Position paper on Ukraine Digital Policy

1. Introduction

As the digital economy continues to expand worldwide, countries are realizing the importance of technology sectors and digital policy frameworks. In this context, Ukraine is standing out. Despite being in a state of conflict for nine years, and having faced a full-scale invasion by Russia for over two years, the Ukrainian government has successfully implemented significant digital reforms. These reforms have brought about a transformation in the country's economy, governance, and public services. As a result, Ukraine has emerged as a leader in digitalization globally. It was the first country to legally recognize a digital ID and was among the early adopters of a digital COVID-19 certificate in Europe. Ukraine has secured the sixth position in Europe for open data and ranks fourth globally in terms of its number of skilled IT professionals.

The IT Association of Ukraine recently released data showing a significant increase in the country's IT export sector from 2016 to 2021, with figures reaching nearly $7 billion per year. Despite the ongoing conflict, Ukraine's technology industry has emerged as the most resilient and dynamic part of its struggling economy over the past eighteen months during Russia's intensive invasion. The tech sector has not only survived but also grown and developed. Going forward, Ukrainian technology companies are expected to play a crucial role in the country's defensive efforts and economic recovery.

Prior to the conflict with Russia, Ukraine's economy was heavily reliant on industries such as oil, gas, food, and metals. However, due to the closure of key Black Sea export channels, there was a nearly 30% drop in Ukraine's GDP last year, which adversely affected various industries including agriculture, which experienced a 24% decrease in exports. Nevertheless, the information technology (IT) and fintech sector in Ukraine has been flourishing amidst the conflict. In 2022, IT was one of the few economic areas that showed growth. While the overall service exports fell by 6% in the first eight months compared to the previous year, IT exports saw a 16% increase year-over-year, according to data from the Ukrainian government. Currently, the technology sector represents almost half of Ukraine's service exports.

Ukraine's tech market has experienced remarkable growth due to its robust educational system, which produces tens of thousands of IT graduates each year. The country's highly skilled workforce and favorable business environment have attracted both domestic and foreign investments, leading to this growth. Ukraine's success can be attributed to a combination of entrepreneurial spirit, skilled workforce, and supportive government policies. As a result, Ukraine has become a significant digital hub in Eastern Europe, which has enhanced its economy and reputation in the region.

The impressive growth of Ukraine's tech sector is a valuable asset for the European Union. By incorporating Ukraine into its fold, the EU can significantly improve its digital competitiveness globally. This is not just a political or economic consideration, but also a strategic move in the digital realm. The inclusion of Ukraine promises mutual benefits, where the EU can enhance its digital landscape while providing Ukraine with a stable and prosperous platform for further growth and development.

2. The State of Ukraine's Technology Sector before war

Ukraine had already started its journey towards digital transformation even before the war. However, after the European Union and Ukraine executed the Association Agreement, the country's digitalization significantly accelerated. The objective of this development was to achieve the country's key goals in information society development, which were consistent with the European standards for societal progress. These standards included adherence to the principles outlined in the *Digital Agenda for Europe initiative of 2010* and the *Europe 2020: Strategy for smart, sustainable, and inclusive growth*[1].

The alignment mentioned in the context is of utmost importance for Ukraine's progressing digital landscape. In 2016, the Ukrainian government followed the EU's strategy and adopted The Digital Agenda of Ukraine. The document emphasized digital transformation as a crucial trend and established it as the base for introducing innovations, along with new values and features[2].

Since then, Ukraine has taken many steps to accelerate its digital transformation. In 2016, the country successfully implemented two electronic systems: ProZorro for public procurement and e-Health for healthcare. These systems received positive assessments from the World Bank's 2017 report, highlighting the significant progress Ukraine has made in the realm of public procurement[3]. ProZorro, in particular, scored an impressive 86 out of 100 in the "Bid opening, evaluation, and contract award phase" indicator. It has not only shown remarkable efficiency and effectiveness but has also surpassed the performance of high-income OECD member countries like Norway, the United Kingdom, Switzerland, Finland, Luxembourg, Sweden, the Czech Republic, Portugal, Slovakia, and Greece. This achievement is even more significant as it outperforms lower-income countries such as Lithuania, Latvia, Croatia, Serbia,

---

[1] https://www.europarl.europa.eu/factsheets/en/sheet/64/digital-agenda-for-europe
[2] Development of Digital Economy as an Element of the Social Development Strategy in Ukraine
[3] https://www.oecd.org/ukraine-hub/policy-responses/public-procurement-in-the-post-war-reconstruction-of-ukraine-main-challenges-c427b561/

and others in the region. Overall, Ukraine has taken a noteworthy milestone towards transparency and efficiency in public procurement[4].

However, the government's efforts towards digital transformation lacked clarity and coordination before 2018. These attempts were primarily driven by both international and domestic IT companies. Despite the issuance of multiple strategic frameworks, the lack of a dedicated lead resulted in only minor advancements. The initiatives undertaken were often unconnected and lacked a coordinated strategy, highlighting the need for a more structured approach to the government's digital transformation efforts.

Since 2018, the government of the country, led by a group of experts, has been working tirelessly to develop and implement fundamental measures to enhance the growth of the digital economy and other sectors. To kickstart and speed up the digital transformation process, more than 100 IT professionals from the Ukrainian non-governmental "HiTech Office" collaborated to draft the Concept Paper on Digital Society and Digital Economy development. They identified key initial actions for its rollout. This collaboration led to the establishment of the Coordination Council, formed in conjunction with the Cabinet of Ministers. The Council, consisting of government officials and leaders from the expert groups, was set up to steer the country's digital transformation efforts.

As a result, in January 2018, Ukraine adopted the "Concept for the Development of the Digital Economy and Society of Ukraine for 2018–2020." This concept provides a comprehensive plan for digital advancement across multiple sectors, including digital infrastructure, digital skills development, the creation of digital jobs, public safety, education, healthcare, tourism, environmental conservation, the promotion of cashless transactions, and alignment with European and global scientific initiatives, among others[5]. The concept defined the following digitization goals:

- Stimulating the country's economy and attracting investment;
- Creating the basis for the transformation of domestic industries toward increased competition and efficiency via digitalization;
- Solving the domestic problem of the digital divide, thus bringing digital technologies closer to citizens and providing them with access to broadband Internet—especially in villages and small towns;
- Creating new opportunities for the realization of human capital, the development of innovative, creative and digital industries and businesses;

[4] Digitalisation of public procurement: The case study of Ukraine
[5] https://eufordigital.eu/library/adopting-the-digital-economy-and-development-concept-of-ukraine-for-2018-2020-and-action-plan-for-its-implementation/

● Developing more exports of digital products and services—IT outsourcing[6].

During this period, Ukraine launched its 4G internet services and saw an increase in telecom investments. The government also enacted new laws to protect electronic signatures and ensure cybersecurity, including the "On Electronic Trust Services" law and the "On the Main Provisions for Ensuring Cybersecurity in Ukraine" law. These measures aimed to safeguard the interests of the national community in cyberspace[7].

The implemented reforms have not only had a direct economic impact but have also contributed to the growth of the IT sector in Ukraine. The State Statistics Service of Ukraine reported that in the first three quarters of 2018, the export of services from Ukraine exceeded $8.769 billion. Among the service categories, computer services ranked third, behind only goods processing services within the country and pipeline service. In the same period, the IT sector contributed $1.5 billion to the economy, accounting for 16.7% of Ukraine's total service export volume[8].

UKRAINIAN SERVICE EXPORT VOLUME,
according to the State Statistics Service of Ukraine (in million US$)

□ All Ukrainian service export   ■ ICT services export   Source: [42]
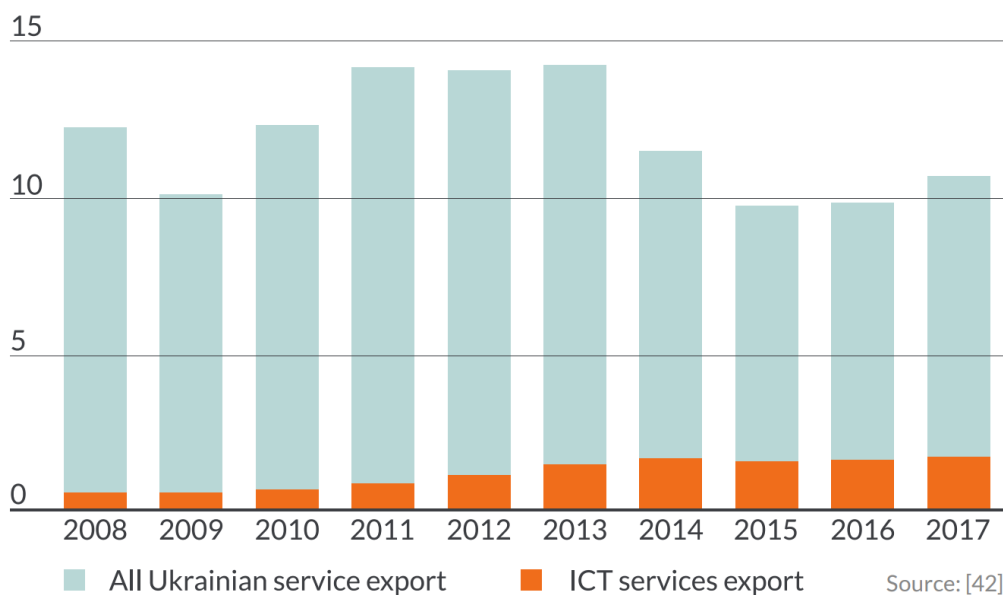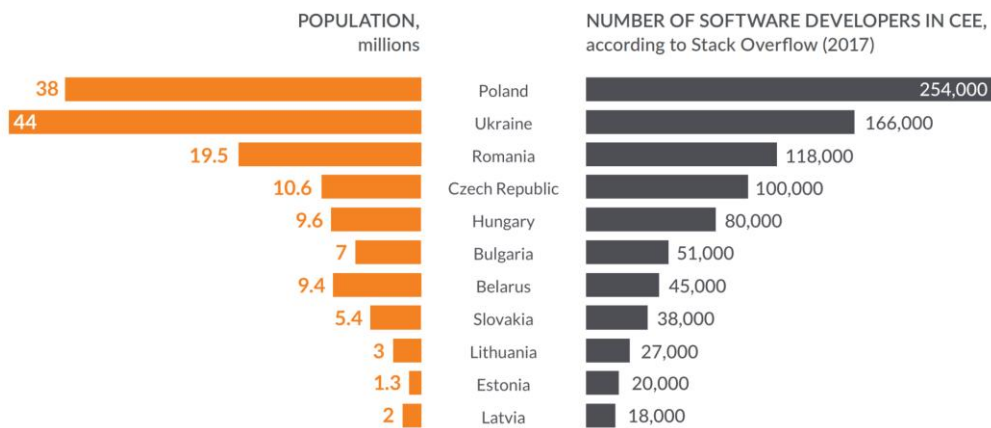
According to an analysis conducted by PwC, the information technology market witnessed a 150% growth between the years 2011 and 2015.

---

[6]https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2020/5G_EUR_CIS/5G_Ukraine-final.pdf

[7] https://ccdcoe.org/uploads/2018/10/NationalCyberSecurityStrategy_Ukraine.pdf

[8] https://eufordigital.eu/wp-content/uploads/2019/10/Ukr-report-29.pdf

Union of Entrepreneurs and Employers | ul. Nowy Świat 33
00–029 Warsaw | **T:** +48 22 826 08 31
E: biuro@zpp.net.pl | **www.zpp.net.pl**
NIP: 522-295-88-64

As a result, Ukraine emerged as one of the leading IT outsourcing destinations in the CEE region by 2017. In a comparison of CEE countries, Ukraine was found to have the largest IT talent pools in the region. It is noteworthy that the industry experienced a significant upswing after the 2014 political crisis. During this time, Ukrainian IT services became increasingly appealing to investors due to the cost advantages driven by inflation.

POPULATION, millions

Country	Population (millions)
Poland	38
Ukraine	44
Romania	19.5
Czech Republic	10.6
Hungary	9.6
Bulgaria	7
Belarus	9.4
Slovakia	5.4
Lithuania	3
Estonia	1.3
Latvia	2

NUMBER OF SOFTWARE DEVELOPERS IN CEE, according to Stack Overflow (2017)

Country	Developers
Poland	254,000
Ukraine	166,000
Romania	118,000
Czech Republic	100,000
Hungary	80,000
Bulgaria	51,000
Belarus	45,000
Slovakia	38,000
Lithuania	27,000
Estonia	20,000
Latvia	18,000

3. Central Force Behind Digital Transformation of Ukraine

The digital transformation of Ukraine has gained significant momentum after the younger generation politicians came to power in the post-2019 election period. In 2019, Ukraine's newly elected President, Volodymyr Zelensky, launched an ambitious initiative called "State in a Smartphone". Following this announcement, the newly appointed Minister of Digital Transformation (MDT), Mykhailo Fedorov, rolled out a comprehensive strategy to bring this vision to life. The objective was to fully digitize all governmental services within three years, implement smart ID technology, and streamline citizen interactions with the government, reducing them to a simple touch on a smartphone. The newest Ministry has outlined specific objectives to be accomplished by 2024:

- 100% of public services should be available to citizens and businesses online;
- 95% of transport infrastructure, settlements and their social facilities must have access to highspeed Internet;
- 6 million Ukrainians should be involved in the digital skills development programme;

Union of Entrepreneurs and Employers

ul. Nowy Świat 33
00-029 Warsaw

T: +48 22 826 08 31
E: biuro@zpp.net.pl

www.zpp.net.pl
NIP: 522-295-88-64

- the share of IT-industry in the country's GDP should be at least 10%[9].

Ukraine started its journey towards digital transformation by implementing a legal framework that guarantees the basic digital rights of its citizens. This framework includes provisions for affordable broadband internet access, as well as cost reductions for technology, such as software and hardware. The government has identified 94 digital transformation projects that aim to improve various sectors of Ukraine's economy and society[10]. Several projects in Ukraine were either completed, scheduled for launch by the end of 2021, or in the planning stages for 2022. These projects represent the country's significant digital transformation across its economic and social landscapes.

The transformation effort was a collaborative initiative involving various ministries and legal entities, led by the MDT. The collective effort aimed to achieve innovation, make business processes more accessible, and provide efficient e-services. In the public sector, organizations combined cyber and physical systems, balancing traditional and modern approaches. This strategy resulted in process optimization, new business models, and customized services.

The public authorities in Ukraine offer a wide range of e-services, including justice, law enforcement, healthcare, education, welfare benefits, and public order. Each service has undergone a different level of digital transformation, with some having minimal human intervention thanks to automation. The goal is to have a fully functional online public service system that can proactively meet user needs.

The progress of Ukraine's digital agenda is based on the existing laws governing the digital economy, telecommunications, and digital infrastructure. This progress has also been supported by advancements in cashless payments, e-commerce (e-Trade), digital security (e-Trust), and cybersecurity measures. The MDT Smart City project is a testament to the government's confidence in its ability to initiate and oversee extensive ICT ecosystem projects at the local level, which are based on the developed legislative frameworks.

The digital transformation of Ukraine was centered around moving public services online and fully digitizing government operations. The goal was to provide comprehensive digital services that would improve the digital interaction between the public, government, and businesses. As part of this, a key government objective was to improve the digital literacy of its citizens, ensuring they could effectively access and use online government services and digital platforms.

---

[9]https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Publications/2021/Digital%20Skills%20Development%20%E2%80%93%20Ukraine%20%E2%80%93%20Good%20practice%20case%20study.pdf

[10] https://ukraine.un.org/sites/default/files/2021-12/CCA_UN_Ukraine_November%202021_2.pdf

Union of Entrepreneurs and Employers | ul. Nowy Świat 33
00–029 Warsaw | **T:** +48 22 826 08 31
E: biuro@zpp.net.pl | **www.zpp.net.pl**
NIP: 522-295-88-64

However, the biggest challenge to progress in digitization, affecting both public services and the IT sector, is the country's inadequate broadband internet infrastructure. According to data from the ITU, internet access in Ukraine has grown significantly, from 0.72% in 2000 to 23.30% in 2010, and further to 62.55% in 2018, with the majority of users in urban areas[11].

Despite the technological advancements made in recent years, there remains a significant gap between the quality of digital infrastructure in urban and rural areas. As of 2020, more than 17,000 settlements in Ukraine, which equates to approximately 65% of all villages, or roughly 5.75 million people, still do not have access to high-quality broadband internet. In rural areas where fiber optic cables are not present, connection costs are approximately 150% higher than the market average. Furthermore, a comprehensive audit carried out by the Ministry of Digital Transformation in December 2020 revealed that over 15,000 Ukrainian villages, with a total population of 3.2 million people, do not have access to fiber optic cable connectivity[12].

A major goal of the MDT has become the modernization of the telecommunications infrastructure. In May 2019, on the World Radio Day, the President of Ukraine issued a decree to initiate the deployment of a 5G network in the country[13]. This move mirrors the government's previous strategies employed for the introduction of 3G and 4G networks.

In just two years since the establishment of the Ministry of Digital Transformation, Ukraine has made significant progress in digitization. Prior to the war, the country's technology sector contributed more than 4% to the nation's GDP, making it one of the fastest-growing markets globally. In 2021, the IT development sector in Ukraine exported IT services worth $6.8 billion, marking a 36% increase from the previous year. Around 20% of Fortune 500 companies use Ukrainian IT services, attracted by the country's supportive governance approach, favorable tax regulations, and the thriving tech industry[14].

In recent years, Ukraine has emerged as a significant player in the global technology sector, attracting companies from Western Europe, North America, and Asia. According to the IT Ukraine Association, as of early 2022, the country had more than 285,000 IT professionals and over 4,000 tech firms. The IT industry in Ukraine has demonstrated exceptional capabilities in various fields, including Fintech, Banking, E-commerce, Healthcare, Transportation, Logistics, Retail, Education, and Entertainment. Some of the major companies that have established R&D centers in different cities of Ukraine include Amazon, Google, Oracle, and Samsung.

---

[11]https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2020/5G_EUR_CIS/5G_Ukraine-final.pdf
[12]https://www.osw.waw.pl/en/publikacje/osw-commentary/2021-08-23/digitisation-ukraine-anatomy-a-success-story
[13] https://www.usubc.org/site/recent-news/ukraine-to-launch-5g-in-2020
[14] https://hi-tech.org.ua/fortune-500-companies-rely-on-ukraine/

Ukraine was becoming increasingly recognized as a popular destination for offshore and nearshore outsourcing, especially in digital engineering and IT skills, before the war. With a workforce of around 30,000 people in third-party service roles, Ukraine has been serving a diverse range of industries, including banking, retail, automotive, and healthcare. This has positioned Ukraine not just as a growing player in the tech world but also as a versatile contributor to various critical global industries[15].

For example, GitLab, which focuses on code development software and was initiated by a Ukrainian, has reached a valuation of $2.7 billion. Genesis, based in Kyiv, has amalgamated several startups into a collective worth of around $1 billion[16]. One of the most well-known Ukrainian startup stories is Grammarly. Founded in 2009 by three Ukrainians, Grammarly is categorized as a "unicorn company" (a private company valued at over $1 billion). The company has offices in San Francisco, New York City, and Vancouver, along with a significant presence in Kyiv.

4. World leading e-government

In 2020, the Ministry of Digital Transformation presented the Diia app, which became a game-changer in Ukraine's digital state ambitions. The brand name "Diia" represents the concept of a digital state as a national brand, developed in Ukraine. Its name translates to "action" in Ukrainian and also stands as an acronym for "state and me," encapsulating the ethos of efficient interactions between citizens and the government.

Diia is a web portal and mobile app that represents Ukraine's e-governance brand. Users can easily access their driver's license, passport, file taxes, or sign petitions through their mobile devices. The app was first unveiled on February 6, 2020, and an enhanced version, Diia 2.0, was launched during the Diia Summit on October 5, 2020. This update marked a significant evolution of the application and web portal. The initiative streamlines service delivery for citizens and improves the efficiency of government officials. Diia's launch unified various agencies into one comprehensive tool, enabling swift, clear, and straightforward access to digital services. The platform ensures that public services are accessible, transparent, and available when and where needed.

Diia is an ecosystem created by the government that offers a variety of services. It's accessible through a mobile app or a web portal. Diia Education is dedicated to educational services, while Diia Business assists small and medium-sized businesses. Additionally, the platform provides administrative services through both the website and app. Diia City is an exclusive initiative aimed at shaping the legal infrastructure for the IT sector.

---

[15] https://cepr.org/voxeu/columns/why-west-needs-ukraine-and-its-it-business
[16] https://huri.harvard.edu/blog/ukraine-country-emerging-technological-innovation

After its release, the platform was expanded to include accessing vaccination records and monitoring COVID-19 exposure during the pandemic. In response to ongoing Russian hostilities before the invasion, Diia proactively enhanced their cybersecurity measures. They implemented policies for user safety, such as avoiding the storage of personal data directly on the interface. This move was partly motivated by the series of Russian cyberattacks on Ukraine's cybersecurity infrastructure in 2014. To further strengthen their digital defenses, Diia launched a "Bug Bounty Program" in 2020.

Within just three months of its launch by May 2020, Diia Portal had already amassed over 2.3 million users, primarily due to the COVID-19 pandemic[17]. In total, Ukraine had rolled out nearly 120 digital services since the beginning of 2019, with approximately half of the country's population - roughly 19 million Ukrainians - utilizing Diia.

5. Overview: Digital Transformation Dynamics Amidst War

The Ukrainian economy has been greatly affected by the full-scale invasion by Russia. However, it is noteworthy that the digital technology and innovative startup industry of Ukraine has shown remarkable resilience. This sector has emerged as the only export-driven field to witness growth in 2022, which was a challenging year for Ukraine, with its gross domestic product contracting by over 30 percent[18].

Assessing the impact of the ongoing conflict on Ukraine's technology industry is a complex task due to the lack of detailed statistical data and constant disruptions caused by frontline fighting and extensive shelling across the country. Industry experts are facing significant challenges, particularly in attracting investments, as the high-risk environment poses a threat to the operational sustainability of Ukrainian IT companies. Additionally, there is growing concern over a brain drain, as many skilled professionals are leaving the country[19]. Despite these formidable challenges, the Ukrainian tech sector remains resilient and continues to grow.

In the 2022 IT competitiveness index, Ukraine ranked 12th among 23 countries in Central, Eastern, Southeast, and Northeast Europe, climbing two places higher than last year[20]. This advancement, as highlighted by industry experts and noted in the Emerging Europe's Future of IT 2023 Report, is partly attributed to a strategic shift in the approach of Ukrainian IT firms. Post-February 24, 2022, these companies have intensified their business promotion efforts

---

[17]https://www.undp.org/ukraine/press-releases/63-ukrainians-use-state-e-services-user-numbers-grow-third-year-row-survey

[18]https://www.imf.org/en/News/Articles/2023/04/05/cf-amid-war-ukraine-is-maintaining-macroeconomic-stability-and-embarking-on-reforms

[19] https://brandukraine.org.ua/documents/117/Ukraines_IT_perceptions_report_web_ENG_3_6DhHRJn.pdf

[20]https://d1aettbyeyfilo.cloudfront.net/emergingeurope/30982500_1680870213929FUTURE_OF_IT_REPORT_2023.pdf

and demonstrated a bolstered confidence in the quality of their offerings. The expansion of their global reach, including the opening of new offices worldwide and improved negotiation capabilities, has played a key role in their growth. According to a recent survey by Lviv IT Cluster, 36% of CEOs plan to open new offices, both domestically and internationally. Among those who plan to establish offices abroad, Poland is the most preferred destination with 28% of CEOs selecting it[21].

Ukraine's growing technology landscape is primarily attributed to its skilled human resources. However, the ongoing war poses a significant threat to this asset, as highlighted in the Global Startup Ecosystem Index 2022 Report. The potential mass departure of talented professionals is a major concern. The situation is further complicated by the generous support offered to Ukrainian refugees by other European countries, making relocation an attractive option. Recent data from Sequoia indicates that since the escalation of the conflict, a significant 16% of IT experts have already left Ukraine. This trend may have a negative impact on the country's tech sector growth and innovation.

In recent years, Ukraine has made significant progress in digitizing its public sector and implementing e-governance through its Diia platform. This progress has been well-documented in various studies, including the UN E-Governance Development Index. Although the latest rankings only reflect data up to February 2022, researchers have already recognized the considerable efforts of Ukrainian officials in ensuring the availability of essential public services and information in areas under their administration, despite the challenges posed by the ongoing conflict. There are almost 22 million users of the Diia portal, and over 19.2 million Ukrainians have adopted the Diia application, which has been installed on approximately 70% of smartphones across the country[22]. The app has become particularly crucial in areas that are under Russian occupation, as it serves as the only means for Ukrainian citizens to access essential assistance and services provided by their government. The widespread use of Diia highlights its importance as a critical resource for many, particularly in regions where traditional methods of accessing government support are disrupted.

Diia has significantly improved the efficiency of state registry services in Ukraine, which were previously notorious for corruption within the country's bureaucracy. The app has effectively reduced the frequency of grassroots corruption by reducing direct interactions between citizens and bureaucrats, which were often used for corrupt practices. By transitioning to fully digital and transparent services, the application has brought about a notable decline in such corrupt activities. According to the Ministry of Digital Transformation, which oversees the program's initiation and upkeep, the economic and anti-corruption impact of Diia's online

---

[21] https://itcluster.lviv.ua/en/tech-industry-dynamics-amidst-war-findings-of-it-research-ukraine-2023/

[22] https://www.atlanticcouncil.org/blogs/ukrainealert/ukraines-digital-revolution-is-proving-vital-for-the-countrys-war-effort/

services has reached UAH 16.37 billion (approximately $500 million) during the 2020-2021 period[23]. This will be a crucial factor for the EU accession process.

6. Inside Ukraine's Thriving Tech Sector

Ukraine is emerging as a significant player in the global tech industry, with support from the government and innovative initiatives. Recent data from Lviv IT Cluster based on the interview among 7,000 tech specialists and more than 400 companies from all regions of shows that despite the fact that a significant number of IT experts have already left Ukraine, the country has witnessed a 7% increase in the number of tech professionals over the past year, reaching a total of 307,600[24]. Of these, around 242,000 experts continue to work and live in Ukraine, contributing to the country's thriving tech landscape.

Furthermore, Ukraine's tech influence is expanding beyond its borders. The number of Ukrainian technology experts working overseas has seen a substantial 20% increase, climbing from last year's figures of 55-57,000 to a current total of 65,000. This trend highlights the sector's capability to thrive under challenging circumstances and underscores the global demand for Ukrainian tech talent. The robust growth in both domestic and international spheres signals a positive trajectory for Ukraine's technology industry, reflecting its adaptability and the high caliber of its workforce.

---

[23] https://war.ukraine.ua/articles/digitalization-in-the-fight-for-transparency-in-ukraine/
[24] https://itcluster.lviv.ua/en/tech-industry-dynamics-amidst-war-findings-of-it-research-ukraine-2023/

There are between 2,000 to 5,000 IT companies in Ukraine, according to various sources. The government's Tech Ecosystem Overview reported the presence of 2,300 such companies[25]. Despite the ongoing Russian invasion, only 12 companies have closed down, which is impressive. Furthermore, 43% of companies expect growth in 2023, demonstrating their resilience.

Ukraine's technology sector has become a key strength in its confrontation with Russia, which boasts a formidable conventional military force. The country has a talented pool of IT professionals and a society deeply embedded in digital culture, transforming potential weaknesses into strategic advantages. Ukraine's reliance on technological innovation is not just a reactionary measure to the current conflict but part of a broader, visionary strategy. The country is highly emphasizing advancing defense technology, identifying it as a key factor in gaining leverage over Russian military might. This strategic focus goes beyond the immediate needs of war, with the defense technology sector poised to be a cornerstone in Ukraine's tech ecosystem, shaping the future direction of its digital economy.

Russia's invasion of Ukraine has led to the formation of a group of over 200,000 volunteers who have joined Ukraine's IT Army[26]. This digital militia carried out 153 successful operations against more than 400 Russian entities in its first year. In addition, Ukraine has been making significant progress in promoting innovation and startup growth, particularly in the defense sector. The country is actively encouraging these innovative endeavors through the development of a thriving venture capital investment scene and support for Ukrainian startups.

One of the most significant initiatives in this regard is the BRAVE1 tech cluster in Ukraine, which was launched in the spring of 2023[27]. The BRAVE1 project is a collaborative effort that involves Ukraine's Ministry of Digital Transformation, Ministry of Defence, Ministry of Economy, Ministry of Strategic Industries, the National Security and Defence Council, and the General Staff of the Armed Forces of Ukraine. The tech cluster functions as a catalyst to accelerate the growth of defense technology firms and startups, facilitate partnerships, and provide support within the ecosystem. As of mid-2023, BRAVE1 had already onboarded approximately 400 projects, with close to 200 of these undergoing testing by the military.

As Ukraine becomes a testing ground for some of the most advanced defense technologies in the world, it is emerging as an innovation hub. Playing a pivotal role in pioneering state-of-the-art military technology, Ukraine fortifies its defenses and positions itself as a potential leader on the global defense tech stage. The ongoing developments highlight that it's true power lies not only in military numbers or armaments but also in its capacity for innovation

---

[25] https://uatechecosystem.com/everything_is_techable_with_ukraine

[26] https://www.csis.org/blogs/strategic-technologies-blog/it-army-ukraine

[27] https://techukraine.org/2023/04/27/brave1-ukrainian-defence-tech-cluster-launch/

and resilience in challenging times. As the conflict unfolds, the international community closely observes how Ukraine's tech sector is integral in its quest for sovereignty and long-term economic growth.

7. Summary: how can Ukraine help boost the EU digital market?

The Ukrainian government's priorities for reconstruction closely align with the European Union's (EU) objectives of supporting Ukraine's transition towards membership in the EU and promoting the country's progress in digital transformation. The National Recovery Plan of Ukraine fully embraces the "build back better" approach, ensuring that its reconstruction efforts are in accordance with the norms and standards of the EU, also within digital sector[28].

Ukraine's digital landscape is a significant factor in its aspiration for EU accession. With a thriving IT sector and remarkable advancements in digital innovation, it presents a unique opportunity for the EU to strengthen its digital market. It is essential to understand Ukraine's current digital status to assess the potential impact of its EU accession. Over the past decade, Ukraine's IT sector has experienced tremendous growth, becoming one of the primary drivers of its economy. The country has a vast pool of tech talent, with over 200,000 IT professionals, and this number is increasing every year. These professionals are not only abundant but also highly skilled, offering expertise in various domains such as software development, cybersecurity, and data science. Ukrainian IT companies have established themselves as prominent outsourcing destinations in Eastern Europe, delivering a range of services, including custom software development and IT consulting, to the global market.

Ukraine has a thriving startup ecosystem, particularly in fintech, agritech, and e-commerce, with cities like Kyiv and Lviv emerging as hubs for innovative startups. These startups are not only contributing to the country's domestic economic growth but are also attracting international attention and investment. Notably, companies like Grammarly have gained global recognition, showcasing the potential of Ukrainian innovation on the world stage.

However, despite making commendable progress in its digital journey, Ukraine still lags behind the EU's digital market standards. The EU's digital market is characterized by advanced digital infrastructure, stringent data protection laws, and a highly integrated digital economy. Ukraine still has challenges to overcome, particularly in regulatory alignment, cybersecurity, and full-scale digital infrastructure development. Addressing these gaps will be crucial for Ukraine's integration into the EU's digital market.

However, the European Union is actively working towards integrating Ukraine technologically, both multilaterally and regionally. This is a significant part of the EU's digital diplomacy

---

[28] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C_202301332

strategy, which aims to promote democratic and human-centric technology governance. The EU's commitment to digital diplomacy is evident in its coordination among member states In its regional endeavors, particularly within the Eastern Partnership (EaP) framework which includes Ukraine, the EU is an active participant[29]. It aims to endorse and encourage European integration for EaP countries, focusing on digital transformation. This involves the integration and application of EU digital regulatory frameworks, aimed at strengthening democratic governance of technology and improving resilience in EaP countries. The EU's strategy is centered on building partnerships and providing continuous support to these nations in their digital evolution.

At the heart of the EU's regional support lies the EU4Digital Initiative. Ukraine joined the program on May 22, 2019. This initiative aims to replicate the benefits of the EU's Digital Single Market within EaP partner states, including Ukraine. Its objective is to promote the digital economy and society in these countries, leading to economic growth, job creation, improved living standards, and stronger business sectors. The key features of the EU4Digital support include:

- **Lowering Roaming Charges:** Making telecommunication more cost-effective within the region, facilitating easier and more affordable cross-border communication for both individuals and businesses
- **Promoting High-Speed Broadband Access:** Enhancing the broadband infrastructure to improve connectivity, a vital driver for the digital economy
- **Broadening E-Services:** Advancing the proliferation of digital services across various sectors, from logistics to healthcare, thereby upgrading public services and their accessibility
- **Strengthening Cybersecurity Measures:** Prioritizing cybersecurity across EaP countries, given the critical importance of digital security
- **Synchronizing Digital Policies:** Aligning digital policies and frameworks throughout the region to establish a unified digital environment
- **Boosting Skills and Creating Digital Jobs:** Focusing on skill development and job creation in the digital sector to form a skilled workforce capable of supporting and advancing the digital economy[30].

Amidst the challenges posed by Russia's military actions, the EU has increased its support for Ukraine's digital transformation. This support is crucial for maintaining national priorities such as digital connectivity and electronic services, ensuring continuous communication and operational resilience in these trying times.

---

[29] https://prismua.org/en/english-eus-and-ukraines-approaches-to-digital-diplomacy-in-the-geopolitics-of-technologies/
[30] https://eufordigital.eu/countries/ukraine/

Union of Entrepreneurs and Employers

ul. Nowy Świat 33
00-029 Warsaw

T: +48 22 826 08 31
E: biuro@zpp.net.pl

www.zpp.net.pl
NIP: 522-295-88-64

One of the key outcomes of the EU4Digital's harmonization efforts in Ukraine is the stimulation of competition in the digital market. This leads to more efficient online services, better pricing, increased choices for consumers, and the attraction of investments. Such developments are instrumental in propelling trade, employment, and overall socio-economic progress in Ukraine.

The EU's commitment to Ukraine's digital advancement extends beyond EU4Digital, as evidenced by bilateral projects like EGOV4UKRAINE, which is part of the 'U-LEAD with Europe' program. This initiative, launched in 2016, improved data exchange between public authorities through the development of new e-service systems. Following this, the EU4DigitalUA project (2020-2024) was introduced, focusing on digital government infrastructure, capacity building, public awareness, service development, and cybersecurity. The 'Digital Policy Support to Ukraine' project (2021-2024) further underpins Ukraine's digital transformation, assisting in fulfilling the commitments under the EU-Ukraine Association Agreement[31]. It specifically supports Ukraine's Ministry of Digital Transformation and the Telecom Regulator in achieving their digital economy policy objectives.

A notable advancement in Ukraine's digital integration into the EU Digital Single Market was the adoption of the EU electronic communications law, effective from January 2022. Additionally, plans were made to release radio frequency bands for 5G communications, although these have been delayed due to the ongoing conflict. Looking ahead, the focus of bilateral assistance will remain on rebuilding digital infrastructure, digitalizing government operations, and enhancing cybersecurity, ensuring Ukraine's steady progress towards a comprehensive digital transformation in alignment with EU norms and practices.

The accession of Ukraine to the EU holds significant importance beyond just economic benefits. It signifies a connection between Eastern European innovation and Western European digital proficiency. This integration holds the promise of not only improving the existing digital infrastructure but also paving the way for innovative digital solutions that could revolutionize the European landscape.

---

[31] https://eufordigital.eu/countries/ukraine/