with the applicable provisions of the Regulation on Electronic Money of the National Bank of Ukraine. Regardless of the technological platform, the basic operating principles of interaction between participants in the “classic” electronic money system, their accounting, control and display remain unchanged and are based on the relevant existing practices agreed with the regulator (Hrytsai, 2022k; Taskombank, 2023a).

The pilot project of Taskombank on the issuance of electronic money on blockchain technology fully complies with the existing regulatory requirements, in particular, the Regulation on Electronic Money of the National Bank of Ukraine No. 481 (C. O. Hrytsai, 2022j; Pro vnesennja zmin do dejakych normatyvno-pravovykh aktiv Nacionaljnogho banku Ukrajinj z pytanj rehuljuvannja vypusku ta obighu elektronnykh ghroshej, 2010), is architecturally similar to the current scheme of interaction between system participants and ensures an appropriate level of accountability and control, (Pro zatverdzhennja Polozhennja pro vypusk elektronnykh ghroshej ta zdijsnennja platizhnykh operacij z nymy, 2022) – says the report on Tascombank’s pilot project.

In addition, the NBU will continue to operate within the current regulatory framework governing electronic money, including limits on transactions in the product environment. The decision was made to operate within the current regulatory framework governing the circulation of electronic money in Ukraine (including transaction limits), as sufficient for researching the technology and conducting operations in the product environment. (Nacionaljnij Bank Ukrajinj, 2019)

1.5. Digital platform DIJA: a breakthrough in digital technologies in Ukraine. In February 2020, the DIJA service was launched as a smartphone application in the AppStore and PlayMarket. And by the beginning

of 2023, the number of DIJA app users exceeded 19 million, and the availability of public services exceeded 70 types (*Poslughy onlajn na portali Dija*, 2023). More than 10 thousand operations of digital document sharing and validation take place every day. 60% of business startups in Ukraine are done online (Fedoriv, 2023; Fefelova, 2022).

The initiative of the DIJA project from the Ministry of Digital Transformation has been supported by USAID from the first days of its development, namely the creation of a mobile application and portal and 80% of public services used by Ukrainians in DIJA as of the beginning of 2023 (Telegram: Contact @mintsyfra, 2023c).

The Ministry of Digital Transformation plans to digitize all 100% of public services in Ukraine and provide the best service for Ukrainians. And to become the most convenient country in the world in terms of digital public services. All key public services are planned to be transferred to the DIJA application by early 2024 (Fedoriv, 2023).

For the first time in the world, on August 23, 2021, a biometric passport or ID card became a complete analogue of a paper or plastic document at the legislative level in Ukraine.

In 2022, we launched one of the most popular services for obtaining a residence certificate in the DIJA app. (Nam neobkhidno neghajno zavershyty leghalizaciju virtualjnykh aktyviv v Ukrajinu – vice-prem'jer Fedorov, 2022).

The DIJA portal allows you to obtain an extract from the Unified State Register (USR), which is another of the most popular documents for entrepreneurs. The service was developed by the Ministry of Digital Transformation jointly with the Ministry of Justice of Ukraine with the support of the EGAP Program implemented by the Eastern Europe Foundation with the support of Switzerland (Telegram: Contact @mintsyfra, 2023a).

1.6. E-projects. A number of separate electronic government projects are being developed or tested in Ukraine, most of them DIJA-compliant. Among them are: E-diploma, E-house, E-assistance, E-residency and a number of others.

E-Baby. This service allows you to register the birth of a child and obtain a child's birth certificate, as well as order up to 9 other public services required for a newborn child.

E-Housing. The first digital state mortgage. At the end of 2022, the E-House program, which had been in test mode since October 2022, was fully launched in the DIJA state application. From now on, Ukrainians can apply for a state preferential mortgage through DIJA. They will receive a response within a day, and all the necessary data for the application will be pulled from state registers automatically (TOP-10 podij na ukrajinskomu fintekh-rynku v 2022 roci, 2022).

E-Help. A digital platform to support Ukrainians. In March 2022, the state online platform for information, humanitarian and state support for the population, E- Help, was launched in Ukraine. The resource allows people to submit a request for assistance. E-Help connects those who need help with those who can provide it. Applications for assistance are accepted from all over Ukraine, and donations from sponsors are accepted from all over the world. You can even support Ukrainians using cryptocurrency (TOP-10 podij na ukrajinskomu fintekh-rynku v 2022 roci, 2022).

E-residency. In 2022, the Verkhovna Rada of Ukraine adopted the draft law on electronic residence in the second reading and in general (Proekt Zakonu pro vnesennja zmin do Podatkovogho kodeksu Ukrajiny ta dejakykh inshykh zakonodavchykh aktiv Ukrajiny shhodo osoblyvostej opodatkovannja pidpryjemnyckoji dijajnosti elektronnykh rezydentiv, 2022). A similar model has already been implemented in Estonia.

And as of April 1, 2023, the so-called law on electronic residence came into force. An electronic resident (e-resident) is a foreigner who has reached the age of 18, is not a tax resident of Ukraine, has received the relevant qualified electronic trust services and whose information is entered into the E-Resident information system. The E-Resident Information System is an information system that is an integral part of the Unified State Web Portal of Electronic Services, which collects, accumulates, processes, protects, records and provides information about an electronic resident (e-resident) (*Pro vnesennja zmin...*, 2022).

The Law provides for the possibility for foreigners to start a business in Ukraine online and remotely manage bank accounts, sign documents with an electronic signature, etc. Such business entities will pay 5% tax on income within the limit of the third group (simplified taxation system) of

individual entrepreneurs, and in case of exceeding the limit – 15% (Telegram: Contact @yzheleznyak, 2022; *V Ukrajinii Ukhvalyly...*, 2022).

E-excise (under development). There are very revealing cases when the sale of more than 50,000 bottles of alcoholic beverages with the same excise stamp was recorded. This suggests that 49999 times people bought “burned” vodka or that the funds from sales did not go to the budget. According to Kantar and Euromonitor international, Ukraine loses more than UAH 30 billion of state budget annually due to the shadow market for these excisable goods. The introduction of the electronic system aims to reduce the volume of the illegal market for these products and increase budget revenues from excise tax by 15% (*eAkcyz. Navishho Ukrajinii...*, 2023).

The Parliament of Ukraine has registered Draft Law No. 8286 “On Ensuring Electronic Traceability of Alcoholic Beverages and Tobacco Products, Liquids Used in Electronic Cigarettes”, which received 242 votes in the first reading: its optional draft law No. 8287 was supported by 321 parliamentarians. Draft Laws 8286 and 8287 take into account the requirements of the European Tobacco Directives to track the route of each product from production to the first retail outlet. A similar mechanism will apply to alcohol. It is envisaged that starting from January 1, 2025, manufacturers, importers, distributors, and retailers will be subject to the requirements for labeling tobacco products and alcoholic beverages and liquids exclusively with electronic labels (*Akcyz na alkogholj...*, 2023).

E-exise is an important anti-corruption project that will change the functioning of the entire sector. The transparent electronic system will work for both the state and the consumer, and will also curb bureaucracy for business. Ukrainians may be able to check the authenticity of alcohol and tobacco products through DIJA. If counterfeit products are detected, consumers will be able to instantly notify the controlling state authorities through the DIJA app.

The system is based on the European Tobacco track and trace system, which has been in place in the EU since 2019. All operations for the transportation, storage, and sale of each product unit will be recorded in the electronic system. The key element of the system will be an electronic excise tax stamp. This is a unique two-dimensional DataMatrix code that

will be applied to the product. The code is visually almost indistinguishable from a QR code, but contains much more data (*eAkcyz. Navishho Ukraini...*, 2023).

E-Diplomas (in development). During the European Blockchain Partnership (EBP) meeting in 2022, the Deputy Minister of Digital Transformation for IT Development said, among other things:

Ukraine is interested in studying the specification and documentation of the pilot project based on EBSI using Verifiable Credentials to verify Ukrainian educational diplomas. Studying the pilot project specification will allow us to understand the necessary parameters for the possible integration of the Ukrainian digital education architecture into the European blockchain infrastructure. The pilot project for the verification of Ukrainian educational diplomas has the potential to help our citizens overcome new challenges. In particular, those related to employment and continuing education in European educational institutions.

The CEO of the Virtual Assets of Ukraine public union and chairman of the Blockchain4Ukraine advisory group noted that the project envisages the recognition of Ukrainian higher education diplomas in 30 EBP member states. The development of Verifiable Credentials technology is provided within the EBSI, which is one of the elements of the European Commission's blockchain strategy. Universities or organizations will be able to verify the authenticity of a diploma using a QR code (*Vlada Ukrainy...*, 2022).

1.7. «DIJA.City» & IT & FinTex. «DIJA.City is a special legal and tax space that stimulates the development of the IT industry in Ukraine. An IT company registered in Ukraine can become a resident. It is attractive due to its openness (almost no corruption component) and low taxation. Corporate tax is 9% on “withdrawn capital” or 18% on profits. The payroll tax is 28.5%, including: 5% personal income tax, 22% unified social tax, and 1.5% military duty. Now, elements of English law are enshrined in Ukrainian legislation: the investment mechanisms familiar to foreign venture capitalists are available in DIJA.City. This will make it easier for

Ukrainian companies to access the necessary funding. The resident company will choose the format of hiring itself and, in addition to the standard formats (usual for Ukraine): Labor Code or cooperation with an individual entrepreneur; it can also sign a GIG contract available only to DIJA.City residents. Property rights to intellectual property belong to the customer (employer) by default. The parties may also agree on other terms and conditions by setting them out in the contract. Ukraine guarantees residents of DIJA.City the stability of conditions for 25 years, as well as the observance of the rights and legitimate interests of residents and specialists engaged by them (*Diiia.City*, n.d.)

“DIJA.City continues to grow rapidly. This is an important indicator that Ukraine has all the conditions for effective business. As of the beginning of April 2023, 500 companies are already residents of the space (Telegram: Contact @mintsyfra, 2023j).

The independent financial consulting organization deVere Group reports that the use of fintech services in Europe has increased by 72% due to the pandemic. This trend is due to the transition of businesses to online services as a result of the COVID-19 pandemic. This creates a demand for companies that can provide ease of doing business in a virtual environment.

Technological infrastructure is the leading activity of Ukrainian fintech startups, i.e., the direct product is the development of IT solutions for financial companies and banks. The most actively developing areas include payments/money transfers, lending, Legaltech, and Insurtech.

According to the Ukrainian Association of Fintech and Innovative Companies (UAFIC), 203 companies are currently represented on the Ukrainian fintech market, 49% of which operate on the international market. Most Ukrainian fintechs are represented in Europe (15%) and the United States (7%). UAFIC became the first non-EU member to join the European Digital Finance Association (EDFA). UAFIC conducted a survey and found that 22% of fintech companies operate in the technology and infrastructure sub-sector (Oghljad ukrajinsjkogho fintekh-sektoru, 2022).

In its report on the attractiveness of countries for IT outsourcing, Daxx, a Dutch software development and technology consulting company,

named Ukraine No. 1 IT offshore in Eastern Europe and the best country in the world for hiring programmers. In particular, Ukraine ranks first among such countries as Croatia, Romania, Belarus, Bulgaria, Czech Republic, Hungary, and Poland in terms of the cost per hour of software development. For example, in Ukraine, the cost is USD 30-60, while in Poland it is USD 45-69 (Fefelova, 2022).

1.8. PLATFORM – Modernization of state registers. The Government of Ukraine has adopted a decree according to which ministries and authorities will create new registers on a special Platform.

The Platform of Registers will allow not only to create new registers but also to gradually revise outdated ones. All data will be stored in an organized manner. All changes in the registers are recorded and made only through business processes. Therefore, no one will be able to change information in the registry illegally. The platform is in test mode and will soon be launched for testing by government agencies. This will speed up the launch of online services and digitalization in general. The work is being done by the Ministry of Digital Transformation jointly with the State Service for Special Communications. This will help to work effectively with information and protect the personal data of Ukrainians (Telegram: Contact @mintsyfra, 2023m).

Clarity Project launches Open Data Watchdog service. Open access to data is the basis of transparency and accountability of the government. That is why Clarity Project is launching the Open Data Watchdog service. This is a convenient tool that allows you to track actions with data sets on the Unified State Open Data Portal. From now on, every concerned citizen can monitor the changes that have taken place with the datasets. The change log will record all the actions of the data controller with the dataset (publication, editing, deletion), what exactly and when. Thus, the actions of data managers will become more open and transparent. Since its test launch in March, Open Data Watchdog has identified more than 160 deleted datasets. Such actions, for unknown reasons, may indicate ulterior motives of data controllers (Open Data Watchdog- Nabory Ta Resursy, 2023; Telegram: Contact @mintsyfra, 2023l).

1.9. Banking & NFC- technologies. NFC technologies, in particular their use by Apple Pay and Google Pay, which have emerged in Ukraine, have already become an influential force that has lured most users to their networks. In Ukraine, among other things, this technology is most often used to pay for purchases or public transportation: subway, trolleybus, and light rail (Fefelova, 2022).

On March 17, 2022, PayPal became fully operational in Ukraine. This service has been available until now, but we are now focusing on its full functionality for individuals. For a long time, users of the service in Ukraine could only make outgoing transactions. From now on, they can send and receive P2P payments, including international ones, transfer funds from a PayPal wallet to Visa/Mastercard credit and debit cards, and pay for online purchases from their wallet. However, accepting payments in favor of businesses is not yet available (*TOP-10 podij...*, 2022).

On August 01, 2022, the Law of Ukraine “On Payment Services” came into force. This law improves the national payment services market in line with the requirements of the Second Payment Services Directive (PSD2) and the Electronic Money Directive (EMD). Non-bank payment service providers will be able to open payment accounts and issue payment cards. The most important thing that this law provides is the creation of conditions in Ukraine for the introduction of the concept of “open banking» (Pro platizhni poslughy, 2021).

“Open Banking is scheduled to be launched in Ukraine by August 1, 2025. The National Bank of Ukraine, together with market participants, is developing a new regulatory framework and standards for the implementation of open APIs (Oghljad ukrajinsjkogho fintekh-sektoru, 2022).

1.10. E – Goods consignment note (E -GSN). The work on the E-GSN began in 2019.

According to the Law of Ukraine “On Road Transport”, the consignment note (GSN) is a single document for all participants in the transportation process (except for individuals who transport goods at their own expense and for their own needs). The document is intended for accounting of commodity and material assets (CMA) on the way of their movement, payments for cargo transportation and accounting of work

performed, which can be used for writing off CMA, posting, warehouse, operational and accounting records. The GSN can be drawn up both in paper and electronic form, indicating the mandatory details required by the Law and the rules of cargo transportation by road.

The initiator of the E-GSN project is the Ministry of Infrastructure of Ukraine, and technical support is provided by the Ministry of Digital Transformation. The implementation is supported by the USAID/UK aid project “Transparency and Accountability in Public Administration and Services/TAPAS” and with the participation of the NGO “Institute of Analysis and Advocacy”, which is the administrator of the E-GSN system for the period of project implementation.

It is planned that the document will be available in real time to all parties to the transportation of goods simultaneously – the sender, the consignee and the carrier. It will also allow for prompt settlements for transportation.

The launched innovative project envisages a gradual transition to E-GSN with the abandonment of paper GSN forms. The pilot project was planned to be launched on August 1, 2022. However, it was only in February 2023 that the pilot testing of the E-GSN project was launched. Starting from August 01, 2023, the use of E-GSN will become mandatory throughout Ukraine (Kabinet Ministriv Ukrajin, 2023).

1.11. Metaverse. Recently, Metaverse has become a hot topic of conversation and a major technological trend in the world. Facebook, Microsoft, Disney, and many other projects that want to move their operations to the “virtual world” claim it. (Apple, Its Control Over the iPhone, and The Internet, n.d.; Heath, 2021; Matthew, 2020; Mopi, 2022).

In 2022, at the Kyiv International Economic Forum, the Vice Prime Minister and Minister of Digital Transformation of Ukraine said: “I will also make a certain spoiler if we are talking about the Metaverse. We already have several MVPs in the direction of the Metaverse (Minimum viable product), where we want to start providing services and become one of the first countries in the world to do so. We are already working on the first service – we have several options – we are testing everything: for example, one of the services we want to launch is the ability to get married

or divorced in the Metaverse. We see potential in this (V Ukraïni mozhutj zapustyty mozhlyvistj odruzhytysja-rozluchytysja v metavsesviti – Fedorov, 2022).

2. UKRAINE'S PARTICIPATION IN INTERNATIONAL DIGITAL PROJECTS

2.1. The project “Digital Transformation for Ukraine” (DT4UA).

Through this project, the European Union is helping Ukraine to introduce efficient and accessible public services. It will be led by the Estonian Academy of Electronic Governance, which has been cooperating with the Ukrainian public sector for 12 years and helping to implement e-services. A total of €17.4 million is allocated for DT4UA. The funding will be used to: develop digital services and the DIJA application; improve data exchange between registries and government agencies; develop electronic identification infrastructure; improve the electronic criminal case management system (Telegram: Contact @mintsyfra, 2023e, 2023f).

2.2. European Blockchain Partnership (EBP). EBP members have access to the European Blockchain Services Infrastructure (EBSI). It includes cross-border electronic services. Among other things, it provides for mutual recognition of diplomas, driver's licenses, and the abolition of notarization of documents.

Ukraine's accession to the EBP was initiated by the head of the inter-factional parliamentary association Blockchain4Ukraine and the head of the NGO Virtual Assets of Ukraine. They had previously sent a letter to the President of the European Commission Ursula von der Leyen regarding the creation of a unified blockchain infrastructure.

Ukraine became the 30th country and the second country outside the European Union after Norway to participate in the project on the use of blockchain technology to provide cross-border public services.

Ukraine's representative in the EBP is the Deputy Minister of Digital Transformation for IT Development. Ukraine's global goal from participating in the project is to create a pan-European blockchain and integrate the digital economic space of the EU and Ukraine. The next step will be

to expand the network of interstate blockchain partnerships between Ukraine and other countries.

“Ukraine’s integration into the European Blockchain Partnership will strengthen joint work on the implementation of blockchain technology in state registries and services, as well as contribute to the creation of a highly efficient regulatory environment, in particular for the virtual asset market,” said the Deputy Minister of Digital Transformation for IT Development (Ukrajina pryjednalasja do Jevropejsjkogho Blokchejn Partnerstva v statusi sposterighacha, 2022).

Subsequently, Ukraine announced its desire to gain access for local companies to the pan-European regulatory sandbox for DLT technologies.

2.3. Digital Europe Program. The goal of the Digital Europe program is to accelerate economic recovery and digital transformation.

In June 2022, Ukraine joined the European Blockchain Partnership as an observer, and in September it joined the Digital Europe program. (Ukrajina pryjednalasja do Jevropejsjkogho Blokchejn Partnerstva v statusi sposterighacha, 2022). Ukraine has joined the Digital Europe Program until 2027. This program provides funding for the digitalization of European countries in various areas (*Digital Europe Programme (DIGITAL)*, 2023). Participation in the Program will bring Ukraine closer to the EU’s Digital Single Market.

The total fund of the Digital Europe Program is EUR 7.5 billion. About EUR 6 billion is provided to finance projects in the areas of the Program that are available to Ukraine. They will be allocated for 7 years.

In total, there are four main areas available for Ukraine to receive funding: 1) High Performance Computing – €2.2 billion, to finance projects that compute large amounts of data for solutions in the economy, healthcare or defense industry; 2) Artificial Intelligence, Data and Cloud Services – €2.1 billion, to finance projects that create AI-based products to facilitate the work of businesses, government agencies or research institutions; 3) Digital skills – €580 million, for projects that create opportunities for acquiring new skills in the IT sector; 4) Use of digital technologies in the economy and society – €1.1 billion, for projects that implement digitalization in business or in the field of e-government, healthcare, environment,

education and culture, and Smart City technologies (Ministerstvo cyfrovoji transformaciji Ukrajiny, 2022a)..

The cybersecurity area is closed to Ukraine, as it is not a member of the EU. However, countries' participation in the Digital Europe Program requires payment of contributions. However, the EU has exempted Ukraine from paying them in 2021-2022 and granted a 95% discount on financial contributions in 2023-2027 (Ukrajina doluchylasja do Proghramy «Cyfrova Jevropa», 2022).

2.4. International Association for Trusted Blockchain Applications (INATBA). In September 2022, the inter-factional association of MPs Blockchain4Ukraine joined the advisory board (GAB) of the international association INATBA. This association was founded in 2019 and aims to implement blockchain technology at the national and international levels. The GAB includes representatives of 24 countries and various organizations, including the European Commission, the European Bank for Reconstruction and Development, the World Trade Organization, and others. The official representative of Ukraine is the head of Blockchain4Ukraine and one of the authors of the relevant Law of Ukraine "On Virtual Assets". (Blockchain4Ukraine Uvijshlo Do Konsuljtatyvnoji Rady Blokchejn-Asociaciji INATBA, 2022).

2.5. Memorandum of cooperation with the Lisbon Council. Building a digital society is one of the main areas of work of the Lisbon Council. It is a powerful think tank and political network that brings together politicians and public figures from all over Europe.

In 2023, the Ministry of Digital Transformation signed a Memorandum of Cooperation with the Lisbon Council, which opens up new opportunities for the development of GovTech initiatives. Thanks to the Memorandum, Ukraine will be able to work on technological solutions together with European countries and join the GovTech4all incubator. In the future, Ukraine will be able to participate in the incubator's pilot projects. This will allow us to use DIIA to develop digital services and documents together with our European colleagues. This is a four-year initiative of 21 partners with a budget of €12 million. It is funded by the Digital Europe

Program and coordinated by the Lisbon Council (Telegram: Contact @mintsyfra, 2023g).

2.6. Electronic signature of Ukraine – European format. When you activate DIJA. Signature” application, two options will be automatically created in the application: according to the Ukrainian standard (DSTU) and the international standard (ECDSA). If necessary, you can choose the desired option. At the same time, the signing process itself has not changed. It has been announced that the functionality will be scaled to all available platforms later (Telegram: Contact @mintsyfra, 2023k).

Ukraine and the United Kingdom signed a Digital Trade Agreement. The first such agreement was signed with Singapore. Ukraine has become the second country in the world to sign a Digital Trade Agreement with the UK. In general, the agreement is intended to deepen Ukraine’s participation in the global economy and positively affect its image as a reliable trading partner. Among other things, the agreement provides for: consolidation of basic freedoms for trade in digital goods and services between the countries; strengthening of the Ukrainian-British investment partnership; Ukrainian IT companies will have free access to digital markets. In summary, all of this will allow Ukrainian businesses to trade with the UK more efficiently and cheaply through electronic transactions, digital signatures, and e-contracts (Telegram: Contact @mintsyfra, 2023h).

3. SHARING UKRAINE’S DIGITALIZATION EXPERIENCE WITH OTHER COUNTRIES

The Vice Prime Minister and Minister of Digital Transformation of Ukraine met with the Administrator of USAID during the World Economic Forum 2023 to discuss further partnership in promoting Ukraine’s digital transformation experience. In 2023, USAID will allocate \$60 million to strengthen Ukraine’s cybersecurity (Telegram: Contact @mintsyfra, 2023d).

Ukraine’s innovations in service delivery are of great interest and demand among other countries. The DIJA app has won dozens of international awards and has been recognized as the best in the world in many respects. Now foreign countries are starting to build their own applications

based on the DIJA code (Fedoriv, 2023). More than 10 countries are already actively studying and planning to adopt the DIJA experience. USAID plans to provide about \$650,000 in assistance to develop an approach to implementing DIJA's analog in other countries. Ukraine's experience in building a digital state will help other countries provide convenient services and manage them effectively (Telegram: Contact @mintsyfra, 2023c).

Together with its European partners, the Ministry of Digital Transformation presented an international initiative – Digitality – aimed at the digital transformation of other countries. The initiative will be implemented in 2023 and will strengthen cooperation between Ukraine and other countries in digital solutions.

Estonia. The Ministry of Digital Transformation has recently distributed the DIJA program code for Estonia, and they are creating their own mobile application with services based on it. Estonia is considered the most digital country in Europe. According to the Vice Prime Minister of Digital Transformation of Ukraine, the Estonian government is impressed by DIJA's experience.

At the World Economic Forum 2023, during the DIJA Reels event, the Ministry of Digital Transformation presented an update of the DIJA ecosystem. In cooperation with Estonian colleagues, the DIJA team shared the application code and approaches to UX/UI design. The Estonian application “mRiik” was presented, which is an analog of the Ukrainian DIJA. Starting February 2023, mRiik will be available in test mode, and its full launch is planned for mid-2023.

Ukraine is ready to assist in the implementation and development of digital services and digital tools in Estonia and around the world (Telegram: Contact @mintsyfra, 2023b).

Austria. In the same direction, the Ministry of Digital Transformation met with the Austrian government, which is currently working on launching digital documents in a “one-stop shop” application that works on a similar principle to DIJA. The team of the Ministry of Digital Transformation is helping them with this. A few months ago, the Ministry of Digital Transformation provided the Austrian government with advice on a digital driver's license, and they have already launched it.

Poland. In addition to the Austrian government, the Ministry of Digital Transformation signed documents and made a technical solution with partners from the Polish government. This will be the first cross-sharing of documents in the history of the EU and the world: driver's licenses, technical passports will be transferred from DIJA to the Polish application "mObywate".

European Union. The Ministry of Digital Transformation is involved in what is happening in the EU. Experts of the Ministry of Digital Transformation are involved in the European Commission's group dealing with ID-Wallet and participate in the development of this product (Nam neobkhidno neghajno zavershyty leghalizaciju virtualjnykh aktyviv v Ukrajinu – vice-prem'jer Fedorov, 2022).

DISCUSSION

In our discussion, we will start from the findings of Kreston Ukraine research, which identified the areas of work of GovTech technologies: 1) Digital currencies. 2) Digital identification. 3) Cybersecurity. 4) Hyper-automation. 5) Modernization of the state IT infrastructure. 6) Artificial intelligence technologies. (*The Global Market of Govtech Solutions: Analytical Overview*, 2023)

We interpreted them based on Ukraine's actual achievements in 2020–2023:

1. The cryptocurrency ecosystem, the formation of which was initiated by the adoption of the Law of Ukraine "On Virtual Assets" (which has not entered into force), is only at the stage of its formation as of the beginning of 2023, and there are at least two reasons for this: 1) there are no amendments to the Tax Code of Ukraine as a prerequisite; 2) the announcement of the MiCA Regulation by the European Commission and the need to implement it in the Law of Ukraine "On Virtual Assets".

2. The Ministry of Digital Transformation has introduced a line of training courses for the population as one of the steps in implementing the global strategy: at a minimum, to familiarize the majority of Ukrain-

ians with decentralized technologies; and at most, to teach 50% of the population to use virtual assets (cryptocurrency) by the end of 2030.

3. Despite the lack of a cryptocurrency legal framework in Ukraine. In the last 2022-2023, acquiring operations have been widely used: that is, agreements are concluded between the bank and service providers, where cryptocurrencies are converted into the national Ukrainian currency.

4. The results of the pilot projects on the introduction of digital money conducted by the NBU in 2018 and Tascombank in 2021-2023, namely, the legal framework for their implementation: give rise to the conclusion that the future legal basis for the introduction of CBDC in Ukraine will be the existing legal framework for electronic money.

5. DIJA is a real digital revolution that was presented in September 2019 in the virtual spaces of Ukraine. This is the digital state in action, which is similar to the name of the DIJA app. Ukraine is beginning to introduce a “paperless” regime, which is likely to make public services more transparent, faster, and reduce corruption. More than 70 necessary and convenient public services are being developed in the DIJA state application. As the most striking example, for the first time in the world, a biometric passport or ID card has become a complete analog of a paper or plastic document at the legislative level. The introduction of E-diplomas may help to facilitate the complex procedure for the recognition of Ukrainian diplomas abroad with the start of using a QR code to confirm the validity of an educational document. E-residency (for foreigners) opens up additional investment opportunities for Ukraine.

6. The digital signature implemented in DIJA has been compliant with EU standards since 2023, but at the beginning of the year it was only in beta test. This allows Ukrainians to sign European contracts and documents using the new application “DIYA. Signature-EU”. It can be used in the EU countries as an advanced electronic signature that meets all the technical requirements of the European Union.

7. A new “Platform” was created – Modernization of State Registers, which is intended to modernize about 450 state registers of Ukraine, of which 80% are technologically outdated and vulnerable to cyberattacks (Telegram: Contact @mintsyfra, 2023m).

8. It is also worth noting that Ukraine ranks 4th in the world in terms of the frequency of payments with mobile devices using NFC technology (Fefelova, 2022).

9. Ukraine is actively cooperating with the Digitality platform, which helps countries that want to introduce digital products into government structures by sharing the successful experience of other countries (Ukraine, Estonia, Poland and others).

CONCLUSIONS

1. In 2022–2023, Ukraine became a member of numerous digital projects and programs that have a GovTech context: “Digital Europe, Digital Transformation for Ukraine (DT4UA), European Blockchain Partnership (EBP), International Association for Trusted Blockchain Applications (INATBA), Memorandum of Cooperation with the Lisbon Council.

All of this will accelerate Ukraine’s digital transformation, promote economic development, and demonstrate Ukraine’s chosen path to the state ideology of “GovTech”.

2. One of the main goals of “GovTech” solutions is to improve the quality-of-service delivery, administrative work, management efficiency, etc. And the ideology of “GovTech” can be expressed in a message to people about two vectors of their future existence in modern countries: where instead of analog officials and certificates, “paperless” will work, and instead of cashless currency, CBDC in a smartphone.

3. Given the achievements of Ukraine in 2020–2023, it can be argued that ordinary Ukrainians do not fully realize how digitized their lives are, and that this is the practical “GovTech” in “DIY” (for example, for the first time in the world at the legislative level, a passport of a citizen of the country in the “cashless” mode).

4. Ukraine’s successful experience in forming a GovTech e-state has begun to spread in Estonia, Austria, Poland and other EU countries. This shows a trend in the future development and formation of the interna-

tional GovTech format, in the form of a certain future standard (we are sure that it will be developed in the future).

5. The research has shown that there are legal difficulties on the way to creating a precedent for Ukraine to form an international GovTech format. The Ministry of Digital Transformation has signed documents and made a technical decision with partners from the Polish government on the first in the history of the EU and the world “cross-sharing of documents”: driver’s licenses, technical passports that will be transferred from DIJA to the Polish application “mObywate”. This raises a number of natural political and legal issues.

First of all. What legal framework will regulate this exchange of information between Poland and Ukraine? Since this project is aimed at transferring personal data of Ukrainians. And such a regulatory framework has not been formed as of the beginning of 2023 (there are no draft laws). The introduction of the interstate GovTech format requires separate legal regulation.

Secondly. Will such an exchange be in both directions, or will only the Ukrainian government transfer personal data of Ukrainians to the Polish government? This is an important issue of a fair balance of bilateral state agreements when introducing the interstate GovTech format, which also lacks relevant legal developments.

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