



Update case study on UKRAINE.

Dr. Oleksandr Khyzhniak, Vrije Universiteit Amsterdam

PLAN

1. General Update on progress in case study
 - 1.1. What is in focus
 - 1.2. Ukraine: some facts

2. Digital Path of the “State in the Smartphone”.

3. AI FORA Ukrainian case study workshop.

4. Challenges during research: ethical issues and surprises.

1. GENERAL UPDATE ON PROGRESS IN CASE STUDY

1.1. What is in focus

- Digital Path of “Government in the Smartphone”
- Records of the workshop with Ukrainian refugees (01-02 November, 2022, Kylemore Abbey, Ireland);
- Analytical materials on “PARTICIPATORY MODELLING WITH VULNERABLE GROUPS AND PROBLEM FRAMING IN AI” by Jesús M. Siqueiros, Blanca Luque Capellas, David Wurster, Elisabeth Späth, Petra Ahrweiler, Oleksandr Khyzhniak

1.2. Ukraine: Some Facts



Area - 603,628 km²

Population – 36,7 millions

Capital – Kyiv

GDP (PPP) 2023 estimate

- Total - Decrease \$441 billion
- Per capita - Decrease \$13,900

Gini (2020) - 25.6

HDI (2021) Increase 0.773
(high 77th in the world)

Russian`s War against Ukraine



During the war from February 24 till April 2023 Russia:

- maximum controlled around 148 000 km²;
- in April 2023 controls around 108 000 km².

Ukraine during the War

- Refugees from Ukraine recorded across Europe - **8,167,986 (11 Apr 2023)***;
- Refugees from Ukraine registered for Temporary Protection or similar national protection schemes in Europe - **5,038,365 (11 Apr 2023)***;
- IDPS tracked - **5,352,000 (Jan 2023)****;
- Preliminary economy data showed a 30.4% drop in gross domestic product last year and economic analysts said risks and uncertainty remain high, especially if Russia continues to attack critical infrastructure in Ukraine;
- economic growth in 2022 = 3.1 %, and projected to slow to 2.2 % in 2023***.

*[Situation Ukraine Refugee Situation \(unhcr.org\)](https://www.unhcr.org/situations/ukraine);

** [Ukraine | Displacement Tracking Matrix \(iom.int\)](https://iom.int/displacement-tracking-matrix)

*** [Consequences of the War in Ukraine: The Economic Fallout | RAND](#)

! The level of internet coverage in Ukraine is at the level of other Eastern European countries – 86% by February 24, 2022 (in 2021 it was 82%)

Population
(14-70 years, without Crimea and occupied territories)



Internet users



Before 24.02

28,7 millions

24,5 millions



Current situation

~22,1 million

~19 million

2. Digital Path of the “State in the Smartphone”

Ukraine’s digitalisation path

In 2019, new Ministry of digital transformation team established four strategic goals through 2024 for building a digital state:

- 100% of government services are online,
- 6 million Ukrainians participate in the digital skills development program,
- IT represents 10% share of the country’s GDP,
- 95% of the transport infrastructure and settlements are covered with high-speed internet.

DIYA: State Services Online

AI FORA
artificial intelligence for assessment

<https://diia.gov.ua/>

Послуги ▾ Що таке Дія Новини Питання та відповіді Ще ▾

Зареєструватися Увійти до кабінету

Дія

Державні послуги онлайн

Назва послуги або життєва ситуація

Наприклад: візюкати ФОП або Підприємництво

Закордонний паспорт
Посвідчення водія
Студентський квиток
Дієва переадресація
Свідчення про реєстрацію транспортного засобу
Квиток платника податків
Свідчення про народження дитини
Пенсійне посвідчення

Громадянам Бізнесу

єРобота
Тут ви можете подати заявку на отримання грантів для розвитку малого та середнього бізнесу.

Пенсії, пільги та допомога
Тут ви можете отримати послуги, пов'язані із пенсією, пільгами або отриманням допомоги.

Сім'я
Тут ви можете скористатися послугами при народженні дитини. Також тут доступні послуги для багатодітних родин та на випадок, якщо ви вирішили всиновити дитину.

Ліцензії та дозволи
Ліцензія з протипожежної діяльності та на послуги з автоперевезень.

Безпека та правопорядок
Отримайте довідку про відсутність судимості, перегляньте мапу пропускних пунктів або подайте позов до суду.

Транспорт
Тут ви можете отримати послуги, пов'язані із документами водія.

Довідки та витяги
Тут ви зможете отримати довідки та витяги на усі випадки життя – пенсія, безпека, транспорт, податки, здоров'я чи будівництво. Усі довідки в одному місці.

Навколишнє середовище
Декларація про відходи та дозвіл на спеціальне водокористування.

Здоров'я
Тут можна сформувати дорослий та дитячий COVID-сертифікати про вакцинацію, про негативний ПЛР-тест та про одужання від COVID-19.

Що таке електронний підпис та як підписувати документи онлайн?

Електронний підпис – це електронні дані, які забезпечують цілісність документів та ідентифікують особу. Зокрема, за допомогою них ви можете підписати документи онлайн на порталі Дія.

Дізнатись більше

To achieve all of the four strategic goals, there were launched the digital state brand Diia (which means “action” in English), housing an ecosystem of national digital projects:

- the mobile application [Diia](#) with digital documents and is the most popular public service,
- the state portal of public services [Diia](#),
- [Diia.Digital Education](#) project for the development of digital literacy,
- the national project for the development of SME and export [Diia.Business](#),
- the unique legal and tax space for IT companies [Diia.City](#).

During the war: digital technology is deployed to help Ukrainians

Services related to the war:

- helping the army in a few clicks,
- a program of financial assistance to entrepreneurs and employees from the regions where hostilities took place,
- assistance services for displaced people,
- submitting an application for compensation for damaged property,
- eVorog, a chatbot for informing the Armed Forces about the movement of enemy equipment, soldiers or collaborators,
- TV and radio with access to a news marathon so that Ukrainians can get accurate information,
- E Document for identification for those people who left home without documents,
- pension certificate (currently in beta testing).

Starlink makes it possible to ensure the stable internet connection of critical infrastructure facilities including medical, energy, education, and business.

3. AI FORA Ukrainian case study workshop.

METHODOLOGICAL FRAME

included Participatory Systems Modelling (PSM) and Gamification.

Participants.

24 Ukrainian refugee citizens between 15 and 61 years old. Participants were mostly women with children

The attributes and abilities are featured according to each case study.

During Ukrainian workshop the game includes next stations:

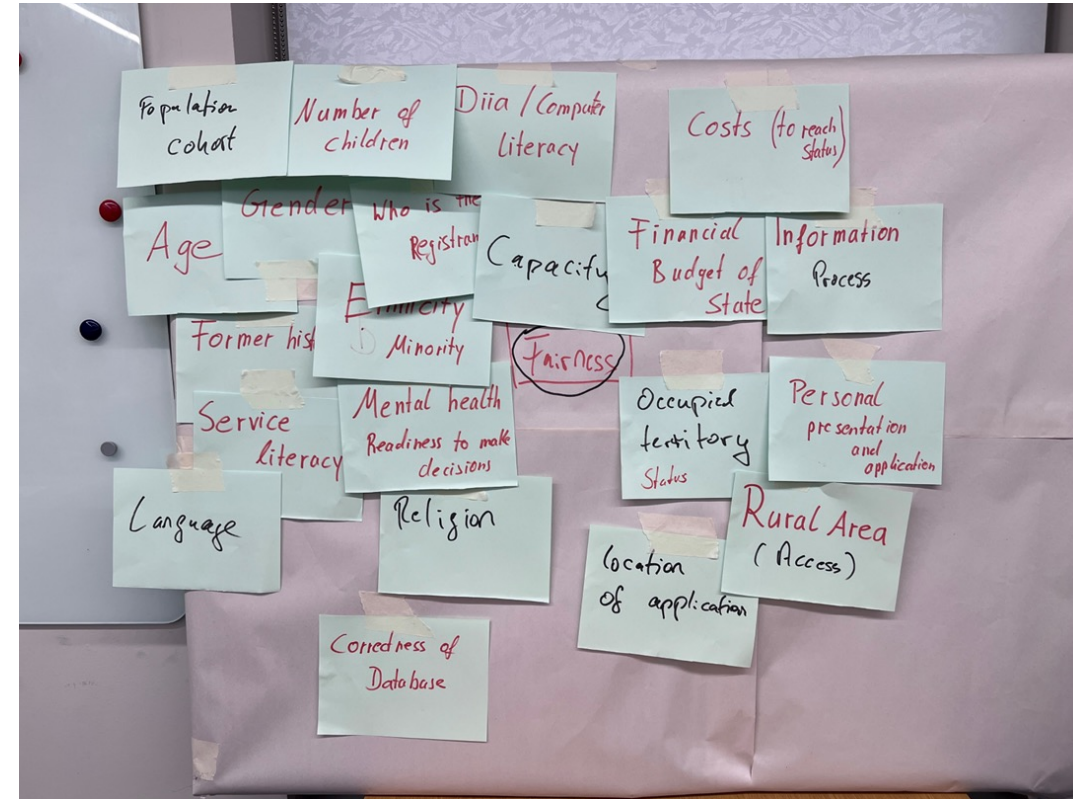
- 1) **Home**, where players can go or stay in each round and where discussions are allowed among the participants;
- 2) the **City council**, where proposals can be handled to be voted by the participants;
- 3) the **Employment agency**;
- 4) the **Training centre** to improve agents' abilities;
- 5) the **Holidays resort** where the agents can improve their happiness and;
- 6) the **Workplace**.

Table 1. Algorithm: initial vs final weighting during the Gamification

The allocation of jobs was decided based on an algorithm.

The agents' attributes were settled based on the PSM factors clustered:

- gender (man or woman),
- ethnicity (Ukrainian or not),
- household composition (single or not),
- having children or not,
- previous residence in Ukraine (in occupied, military operation zone or Western territories)
- former history of the agent (with a good track record or not).



Education level and networking abilities were included as abilities which could be improved. Each attribute gets one or no points and their sum gives the player a score. An “algorithm” was devised based on this attributes.

The algorithm is a chart with limit values to assess the score of the player and decide whether the player:

- gets access to a good job,
- gets access to a bad job
- cannot access any job.

The values of the algorithm are set at the beginning of the game, and players do not have access to. The agent's attributes and abilities and their level of happiness were included in the "algorithm" as features of the agents to determine the kind of job they could achieve at the employment office. In the last session, the game was run with the participants. Three different rounds were played, in which the participants could implement changes in the algorithm.

The dynamics of the game.

At the beginning of the game, each participant had the same units of wealth, happiness, education and networking. Some bad and good jobs were randomly distributed among the participants and there were also unemployed participants.

The goal of each player is to maximise their wealth and happiness units. In each round of the game, the participants decided in which station they would spend the round.

- Only employed participants could attend the Workplace, where they earned wealth and networking units.
- Those with a bad job or no job could try to improve their situation at the Employment agency, where they could become a new job depending on their scoring.
- Those who chose the Holiday resort spent money but won happiness.
- Staying at home provided happiness only for one round.
- Those who chose to go to the City council could propose new game rules or changes in the algorithm and earned networking units. Those who went to the Training centre earned education units.

At the end of each round, each participant could donate wealth units for the community, which could be used if, after the deliberation at the end of each round, they decided to change the game rules, the attributes or the algorithm, which had a cost in terms of wealth.

In the first stage of the game discussion, the players began to form strategies based on the “ascriptive” statuses that were indicated on their cards. They calculated their own capabilities and thought about how they could be better used. The main goal during this stage is to create opportunities for those players who did not have one to get a job.

At the end of the first round, a lively discussion took place, which significantly changed the behavior of the participants. Awareness of the possibility of changing the rules of the game through **petitioning** has led to active discussion of how this can be done. The most active role was played by small group of leaders (by 5 persons) who set a new "agenda" in the direction of finding conditions that would satisfy the majority.

When discussing these possibilities, the participants started not from their own positions, but from the positions of the conditional majority:

- *We need to change the algorithm, better first.*
 - *I suggest changing it to 3-4 days.*
- *So, there is not enough money now, we can't do it now.*
 - *Let`s do it fair to evebody.*

The type of petition was determined by calculating how it would benefit the most participants.

Accordingly, the participants unconsciously formulated the goal of the game as achieving “the utilitarian principle” – ***the maximum amount of happiness and benefit for the maximum number of people.***

Oppression of minority interests (even if a specific participant was part of it) was not taken into account.

At the end of the second day, the question of the formation of a monetary contribution for submitting a petition caused another stormy discussion.

The participants agreed to contribute regardless of the availability of work, the amount of salary and agreement or disagreement with the change of the points calculation system.

Efforts to agree on the amount of the contribution began with a proposal to act on one's own will:

- *How many people are in favour?*
- *We should divide roles who will formulate “petition” and other roles.*
 - *Who can get how much, and then we'll count.*

However, at the end of the discussion, the participants realized that if the petition is accepted, all participants will receive information about the algorithm, regardless of whether they contributed.

The participants agreed that everyone should participate. The size of the contribution ranged from 5 to 8 units, depending on what the participants had in their work, whether they were "for" or "against" the changes, whether they had plans to spend the available money in the next round.

- *Let's count who gave how much.*
- *It doesn't matter how much money everyone have. Pay equally.*
 - *This is a state tax, no one evades it!*

CONCLUSIONS

According to the results presented, we can state that participatory modelling allows us to obtain information about the values and conceptions of the participants involved. Participatory modelling is a powerful tool to include vulnerable groups as epistemic agents in AI development and design. Participation can improve public services provision by defining the problems to handle with AI and providing information about the desired state of the situation.

Having the participants in the process of problem formulation allows us to conclude that the inclusion of vulnerable groups through participatory modelling can foster the alignment of AI technologies applied to public services provision. Since vulnerable groups are often the target of public services, a good alignment of AI will only be possible if the needs of vulnerable groups are considered and not only the needs of bureaucratic administration or the computer scientists who design an algorithm with only good technical performance in mind. Additionally, the inclusion of the other stakeholders' perspectives should be included to foster a better alignment between performance and social values.

4. CHALLENGES DURING RESEARCH: ETHICAL ISSUES AND SURPRISES

1. No external evaluations of “Diia” and no readiness for collaboration of its development. Also should be additionally discussed sociological surveys that are constantly implemented via this application without taking into account other relevant sociological surveys.
2. Openness and readiness to share materials, photos of the workshop by the participants.
3. Utilitarian intentions by the majority of participants.
4. Presence of dissonance between actions in the game and actions in real life. Some players claimed that they acted collectively during the game, whereas in everyday life they usually do not show such intentions;

The final discussion revealed a number of trends regarding the nature of interactions between participants during the game:

- manifestations of conformist behaviour. From time to time some participants tried to find out what others were doing before making a move;
- identification of justice, interests and happiness. The criterion for winning the game is individual satisfaction with the conditions that have developed after the change in its rules;
- the importance of awareness that coordinated interactions can lead to system change;
- in conversations among themselves, the participants noted the importance of the fact that they understood the fundamental possibility of achieving social changes on their own;
- the presence of an active minority played a key role in the course of the business game.



Thank you for your attention!

Update case study on Ukraine.

Dr. Oleksandr Khyzhniak, Vrije Universiteit Amsterdam