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How to design a human-centred digital transformation initiative: An emerging case study from Ukraine

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Throughout the pandemic, governments have rushed the development of digital tools for citizens to receive public services online—to minimize in-person appointments, keep operations running despite lockdowns and expedite service delivery. Against this backdrop, the Government of Ukraine achieved progress in reshaping how citizens interact with the state. This brief highlights preliminary lessons learned from designing an inclusive eService support project, the differences between a ‘client-oriented’ and the Human Rights Based Approach (HRBA)² to electronic service design and delivery and some implications of *leaving no one behind* in the ‘digital by default’ world.

Background, purpose, and limitations

Digital (electronic) services for citizens have received praise as valuable tools throughout the global COVID-19 crisis. Even before the pandemic hit, digitalization of public services in various sectors was a noteworthy trend. As early as 2012, the United Nations system recognized the importance of new technologies, including web-based instruments, to protect and promote human rights and human development worldwide.³ Yet, digital transformation is a double-edged sword. On the one hand, it is a potent force that holds many promises, including speed, ease, precision, comfort, potential cost savings⁴ and corruption prevention;⁵

on the other, when applied without due regard to human rights and good development practices, it is a catalyst for new, multidimensional gaps. In addition, extrapolation of faulty governance into the digital realm will bring about nothing more than electronic faulty governance empowered by the speed and efficiency of machine logic.

The Secretary-General’s Strategy on New Technologies⁶ and the UNDP ‘Future Forward’ Digital Strategy⁷ openly address the high hopes for technology and the risks borne when IT solutions are embraced hastily and uncritically.

The 2019 seminal report⁸ of the Special Rapporteur on extreme poverty and human rights, Philip Alston, is a sobering account of the pitfalls rapid digital transformation can create for the poor and marginalized communities and which human rights may suffer as a result (see box). A growing number of academics and practitioners are concerned with the multifaceted digital divide,⁹ privacy and cybersecurity issues.

“In terms of digital welfare policy, several conclusions emerge. First, there should always be a genuine, non-digital option available. Second, programmes aimed at digitizing welfare arrangements should be accompanied by programmes designed to promote and teach the digital skills needed and to ensure reasonable access to the necessary equipment as well as effective online access. Third, to reduce the harm caused by incorrect assumptions and mistaken design choices, digital welfare systems should be co-designed by their intended users and evaluated in a participatory manner.”

Special Rapporteur on extreme poverty and human rights (Philip Alston). <https://undocs.org/a/74/493>

As the pandemic reached Ukraine in March 2020, UNDP began designing its signature digital transformation initiative for the country¹⁰ supported by the Government of Sweden and in partnership with the Ministry of Digital Transformation (MDT) of Ukraine. The design phase dovetailed with the high digital aspirations of the country and the top-level political will of Ukraine’s leadership. With the COVID-19 quarantine restrictions, the need for rethinking citizen-government interactions became ever more pressing.

This brief looks at Ukraine’s path of ‘going digital’, focusing on the early evidence collected and preliminary lessons learned from the UNDP DIA Support Project in the COVID-19 affected country context. The focus is on the digital transformation of public, citizen-oriented services at the national level, specifically, administrative and social services. Other realms of digital transformation, such as autonomous land and aerial vehicles, automation of jobs, bioengineering, fintech¹¹ and themes of cybersecurity and personal data protection, are important for Ukraine but are beyond the scope of the HRBA focus of this paper.

The findings can, hopefully, be relevant for other country contexts, development partners and

government counterparts interested in HRBA-driven eServices. Consultations held with various UNDP country offices have proven that cross-country information exchange is beneficial for project design and policy elaboration.

Ukraine’s digital transformation: The stage set

Ukraine is ranked third among lower-middle-income countries in the UN’s E-Government Development Index in 2020, with Georgia and Armenia topping the list. Ukraine has landed in the middle of the league table of the UNDP Europe and Central Asia region, having improved its global rank to 69th in 2020 compared to 82nd in 2018.¹²

Table 1: Ukraine’s digital dashboard snapshot¹³

Indicator	%	Year
Mobile telephone penetration	139	2021
Internet users, share of population (total/men/women)	(63/66/60)	2018
Internet at home, urban/rural	72/41	2018
Villages without quality broadband	65	2020
Households with a personal computer at home	62	2018
Mobile internet connection, 3G/4G	89/78	2019
Annual internet connection growth	+ 7.3	2020–2021
Annual social media use growth	+ 15.8	2020–2021
Device type, based on internet traffic (smartphone/laptop or PC/tablet)	(30.7/68.2/1.1)	2019–2020

While Ukraine’s electronic governance received a potent impetus for development after the Revolution of Dignity in 2014, some prerequisites were already in place before it. Thus, in 2011, Ukraine joined the Open Government Partnership initiative,¹⁴ which improved Ukraine’s standing on open data disclosure and overall governance transparency.¹⁵ In 2014, Ukrainians called vociferously for state accountability, fair treatment of citizens and justice, against the backdrop of the country’s historically poor ratings on control of corruption.¹⁶ International partners were also eager to support state digitalization as part of their good governance and anti-corruption assistance agendas for Ukraine.

From 2014 to 2019, Ukraine launched several large-scale initiatives¹⁷ in digital transformation, including:

- the ProZorro procurement system, which received global recognition;
- the eHealth data-processing and patient management ecosystem in healthcare;
- the eAsset Declarations system for monitoring assets of public officials;
- the citizen petition systems for appealing to the president, Parliament and Cabinet of Ministers;
- the centralized Open Data Portal and the eData platform to publish state budget transactions in real-time, as well as local government ‘open budget’ spinoff web pages;
- the ‘Trembita’ state data conversion and exchange platform;
- an initial set of electronic services¹⁸ for citizens and businesses.

In addition to these sectoral initiatives, the Ukrainian government established the State Agency for Electronic Governance in 2014, prioritizing digital transformation policy. In 2019 the government adopted several policy documents¹⁹ that would make it possible for all persons under the jurisdiction of Ukraine who have a valid electronic signature to get public services online from their internet-enabled device.

Upon this foundation, “your state in your smartphone” became one of the electoral promises of presidential contender Volodymyr Zelenskyy to his young, tech-savvy voters. As the president took office in 2019, the State Agency morphed into the more powerful MDT, with more staff, increased budget and a bold mandate to lead digital transformation in its sister ministries. The MDT team got a carte blanche from the president for

lightning-speed, quick-win-oriented reform. Within five months, MDT had already officially launched its flagship mobile application for eServices, the ‘Diia’ (‘action’) app on Android and iOS.²⁰ Ukraine currently has over 2,000 administrative services listed in its Registry of Services (<https://guide.diia.gov.ua/>). According to MDT, the Diia portal currently has 70+ services (and counting) and a dozen services are rendered through the mobile application. Another 360 services are listed as available through other eService web portals.²¹ The current government policy is to transfer all services to Diia to avoid having multiple service outlets online.

Witnessing unprecedented political will and desire to demonstrate progress, the international development partners (such as the EU,²² the United States, Great Britain²³ and Switzerland²⁴) provided full support for the government’s digitalization agenda. In 2020, the Government of Sweden also joined efforts to support reengineering the existing paper-based administrative services, developing capacities of decision-makers and prompting wider eService use. The UNDP project was codenamed ‘DIA’, for ‘digital, inclusive, accessible’: a pun on the state eService brand ‘Diia’.

From providing services to promoting rights

Understanding public service delivery cultures is important in considering how eServices are positioned vis-à-vis citizens. While the distinctions among these cultures may be blurry at times and the categories are not mutually exclusive, at least three ‘Government 2 Citizen’ interaction paradigms can be singled out when it comes to rendering public services in Ukraine (see Table 2).

Table 2: Three cultures of public service delivery to citizens

	Classic bureaucracy	Service-oriented (market-based)	HRBA-driven
Attitude of the service-point officer to the individual seeking a service	The individual is viewed in a depersonalized manner, neutrally (at best), or as a nuisance—especially when the case is complex or the individual is unpleasant to the officer.	The individual is seen as a client to be taken care of.	The individual is seen as a rights-holder. Individuals' legitimate human rights that are part of international conventions have to be upheld.
Main goal of the state entity and the service-point officer	Deliver a service to meet the target or quota (key performance indicators), minimize complaints or risk of running into litigation.	Make an individual feel like a <i>valued client</i> of the state. Encourage the client to share positive feedback about the provider (the state). At the same time, if the person cannot become a client (has no device, cannot access the service centre), the individual is left behind.	Meet the state's (duty-bearer's) obligations towards individuals (rights-holders)—regardless of their abilities, financial status, residence or other factors.
Ways that the state engages individuals into the design of relevant services or collects feedback	Limited and, in most cases, lacking.	Feedback is considered important, including written or oral feedback, product pilots, focus groups, etc. At the same time, if citizens are not seen as clients, they are left behind, and their voices are muted.	With 'deep dive' HRBA application, <i>all processes</i> to design the public service elicit diverse voices that <i>always include vulnerable groups</i> or those who are usually voiceless. The 'nothing for us without us' principle is consistently implemented. Universal design ²⁵ principles are applied.

Source: Author's analysis

Despite the prevalence of the **classic bureaucratic culture** of public service provision outside the big cities, many local government entities have succeeded in setting up **service-oriented front offices**.²⁶ These offline centres (Centres for Administrative Service Provision) offer eQueues, Wi-Fi, convenient waiting spaces and transparent guidelines and have staff trained to provide a warm welcome to citizen-clients. MDT also plays a key role, supporting the launch of the so-called 'Diia Centers' at the sub-national level²⁷ in parallel to advancing the ambitious 'paperless agenda'. While there is always a risk that the front-office staff may start falling back into the classic bureaucratic culture, the greatest safeguard against this is the increased speed of feedback exchange, including through social media, as well as 'clicktivism' of citizen-clients who leverage online communities to speak up if the in-person administrative services are rendered poorly and to tag higher-level officials to 'name and shame'.

eServices in Ukraine are based on the **service-oriented culture** with distinctive characteristics of

the IT business sector client-relations approach: reliance on instant messengers for client support, beta-testing for receiving feedback from users, responding to clients' tagging on social media, etc. Thus, for instance, the Diia smartphone application had a large-scale pre-launch test akin to market products in the IT sector, allowing early technology adopters to download beta versions, test and provide feedback online. The eService platforms were styled and marketed as trendy and sleek IT products to appeal to the young and open-minded, the urban middle class and technically savvy audiences. The visual design of the Diia portal and application won the prestigious Red Dot design award.²⁸

Increasingly, eServices became positioned as not just a more client-friendly alternative but a full-scale substitute to the face-to-face experience of service provision.²⁹ However, MDT realized that it still had to reach out to those wider audiences, which were more difficult to persuade and who could face challenges in their user journey. To

bridge a multidimensional digital divide, the ministry launched its digital education and skills-building [Osvita.diia.gov.ua](https://osvita.diia.gov.ua) portal. Yet, as with the other e-resources, its users need to possess an internet-enabled device, know about the portal's existence and have basic digital skills to navigate their learning. Responding to the challenge of internet access, MDT also allocated funding to remote rural regions to access reliable broadband internet.

In a year, it became clear that strong political will and speedily deployed solutions alone will not be sufficient to guarantee an inclusive, safe eService experience for all persons, especially as the COVID-19 pandemic started to unfold and related quarantine restrictions made access for some of the vulnerable groups a much more significant concern.

What evidence tells us about the accessibility of eServices

Findings on the accessibility of eServices presented below are based on information collected and triangulated through representative opinion polling, focus groups,³⁰ desk research on the role of national human rights institutions (NHRIs) in the fourth industrial revolution and eService experience mapping by professional IT testers with disabilities.

While eServices quickly gained much popularity among Ukrainians,³¹ almost half of the population has not used them yet, suggesting a significant digital divide. In the autumn of 2020, 53 percent of the adult population (about 18 million) reported using at least one electronic service in 12 months (see the list of most popular eServices in Table 3).

Table 3: Top-10 eServices in Ukraine in 2019–2020, multiple answers possible³²

Have you received state electronic services in any of these areas over the past year?	%
Applying for passports and addressing other issues with the State Migration Service	15
Receiving subsidies, benefits and welfare payments	13
Personal vehicle issues (driver's license, car sale, payment of fines online, etc.)	12
Pension-related (using the Pension Fund e-services portal)	11
Obtaining information from state data registers or obtaining digital extracts from them	10
Issues related to individual entrepreneurship: registration, unified tax, financial statements	9
Taxation (using the electronic Taxpayer's Office)	9
Business management of a firm or company: registration, taxes and other issues	8
Applying to receive a birth certificate or other related documentation for newborns	6
Enrolment in a higher education institution (electronic submission of documents)	6

Source: Kyiv International Institute for Sociology (2020), 'Electronic services: user experience, trust and accessibility.' Sociological findings. <https://cutt.ly/rWnfQko>

Forty-seven percent of Ukrainians did not use any service. Among them, 24 percent reported weak digital skills, and 21 percent had no internet-enabled device. The non-users also noted that

they had no need to receive the listed eServices (68 percent) or did not trust paperless state-citizen transactions (9 percent) (see Table 4).

Table 4: Why people do not use eServices; multiple answers possible

Why did you not use eServices during the past year?	%
I did not need to	68
I lack the skills to use such services	24
I do not have an internet-capable device	21
I do not trust electronic documents or services, as they are unreliable	9
I am not sure whether a service I need is available electronically	4

Source: Kyiv International Institute for Sociology (2020), 'Electronic services: user experience, trust and accessibility.' Sociological findings.

A more detailed data analysis showed that the non-users tended to be women, people over 60 years old, those with a lower educational level and those who resided in a rural area (see Table 5). Elderly women represented a particularly large group of users with limited digital skills to access the internet and web-based services, given that women have a longer life expectancy (by ten years) in Ukraine

compared to men. Also, the gap connected to the income levels is pronounced—only 40 percent of those who had funds to cover only food supplies received eServices in 12 months. The share of eService users went up to 60 percent and 71 percent among those who could meet basic needs and have savings and the wealthiest (those who could afford luxuries), respectively.

Table 5: eServices user and non-user demographic profiles

	Share, %	
	Users	Non-users
Women	50	60
Elderly (60+)	17	40
Residents of rural areas	27	40
Persons with income insufficient to buy food or sufficient to buy <i>only</i> food	32	55
Persons with an incomplete or completed university degree	54	32

Source: Kyiv International Institute for Sociology (2020), 'Electronic services: user experience, trust and accessibility'. Sociological findings.

Another UNDP-commissioned study on the accessibility of eService platforms in Ukraine revealed that these online instruments did not fully comply with international accessibility standards.³³ At the end of 2020, a total of 82 eService websites and seven electronic self-service terminals were inspected by professionally trained IT testers with a disability (visual impairments, limited mobility) against the criteria of Web Content Accessibility Guidelines (WCAG) version 2.1.³⁴ The testing found that none of the platforms and websites had full adherence to the WCAG criteria. Only 5 percent of the platforms had the required controls for operating assistive software (screen readers), 6 percent had controls to ensure sufficient contrast of the text against the background and 10 percent had mechanisms to alter the colour schemes of the page.

Despite COVID-19 lockdown restrictions, the research group was also able to assess the physical accessibility of service centre premises that offer services with a digital element (for instance, eQueues or payment of the required fees). This user journey of a person with a disability willing to use such digitally enhanced services in the premises of a service centre was documented and reflected in a forthcoming report.

As a result of this preparatory work and due diligence, the UNDP DIA Support Project design team was able to persuade government partners to start considering the 'leave no one behind' principle in eService design and provision. Analytical materials and case studies became a catalyst for the ministry to agree to review the existing eService platforms, particularly consider adjusting them according to the WCAG, and to test the whole Diia online ecosystem for accessibility.³⁵

Initial lessons learned

Whether Ukraine is able to bridge the digital divide and practice HRBA in eService design or review will depend on several factors. Despite the early stage of these developments in Ukraine, some tentative findings and conclusions can already be made as insights for other development partner practitioners:

- **Due diligence to underpin new e-solutions.** It is critical to understand both the positive sides and the shortcomings of novel and yet untested technological solutions. Negative lessons learned in the areas of, for instance, artificial intelligence and human rights, abound, including denial of service based on demographics and preferential or discriminatory treatment based on sex, race or even postal code. Such experiences are quite common in developed countries.³⁶ Emerging narratives, such as ‘tokenisation’, ‘blockchain-based solutions’ and ‘AI-powered decisions’ need to be thoroughly verified by weighing potential risks and assessing those against expected benefits before they are incorporated into international development projects.
- **Handling the political will wisely.** An iterative, cautious approach to eServices that entails data-gathering, policy reengineering and extensive testing with versatile users (including those usually left behind) may not initially be welcome by government partners that have the political will to show quick results. As governments globally look to the private markets and the start-up culture for inspiration (market-oriented model), there is much less appetite for the iterative, slower-paced inclusive approach of considering discordant rights-holder voices (HRBA model). Government counterparts could therefore express concerns about ‘too much testing’ as well as traditional, piecemeal approaches to budgeting, planning, procurement, quality control and cybersecurity requirements characteristic of digital transformation.³⁷ To come on board, government partners should be convinced that a slower but more participatory approach (that could run in parallel with fast-paced deployment with the early adopters) would bring more trust and political dividends in the long run.
- **Solid data to guide HRBA-driven eService design.** High-quality data about the digital gaps may be helpful to gain the above-mentioned political backing for the slower and more meticulous HRBA-based development path alongside the ‘quick wins’ strategy. Combining opinion polling with in-depth focus group interviews involving vulnerable groups may provide additional data leverages. HRBA-based interventions may also be used alongside those that fit the service-oriented (market) model: for

instance, massive early beta-testing with thousands of users needs not be abandoned altogether. It should, instead, be complemented with targeted user-testing by representatives of those groups that are left behind—the low income, those lacking internet access or not possessing a device, or those who are reluctant to try using services due to perceived or real lack of digital skills.

- **Well-known risks intensify.** Rapid deployment of digital solutions to provide public services increases the risks of digital exclusion (for instance, due to the design of inaccessible solutions) and personal data leaks³⁸ (due to insufficient rigour in cyber-protections or user cyber-hygiene). To stay both human-centred and secure, the task forces that work on eService solutions can greatly benefit from teaming up software engineers, user interface/experience (UI/UX) specialists, human rights experts and cybersecurity professionals.
- **Institutional pushback to HRBA.** State partners may initially object to HRBA in eService design because of the following:

 - lacking staff to organize consultative processes at the policy design stage and implement the HRBA model;
 - inability to have a quick and massive (thousands of feedback participants) consultative process;
 - perception that HRBA is ‘too far out’ and something that does not necessarily belong in a given situation; and
 - view of the HRBA as a paternalistic framework where the individuals are ‘entitled’ and the state ‘shall provide’.

Collaborative efforts between public administration bodies, international donors, development agencies, and—where possible—national human rights institutions (NHRIs) shaped as pilots (‘you lose nothing if you just try’) may help address some of the above arguments.

- **Un(der)tapped role for national human rights institutions (NHRIs).** There is significant space for the NHRIs, such as offices of the ombudsperson or human rights commissions, to step up in eService development or reengineering. Countries that forge strong connections among state champions, civil society, NHRIs and development partners are likely to be at the forefront of developing truly inclusive, accessible services with the citizens at heart. While there is some evidence of HRBA-driven policy processes applied in many settings, especially in the European Union, such practice is not as common as one would expect³⁹ and holds much potential for expansion.

Steps ahead

Finding common ground for all stakeholders (government, private businesses, CSO actors, NHRIs, and development partners) to advance HRBA priorities is the first essential step. Partners in the government entities should be presented with clear examples of how HRBA helps the state deliver on its international human rights commitments by ‘doing the right thing’ and catering to the interests of their voters at the same time. Bringing IT systems in line with WCAG standards helps meet commitments under the Convention on the Rights of People with Disabilities. Similarly, participatory design of services for young parents could help deliver on the principles of the Convention on the Elimination of All Forms of Discrimination against Women. In both cases, the beneficiaries are the voters whom government counterparts seek to serve. Meaningful communication with the citizen-users as rights holders provides avenues for feedback: not only

grievances but also greater trust in state-funded solutions.

Digital transformation and eService development are areas where explosive growth is expected in the decade to come. With ‘the new normal’ on the horizon as a result of the COVID-19 shock, there is an urgent need for a critical review of the approach to digital transformation efforts of both states and development partners. This new normal of eService design should, ideally, build a culture of HRBA-driven co-creation along with cybersecurity and citizen data protection at heart. The spirit of the Sustainable Development Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation), as well as of all other Goals, should be the guiding value in making a safe, accessible digital world a lived reality.

Endnotes

- 1 Maksym Klyuchar is a Digital Governance and Policy Development Consultant at UNDP Ukraine, email: maksym.klyuchar@undp.org. This note and the design of the DIA Support Project would not have been possible without Olena Ursu, Volodymyr Brusilovskyy, Oleksandr Ryzhenko, Oleh Denysyuk, and Leila Haccius. Deep appreciation also goes to Ildar Gazizullin, Darinka Vasquez, Samuel Ng and Mark Belinsky for contributions, edits, ideas and thought-provoking questions. The final note of gratitude goes to UNDP colleagues in the country offices in Azerbaijan, Bosnia and Herzegovina, Egypt, Serbia, Thailand and Uruguay, who shared their experiences with the DIA project design and implementation team.
- 2 While there is no compact and unified definition of the Human Rights Based Approach, the 2003 UN Agencies' Common Understanding of the Human Rights Based Approach to Development Cooperation provides a general framework. Please see: UN Sustainable Development Group (September 2003), *The Human Rights Based Approach to Development Cooperation: Towards a Common Understanding Among UN Agencies*. Retrieved 1 September 2021 from UN Sustainable Development Group: <https://unsdg.un.org/resources/human-rights-based-approach-development-cooperation-towards-common-understanding-among-un>
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- 9 See, for instance, the themes and papers to be discussed at the Digital Inclusion Policy and Research Conference 2021 (DIPRC2021) in September 2021. The detailed agenda and brief description of the papers to be discussed is available at <https://easychair.org/smart-program/DIPRC2021>
- 10 The project description is available at the UNDP Ukraine website at <https://www.ua.undp.org/content/ukraine/en/home/projects/digital-inclusive-accessible-support-to-digitalisation-of-sta.html>. The DIA Support Project Document may be accessed through the UNDP Transparency Portal at <https://open.undp.org/projects/00132377>
- 11 Please see a recent comprehensive report in this realm: Task Force on Digital Financing of the Sustainable Development Goals (SDGs) (August 2020). *People's Money: Harnessing Digitalization to Finance a Sustainable Future*. Retrieved 1 September 2021 from UN Sustainable Development Group: <https://unsdg.un.org/resources/peoples-money-harnessing-digitalization-finance-sustainable-future>
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- 19 For an overview of Ukraine's regulatory environment that enabled eServices emergence, please see: European Union (2020). *Digital Public Administration Factsheet 2020: Ukraine*. Retrieved 1 September 2021 from the Joinup Platform: https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Public_Administration_Factsheets_Ukraine_vFINAL_0.pdf
- 20 The application is freely downloadable in GooglePlay (<https://play.google.com/store/apps/details?id=ua.gov.diia.app>) and AppStore (<https://apps.apple.com/ua/app/%D0%B4%D1%96%D1%8F/id1489717872?l=en>). The Diia.gov.ua portal (<https://diia.gov.ua/>) is the web interface of the unified eServices electronic space.
- 21 The count also depends on whether each meaningful transaction is counted as a separate eService or whether a set of cognate actions are grouped as one eService. Some of the most popular services on Diia include opening a small-scale private enterprise, paying fines for traffic violations, applying for certificates and managing paperwork for newborn children (birth certificate and other papers) and changing an official place of residence that the government has on record. For the most recent updates, please see the blog by the Vice Prime Minister:

- Fedorov, M. (2 September 2021). *Two Years of MDT: Results*. Retrieved 2 September 2021 from Ukrainska Pravda: <https://www.pravda.com.ua/columns/2021/09/2/7305579/>
- 22 European Union (2 February 2020). *EU and Ukraine Sign €25 Million Programme for E-Governance and Digital Economy*. Retrieved 1 September 2021 from the EU Neighbours Portal: <https://www.euneighbours.eu/en/east/stay-informed/news/eu-and-ukraine-sign-eu25-million-programme-e-governance-and-digital-economy>
- 23 USAID / UK Aid Transparency and Accountability in Public Administration and Services Programme (TAPAS) (2020). *About Project*. Retrieved 1 September 2021 from TAPAS: <https://tapas.org.ua/en/about-project/>
- 24 East Europe Foundation (2020). *About the Program*. Retrieved 1 September 2021 from E-Governance for Accountability and Participation: <https://egap.in.ua/en/>
- 25 Kodai, L. (2 July 2015). *Embrace 7 Principles of Universal Design for Better Website Design*. Retrieved 1 September 2021 from Bitovi Blog: <https://www.bitovi.com/blog/embrace-7-principles-of-universal-design-for-better-website-design>
- 26 Ministry of Communities and Territories Development of Ukraine (1 September 2021). *Administrative Service Centres*. Retrieved 1 September 2021, from the Decentralization Portal: <https://decentralization.gov.ua/en/cnap>
- 27 MDT Plans to Open 100 Diia Centers across the Country in the Years to Come. Fedorov, M. (2 September 2021). *Two Years of MDT: Results*. Retrieved 2 September 2021 from Ukrainska Pravda: <https://www.pravda.com.ua/columns/2021/09/2/7305579/>
- 28 Red Dot Team (2020). *User Experience Design, User Interface Design: Digital Portal Diia*. Retrieved 1 September 2021 from Red Dot Award: <https://www.red-dot.org/project/digital-portal-diia-49318>
- NV Business (6 August 2021). *Red Dot: Diia Received Two Awards of the International Design Prize*. Retrieved 7 September 2021 from NV Business: <https://biz.nv.ua/ukr/tech/diia-otrimala-dvi-nagorodi-red-dot-novini-ukrajini-50175963.html>
- 29 MDT has, since the moment of its foundation, declared four goals, including at least 95 percent coverage with high-speed internet for the country, involving no fewer than 6 million Ukrainians in digital skills development initiatives, boosting the share of IT in GDP to 10 percent and making 100 percent of the administrative services available for businesses and the population online by 2024 (<https://thedigital.gov.ua/ministry#section-goals>). In October 2020, the president announced that Ukraine was moving to the so-called 'paperless' regime where citizens would not have to provide any paper-based documents to state entities if the requested data is already in the state registries and databases: Interfax Ukraine (5 October 2020). *Zelensky: Ukraine Will Start Moving Towards 'Paperless' Workflow Regime from 2021*. Retrieved 1 September 2021 from Interfax Ukraine News Agency: <https://en.interfax.com.ua/news/general/692972.html>
- 30 The UNDP Ukraine—commissioned 'Electronic Services: Experiences, Trust, Accessibility' study (https://www.ua.undp.org/content/dam/ukraine/docs/DG/HR4U/Report_KIIS_English_18.03.2021.pdf) included eight focus groups: internally displaced persons, retirees, persons with disabilities, persons without an ID or a registered place of residence, young mothers, low-income and job-seekers, rural residents, and young war veterans and combatants returning to civilian life.
- 31 In mid-May 2021, the president announced that over 10 million Ukrainians were already using the Diia mobile app and the web-based portal (<https://diia.gov.ua/news/diia-summit-20-yaki-revolycijni-poslugi-teper-dostupni-ukrayincyam-u-dijy>).
- 32 The UNDP Ukraine—commissioned 'Electronic Services: Experiences, Trust, Accessibility' study relied on computer-assisted telephone interviews based on a random sample of mobile phone numbers. A total of 2,000 respondents were interviewed. The margin of error of the sample (with a probability of 0.95 and a design effect of 1.5) does not exceed 3.3 percent for reported values close to 50 percent.
- 33 The UNDP Ukraine—commissioned 'Inclusion and Human Rights at the Forefront. Accessibility of E-Government Services and Tools for Citizens in Ukraine' study is undergoing final clearance with MDT and is scheduled for publication in September 2021.
- 34 The Web Content Accessibility Guidelines (WCAG) 2.1 are a set of internationally recognized metrics to determine whether a website is accessible for all users, regardless of their health or disability status. WCAG 2.1 is part of the EN 301 549 V2.1.2 (2018-08) Harmonized European Standard, while its predecessor, WCAG 2.0, is adopted as the ISO/IEC 40500:2012 standard. In general, WCAG is a list of criteria for visual design and proper presentation of information to ensure maximum accessibility. More information may be found at the W3C website: <https://www.w3.org/TR/WCAG21/>
- 35 The works necessary to test the Diia accessibility ecosystem are ongoing. The detailed terms of reference may be found at: https://procurement-notices.undp.org/view_notice.cfm?notice_id=78474
- 36 The 'Bots at the Gate: a Human Rights Analysis of Automated Decision-making in Canada's Immigration and Refugee system' report by the Citizen Lab at the University of Toronto argues that the application of AI to decision making in the field of refugee law in Canada threatens to create "a laboratory of high-risk experiments within an already highly discretionary system". An automated decision-making process reduces the complexity and nuance necessary when assessing the delicate subject of refugee claims. The report may be found at: <https://citizenlab.ca/wp-content/uploads/2018/09/IHRP-Automated-Systems-Report-Web-V2.pdf>.
- The 'Automating Society: Taking Stock of Automated Decision-making in the EU' report by Algorithm Watch documents practical examples of AI systems (with their positive and negative externalities) from Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Poland, Slovenia, Spain, Sweden and the United Kingdom. The report may be found at: https://algorithmwatch.org/de/wp-content/uploads/2019/02/Automating_Society_Report_2019.pdf
- 37 One of the most recent large-scale IT case studies is with the United States Department of Defense Joint Enterprise Defense Infrastructure contract valued at USD 10 billion. One of the points suggested in the analysis was that the big government investments and the sluggish procurement processes made the future system outdated even before it was designed and ready for deployment. For more, please see: Ovide, S. (7 July 2021). *Government Tech Moves Too Slowly*. Retrieved 1 September 2021 from New York Times: On Tech: <https://www.nytimes.com/2021/07/07/technology/jedi-government-tech.html>
- 38 Multiple examples may be presented here. Some of the most recent ones, both linked to the passport databases containing personal identifiable information from Belarus and Estonia, respectively: Charter 97 (31 July 2021). *Operation Heat in Action*. Retrieved 1 September 2021 from Charter 97: <https://charter97.org/en/news/2021/7/31/431475/>
- ERR News (28 July 2021). *Hacker Downloads Close to 300,000 Personal ID Photos*. Retrieved 1 September 2021 from ERR News: <https://news.err.ee/1608291072/hacker-downloads-close-to-300-000-personal-id-photos>
- 39 In August–October 2020, the DIA Support Project preparation team researched whether NHRIs in European countries had experience of engaging in the design of citizen-oriented services early on (from the stage of conceptualization) to make sure that issues with human rights are addressed before they emerge. Apart from several successful cases of reacting to human rights violations that stemmed from the use of technology (for instance, the case of the EU Ombudsman VS OLAF in 2019, <https://www.ombudsman.europa.eu/en/decision/en/118138>), the team was not able to find examples of early involvement of NHRIs into the design of eServices. Detailed information and findings are presented in 'Human Rights and eService Innovation: An Unlikely Crossbreed or an Essential Need?' available at <https://www.ua.undp.org/content/dam/ukraine/docs/DG/Human-Rights-and-Digitalisation.pdf>