

4.9. ICT AND DIGITAL SECTOR

4.9.1. Current situation and the sector role

Ukraine had a **booming Information and Communications Technology (ICT) and digital sector** before full-scale invasion, with thousands of ICT companies and skilled ICT workforce, large 4G network.

< 80%

population covered by broadband Internet access.

Ukraine does not have 5G yet, but all key mobile operators announced their interest in testing and deployment nation-wide 5G networks in the coming years. Moreover, 4G networks in Ukraine were implemented in 2018 only and are quite advanced in comparison with other 4G peers.

War damaged all parts of the Ukrainian economy and in particular ICT infrastructure: according to the World Bank, full-scale invasion has resulted in more than USD 2 billion in direct damage, USD 2.27 billion in losses, and USD 4.67 billion in recovery needs for the telecommunications and digital sector by the end of 2023. This figure covers lower income from mobile and fixed internet services, and higher expenses of backup power generators for internet service continuity¹.

USD 2 billion

direct damage

USD 2.27 billion

losses

USD 4.67 billion

recovery needs for the telecommunications and digital sector by the end of 2023

At least 726 operators of electronic communications of fixed access to Internet networks have suffered losses. In some areas, the destruction of networks reaches 100%, and the quality of data transmission over fixed Internet access networks has decreased by an average of 13%. Mobile communication was also affected, with no access in 12.2% of settlements and partial availability in 3.1%.

13%

the decrease in the quality of data transmission over fixed Internet access networks

12.2%

no access of settlements to mobile communication

3.1%

partial access of settlements to mobile communication

Despite the destruction, the **ICT sector showed resilience**. It was the only sector to **increase its exports** from 2021 to 2022, earning over USD 6 billion in IT services exports in 2022. The government did not draft IT workers and gave tax breaks to ICT businesses.

USD 6 billion

IT services exports in 2022

These actions helped ICT businesses survive and keep exporting services. Many technology workers left the country or moved west, but the industry kept going².

The recovery phase presented an opportunity to innovate and integrate advanced digital solutions. Efforts were aimed at enhancing the digital ecosystem, including the expansion of broadband services, the adoption of 5G technology, and the strengthening of cybersecurity measures. These initiatives aimed to not only restore services but also to position Ukraine as a forward-looking digital economy³.

¹ World Bank. Updated Ukraine Recovery and Reconstruction Needs Assessment Released (<https://www.worldbank.org/en/news/press-release/2024/02/15/updated-ukraine-recovery-and-reconstruction-needs-assessment-released>)

² Rebuilding and Modernizing Ukraine's ICT Infrastructure Will Be Essential to Attract Private Investment (Rebuilding and Modernizing Ukraine's ICT Infrastructure Will Be Essential to Attract Private Investment (csis.org))

³ World Bank. Updated Ukraine Recovery and Reconstruction Needs Assessment Released (<https://www.worldbank.org/en/news/press-release/2024/02/15/updated-ukraine-recovery-and-reconstruction-needs-assessment-released>)

The ICT sector has emerged as a significant component of Ukraine's economic framework, demonstrating constant growth and a substantial contribution to the nation's GDP.

Rapid Expansion:

The ICT industry in Ukraine has witnessed exponential growth (**more than doubled** in terms of value added between 2015 and 2023), establishing itself as a cornerstone of economic fortification.

GDP Contribution:

A significant increase of 35.3 pp. over the past decade has led to the ICT sector accounting for **4% of the GDP** (about 2.5% IT and 1.5% Communications), equivalent to USD 6.7 billion (2023).

Tax Contributions:

In 2023, the IT industry contributed nearly USD 1 billion in taxes, underscoring its economic significance.

Turnover and Export Growth:

Turnover surged from USD 5 billion to USD 8 billion, while IT service exports differentiated from USD 4.2 billion to USD 6.7 billion between 2019 and 2023.

Export Share:

The export share of IT services increased from 23.9% in 2019 to an impressive 44% in 2022, reflecting the sector's global competitiveness⁴.

Capital expenditures (Communications):

The 3 top companies of the communications market invested USD 444 million in 2023. The total amount of capital investment in the communication infrastructure in Ukraine reached USD 516 million in 2023.

Population employment:

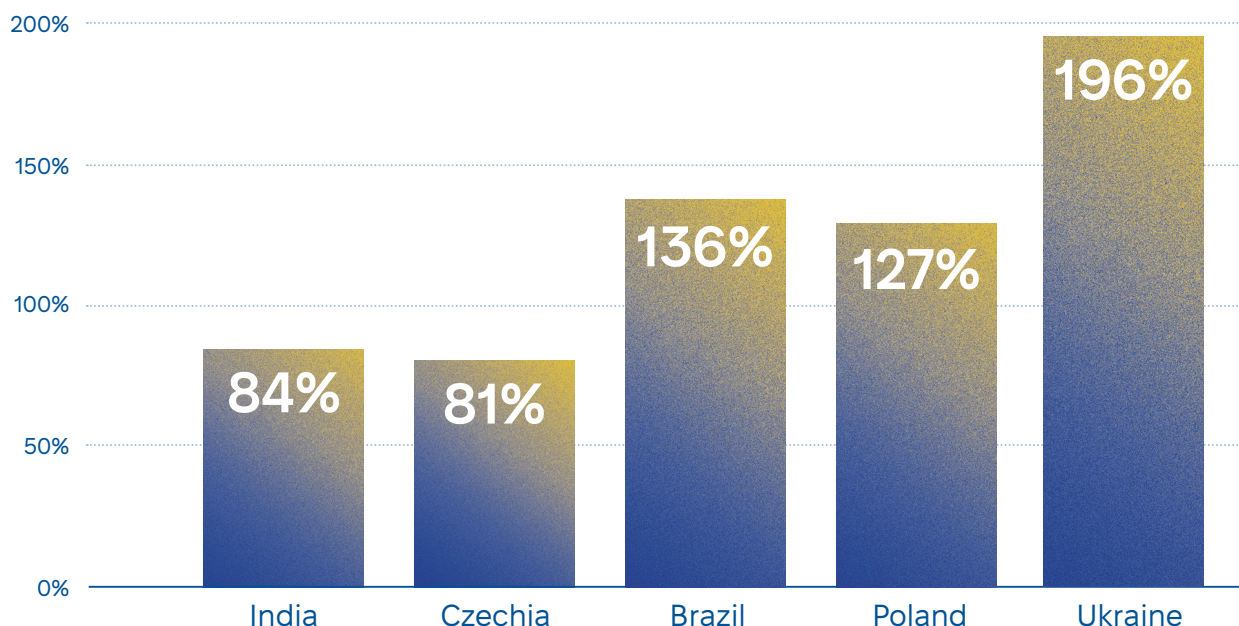
42.2 thousand people worked in the sphere of electronic communications in 2023. 346.3 thousand people worked in IT sphere in 2023.

⁴ Digital Tiger the Power of Ukrainian IT 2023 (<https://itukraine.org.ua/en/digital-tiger-the-power-of-ukrainian-it-2023/>)

Ukraine's presence in the global IT market is marked by two primary features: exponential growth in IT service exports and a high level of technology skill proficiencies.

Between 2017 to 2022, Ukraine experienced a **196% increase in IT service export growth**. Furthermore, per capita IT service export demonstrated an astounding 249% growth during this period.

Figure 1: IT service export growth in 2017-2022



According to Coursera's Global Skills Report, Ukraine has shown consistent improvement in technology skill proficiencies over the years. In terms of technical skills, **Ukraine ranks 15th globally - an indication of the country's commitment to fostering education and skill development**⁵.

Technological Adaptation:

The country's success in the IT market is partly due to its agility in embracing technological advancements. This adaptability has fostered a conducive environment for innovation and growth within the sector.

Skilled Workforce:

A focus on education and skill development has resulted in a workforce that is well-equipped to navigate the complexities of the modern technological landscape. This has been a crucial factor in Ukraine's IT market success.

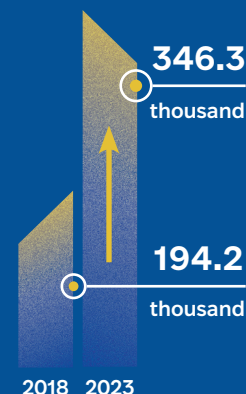
ICT AND DIGITAL IN UKRAINE: RESOURCES AND SEGMENTS

With 316 universities, Ukraine has a solid educational infrastructure that graduated

31.5 thousand IT specialists in 2023 alone.

Kyiv stands out as the leader in both the number of institutions and graduates, highlighting the city's role as a central hub for IT education.

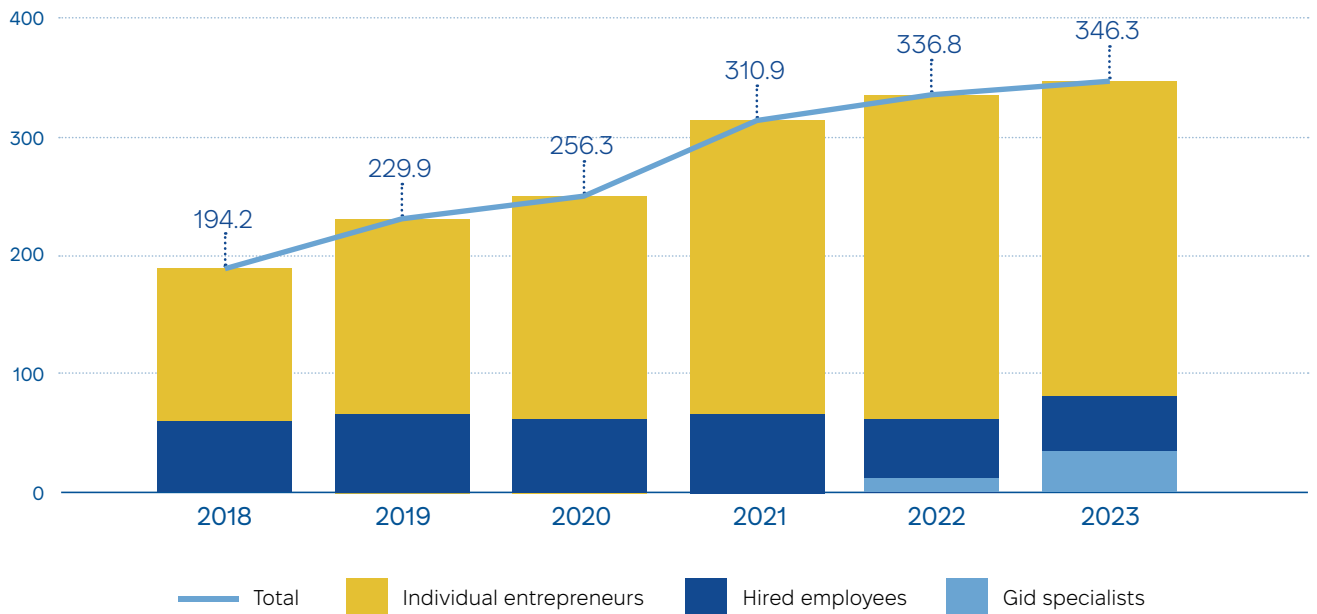
Between 2018 and 2023, the **IT workforce grew from 194.2 thousand to 346.3 thousand**. The median monthly income for IT specialists in 2023 reached **USD 2,630**, an 11% increase from the previous year. The median income for middle, senior, and lead technical specialists is projected at **USD 4,217** per month⁶.



⁵ Global Skills Report (<https://www.coursera.org/skills-reports/global>)

⁶ Digital Tiger the Power of Ukrainian IT 2023 (<https://itukraine.org.ua/en/digital-tiger-the-power-of-ukrainian-it-2023/>)

Figure 2: Number of employees in the IT industry, thousand



The trend in IT education reveals a consistent number of junior bachelor graduates, with a slight decrease from 33 thousand in 2020 to 31.4 thousand in 2021, stabilising at 31.5 thousand for 2022 and 2023.

2,150

Ukraine boasts active verified IT companies, as of 2023

8,100

Ukraine boasts legal entities, as of 2023

This intricate structure reflects the complexity and diversity within the Ukrainian IT landscape.

The industry is segmented into various specialisations, with the largest shares being:

14%

Business Productivity Software

13.7%

Martech & Media

10%

Fintech & Insurtech

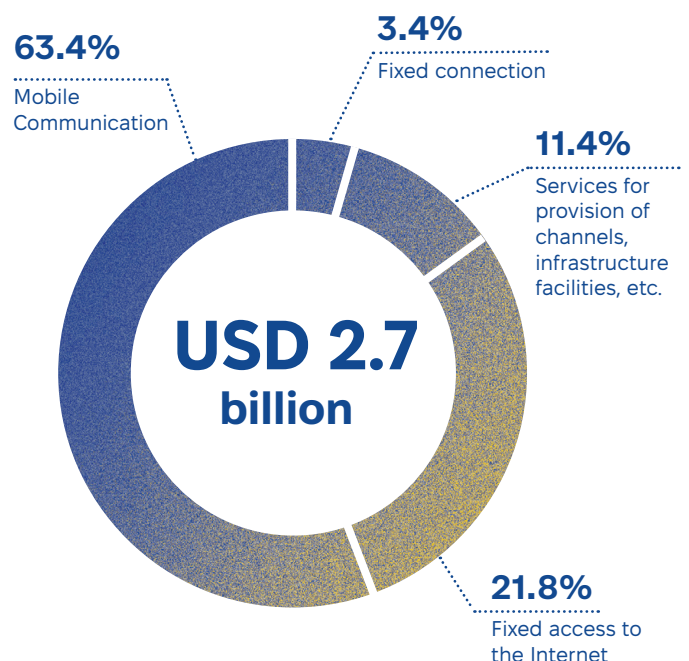
These segments demonstrate the breadth of expertise and innovation that Ukrainian IT companies bring to the global market.

A notable trend in the sector is the growth in the number of operating legal entities providing IT services, which peaked in 2021 with 9.6 thousand entities. Although there was a slight decline to 8.1 thousand in 2023, the trend indicates a robust and expanding industry.

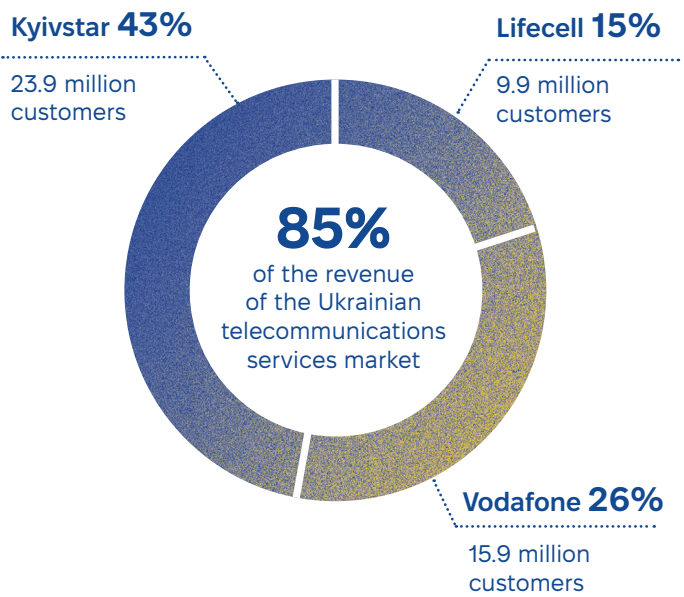
In terms of employment, the data reveals that most IT companies in Ukraine are small, with up to 50 employees, accounting for 74.7% of the total. Medium-sized companies with fifty to two hundred employees make up 16.8%, while larger companies with two hundred to one thousand employees constitute 6.9%. This distribution suggests that the Ukrainian IT sector is largely composed of small but agile firms capable of rapid innovation and adaptation.

Communication market in Ukraine is estimated at the level of USD 2.7 billion in 2023 with the largest share of mobile communication part.

Figure 3: The share of mobile communication market



Mobile communication market is quite concentrated: 85% of the revenue of the Ukrainian telecommunications services market is divided between the three largest companies.



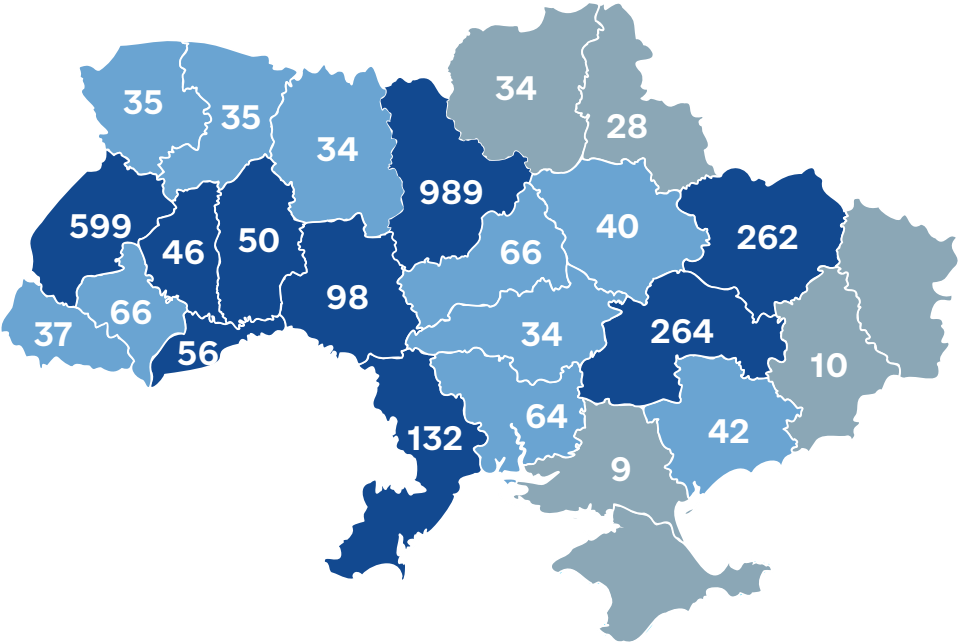
In the recent years, mobile operators started their **expansion in both fixed internet and media services** segment: in 2023 Vodafone acquired one of the largest fixed Internet access providers Freenet (about 160 thousand subscribers) and there is one even larger expected acquisition of Lifecell (mobile), Ukrtower (cell towers), Datagroup (provision of infrastructure) and Volia (TV and fixed Internet access) by NJJ Capital (France) which is going to combine the assets after the deal.

FEATURES OF LOCAL INDUSTRIES IN IT

Ukraine’s local IT industries are characterised by **regional disparities** yet collective growth. In 2023, the distribution of IT specialists across Ukraine was diverse, reflecting the country’s vast talent pool. Each **region contributed uniquely** to the IT sector, fostering a dynamic and advanced tech ecosystem.

The central and northern regions, known for their innovative environment, had a balanced mix of specialists working on product development and outsourcing. In contrast, the western region, with its service-oriented market, was dominated by outsourcing specialists catering to international clients. The southern and eastern regions showed flexibility with a mix of business models, catering to a wide range of client needs and market demands.

Figure 4: Distribution of IT company representatives by region in 2023⁷



Northern macroregion

In 2023, the city of Kyiv and the Kyiv region remained key leaders in the Ukrainian market, both in terms of the number of employed people and the number of IT company representatives. This dominance underscores the region’s strong IT infrastructure and talent pool. Kyiv, the capital city, is a hub to 37% of the country’s IT professionals. This region has historically been the epicentre of Ukraine’s IT growth, attracting talent and investment alike.

The concentration of IT professionals in this region has made it a hub for innovation and technological advancement. The city’s IT companies contributed USD 256.0 million in taxes in the first half of 2023, highlighting its significant economic impact. The Northern macroregion, with Kyiv at its core, has created or saved approximately 230-233 thousand jobs through its IT sector, affirming its status as an employment powerhouse.

⁷ IT Research Ukraine 2023 (<https://itcluster.lviv.ua/dynamika-it-industriyi-pid-chas-vijny-rezultaty-it-research-ukraine-2023/>)

Western macroregion

Full-scale invasion has significantly affected the regional structure of the industry. The western city of Lviv has also seen a 5% increase in the number of IT specialists, now accounting for 29% of the total, mostly due to migration caused by the ongoing state of war. This shift highlights the region's resilience and adaptability in the face of adversity. As of 2023, Lviv hub accumulated nearly USD 60 million to the local budget, reflecting a high consolidated tax share of 47%.

Eastern and Southern macroregions: Emerging IT Destinations

In the eastern macro-region, Kharkiv and Dnipropetrovsk regions are the leaders of the industry, partially because of relocation of specialists from regions close to the frontline. The Dnipro hub and Kharkiv hub contributed respectively 7.5% and 15.6% of share to the nominal industry turnover in 2022.

As for the southern macro-region, the Odesa region remains the industry leader. These trends indicate a diverse distribution of IT professionals across the country, contributing to a vibrant and dynamic tech ecosystem. Odesa has seen a 15.4% increase in the number of individual entrepreneurs in the IT sector, reflecting a strong drive for innovation and entrepreneurship within the region. The Southern macroregion, with Odesa as its hub, offers a 5% turnover share and USD 27.2 million in company-paid taxes⁸.

Involvement of IT specialists by business model

The Ukrainian IT sector is divided into product companies and outsourcing firms. In the northern and southern macro-regions, product companies constitute 40% and 51% respectively, indicating a strong inclination towards innovation and self-driven projects. Conversely, outsourcing companies are more prevalent in the western and eastern regions, with 53% and 38% respectively, engaging in service-based operations for international clients.

Despite the dominance of established business models, the startup ecosystem is launching across all regions. However, startups account for no more than 10% of the industry, suggesting that while there is entrepreneurial enthusiasm, it is yet to reach a scale where it can compete with the traditional models⁹.

The involvement of specialists in companies by business model in 2023 further underscores the adaptability of Ukraine's IT sector. Companies were not solely focused on outsourcing; they also invested significantly in product development and mixed business models. This diversity in business models allowed companies to enhance their competitiveness globally, meet varied client requirements, and stay resilient in the face of challenges.

Startup ecosystem of ITC and Digital sector

From 2017 to 2022, the market size for startups in Ukraine surged from EUR 2.6 billion to EUR 23.3 billion, a nearly ninefold increase. As of January 24th, Ukraine boasts over 2,600 startups, with more than 200 established in the last year alone. This growth trajectory is supported by 90% of startups seeing high potential for future expansion. Ukraine has also produced unicorn startups like Grammarly, GitLab, and AJAX Systems etc., each contributing to the country's economic reputation and development.

Flexibility and adaptability are identified as core strengths by 62% of startups, which they believe will enable them to navigate effectively through changing circumstances.

A striking feature of Ukraine's IT landscape is the geographical expansion of companies. While 64% have no plans for new offices, 28% aim for international growth, targeting countries like Poland, Portugal, the US, and other European nations. Meanwhile, 8% are considering establishing offices in Ukraine's burgeoning regions such as Kyiv, Mykolayiv, Lviv, Ivano-Frankivsk, and Vinnytsia¹⁰.

Diia.City's special tax regime as a transformative initiative has positioned Ukraine as a hub for IT innovation. With its reduced tax burdens, operational flexibility, and enhanced legal framework, Diia.City is set to continue to accelerate growth of the IT industry in Ukraine¹¹.

In addition, the GoU has taken a significant step forward by introducing the "Diia Portal" – now the Unified State Web Portal for Electronic Services. On December 4, 2019 the government approved a resolution to regulate the functioning of the "Diia Portal". This move is a testament to the government's commitment to modernise public services and make them more user-friendly. The "Diia Portal" offers a wide range of services. It allows citizens to access public services, submit applications, complaints, petitions, and engage in electronic correspondence with authorities. This initiative aims to eliminate outdated interfaces, inconvenient mechanisms, overlapping functions, and duplication of services that are inherent in numerous service portals of state bodies. The "Diia Portal" not only simplifies the process of accessing public services but also ensures transparency and efficiency in the system¹². Application for acceptance to the public licence for the use of the open source software of the mobile application of the Unified State Electronic Services Web Portal (Diia): an Annex to the public licence for the use of the open source software of the Diia mobile application, which is part of the Unified State Electronic Services Web Portal in Ukraine. By signing the annex, the applicant agrees to the terms and conditions of the public licence and is granted permission to use the Diia mobile application software after approval of The Ministry of Digital Transformation. The applicant cannot propose their own terms and conditions to the License¹³.

⁸ IT Research Ukraine 2023 (<https://itcluster.lviv.ua/dynamika-it-industriyi-pid-chas-vijny-rezultaty-it-research-ukraine-2023/>)

⁹ The indicator is based on data from "Digital Tiger: the Power of Ukrainian IT—2023" on the number of active IT companies (2,150) and the number of implemented startups for the period 2022-2023

¹⁰ Digital Tiger the Power of Ukrainian IT (<https://itukraine.org.ua/en/digital-tiger-the-power-of-ukrainian-it-2023/>)

¹¹ Diia.City portal (<https://citydiia.gov.ua/>)

¹² Ministry of Digital Transformation (<https://thedigital.gov.ua/news/ofitsiynno-portal-diya-vidteper-edinyi-derzhavnyi-vebportal-elektronnikh-poslug>)

¹³ Application for acceptance to the public licence for the use of the open source software of the mobile application of the Unified State Electronic Services Web Portal (Diia) (https://cms.thedigital.gov.ua/storage/uploads/files/page/community/docs/international/Application_for_acceptance.pdf)

Selected IT and Digital projects in Ukraine

GitLab

- a complete DevOps platform, is one of the leading startups with Ukrainian roots. Founded by Dmitry Zaporozhets, GitLab offers a single application for project planning, source code management, CI/CD, monitoring, and security.

Grammarly

- an AI-powered digital writing assistant used by 30 million people daily to enhance their communication. Founders Max Lytvyn, Alex Shevchenko, and Dmytro Lider have made Grammarly a household name in digital writing assistance.

Ajax Systems

- is the most award-winning wireless security system in Europe. Founded by Aleksandr Konotopskyi, Ajax Systems offers a smart wireless security system for commercial and residential properties.

People.ai

- founded by Oleg Rogynskyi, is an AI platform that automates and improves the work of sales and other customer-facing specialists. The platform collects data from over 90 sources to form business intelligence.

Restream

- founded by Alexander Khuda and Andrew Surzhynskyi, is the world's largest distribution service for live video broadcasts. It helps creators broadcast video live to Twitch, YouTube, Facebook Live, Periscope, and 30+ other streaming services simultaneously.

MacPaw

- a macOS and iOS software development company, is known for its key products CleanMyMac and Setapp. Founded by Oleksandr Kosovan, MacPaw has made a significant impact in the software development industry.

Jiji

- a Pan-African digital classifieds company, is the biggest online market of 400 million people across its operating countries. Founded by Anton Wolyansky, Jiji has revolutionised the digital classifieds industry.

Preply

- a global online marketplace for tutoring, helps individuals find the best tutor for improving foreign languages and a range of other subjects. Founders Kirill Bigai, Dmytro Voloshyn, and Serge Lukyanov have made Preply a go-to platform for online tutoring.

Depositphotos

- the world's fastest-growing photo bank, is an online platform that sells high-quality licensed stock photos, graphics, vectors, and videos. Founded by Dmitry Sergeyev, Depositphotos has become a leading player in the photo bank industry.

Jooble

- a search engine that enables individuals to find and apply for suitable jobs from numerous countries around the world. Founded by Roman Prokofiev, Jooble has made job searching easier and more efficient.

GSC Game World

- Ukrainian game developer known by its S.T.A.L.K.E.R series, S.T.A.L.K.E.R 2 game is among long-awaited projects for PC and consoles.

4A Games

- well-known Ukrainian game developer (since 2020 – part of Saber Interactive / Embracer Group, Sweden) founded by ex-GSC Game World employees. Key projects – Metro game franchise (Metro 2033, Metro Last Light, Metro Exodus).

Frogwares

- Ukrainian video game development studio headquartered in Kyiv with subsidiary offices in Dublin, Ireland. The studio and its subsidiaries develop adventure games for PlayStation 4, Xbox One, Microsoft Windows, Nintendo Switch as well as PlayStation 3, Xbox 360, Nintendo DS, Nintendo 3DS, Wii, and mobile (Sherlock Holmes and Sinking City franchises and other games).

International R&D Centers in Ukraine

There are more than 400 R&D companies in Ukraine, including both local and international players. Several examples of the global tech giants that have R&D centres in Ukraine are the following:

- **Samsung:** The Korean company has two R&D centres in Kyiv and Lviv, focusing on software development, testing, and quality assurance for Samsung products.
- **Siemens:** The German company has an R&D centre in Kyiv, working on digitalization, automation, and electrification projects for energy, transportation, and healthcare sectors.
- **Oracle:** The American company has an R&D centre in Lviv, developing cloud-based applications and platforms for various industries.
- **Boeing:** The American company has an R&D centre in Kyiv, conducting research and engineering projects for aerospace and aviation.
- **Wargaming:** The Belarusian company has an R&D centre in Kyiv, creating and supporting online games, such as World of Tanks and World of Warships.
- **Ericsson:** The Swedish company has an R&D centre in Lviv, developing software solutions and services for telecommunications and IoT.
- **Huawei:** The Chinese company has an R&D centre in Kyiv, working on wireless technologies, cloud computing, big data, and artificial intelligence.
- **Microsoft:** The American company has an R&D centre in Kyiv, developing software and hardware solutions for cloud computing, gaming, and artificial intelligence.
- **IBM:** The American company has an R&D centre in Kyiv, providing software development, consulting, and technical support for IBM products and clients.
- **Intel:** The American company has an R&D centre in Kyiv, working on hardware design, software engineering, and machine learning for Intel products and platforms.

4.9.2. Overview and outlook of key reforms

The IT industry in Ukraine offers **diverse employment structures**, allowing professionals to work as hired employees, individual entrepreneurs, or gig-specialists. The rise of individual entrepreneurship and gig-specialty, supported by legal frameworks of Diia City, indicates a preference for flexible work arrangements and project-based employment.

The IT industry in Ukraine has experienced a **transformative evolution, driven by strategic reforms** aimed at enhancing growth, innovation, and efficiency. These reforms have positioned Ukraine as an emerging tech hub, attracting global attention¹⁴.

- **E-Residency and Business Registration:** One of the most significant reforms is the introduction of an e-residency system in April 2023, which simplified business registration for foreigners in the IT sector. This reform has removed bureaucratic barriers, making Ukraine an attractive destination for foreign investments. The digitization initiative launched in 2022 further streamlined the process, allowing individual entrepreneurs to register online in just ten minutes. Since its inception, over 10,000 individual entrepreneurs and approximately 1,200 companies have registered, indicating a substantial increase in business activities.
- **Migration Quotas for IT Specialists:** In 2020 and 2021, the Ukrainian government allocated 5,000 migration quotas each year for foreign IT specialists. This strategic move has not only enhanced the local market's capacity but also facilitated knowledge transfer and skill diversity. The influx of highly qualified personnel has contributed to the industry's robust growth.
- **Copyright Law Amendments:** Amendments to copyright law have provided legal clarity for software

and AI development, ensuring that any product created for a client is owned by them from inception. This legal assurance has encouraged innovation and protected developers' intellectual property rights.

- **IT Education Reform:** December 2021 marked the unveiling of a roadmap for IT education reform, extending until 2030. The reform focuses on industry-academia collaboration and diverse training programs, ensuring that the skills developed align with industry needs. This long-term commitment to education is expected to sustain the industry's growth trajectory¹⁵.
- **Dia City Regime:** The "Dia City" regime, initiated on February 8th, 2022, offers a unique tax and legal environment, providing significant incentives for business development. This regime has made Ukraine an attractive hub for global tech giants seeking expansion opportunities while benefiting from operational efficiency and reduced costs¹⁶.

Ukraine is constantly implementing new reforms in the ICT area. During 2023 a number of steps were performed in harmonisation of legislation with EU legal acts (development and adoption of 29 normative legal acts), development and implementation of the effective operator model (LRIC – Long Run Incremental Costs), implementation of practical steps on the way to the accession of Ukraine to the single roaming zone of the EU – «Roaming like at home».

These reforms are part of a broader strategic initiative designed to position Ukraine as a leading player in the European IT landscape during the whole EU integration process. The primary focus is on the compatibility and interoperability of Ukrainian IT products and services with the European market, as well as the enhancement of personal data protection and consumer rights¹⁷.

¹⁴ Ukraine reform tracker (https://cdn.vev.design/private/BCwBc9ZFZYVz8yQQKr9VeLxSnjf1/QsEtzJC50A_ECO065-SDC-UkraineReport-ALL.pdf.pdf)⁹

¹⁵ Official website of the Parliament of Ukraine (<https://zakon.rada.gov.ua/laws>)

¹⁶ Diia.City portal (<https://citydiia.gov.ua/>)

¹⁷ Eurointegrational portal. EU Law (<https://eu-ua.kmu.gov.ua/en/law/rekomendatsiyi-shhodo-nablyzhennya-ukrayinskogo-zakonodavstva-do-prava-yes/>)

The Ukraine Facility program introduced future reforms in Ukraine Plan 2024-2027. Regarding the IT and Digital sector two prior amendments are projected.

Reform 1.

Secure and Efficient Digital Infrastructure (Q1 2025)

- **Objective:** To establish a secure and efficient digital infrastructure in Ukraine, focusing on the launch of 5G networks and the development of broadband internet infrastructure.
- **5G Launch:** Financial support is needed to release the 700 MHz band from broadcasting and special users. Investments in 5G pilots are considered essential.
- **EU Association Agreement:** The reform aligns with Ukraine's spectrum harmonisation obligations under the Association Agreement with the EU.

- **Challenges:** The full-scale aggression against Ukraine has slowed down the 5G launch. Despite this, efforts are being made to harmonise spectrum policy and create cross-border 5G corridors with the EU.
- **Cybersecurity:** The National Security and Defense Council of Ukraine is implementing a national cybersecurity strategy to secure data traffic, especially along main railways and roads connecting Ukraine with EU member states.
- **EU Cooperation:** Steps are being taken towards closer institutional cooperation with EU counterparts, including the EU Agency for Cybersecurity (ENISA) and CERT-EU.

Reform 2.

Digital Transformation in Public Administration (Q2 2026)

- **Progress:** Ukraine has made significant strides in digital transformation, particularly in public administration.
- **Mobile Accessibility:** The government plans to increase the availability of electronic public services through mobile phones and the Diia Portal.
- **Diia Engine Platform:** An innovative solution launched to help ministries and government agencies create and manage registers efficiently.

Enhancing Transparency and Efficiency

- **Register of Damaged and Destroyed Property:** A popular register developed using Diia Engine, containing over 520,000 reports from Ukrainians.
- **eRecovery Program:** A comprehensive program based on the register for Ukraine's transparent reconstruction.

Cybersecurity and Technological Modernization

- **Diia Engine Platform:** A system solution that changes the approach to creating and managing registries, with 20 ministries and central executive authorities currently using it to create over 50 registers and 100 public services.

EU Integration and Legislation Harmonization

- **EU Digital Single Market:** Ukraine aims to integrate into the EU Digital Single Market, focusing on electronic identification, authentication, and trust services.
- **Legislation Harmonisation:** Ukraine has harmonised its legislation according to the Association Agreement and is the first non-EU country included in the EU Trust List under e-IDAS Regulation.
- **Legislative Work:** Further legislative work is required to fully approximate the revised e-IDAS Regulation requirements¹⁸.

DIIA CITY – UNIQUE TAX REGIME FOR IT INDUSTRY IN UKRAINE

The GoU actively supports the IT industry by creating favourable conditions for its development and sustainability. The Ministry of Digital Transformation acts as an ambassador for the IT industry, ensuring its stability and attractiveness to foreign investors.

Recognizing the IT industry among key drivers of the Ukrainian economy, the GoU established a special tax

regime **Diia City** for IT companies and their employees, making Ukraine a favourable jurisdiction for developing IT-related projects. **Diia City** offers a range of incentives for IT business development:

- Special taxation conditions for resident companies and for their employees and gig specialists. The tax burden is almost **five times lower** than in the general taxation system.

¹⁸ Ukraine Facility. Ukraine Plan 2024-2027 <https://www.ukrainefacility.me.gov.ua/en/>

- A company can choose **different forms of cooperation**: an employment contract, an individual entrepreneur's model, or a gig contract.
- Elements of English law have been implemented, specifically, universal tools for protecting corporate rights and stimulating venture capital investment.
- **Corporate**: 9% withdrawal capital tax or 18% income tax
- **Investment promotion**:
 - * **0%** on the income of individuals as dividends accrued by a resident company, provided that they are paid no more than once in 2 years term
 - * **Tax rebate** (with personal income tax) on the amount of investments in Ukrainian startups

41% active verified IT companies in Ukraine that are residents of Diia City

Special taxation conditions include:

- **Labour**: Personal income tax — 5% vs 18% on general taxation
- **Labour**: Social Security fee — 22% of the min wage vs 22% on full gross salary on general taxation

Companies operating within Diia City can enjoy significantly lower tax rates compared to other countries. For example, a company with EUR 200,000 in revenue and a staff of 10 employees with an average salary of EUR 1,200 per month would pay only EUR 16,600 in taxes per year. This includes EUR 0 income tax, EUR 1,800 exit capital tax, and EUR 14,760 total taxes including personal income tax plus military tax and social security¹⁹.

Table 1. Comparison of taxes payable in different countries with special frameworks (EUR per year)

Diia City	India	Kazakhstan Astana Hub	the U.S. Delaware	Georgia IT virtual zone	Poland	
—	5,500	—	2,175	—	—	Income tax
1,800	—	—	—	1,000	—	Exit capital tax
9,360	7,200	9,360	4,976	28,800	7,200	PIT (+Military)
5,400	5,760	14,400	22,032	2,880	30,925	Social security tax
16,560	18,460	23,760	29,680	32,680	38,125	Total taxes

4.9.3. Prospects and potential for the sector

Over the past two years, despite the challenges of the full-scale invasion, a **growing trend** has been observed in the number of companies experiencing a steady increase in income.

In 2023, a significant majority of companies (74%) reported that their **income either remained stable or increased** compared to 2022.

84% of IT companies have long-term projects, 66% of IT companies have short-term projects. However, only 15% of IT companies report that their active projects are approaching completion, with no new projects on the horizon.

84% IT companies have long-term projects

66% IT companies have short-term projects

15% of IT companies have active projects, with no new projects on the horizon

Data from 2023 indicates a **notable shift in workforce dynamics**:

38% of companies reported a decrease in their Ukrainian workforce

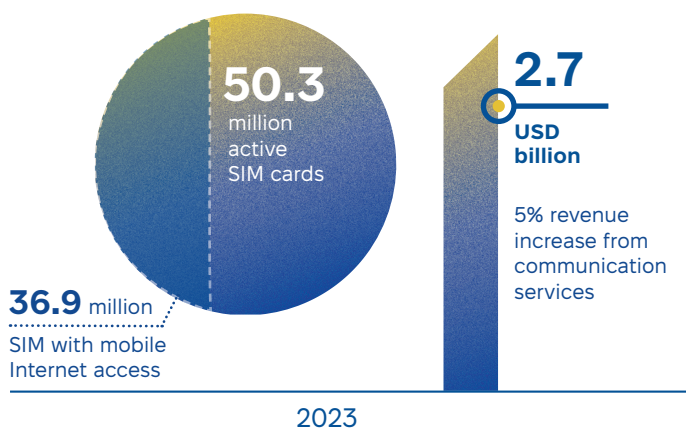
40% of companies noted an increase in their workforce abroad

This trend indicates a significant relocation of IT specialists abroad due to full-scale invasion. Besides, 85% of companies continue to hire specialists for open positions, with 56% of them seeking candidates from external sources.

¹⁹ Diia.City portal (<https://city.diia.gov.ua/>)

The Ukrainian IT industry's initiatives to integrate veterans through education and job opportunities reflect a forward-thinking approach that not only aids in the reintegration of service members but also strengthens the industry's talent pool. Initiatives like Choice31's courses for military personnel offer free education in Project Management, Business Analyst, PPC, and ASO. These programs are not time-bound and prioritise veterans for employment within the Netpeak Group companies. EPAM Ukraine piloted various educational product formats in 2023 to meet modern demands. The project includes foundational computer science education followed by IT specialisation, with mentorship support. Platforms like ITVDN and Mate academy provide free video lectures and full-day courses in various IT fields. They require proof of combatant status and sometimes completion of tests for further progression. New Horizon Hub aids veterans in transitioning to IT careers through online courses in Python development, cybersecurity, QA, and more, including English language learning and psychological support²⁰.

Trends in the Communication industry in many ways are driven by full-scale invasion and related migration. Demand for stable communication is growing, so total revenues from the provision of electronic communication services increased in 2023 by 5% to USD 2.7 billion in 2023. The number of active SIM cards as of the end of 2023 amounted to **50.3 million units**, which is 1 million units more than by the end of 2022, but by 5.6 million units less than at the end of 2021 (decrease in total amount was primarily due to migration of more than 6 million people abroad).



More SIM cards are used for mobile Internet access with a total amount of 36.9 million as of the end of 2023 (+4.2% to 2022), while revenues from the provision of fixed Internet access services in 2023 decreased by 2% to USD 0.6 billion. These trends can be explained with more autonomous capabilities of mobile operators who can provide their services even during blackouts, so more people are using mobile Internet access.

Development prospects in Ukraine

The full-scale invasion stimulated the emergence of many companies that tested their developments on

the battlefield. As a result, the share of the product sector in IT and new export capabilities through unique developments is expected to increase. Companies should have a transparent corporate structure to attract investment, and they can join Diia.City to operate under favourable tax conditions. The Brave1 coordination platform has already been launched to support projects, with a priority on finding investors for scaling²¹. The Brave1 offers to international partners:

- Access to the Ukrainian Defense Innovations with a soft-landing procedure for a foreign partners;
- Partnership and cooperation between stakeholders from public and private sectors;
- Organisational support, access to pitches, hackathons, meetups, grants, and investments;
- Participation in networking events, pitches, demo days, etc.;
- Development and testing of Ukrainian and international advanced technologies;
- Investments opportunities in Ukrainian cutting-edge defence tech developments.

The GoU in cooperation with the EU has laid out a comprehensive framework for 2024-2027 to support the ICT and Digital sector, including tax incentives, infrastructure development, and regulatory reforms. These initiatives aim to create a conducive environment for both domestic and foreign investors²².

- **The digitization of the economy** has a big potential and many market niches, can promote more efficient resource utilisation, unlock the potential of traditional economic sectors, reduce bureaucracy and corruption, and improve access to services for all citizens and can be scaled to other countries. A promising directions for digitization are the following: the implementation of innovative solutions in traditional economic sectors, services for the population (medical, communal, educational, etc.), which will improve the accessibility and quality of services (including in hard-to-reach regions with high military risk), increase their efficiency and productivity, enhance individualization and personalization (to meet the specific needs and capabilities of each individual), promote research

²⁰ DOU. Educational opportunities for veterans (<https://dou.ua/lenta/articles/educational-programs-for-veterans/>)

²¹ United coordinational platform for defence tech powered by the government (Brave1 - Ukrainian Defense Innovations)

²² Ukraine Facility. Ukraine Plan 2024-2027 <https://www.ukrainefacility.me.gov.ua/en/>

- and innovation development, stimulate innovative entrepreneurship, and improve the management and analytics system, which will contribute to making better management decisions. Another important sub-direction is the **development of SMART cities and the Internet of Things (IoT)**, which will optimise the work of municipal services, reduce city management costs, and increase the efficiency of providing public services, thus improving the quality of life for residents, and implementing an inclusive approach. This will create new business opportunities by introducing new markets and digitising processes. Additionally, the implementation of SMART technologies allows for reducing energy consumption and environmental risks, as well as improving security in urban environments.
- **Increase the number of successful startup projects:** Despite the full-scale invasion, a significant number of talented developers in Ukraine are creating unique startups, leading to the emergence of many innovative companies. This trend is expected to enhance export potential and global market competitiveness. To realise this, companies are engaging in trade missions and showcasing their developments at major technology events worldwide. The government supports this movement by promoting technological entrepreneurship among the youth and providing easier access to investments and grants. Supporting and strengthening acceleration programs for the IT sector will enable the development and scaling of startup projects, promote startup culture in Ukraine and abroad, stimulate corporate innovation and digital business transformation, and attract venture capital and investments.
- **Restore export growth in 2024:** Ukrainian IT companies have successfully adapted to working under martial law, retaining their human resources and expertise. Increased foreign exchange earnings will contribute to the industry's turnover growth, positively affecting further development. IT companies aim to enter new markets and launch new projects, including unique products. The Ministry of Digital Transformation serves as an ambassador for the IT industry, ensuring its sustainability.
- **Restoration and development of digital infrastructure.** The main areas of investment are restoration and expansion of 4G and fibre-optic networks, increasing autonomous capacities as well as the preparation for the launch of 5G services in the following years. The development of cloud infrastructure and the expansion of data centre capacity are crucial for enhancing digital capabilities.
- **Development of infrastructure and services in cybersecurity.** The risk of cyber threats and the level of their consequences for Ukraine are at their highest due to the war with Russia. With the development of the digital economy and the automation and digitization of processes, the level of risks and negative consequences will continue to increase steadily. Reducing vulnerabilities in critical infrastructure, enhancing technical capabilities in key institutions, developing, and implementing cutting-edge cybersecurity solutions, as well as fostering a qualified workforce in this field, can protect critical information assets, foster trust in digital services, and attract relevant foreign enterprises. Ukraine is working on developing the potential of existing experts and forming a dedicated workforce in the field of cybersecurity based on operational partnerships, threat data sharing, and experience exchange. Investing in advanced threat detection, encryption, and incident response capabilities will be crucial in combating and preventing growing external digital threats.
- **Increasing the number of IT professionals** with a high level of fundamental knowledge by the development of STEM specialities. Investments in educational projects aimed at increasing the quantity and level of IT professionals. Establishing ecosystems for the development of the IT sector, involving universities, training centres, enterprises, and non-governmental organisations, will facilitate the implementation of cutting-edge technologies through the preparation of professionals capable of working with new tools and concepts.
- **Innovation development** by creating and fostering the growth of technoparks and innovation clusters, as well as incentivizing R&D. Investments in creating and modernising the infrastructure of technoparks, clusters, and hubs help create a conducive environment for the development of innovative enterprises and research institutions. Additionally, infrastructure development may include establishing robotics laboratories, artificial intelligence and big data analysis research laboratories, semiconductor manufacturing clusters, implementing cloud technologies, and more. Creating favourable ecosystems that bring together businesses, universities, research centres, and government agencies to foster collaboration, technology transfer, knowledge sharing, and resource exchange. With international partnerships, supporting R&D centres in Ukraine will broaden the horizons of Ukrainian R&D teams in the global technological landscape. It is also important for international financial institutions to directly participate in financing Private Equity and Venture Capital Funds that invest in Ukrainian startups.
- **Increasing investment volumes and development of companies in the venture capital and private equity sphere.** Ukraine is working on creating programs and mechanisms for joint investments with the state and IFIs in Ukrainian projects to prevent relocation abroad of early-stage companies to gain access to capital.

The Innovation Development Fund (Ukrainian Startup Fund)²³ is a leading state institution that helps innovative projects and technological startups to attract funds at the early stages and launch their own projects. The fund is a driver of the development of the startup ecosystem, provides conditions for the growth of the field, represents Ukrainian innovative solutions around the world. The fund was created in 2018 by the Cabinet of Ministers of Ukraine at the initiative of the Minister of Finance of Ukraine. From January 1, 2023, it was transferred to the sphere of management of the Ministry of Digital Transformation.

Brave1²⁴ is a single coordination platform created for cooperation between all stakeholders of the defense tech industry by providing them with organisational, informational and financial support for the development of innovative defense projects in Ukraine. Brave1 was created on the initiative of the Ministry of Digital Transformation together with the Ministry of Defense of Ukraine, the General Staff of the Armed Forces of Ukraine, The Ministry of Strategic Industries of Ukraine, the Ministry of Economy of Ukraine, the National Security and Defense Council of Ukraine.

Name website	Description	Year of establishment	Business model	Industries
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CIVIL PROJECTS

PRE SEED				
Haiqu www.haiqu.ai	Haiqu - is pushing the limits of modern quantum computing, enabling quantum applications that were previously impossible. Using breakthroughs in quantum circuit execution, Haiqu enhances the effective quantum volume of near-term Quantum Processors allowing quantum hardware providers and application developers to achieve orders of magnitude better performance.	2023	B2B	Deep & Spacetechnology, Quantum Computing
SEED				
Releaf Paper www.releaf-paper.com	Releaf Paper is an international producer of sustainable packaging materials made of green wastes with focus on manufacturing and R&D. Ukraine's most known green startup in the world and one of the most innovative SMEs from EU by European Commission.	2021	B2B, B2B2C	Greentech, Manufacturing
Aspichi www.aspichi.com	Aspichi is a technical startup that applies spatial video real-time transfer and representation in VR headsets in the area of Mental Health - for massive scaling of psychological services and AI-powered automation, and Dual use - for spatial surveillance and immersive awareness to support UAV, UGV, and special forces.	2021	B2G, B2B2C	Edtech, Militarytech, Traveltech, Healthtech & Wellness
Datrics datrics.ai	Datrics is a data intelligence platform: we help companies create their own digital AI analysts	2020	B2B, B2B2C	Business productivity software, Deep & Spacetechnology, E-commerce & Retail, Fintech & Insurtech, HR Tech
Numo ADHD numo.so	The AI-powered productivity platform for adults and teens with ADHD (Attention Deficit Hyperactivity Disorder). A clinical study by PhD in Neuroscience has proven that it helps.	2022	B2C, B2B	Healthtech & Wellness

²³ <https://usf.com.ua/en/>

²⁴ <https://brave1.gov.ua/en/>

Name website	Description	Year of establishment	Business model	Industries
Comeback Mobility comebackmobility.com	Startup has developed a Smart Crutch Tips - IoT device and mob apps for at-home patient compliance after lower limb injuries.	2020	B2B, B2C, B2G	Hardware & IoT, Healthtech & Wellness, Medical Device
S.Lab www.ilab-s.com	Sustainable packing on an industrial scale. S.Lab developed innovate proprietary technology to produce natural replacement of foamed plastic using out of only two plant based components.	2021	B2B	Advanced manufacturing, Deep & Spacotech
Beholder beholder.earth	Beholder is a revolutionary AI-assisted SaaS platform for minerals discovery and mining. We solve the biggest challenge of the energy transition - shortage of green tech minerals, with the help of SOTANNs that process gigabytes of geological and satellite data to discover and develop new deposits with up to 10 times more efficiency.	2021	B2B, B2C	Cleantech, Deep & Spacotech
Carbominer carbominer.com	Carbominer is developing modular and efficient Direct Air Capture technology to capture CO ₂ from the open air. The startup then offers green CO ₂ to help indoor farmers grow crops more sustainably.	2020	B2B	Agtech, Foodtech, Hardware & IoT
LetsData letsdata.net	LetsData is an AI radar against information operations, equipping corporations and governments with the technology to detect disinformation, spoofing, synthetic identities, and deepfakes at their inception.	2022	B2B, B2G	Business productivity software, Communication, Martech & Media, Software
SorbiForce www.sorbiforce.com	World's first non-metal sustainable battery the most cost-effective, safe, with zero environmental impact, and made from renewable raw materials.	2017	B2B, B2C	Cleantech
Deus Robotics deusrobotics.com	A robotics company focused on automating warehouses with intelligent robots. Their end-to-end solutions enhance operational efficiency, tackle labor shortages, and improve employee retention.	2018	B2B	Deep & Spacotech, E-commerce & Retail, Logistics, Hardware & IoT
AiSDR aisdr.com	AiSDR is among the leading providers of AI sales assistants, and the creator of the first AI SDR that can hold an actual conversation with the prospects and expertly tackle any incoming questions and objections with the goal to convert them. AiSDR focuses on always responding to the leads in under 10 minutes, thus securing the highest possible conversion rates, and runs on complete autopilot without needing human oversight. AiSDR makes email personalization scalable and maintains the highest AI-generated content for outreach currently available.	2023	B2B	"Business productivity software, Martech & Media, Communication
Airlogix airlogix.io	Airlogix is a Ukrainian company that specializes in the production of innovative products in the field of unmanned aerial vehicles (UAVs). Our mission is to create high-quality and reliable solutions for the effective use of UAVs in various industries. We work with state-of-the-art equipment and technologies, which allow us to develop products at the forefront of technological progress.	2020	B2B, B2C, B2G	Militarytech
Respeecher www.respeecher.com	Respeecher is a Ukrainian startup that uses artificial intelligence techniques to produce high-quality synthetic speech for Hollywood. Among the most recent works AI voice for Darth Vader and Luke Skywalker voice for Star Wars TV series. Ukrainian team was also credited in the God of War.Ragnarök. In 2019 Respeecher won its Emmy Awards for the short film In the Event of Moon Disaster.	2018	B2B, B2C	Consumer products, Martech & Media

Name website	Description	Year of establishment	Business model	Industries
SERIES A				
Esper Bionics esperbionics.com	Esper Bionics is a pioneer engineering company focused on mechatronics, artificial intelligence, and IoT technologies for human augmentation. Our first product is Esper Hand, a bionic self-learning hand prosthesis with a cloud-based software solution to individualize the control of wearables.	2019	B2B2C	Hardware & IoT
ADAM adambioprinting.com	A.D.A.M. offers a Point-Of-Care Medical Device Production System (POC MDPS) for bone implants and other tissues, a turnkey solution for hospitals to 3D-print personalized medical implants on-demand. A.D.A.M. holistic solution and service model are designed to be easily scaled geographically and tissue-wise, uniquely positions the company to disrupt the orthopedic implants market, and allowing hospitals to generate additional revenue.	2019	B2B2C	Advanced manufacturing, Healthtech & Wellness, biotechnologies
Mate Academ mate.academy	EdTech startup that is on a mission to help 1M people worldwide build their careers in tech. The main product is a technological LMS platform where people learn coding, design, QA testing, and other IT-related professions.	2015	B2C	Edtech

MILITARY | DEFENCE TECH

PRE SEED				
Farsight Vision www.farsightvision.com	Company develops a product for creating orthophotos and 3D models from photo/video/video streams from drones for planning and monitoring operations; navigation; quick familiarization with the terrain, understanding situational changes; accurate distance measurement, etc.	2017	B2B, B2C	Cleantech
Falcons www.falcons.com.ua	Falcons is a military tech company producing software and hardware for national defense. Flagman product is a full cycle system of searching-confirmation-elimination.	2018	B2B	Deep & Spacetechnology, E-commerce & Retail, Logistics, Hardware & IoT
Ailand Systems ailandsystems.com	Unmanned aerial mine detector. It was designed from scratch for landmine detection purposes. Its body is screened to eliminate electromagnetic noise. It has multiple sensors for situational awareness and a powerful onboard microcomputer for real-time data processing. It can operate 4x times faster than a human and is fully autonomous.	2023	B2B	"Business productivity software, Martech & Media, Communication
Drill App appdrills.com	Drill is a unique app for training in secure weapon handling and first aid. Access interactive courses on concealed carry tactics, dry fire training, first aid, and more. Gain the skills to protect yourself and your family with confidence. Practice with exclusive content, boost your expertise, and track your progress in this all-in-one app.	2020	B2B, B2C, B2G	Militarytech
Oko Camera oko.camera	An affordable thermal imager based on best in class uncooled microbolometer detector from EU manufacture. Custom electronics designed and manufactured in Ukraine/EU. Custom optics designed and manufactured in Ukraine/EU. Calibrating each module to ensure superior performance.	2018	B2B, B2C	Consumer products, Martech & Media

Name website	Description	Year of establishment	Business model	Industries
Eleek eleek.com.ua	ELEEK Company is an innovator and the first trademark of the Ukrainian electric bicycle industry. It began its activity with the production of electric bicycles in 2010. Since then, we have dedicated ourselves to providing our customers with an environmentally friendly and healthy mode of transport. Each bike is an original work with a piece of soul invested in it, which has been developed and improved over time. Our team consists of professionals who love their work and treat it with respect and enthusiasm.	2023	B2B, B2C	Logistic
Griselda www.griselda.com.ua	The system has been actively used to process intelligence data from sources of different types, structures, and origins since the first months of the full-scale invasion. The customizability of the system has allowed us to create a number of highly effective solutions based on the unique experience of our users and to go far beyond intelligence processing.	2022	B2G	Intelligence
SEED				
CryEye cryeye.net	CryEye is a cybersecurity company specializing in protecting organizations from evolving cyber threats. With over 15 years of experience and numerous projects across private businesses, government sectors, and critical infrastructure entities, CQR has established itself as a leader in the cybersecurity domain, operating globally with offices in Ukraine, the USA, Poland, Kazakhstan, and Qatar.	2018	B2B, B2G	Cybersecurity
Himera himeratech.com	Himera developed the only battlefield-ready tactical communication system that can match the current rapidly growing demand among the global defense forces. Our system is designed to operate in a harsh electronic warfare environment by combining proprietary technology and approaches with industry-standard functionality. With thousands of handsets already in use with the Ukrainian Defense Forces, we can iterate rapidly, ensuring relevance and reliability.	2022	B2G, B2B	Communication
Swarmmer Getswarmer.com	Autonomy OS for coordinated robots. We empower humans to manage swarms of drones. We designed Swarmmer OS - an operating system that scales to swarms of infinite size. Humans say «Go» or «No Go». Our software does the rest.	2023	B2B	UAV
SERIES A				
Roboneers roboneers.net	Roboneers is a Ukrainian engineering company with extensive expertise in manufacturing UAV, UGV, RWS, anti-aircraft and situational awareness systems. The company implements AI, Radar and Anti-Shahed solutions into its operations. Company's products are battle-proven, and since 2014, all work has been dedicated to creating advancements tailored to military needs to save their lives.	2014	B2G	Robotics