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Online Public Engagement Platforms and Participation in Ukraine

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1 Abstract

Participation and accessibility in ICT are according to Amartya Sen determining for equality of opportunity (Toboso, 2011). The future is digital and removing barriers that cause exclusion and to promote more participation is key according to current research (Toboso, 2011).

Online public engagement platforms are digital platforms where citizens can perform civic activities, one example of this is the EDEM platform. EDEM platform is an online public engagement platform launched in Ukraine as a pilot through the cross-disciplinary network Evidence in Governance and Politics (EGAP n.d.). Through investigating the implementation of the EDEM platform in Ukraine and the barriers citizens experienced, this paper aims to map out the citizens experiences and the outputs and outcomes of the implementation.

This thesis is using the qualitative methods (Patton, 1990) semi-structured interviews (Longhurt, 2003) and data document data analysis (Bowen, 2009). Furthermore, the thesis is analysing the data findings using thematic analysis (Boyatziz, 1998) and recursive abstraction (Polkinghorne, Arnold, 2014). For a thorough analysis the aims are answered with the implementation in Ukraine as an example. Although this is specific to a country, it can give indications on how an implementation and the barriers surrounding this are in other implementations of public engagement platforms.

According to research by Mossberger, Tolbert and McNeal young Americans are more likely to show interest in politics if it is on the web (Mosseberger, Tolbert & McNeal, 2007). This is likely translated to other countries in the same matter. Participation in elections and democratic processes can be seen from the research of Blais, Gidengil and Nevitte which shows that voter turnout is declining, and especially voter turnout of younger generations (Blais, Gidengil, Nevitte, 2004). In sum the research shows that young voters do not vote and that young voters are more likely to vote if it is on the web. In other words, Online Public Engagement Platforms are important for the future of democracy.

Keywords: Accessibility, Public Engagement Platform, Ukraine, Participation, Barriers

2 Introduction

Online public engagement platforms provide a means to discuss political issues and are becoming more prevalent on the internet-based society (Mosseberger, Tolbert & McNeal, 2007) because more governments have started adopting these (OpenGovPartnership, 2018). The society and its functions are transforming to become more digital according to Dufva and Dufva (Dufva & Dufva, 2019) and we must make sure it is accessible to everyone.

In the past, people were invited to public gatherings on the agora where they voiced their opinions in an early form of a public engagement platform (Schwartzberg, 2010). Public Engagement Platforms have since become digitalized and are now often accessible through the internet with for example EDEM platform, CitizenLab and 76Engage.

Previous research has shown benefits with Online Engagement Platforms, Farina et al on the other hand talk about the drawbacks (Farina et al, 2014). Farina et al explains that Online Public Engagement Platforms in some cases can trade good participation for more participation. This means that more people get somewhat active while less people get very active with public engagement (Farina et al, 2014). Another drawback by Farina et al is that political language is often complex and information heavy. To make political choices more understandable, legislators and politicians need to simplify the language and use layman terms (Farina et al, 2014). In other words, to have an effective and informed public engagement platform, the information needs to be understandable and accessible by everyone.

Another drawback with Online Public Engagement Platforms is the accessibility of the solution itself. It is easy to see if a public hall meeting doesn't have a ramp for people with motoric disabilities to get in and voice their opinion, but if the code behind a solution does the same to people with other disabilities it is harder. Not having an accessible Public Engagement Platform can lead to discrimination, and in a worst-case scenario leave 20% of the population out of the decision-making process (Worldbank, 2019). While 20% is the number of people with various disabilities, leaving only a smaller percentage out of the decision-making process can be a threat to democracy.

Ukraine launched a pilot for an Online Engagement Platform with the support of Evidence in Governance and Politics (EGAP). EGAP is a network of researchers which try to prove or

disprove topics of governance, politics, and institutions (EGAP, n.d.). This engagement platform had several possible uses, for example voting over some uses in the municipality budget, general participation, voicing opinions, and other e-democracy related activities (EGAP, n.d.). The launch of this Public Engagement Platform was the basis on finding out citizens experiences. Outputs and outcomes of the launch and the research question was be answered with this launch in mind.

The aim of this master thesis is to investigate the case of the launch of the Public Engagement Platform "EDEM platform" from Evidence in Governance and Politics (EGAP) which barriers were present and to which degree these affect democracy in Ukraine. The following research question was be answered through this master thesis: *To what extent do Ukrainian citizens experience barriers accessing public engagement platforms for political participation?*

First this thesis investigated the relevant literature, then this thesis detailed the methods. Then this thesis looked and investigated the ethical dilemmas with doing this thesis. After this a project plan was posed, this was subject to change but was meant to guide the reader to what this thesis aims to do and when. After the project plan a set of interviews document data was performed and analysed according to the methods detailed. Lastly this thesis presents the results and concludes the results with trends and recommendations for future implementations of public engagement platforms.

3 Literature Review

3.1 Societal and Governmental Barriers

3.1.1 Civic Engagement

Immigration is not traditionally seen as a barrier but rather as a compound of other barriers. Immigrants might have lower skill level with ICT, experience language barriers and most often start out as a lower socio-economical position. This especially applies to elderly immigrants according to Kluzer (Kluzer, 2012). This master thesis is investigating how immigrants as a marginalized group experience interact with the E-DEM barrier and which barriers they experience. Further immigration has implications on civic engagement, but also non-immigrant citizens can experience barriers on civic engagement.

Relevant literature concerning civic engagement talks about barriers with the transparency, language barriers, time barriers and public awareness (OECD, 2009) (Arvodino, 2015). This literature to a lesser degree focuses on the ICT barriers which arise from the ICT solutions themselves. Research by Harris, Owen and De Ruiter purposes that persons with disabilities need support in both formal and informal terms when It comes to civic engagement (Harris, Owen & De Ruiter, 2012). Some of the support purposed by Harris, Owen and De Ruiter is peer mentoring, Training and education and accessible technology (Harris, Owen & De Ruiter, 2012).

3.1.2 Cost

Cost and cost-reduction is a deciding factor and might be a barrier when organizations and governments implement new features platforms (Ebrahim & Irani, 2005). According to Ebrahim and Irani governments and organizations may postpone or not introduce new platforms and ways of doing things if costs are too high or cost-reducing is too low (Ebrahim & Irani, 2005). In other words costs can be an organizational barrier to the implementation of for example Public Engagement Platforms.

One factor when addressing costs is return on investment (Chmielewski & Phillips, 2002). Research shows that government are increasingly focused on the bottom-line (Chmielweski & Phillips, 2002) and this is probably also true in the case with the implementation of the

EDEM platform Public Engagement Platform. While several ways of computing the ROI are needed according to Fuglerud, Hallbach and Tjøstheim (Fuglerud, Hallbach, Tjøstheim, 2015), The ROI is generally calculated as current value. In this case the current user participation minus the cost, a yet unknown number, divided by the cost of investment (Chen, 2020).

Case studies by Fuglerud, Hallbach and Tjøstheim also show that big companies like Tesco and D&G have shown an increase in income and decrease in maintenance costs after implementing different accessibility solutions. (Fuglerud, Hallbach & Tjøstheim, 2015). Tesco did not technically Universally Design their solution, they added an element of accessibility for visually impaired users and therefore can be said tackled half the issue and still came up ahead (Fuglerud, Hallbach & Tjøstheim, 2015).

3.1.3 Internet, Hardware and Software

Skinner, Poland and Biscope theorize that the quality and availability of internet might be a barrier with the implementation of an Online Solution and the adoption of it (Skinner, Poland & Biscope, 2003). Ukraine has an internet penetration of 70%, which is projected to reach 82% by 2022 (O'Dea, 2019). Furthermore, a large population of Ukraine also has access to Mobile network (Nperf, 2020). Comparingly the worldwide internet penetration is 58,8% and the Mobile Network Penetration is around 50% (GSMA, 2019). GSMA also states that in LMIC countries, which Ukraine is (WorldBank, 2019), Internet connectivity is often based on Mobile Internet (GSMA, 2019).

According to research by Minaev et al, Ukraine has since year 2000 focused on creating an information infrastructure for research and education. There is therefore reason to believe that the development of infrastructure in higher education has also made the general infrastructure in Ukraine better (Minaev et al, 2002). The General state of the information infrastructure in Ukraine can be seen in the numbers of internet penetration and mobile network access which are comparingly higher than the mean average in the world. (GSMA, 2019) (O'Dea, 2019). Hardware and software are other barriers which can affect political participation.

Research shows that although developing and poorer countries have a better access to hardware than earlier this is still lacking (Hosman & Arney, 2017). Hardware might prove to be a barrier if the people do not have access to correct hardware to access the EDEM platform. The Software demand on hardware must be appropriate and according to Heeks new technologies and innovation must be present to introduce ICT solutions in poorer countries. (Heeks, 2008). Related research also states that there must be hardware-software simulation to verify that these works together (Rowson, 1994).

3.1.4 Transparency and distrust in Political Participation

Political participation in social sciences is about the different mechanisms for the public or users to show their opinions. This is regarding politics, economics, management, or other social decision making. The political participation in Ukraine has been halted by a tumultuous political situation and by a lack of trust in the government (D'anieri, 2018). The Ukrainian government has therefore as seen by this thesis implemented several initiatives to better the situation, for example online public engagement platforms.

The directorate of democratic institution in the EU have released guidelines on transparency of e-enabled election (Directorate of Democratic Institutions, 2015). Although this is made for EU-countries the principles can apply to E-voting, online public engagement platforms and transparency in general. As seen from the document the source code for example shall remain open source for review for the general public. There are already examples of open-source code for Online Public Engagement Platforms such as OPL Opengov (OpenGov, 2018) which is an open government platform developed by the governments of India, Canada, and the United states. The work of Douglas Rushkoff also states that one should have open-sourced code, but in addition goes into detail on how a closed source can be negative security wise (Rushkoff, 2003).

3.2 Individual Barriers

3.2.1 Disability and Barriers

International Telecommunications Union has defined Barriers as "Attitudinal or environmental factor that, in relation to an impairment, limits functioning and participation in society on an equal basis with other" (ITU, 2019). This loosely defines accessibility barriers as something that limits functioning in everyday life. Another definition by the ITU is disability "An evolving concept, which refers to the interaction between persons with impairments, and attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others" (ITU, 2019). These definitions are important for the understanding of accessibility and inclusion as stated by Sierkowski (Sierkowski, 2003). Furthermore, these definitions are big parts of accessibility defined by ITU as "The degree to which a product, device, service or environment (virtual or real) is available to as many people as possible." (ITU, 2019).

3.2.2 The Gap Model of Disability Theory

Research shows that barriers with ability-level are prevalent within ICT (Piling, Barret & Floyd, 2004). Which disability or ability the individual has affects how the individual uses the ICT solution according to Stendal (Stendal, 2014). This master thesis aims to find out how persons with different abilities experienced using the EDEM platform public engagement platform and to which degree the accessibility of the platform affected their use.

Research around ability levels show a theoretical model of disability called "the gap model" (Universell, 2019) (Solvang, Hanisch & Reinhardt, 2016). while there are several models for that try to explain ability-level like the social model and the medical model (Oliver, 2013), the gap model best explains the bridging of the disparity between a user's ability level and the demand from the system (Universell, 2019).

Figure 3.1 Depiction of the Gap model of disability

There is a significant number of scientific articles on the integration of ICT in school (Bingimlas, 2009) (Al Mulhim, 2014) (Salehi & Salehi, 2012), finding relevant literature concerning which accessibility barriers are most prevalent within public engagement platforms is harder. Online public engagement platforms are a new phenomenon which is yet to be investigated thoroughly. Some relevant literature still exists but to a great degree is published by owners or stakeholders of these platforms. Some barriers are discussed in these articles, like costs and fear of low participation. The website of one of the Online Public Engagement platforms, CitizenLab, states that these barriers can be mitigated by some Universal Design principles like simple and intuitive use, and perceptible information (Lodewijckx et al., 2019). Inclusion International has a brochure with information about civic engagement for disabled people (Inclusion International, 2015) which explains that for example voting ballots and polling stations are not accessible, this can to an extension also concern ICT solutions not being accessible if the Public Engagement Platform is not accessible.

3.2.3 Barriers for online participation

Research shows that persons with disabilities experience barriers with ICT solutions more often than people with no disability (Piling, Barret & Floyd, 2004). Barriers are different within different demographics, elderly for example experience a high number of barriers with cognition, skill-level, and technology (Sayago & Blat, 2011). Younger people on the

other hand might not experience similar amounts of barriers as elderly but can experience environmental barriers. One example of an environmental barrier is where young people use ICT solutions while commuting in a stressed environment (Lenhart et al, 2010). Research from Sayago & Blat, Piling Barret & Floyd and Lenhart et al state that barriers are very diverse, therefore only some barriers were investigated in this master thesis.

While the age-related barriers can be found without in individuals and groups which are not in a specific age group, which age-related barriers and to which degree the barriers restricts the individual with interacting with ICT solutions is individual (Sayago & Blat, 2011) (Lenhart et al, 2010). Research by Hackett, Parmanto & Zeng shows that by the age of 65 users will have lost at least some of the ability to focus, resolve images, distinguish colours, and adapt to changes in light (Hackett, Parmanto & Zeng, 2003). The age contingent ability loss affects how these individuals use ICT solutions (Hackett, Parmanto & Zeng, 2003) and is investigated through this master thesis.

Another barrier that is investigated in this master thesis are barriers concerning the ability-level of the individual. Research shows that barriers with ability-level are prevalent within ICT (Piling, Barret & Floyd, 2004). Which disability or ability the individual has affects how the individual uses the ICT solution according to Stendal (Stendal, 2014). This master thesis aims to find out how persons with different abilities experienced using the EDEM platform public engagement platform and to which degree the accessibility of the platform affected their use.

Younger people tend to be more tech-savvy and adopt technology faster than their older counterparts (Valor & Sieber, 2003). Barriers concerning skill level mainly apply to either elderly or simply people that don't want to adopt new technology. Groups with low skill level must be reached somehow to increase user participation. This master thesis investigates how participation was affected by skill level.

The literature also shows that marginalized groups are less likely to vote or engage civic activity (Priestley et al, 2016). While there are several national initiatives to increase participation for disabled people as the CRPD (UN, 2020) (Kharkiv Human Rights Protection Group, 2009), there are still obstacles disabled people must go through to participate in politics. Some of these obstacles are according to research Insufficient Poll worker training,

Access to polls (including publicly available transportation) Access to election materials, registrations prior to elections and Stigma. (Ornstein & Kopic, 2016).

Young people don't vote because of lack of faith in political parties, lack faith in their own knowledge of politics and new forms of politics appeal more to these groups as for example self-actualization politics (Konstantinou, 2017) (Record, 2011).

In general, across all user groups some reasons for low user participation might be apathy and burnout, work involved in registration, education, and lack of appealing alternatives (Brookshire, 2019) (Butler, 2019). Many but not all of these reasons for not voting or engaging can presumably be remedied with an online public engagement platform and so one of the outcomes of this project is to address how the output was affected after the implementation.

3.3 Universal Design, laws, and legislations

3.3.1 Laws and legislations

Ukraine has both signed and ratified the CRPD (UN, 2016). The CRPD has several articles governing the rights of people with disabilities with the most relevant being Article 29.

"To undertake or promote research and development of universally designed [technology], … and to promote universal design in the development of standards and guidelines;" (UN, 2016)

In 2012 Ukraine adopted the National Plan for The Implementation of The Convention on the Rights of Persons with Disabilities as an action plan for the CRPD. (OHCHR, 2015) This shows that Ukraine has a plan around disability and the adoption of the CRPD and that it takes its ratification and signature of the convention seriously. Even though Ukraine has a strategy towards disability, a popular science articles shows that only 4% of Kiev's infrastructure is Disability Friendly (Pravda, 2014). It is reported that Ukraine has 6% persons with disabilities and an additional 1,5% with temporal disabilities in 2014. (CIA, 2014) These numbers show that there is a need for accessibility laws and to follow up both these and the CRPD.

Ukraine has several actions plans according to the OpenGov (OpenGovPartnership, 2018) These actions plan have commitments related to public procurement, open data, access to

information, online public services, cooperation with civil society organizations and anti-corruption (OpenGovPartnership, 2018). According to OpenGovPartnership these plans are set in motion to promote transparency and to make the partnering countries leading when it comes to E-Government (OpenGovPartnership, 2018).

3.3.2 WCAG

The theory of Universal Design is defined as "design of products, environments programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" by the CRPD (UN CRPD, 2020). The convention on the rights of people with disabilities or CRPD is a human rights treaty that promotes inclusion and protects the rights and dignity of people with disabilities (UN CRPD, 2020). According to the UN 181 countries have ratified the convention thus formally consenting to follow the CRPD which in part contains Universal Design. Research by Giannoumis and Stein shows that to date, Norway is the only country where service providers are bound by law to ensure Universal Design of ICT solutions for people with disabilities (Giannoumis & Stein, 2019). In this thesis we will examine how universal design and WCAG and how it is used in the EDEM platform.

The theory of universal design is that conceptually Universal Design in ICT solutions is about making the solutions accessible to the furthest degree possible for as many people as possible. W3C has developed a set of accessibility guidelines to achieve this goal (W3C, 2020). The web content accessibility guidelines, abbreviated WCAG are now at version 2.1 which Is an extension that build on the more comprehensive WCAG 2.0 guidelines (W3C, 2020). The WCAG 2.0 follows four principles, Perceivable, Operable, Understandable and Robust. These four principles in turn have testing criteria and conformance levels ranging from A to AAA with AA being the easiest to achieve and having the least compromise with design and AAA being the hardest to reach and having the most compromise with design (W3C, 2020).

The guidelines set by WCAG 2.1 are utilized for comparison in this thesis. It is the most up to date standard and because WCAG 2.1 to a larger degree addresses issues on mobile devices compared to its predecessors (W3C, 2020).

The web content accessibility guidelines are a set of guidelines developed by the world wide web consortium (W3C, 2020). The web content accessibility guidelines abbreviated as WCAG are a set of recommendations for making web content more accessible for all user agents, but especially people with disabilities (W3C, 2020).

WCAG 2.1 is an extension that builds on WCAG 2.0 and includes additional criteria that address accessibility for people with cognitive disabilities and people with low vision. The WCAG 2.1 standard also addresses users on mobile devices to a larger degree than the WCAG 2.0 (W3C, 2020).

3.3.3 Accessibility in Mobile Applications

According to W3C there are no separate guidelines for mobile applications as they are covered in W3C WAI accessibility standards and guidelines (W3C, 2020). The WCAG 2.1 extension to the WCAG standard addresses issues on mobile devices among others (W3C, 2020). WCAG 2.1 was first published in June 2018 and therefore little research exists on the topic (W3C, 2020). Another standard for Accessibility in mobile applications is the accessible rich internet application suite or WAI-ARIA (W3C, 2020). WAI-ARIA defines ways to make web content and web applications more accessible to people with disabilities, and especially helps dynamic content and advanced user interface controls develops with Ajax, HTML, JavaScript and related technologies. WAI-ARIA gives developers and designers more tool to make solutions accessible with mark-up that can be interpreted by assistive technologies especially for people who rely on screen readers and people who can't use a computer mouse (W3C, 2020).

Research by Serra et al from 2015 points out several problems encountered by the users in their research on mobile devices were not covered by the guidelines (Serra et al, 2015). This might still be the case after the launch of WCAG 2.1 because the research shows that in cases where the problems were covered by the standards from W3C, the severity of the problems did not correspond to the priority level of the correspondent guidelines. (Serra et al, 2015). Research by Clegg-Vinell, Bailey and Gkatzidou from 2014 investigates the relevance and appropriateness of Mobile Web Accessibility guidelines. Clegg-Vinell, Bailey and Gkatzidou find that issues with mobile accessibility do not easily relate to guidelines or

require interpretation from an expert to understand (Clegg-Vinell, Bailey & Gkatzidou, 2014). WCAG 2.1 addresses many problems of the pointed out in but the research shows that the accessibility standardization probably is somewhat lacking.

A new term has been purposed by Hjartnes and Begnum, AUD which is UD in agile ICT projects (Hjartnes & Begnum, 2018). According to this research AUD faces challenges in two main fields, firstly, "Capturing, communication, keeping track of and quality assure requirements from stakeholders and users as a part of the agile development process", and secondly, "balance time spent on user-involved activities with development activities" (Hjartnes & Begnum, 2018). The research by Hjartnes and Begnum is highly relevant because agile methods rely heavily on iterations and continuous delivery.

3.3.4 Mobile Accessibility guidelines

Several stakeholders have added mobile specific accessibility guidelines, but none of these have been adopted as the golden standard of guidelines. Android and iOS have developed accessibility guidelines to make their application accessible (iOS Accessibility guidelines, 2020) (Android Accessibility guidelines, 2020). The guidelines are varying based on the features available on the respective smartphones and which assistive technology accessible. According to research by Milne, Bennett and Ladner these guidelines in general recommend that elements are screen reader friendly and that mobile applications can be navigated by switching focus (Milne, Bennett & Ladner, 2014).

Private and public stakeholders also have their own versions of accessibility guidelines for mobile accessibility. BBC and Mozilla have both developed accessibility standard for mobile content (BBC Accessibility, 2019) (Moz Accessibility, 2019). Mozilla Developer Network or MDN guidelines focus on colour, visibility, focus, text equivalents, handling state and orientation (Moz Accessibility, 2019). The BBC mobile accessibility standards are guidelines are a set of best practices for BBC mobile web content and applications, but it is open for reuse under an Open Government Licence for Public Sector Information (BBC Accessibility, 2019).

A11Y project, or The Accessibility project is a global movement for promoting accessibility and make implementation on the web easier according to themselves (A11Y, 2016). A11Y

has their own checklist for following accessibility guidelines and is on the list of accessibility checking software on W3C's website (W3C, 2020). The A11Y checklist follows WCAG closely and is an extensive checklist with describing text and links directly to the corresponding WCAG Success criteria (A11Y, 2016).

The accessibility guidelines from WCAG and the different mobile accessibility guidelines are utilized in an automated usability analysis. This is done to discover errors in the platform and use these in the user interviews.

3.4 E-Dem Platform

There are several political participation platforms which are being used in different countries. While these are different in design and implementation, the main point of these is that the public gets to participate politically online. Ukraine has several online public participation platforms, but this master thesis investigated one, the E-dem platform.

3.4.1 E-Dem Platform functionality

The E-Dem platform is a E-democracy solution which consists of four main parts. E-Petitions, E-Consultations, Participatory Budget and OpenCity all combined in a single system.

The E-Dem platform is used by more than 250 communities in Ukraine and is the biggest E-democracy platform in the country. The E-Dem platform is free for now, when the EGAP program ends in 2023 it will be available but probably is going to be acquired by private parties and sold for a price according to administrators of the platform.

3.4.2 Open City

OpenCity is an electronic service which lets the users inform local authorities about current problems with landscaping, housing, communal services, and infrastructure amongst others. The most reported problems reported by the users are problems with sidewalks, roads, and communal services.

The process in OpenCity is:

Step 1: The user registers on the portal using BankID or electronic signature. User chooses the category of the problems, adds a description and marks on an interactive map where the problem is located.

Step 2: The information about the problem is sent to the department which is responsible for the solution.

Step 3: The authorities solve the problem and involve the users about it marking the spot marked by the user green instead of red. If no solution exists users are given an explanation on the spot marked.

3.4.3 E-Consultations

E-Consultations or Public Consultations is a digital service which lets the local government involve the community residents in surveys, Decision-making, and voting. Local governments reach out to citizens registered as users of e-consultations and for example send out surveys, discusses legislations or take in consultations from citizens.

The process of E-consultations is:

Step 1: The user registers on the portal using BankID or electronic signature.

Step 2: The Municipality send out a survey, discussion of a legislation or ask for citizens opinions on matters.

Step 3: Citizens answer questionnaires, discuss, or give their opinions on the matters.

Step 4: The local governments take the citizens opinions into consideration and use these.

3.4.4 E-Petitions

E-Petitions or Local Petitions is a digital service which give Ukrainian citizens the possibility to draw authorities' attention to local problems that are important for an individual or a community online.

The process of E-petitions is:

Step 1: The user registers on the portal using BankID or electronic signature. User chooses the category of the problems, adds a description, and sends in the petition.

Step 2: The petition is put online and needs a number of votes, which changes by the population of the municipality it is being used it. If this number is reached it is read by the municipality, else it does not go any further.

Step 3: If the petition got enough votes it gets read by local authorities which come back with an answer to the starter of the petitions. These answers can include a plan on the way forward or in a way that fits, answers the petition.

3.4.5 Participatory Budget

Participatory Budget is a digital service which gives the users an opportunity to initiate their own project and to vote on other projects. Participatory budget is allocated a fund from the municipality to use on projects which differs with the economy of the municipality.

The process of Participatory Budget is:

Step 1 The user registers on the portal using BankID or electronic signature. Adds a description and sends in the application.

Step 2: The application is checked if it's feasible and legal, the application is verified and clarified with the writer of the application.

Step 3: Users vote on which projects they want done and a winner is announced when a time limit is reached.

Step 4: The department responsible for the project that won implements the project.

3.5 Drawbacks

There might be drawbacks of the implementation of the public engagement platform and while this is not the focus of the project must be addressed but to a lesser degree. Some of the dangers of going digital and not manual are security issues, fraud, and corruption but with the correct implementation it can to the greatest degree possible be remedied (Bismarck, 2010). Other potential drawbacks can be if a private company develops the public engagement platform. First it is less likely that a private company releases source code to the public for review, but the involvement of private organizations in politics has shown

through times to not be a good idea. Another problem might be anonymity issues because on one side each voter must be identified but on the other each person must be anonymous (PublicIssuesComp, n.d.) These drawbacks and more must be investigated but as stated before is not the main focus of this master thesis.

4 Methodology

This assignment utilizes qualitative methods to gain an exploratory understanding of the underlying reasons motivations and opinions on Public Engagement regarding ICT solutions. Qualitative methods let this master thesis discover underlying trends and allow it to dive deeper into the issue at hand.

This master thesis uses three qualitative methods to triangulate the results. The methods are User interviews, Expert interviews, and document data analysis. This master thesis uses a heuristic analysis of the application E-DEM for a deeper understanding and to ask the questions in a more precise way. All the interviews are performed as semi-structured interviews.

While quantitative methods and machine learning could have been utilized with for example sentiment analysis the exploratory nature of this master thesis made it more natural to avoid it and focus on qualitative exploratory methods.

4.1 Methods

4.1.1 Heuristic Analysis

Heuristic Evaluation is a usability engineering method to find problems with usability in an interface design (Nielsen & Molich, 1990) In this Heuristic testing Nielsens 10 Heuristics have been applied. (Nielsen, 2005). Nielsen's heuristics are rules of thumb are according to the author himself general principles for user interface design (Nielsen, 2005). According to research by Jacob Nielsen and Thomas Laundauer three to five evaluators is the most cost-effective. (Nielsen & Laundauer, 1993). Heuristic analysis is an expert analysis which can help to uncover some usability problems, these are further used as a basis for the interviews.

For this master thesis only one evaluator, the author, has been used to analyse the solution. As this master thesis is written by only one author and therefore only one heuristic analysis, this analysis will not be used as proof of anything. The heuristic analysis will be used together with the semi-structured interviews to be able to discuss problem parts with the

application. Nielsens 10 heuristics are the basis for the heuristic analysis in this article (Nielsen, 2005).

4.1.2 Semi-Structured interviews

Semi-structured interviews are a qualitative research method that utilizes open-ended questions and an informal two-way communication when interviewing according to research of Lindlof & Taylor and Longhurst. (Lindlof & Taylor, 2017) (Longhurst, 2003). Research by Fylan shows that it is good practice to follow an interview guide, but that this should not impose to much structure on the interview to facilitate a two-way communication. (Fylan, 2005) In other words, an interview guide is present in semi-structured interviews but serves more as a guide to which topics and questions you want to ask rather than rigorous must-follow plan (Fylan, 2005).

The Semi-structured interviews in this master thesis will be recorded through audio, as this allows the interviewer to focus fully on the interaction (Longhurts, 2003). The audio will at the first possible occasion be transcribed into text and deleted as research shows it is easier to do when the conversation is fresh in mind (Longhurts, 2003). According to Blee and Taylor semi-structured interviews allow the interviewees to show feelings and naturalize the conversation as opposed to formal interviews, this means that the answers will be affected by feeling and make the coding process harder. (Blee & Taylor, 2002). One way to remedy this as purposed by Blee and Taylor is keeping the coding process as easy as possible which this master thesis will make use of (Blee & Taylor, 2002). This means that the themes and codes developed will be understandable and easy as to not be affected by personal bias or incorrectly interpreted (Blee & Taylor, 2002).

Semi-Structured interviews are a good way of gathering data through a two-way communication, research by Raworth et al states that semi-structured interviews often are the best way to learn about people motivations behind people's choices (Raworth et al, 2012). This in turn is valuable for the master thesis because it reveals the impact on the interviewee's life concerning the implementation of the Public Engagement Platform and might show things that are not expected in the data collection (Raworth et al, 2012).

The User interviews were 15 semi-structured interviews to investigate which barriers the users experienced and how this affected their political participation. 9 of these interviews were novices (users of the platform), and 6 were people connected to the project or other experts in the field. The user interviews were done online through zoom and transcribed before being analysed.

4.1.3 Document Data analysis

Document Data analysis is a method often used together with other qualitative data collection methods to make a study reliable and more valid (Bowen, 2009). Document Data Analysis in short is split into two, formal which often are produced by organizations or informal which often are produced by individuals (Bowen, 2009). The Document analysed can later be given a code for easier identification and written into a data collection sheet for easier analysis (Altheide et al, 2008).

According to Bowen there are three steps to analyse a document: skimming, reading, and interpreting (Bowen, 2009). Other research purposes a fourth step which is coding and writing into a data collection sheet (Altheide et al, 2008). For the master thesis the document analysed will follow this four-step process. As purposed by Bowen the documents analysed will be public records and other formal records produced by organizations such as academic literature and popular literature. Another source that will be used less actively is informal material produced by individuals such as websites, social media, and online communities. This will be used less actively because research shows that this is more likely to be incomplete, falsely remembered or used to push an agenda according to research by Owen (Owen, 2014).

To produce more valid and reliable research more than one method of data collection will be used (Bowen, 2009). Together with semi-structured interviews, document data analysis might on a higher-level reveal government and organizations future plans. The future plans can for example be within internet penetration, Mobile Networks and other possible barriers with Public Engagement Platforms. The analysis of Document Data can also show what the plans were before the enrolment of the EDEM platform Public Engagement Platform by EGAP and show how and if the government planned for inclusion and ICT barriers. Research

shows documents are stable and non-reactive and therefore do not change based on the actual implementation of the Public Engagement Platform (Bowen, 2009).

4.1.4 Analysis

4.1.5 Thematic Analysis

The Thematic analysis is a method for analysing qualitative data, in this project for example it will be used to identify common themes or patterns that come up repeatedly in the interviews. The thematic analysis has several parts to as described by Guest, McQueen and Namey. (Guest, McQueen & Namey, 2011). While often used in psychology as stated by Clarke, Braun and Hayfield it can also be used for other topics and subject areas to analyse themes (Clarke, Braun & Hayfield, 2015).

4.1.5.1 *Planning and preparing the analysis*

The planning step of thematic analysis is according to Guest, McQueen & Namey a step where the research questions themselves are developed and the way of asking these is established (Guest, McQueen & Namey, 2011). It is stated that one should establish analytic objects or the objects you are analysing. It is also often useful to make an analysis plan which might include which research questions are investigated, how many people will be involved and their roles, rules for code, expected output and other general guiding factors for the analysis (Guest McQueen & Namey, 2011). Different analyses will need different plans and it is often more important to have a plan when several people are Involved in one data collection and analysis.

4.1.5.2 *Themes and codes*

One of the main benefits of thematic analysis is the mathematical view that often doesn't appear in qualitative methods (Aronson, 1995) by coding the data collected from the qualitative methods it can be shortened down and made easier to follow up with the next steps (Guest, McQueen & Namey, 2011). The most prevalent way of coding themes is text segmentation, or the process where similar text segments are put together (Aronson, 1995).

Text segmentation is when for example interview answers are segmented into groups according to the meaning or intended meaning of the answer and are coded in themes.

Different levels of themes can be provided as stated by Braun and Clarke (Braun, Clarke, 2006), this means that segmented text can first be coded and then broken up into similar statements within the coding. This is done both to make it easier to analyse the data material but also to provide logical chains that are easier to follow and analyse (Braun, Clarke, 2006). One example of different levels of themes in this thesis can be to first identify that an interviewee has experienced barriers, and then the second level would be which barriers the interview object has experienced.

4.1.5.3 *Reviewing Reliability and Validity*

As answers from interviews are segmented and coded some information might disappear, this in effect can affect the reliability and validity of the analysis (Guest, McQueen & Namey, 2011). Reliability in the sense of qualitative methods means that research is consistent over time and can be both internal and external. Validity on the other hand is to which extent the scores from a study represent what they are intended to (Yonge & Stewin, 1988). According to research by Alhojailan revaluating how the coding fits the intent for the answers from interviews is essential and it is important to have the validity and reliability of the study in mind when doing these evaluations (Alhojailan, 2012).

4.1.6 Recursive Abstraction

Recursive Abstraction is another method to analyse qualitative data and is to a degree similar to the thematic analysis (Qualitative Data Analysis, 2020). One of the ways recursive abstraction differs from thematic analysis is that the final data might be distant from the original data and therefore it will be needed to ensure validity of the data in the end. The recursive abstraction generally follows 6 steps (Polkinghorne & Arnold, 2014).

Research states that the first step in recursive abstraction is the development of the questions and an interview guide (Polkinghorne & Arnold, 2014). These are several ways of approaching an interview guide with, but the framework worked out by Kallio et al is the one to be used as it focuses on semi-structured interviews. (Kallio et al, 2016)

The work of Kallio et al advances the idea of a five-step process which goes through the step necessary to develop a good interview guide. The five steps are Identifying the prerequisites for using semi-structured interviews, Retrieving, and using previous knowledge, formulating the preliminary semi-structured interview guide, pilot testing the guide and presenting the complete semi-structured interview guide. (Kallio et al, 2016).

After creating the interview guide making good interview questions is the next step in recursive abstraction, in this thesis through a semi-structured interview (Kallio et al, 2016). Good research questions for semi-structured interviews in particular are open-ended, and short but understandable questions (Rabionet, 2016). When the questions have been made, they are distributed to the interviewees and answered and everything of interest in the answers is highlighted and prepared for the next step (Polkinghorne & Arnold, 2014).

The second step of recursive abstraction as purposed by Polkinghorne and Arnold is the transferring of data to a table. The highlighted parts of the interviews questions in the last step are transferred to a table where the question topics are in the left column and the answers that fit into the topics are in the right column. Each of the answers must be appointed as an individual statement and grouped (Polkinghorne & Arnold, 2014).

In the third step the data is paraphrased (Polkinghorne & Arnold, 2014) which is especially hard to do while still conveying the intended meaning when paraphrasing from one language to another (Shi, 2012). According to Shi it is important to know about the issues around paraphrasing and knowing about the problems around this to do it correctly (Shi, 2012).

The next part of the recursive abstraction is about combining topics into themes (Polkinghorne & Arnold, 2014). If a topic from the previous steps is similar to another these are combined into a theme. The themes are broader than topics and can include more of the paraphrased interview answers (Polkinghorne & Arnold, 2014).

4.1.6.2 Reiterations and checking for patterns.

The process of coding and shortening interview answers should be reiterated as many times as many times as possible (Polkinghorne & Arnold, 2014) Moving answers between the different themes and topics is allowed in this step (Polkinghorne & Arnold, 2014).

The last step of the recursive abstraction is to check for patterns between external factors such as for example company size, company location, age of interviewees and similar information gathered in the process of data collection (Polkinghorne & Arnold, 2014). When one of these patterns is spotted as for example that persons with vision impairment experienced barriers with visual cues on the public engagement platform it is important to verify the original transcript to validate that the meaning has not changed. This is done as a kind of quality assurance of the validity in a study and is an according to Daley a recurring problem within qualitative research (Daley, 2004).

4.1.6.3 Thematic Analysis interviews

After the recursive abstraction, the different data sets were analysed with Thematic Analysis. This master thesis uses the thematic analysis approach developed by Braun and Clarke (Braun & Clarke, 2006) with a 6-step process. Familiarization, Coding, Generating Themes, Reviewing Themes, Defining and naming themes and Writing up the analysis. The Thematic analysis was done using the software MaxQDA.

The documents to analyse were found with asking experts to provide these and by using search engines. The search engines used were Google Search and Bing. A VPN with the location set to Kiev was used for the search engines. The texts were downloaded to Google Drive and locally to the computer. Google Translate and Microsoft Translate were used to translate the files and these were manually examined to check for differences.

4.2 Practical Applications

4.2.1 Practical Application Interviews

The expert interviews were split into three parts. One part were two experts directly responsible for the application, how it was developed and how it was used, and the other part were two experts from the government on how it was implemented and used. The third part the actual developers of the different systems in the E-Dem platform. The experts were interviewed using semi-structured interviews and the interviews were transcribed and analysed using thematic Analysis and Recursive abstraction.

The interview guide (see appendix a and b) was modified for each group, but the main line of questioning was the same for all three groups as research by Polkinghorne and Arnold suggest (Polkinghorne & Arnold, 2014).

4.2.2 Practical Applications Heuristic Analysis

The grading scale goes from 3 to 1 in error severity. Through the discussion it has been shown that several errors might have been set as to low. Heuristic analysis aims to be as objective as possible but will always have some subjective influence. The error severity scale is set into context with the rest of the document and the severity is partially graded according to the rest of the problems.

A problem with the error severity scale can be that it only goes from 1 to 3. EDEMH1/1 and EDEMH4/1 are vastly different in the consequences for user groups. EDEMH1/1 only affect people with visual disabilities and is a bug in the platform. EDEMH4/1 is a platform breaking problem for many user groups and does not have a work-around but still gets the same severity as EDEMH1/1. The severity scale could be larger going from 1-5 or 1-10, or it could follow other criteria. Due to this heuristic analysis having low worth for the assignment as a whole because of the problems written in the introduction this was not prioritized. Further the definitions could be broader to ease of use, how many groups it affected etc.

The heuristic analysis is done to be used as a basis for the user interviews but also provides insights to where the platform can be improved. The errors are factual and exist even if their severity levels might be off. It is advised to further investigate the heuristic analysis of the E-

Dem platform with more experts and a way to log in and test it as a user to uncover more errors and improve the platform for marginalized groups.

4.2.3 Practical Application Document Data

4.2.3.1 Text overview

In total 80 texts were picked for the thematic analysis, of these 38 were analysed and used in the thematic analysis. Out of the 38 texts 9 were Informal/Physical evidence and 29 were formal/Public records. The year produced distributions was 2 from 2016, 3 from 2017, 15 from 2018, 11 from 2019 and 7 from 2020. There were 42 text which were discarded, 22 because of suspected bias or authors self-interest, 7 because of non-factual information and 13 because of other reasons. Other reasons for exclusion include low reliability, informal writing, or problems with the translation.

As stated, earlier document analysis involved skimming, reading, interpretation and coding (Bowen, 2009) (Altheide et al, 2008). This is a two-part process which combines elements from content analysis and thematic analysis (Bowen, 2009). While this is generally the flow of document analysis some qualitative research experts as Silverman (Silverman, 2000) object to the content analysis part as it may obscure the interpretation of the document. This master thesis's focus is on both content analysis and thematic analysis to reach the aims of the document analysis. The document data will then be organized into a data collection sheet for analysis with recursive abstraction and thematic analysis. Using thematic analysis when the document analysis is supplementary to other methods is according to Fereday and Muir-Cochrane important because it gives the reviewer a more careful look at the data to uncover themes important to the phenomenon being studied (Fereday & Muir-Cochrane, 2006).

To find relevant documents for this master thesis several government websites were searched online. Due to the transparency policies in Ukraine some documents were easy to find. Further experts on the public engagement platform were consulted and interviewed using semi-structured interviews. The experts were city council officials in Lviv and programmers working on the Open Platform from EGAP and provided different sets of documents open to the public which then had to be translated for analysis.

The data collection sheet is split into 9 parts. The first three columns are for statistics and ease of identification with Author, Link and Date. This is to locate the documents, put these into a timeline to see if the sentiments have changed over time and put the documents into context. The latter 6 columns; Type of document, Intended Audience, Main points expressed, Context, Significance and Message of the document are important to ease the work when analyzing these.

Table 4.1 Data Collection Sheet with example values

Data Collection Sheet									
	Author	**Date**	**Link**	**Type of Document**	**Intended Audience**	**Main Points expressed**	**General Message**	**Content**	**Significance**
Example	EU4Civil Society	2016	Roadmap_for_cs_ukraine.pdf	Formal	Govt Organizations and politically active individuals	Still problems in Ukraine concerning Civic participation. Heading the right way but problems with transparency	Ukraine is heading in the right direction but still has a way to go	Ukraine in a somewhat turbulent political sphere due to Crimea	Roadmap of how computer science should be implemented in the future.

4.2.3.3   Type of document

This is together with the author column important to identify if the research is formal or informal and to which degree it is reliable and valid. According to Bowen (Bowen, 2009) Informal documents are to a larger degree susceptible to a personal bias, incomplete, falsely remembered, or fake news.

There are three primary types of documents (O'Leary, 2014):

Public Records: The official, ongoing records of an organization's activities. Examples include student transcripts, mission statements, annual reports, policy manuals, student handbooks, strategic plans, and syllabi.

Personal Documents: First-person accounts of an individual's actions, experiences, and beliefs. Examples include calendars, e-mails, scrapbooks, blogs, Facebook posts, duty logs, incident reports, reflections/journals, and newspapers.

Physical Evidence: Physical objects found within the study (often called artifacts). Examples include flyers, posters, agendas, handbooks, and training materials.

Intended Audience, Main points Expressed, Context, Significance and Message of the Document columns are chosen to make it easier to identify the documents while performing a thematic analysis or recursive abstraction. It is important to avoid personal bias when setting these characteristics and be as objective as possible (Bowen, 2009).

4.2.3.4 Search terms

The documents which were analysed were provided by experts or searched for using the following keywords with different variations of spelling: E-Dem, E-Dem Platform, E-democracy, ICT, Inclusion, Universal Design, Accessibility, Online Democracy, Democracy, and Local Democracy, Lviv, Ukraine, and Kiev. The search included different spellings like Kiev/Kyiv and common typos like E-dem/Edem. The different keywords were translated to Ukrainian and Russian when searching. See Table 1 for extensive list of search terms.

The search engines used were Google Search and Bing. A VPN with the location set to Kiev was used for the search engines. The texts were downloaded to Google Drive and locally to the computer. Google Translate and Microsoft Translate were used to translate the files and these were manually examined to check for differences.

Table 4.2 Search terms document analysis

English	Ukrainian	Russian
E-Dem, E-Dem Platform, E-democracy, ICT, Inclusion, Universal Design, Accessibility, Online Democracy, Democracy, and Local Democracy, Lviv, Ukraine, and Kiev	Э-дем, платформа Э-дем, електронна демократія, ІКТ, інклюзія, універсальний дизайн, доступність, онлайн-демократія, демократія та місцева демократія, Львів, Україна та Київ / Київ	Э-дем, платформа Э-дем , электронная демократия, ИКТ, инклюзивность, универсальный дизайн, доступность, онлайн-демократия, демократия и местная демократия, Львов, Украина, и Киев / Киев.

Note: The search terms are translated using automated software which might change the meaning of the terms.

4.2.3.5 Planning

The document data analysis was planned using O'Leary's 8-step planning process (O'Leary, 2017). First a list of texts was explored. In this part experts in on E-democracy, Universal Design, E-Dem platform, and other relevant parts were asked to supply documents for this

master thesis. Searches online were also used to supplement the document analysis. The translation process of the texts follows a three-step process involving Pre-Translation, Translation and Post translation as purposed by Daniel Gouadec (Gouadec, 2007). In the pre-translation the different texts were pre-processed by marking which content should not be translated. Examples are names, addresses and similar.

After the initial pre-translation, all the texts in the list were translated to English. Google Translate and Microsoft Translate were both used on all documents. Research by Groves and Munth shows that translation services give a comprehensible, but in some cases flawed translations (Groves & Munth, 2015). In the post-translation process the two translations were compared and the word which fit the context was used in the final translation. It is impossible to ensure that the texts were translated correctly but by using two different translation software increases the probability of this being true.

According to researcher Bonnie Steinbock bias is a disproportionate weight in favour or against an idea or thing (Steinbock, 1976). During the translation process the list was analysed to address biases, both personal and the authors. The formal sources were mostly bias-free while the informal sources were partially biased. Texts that were according to Steinbock's definition biased were excluded from further analysis.

The part about developing skills for research, considering strategies for credibility, and knowing the data that was searched for were either covered by previous knowledge or addressed during the bias analysis.

The next part in the planning was to consider ethical issues, the most relevant being that some of the sources were unpublished material that was not supposed to be available for the public. These documents are subjected to an anonymity clause and if the reader wishes to access these an anonymized version of the original texts is available on demand.

The documents were backed up on both on the computer and on a cloud. This is to ensure that if anything happens to the documents stored locally, these can be accessed from the cloud.

4.2.3.6 Codes and Themes

The codes and themes were identified using a hybrid-deductive approach with a latent perspective as described by Fereday and Muir-Cochane (Fereday & Muir-Cochanre, 2006). The author of the master thesis had some preconceived themes that were expected to find in the thematic analysis. The preconceived themes were based on the literature analysis in this report and previous knowledge about inclusion of marginalized groups in ICT solutions. The preconceived themes that were expected to find was a distrust in democracy, a distrust in ICT solutions for democracy, exclusion of marginalized groups and a lacking degree of completion with ICT solutions.

4.2.4 Practical Application Analysis

4.2.4.1 Recursive Abstraction

The recursive abstraction was done according to the 6-part method suggested by Polkinghorne and Arnold which is referenced in the methods chapter. First the Interviews were conducted and transcribed. After the transcription all the answers were anonymized except for which part the experts were from: Platform Experts, Government Officials and Developers. The transcription was put into a table where the answers were condensed and where possible combined into themes. Lastly the control data was rearranged several times to identify different themes that came up.

4.2.4.2 Triangulation

Document analysis can be used in combination with other qualitative research methods as a way of triangulating according to Denzin (Denzin, 1970). Research of Stake (Stake, 1995) and Yin (Yin, 1994) purpose that quantitative data collection can work as a tool to produce rich descriptions of phenomenon's, events, organizations, or programs and thus can work well with this master thesis. As stated by Merriam (Merriam, 1988) Document analysis can help develop an organizational understanding and discover insights relevant to the research question.

For this master thesis the purpose of the document analysis is to discover if and to which degree barriers and disabilities were focused on when creating the online public engagement platform but also find indications on where the online engagement platforms are heading in the future and which changes are prioritized to be implemented in the platforms. The triangulation in this master thesis was concerned on how the documents analyzed and the different interviews performed correlated and to which degree the results could enrich each other.

4.3 Ethics

4.3.1 Ethics and NSD

Since this project is in the crossroads between ICT and Humaniores the master thesis follows "Forskningsetiske retningslinjer for samfunnsvitenskap, humaniora, juss og teologi" produced by NESH and updated in 2016 (NESH, 2020). These ethical guidelines dictate how this master thesis will be concerning ethics and topics like individuals and their rights, organizations and their rights, data collection and data analytics .Furthermore, the individuals privacy is being upheld by following NSD or "nasjonal sikkerhetsmyndighet"'s rules about data collection, Since this master thesis will be anonymized and to the greatest extent possible will rely on data gathering which cannot infringe on the individuals privacy there was no need to apply to NSD for permission to perform data collection (NSD, n.d.).

While data collection with disabled persons might not be different than with body-abled persons it still differs in nature. According to research it is especially important to have a barrier free interview environment and often it is best to do interview questions based on ICT on the disabled persons device of choice (Lazar, 2007).

Anonymity is important for the interviewee to feel safe (Lee & Yoon, 2009). While this is especially important in countries which are politically unstable, the feeling of being safe and looked after is important for any person. If a research gathering is completely anonymous it might also give more real answers and provide more validity and reliability to the research (Ramo, Hall & Prochaska, 2011).

5 Results

The different codes were combined into themes and are shown below. The results are triangulated by document analysis, expert interviews, and user interviews to increase the validity and reliability of this master thesis.

5.1 Heuristic Analysis

The Heuristic analysis was performed on the E-Dem platform with the four main components, E-Consultations, OpenCity, E-Petitions and Participatory budget. The heuristic analysis was performed by only one expert in contrary to the recommendations of Universal Design expert Jakob Nielsen (Nielsen & Molich, 2006) which are three to five. This is due to this master thesis being a solo project. The lack of several experts can lead to errors being missed and impacts the reliability of the assignment. This heuristic analysis is used as a basis for the user interviews by getting background knowledge of the platform. The errors in this analysis are therefore real and factual but this might not be an extensive list of all errors on the platform.

The code is an identifier of a code consisting of EDEM, which is the name of the platform. Hx which is the heuristic it concerns, for example H1 is heuristic 1 or visibility of system status. And /x is the identifier number of the mistake. EDEMH1/1 means that the error is from the EDEM platform, concerns heuristic 1 and is the first of the errors within that heuristic.

The errors range from 1 to 3 with 3 being severe and 1 being less significant. A level 3 error is considered solution breaking or making it impossible for a group or individual to use the solution. A level 2 error is considered severe, but it is possible to use the solution with time. A level 1 error is considered less significant, and it is possible to use the solution with some workarounds.

Table 5.1 Overview of the results of the heuristic analysis

Code	Name	Level

EDEMH1/1	No response in appropriate time	3
EDEMH1/2	Use colour as indicator for system used	1
EDEMH1/3	Interactive representation without text alternative	3
EDEMH2/1	Phrases and language	1
EDEMH2/2	Logical structure	1
EDEMH3/1	Emergency Exits	3
EDEMH3/2	Undo/Redo	3
EDEMH4/1	Alternative image text	3
EDEMH4/2	Naming	1
EDEMH6/1	Transferable Information	2
EDEMH7/1	Accelerators	2
EDEMH8/1	Unnecessary fields	1

The website where the solution EDEM platform is www.e-dem.ua is available in English, but the subsites where the different solutions OpenCity, Participatory budget, E-Consultations and E-Petitions are located are only available in Ukrainian. When doing the heuristic analysis some of the heuristics can be influenced by the translation from translation software. Some of the parts of the EDEM platform are only available for Ukrainian citizens behind a login, these were analysed using a video interview with an expert on the EDEM solution.

The heuristic analysis is not extensive enough to be used to give value to this master thesis by itself because of lack of experts to review with. An overview of the errors identified can be found in table 3. One major drawback of the heuristic analysis is that the author of this master thesis could not log in and use the features to test out. Two of the experts on the platform had a walkthrough to the functions of the platform. The errors which require a user

to be logged in to test are therefore tested based on the answers in the interviews and these walkthroughs.

However, the heuristic analysis gives value by giving technical insight on the EDEM platform before the interviews. The interview method is semi-structured interviews, and to have a natural conversation it is important to know about the subject that is discussed.

EDEMH1/1- No response in appropriate time

The website violates the heuristic of Visibility of system status by not providing feedback withing reasonable time when voting for a project in E-petitions. When a user "likes" a project the heart is supposed to turn red as in Instagram to show that the user has performed an action and that has voted for that specific petition. This does not happen every time and is likely to be a bug in the system, but since the feedback is only visual through a colour it might affect colour-blind, vision impaired and other disabilities and therefore is a level 3 error.
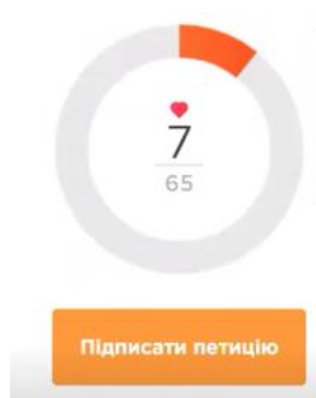
Figure 5.1 EDEMH1/1 Use of "heart" colour change as sole indicator of system status.

Explanation EDEMH1/1- No response in appropriate time

This error could be divided into two parts but since both concern the visibility of system status and are on the same element these were shown as one in the analysis. Firstly, is it problematic that the user doesn't get any feedback while performing an action that is the whole point of the E-petitions part of the platform.

The other part of the problem is that the only indicator that shows that a user has voted is a heart symbol that becomes coloured when pressed. This can be problematic for colour-blind users with deuteranopia or with monochromatic vision. This can also affect people with visual deficiencies and handicaps (FIKS). This is to a lesser degree a severe problem for colour-blind people as there is still a visible change but can be a problem for people with visual impairments as this is only a visual change.

This is a level 3 error as it makes the e-petitions impossible to use for some groups of people. This could be a level 2 error depending on the workaround available for people with visual disabilities but has been set as a 3 because it concerns several groups of people.

EDEMH1/2- Use of colour as indication of system used.

The website violates the heuristic of Visibility of system status by using colour as the sole indicator of which system inside the EDEM platform is being used. While expert users can identify the system inside the EDEM platform by reading about it and understanding it. This is more confusing than system breaking and therefore only gets a level 1 error.
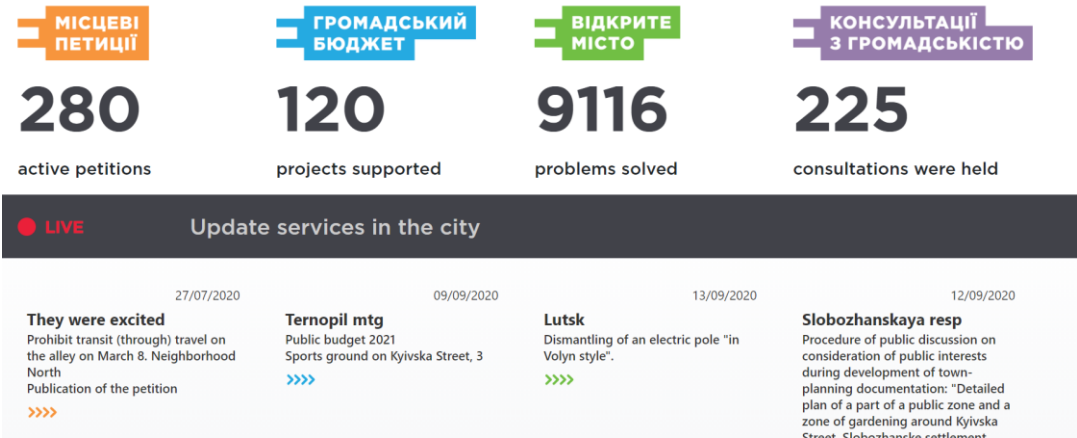
Figure 5.2 EDEMH1/2 colours are main identifier of consistency and visibility of where a user is on-page.

Explanation EDEMH1/2- Use of colour as indication of system used.

The platform uses colours heavily in describing which system within the platform a user is on. The user can with time intuitively understand which system they are using, but for novice users with visual disabilities concerning colours it is harder. There are several workarounds for this problem, and it is not platform breaking, and therefore is a level 1

error. It can be argued that this should be a level 2 error with the severity and time that is needed to learn the platform. From image 16 one can see that the cases concerning a specific platform are put into an intuitive order when on desktop, which is an argument of it being easy enough to be a level 1 problem. This structure however disappears when using this platform on smaller devices like mobile and tablet (See figure 15) which again is an argument of this being a level 2 error. Seen in a context of the other problems on the list and their error level this is on par with the other level 1 problems but can be an indicator that the errors levels are too low in general.
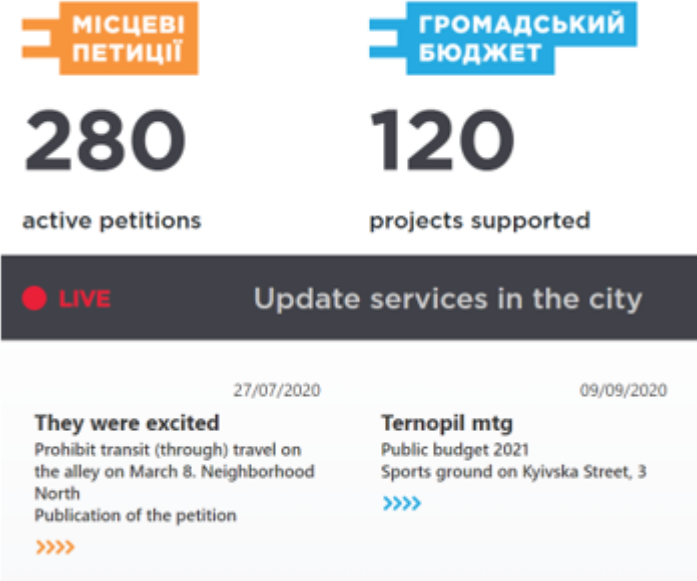
Figure 5.3 Frontpage Desktop screenshot
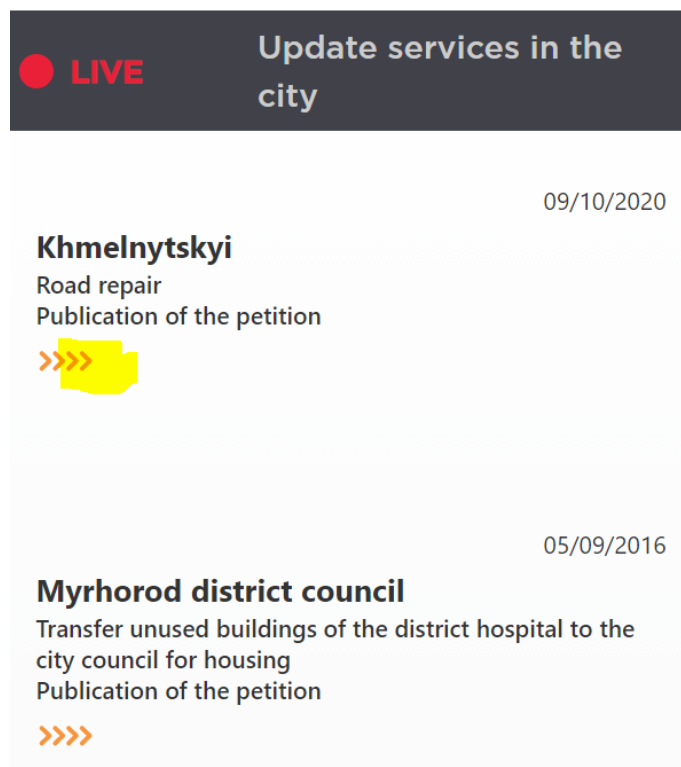
Figure 5.4 Frontpage Mobile screenshot

EDEMH1/3-Interactive visual representation without text alternative.

The website violates the heuristic of Visibility and system status by using colour as the sole indicator and of work done, in progress and finished. The solution OpenCity uses an interactive map as a way to see which reported problems are for example under process. Persons with visual impairments can't use the OpenCity portal at all due to this. This is a level 3 error.

Figure 5.5 EDEMH1/3 OpenCity system with visual representation as the sole alternative to user

Explanation EDEMH1/3-Interactive visual representation without text alternative.

The OpenCity part of the platform uses colours as the sole indicator of where in the process from start to completion a case is. The colours are green for done, orange for in progress and red for not started. This is again a problem with deuteranomaly and protanomaly. Users with these impairments have problem distinguishing between red, orange, and green and can therefore misunderstand where in the process a case is. Further people with other visual deficiencies can have problems seeing where in the process a case is. This also brings up problems for people with motoric impairments such as dexterity issues which must move around, zoom in and zoom out on the map to find their case.

The visual representation affects several groups of people with different impairments and breaks the intention functionality behind OpenCity and it is therefore a clear level 3 error. While it can be argued that by using different plugins and assistive technologies this might prove to be a level 2 problem. Due to so many groups struggling with the same problem where it breaks the platform for these, it is considered a level 3.

EDEMH2/1- Phrases and language

The website violates the heuristic of match between system and the real world with the language and phrases used. While the phrases and language used is normal with government documents can be confusing with itself there is no need for the solution to follow this. A user can get to know the platform and the language used but this is something that can be confusing for new users. Since this is not a major flaw with the system and can be omitted using a dictionary it is therefore considered a level 1 error. Since much of the content is user generated it is impossible to monitor the language used in these, but the platform itself still uses confusing language.

Explanation EDEMH2/1- Phrases and language

The documents in the platform are written in a language that is normal for government documents and are not the problem in this heuristic. The problem stems from the platform itself having confusing language and very platform specific language. The documents are referring to other parts of the platform which are platform specific like OpenCity and a novice user which only uses some parts of the platform might not be aware of what OpenCity is.

Since this is not a platform breaking error and does not need a long time of use to get used to, it is considered a level 1 problem. Further it is impossible to know if this error stems from faulty translation or actual language used in the documents. This is another reason to set it as a level 1 problem.

EDEMH2/2- Logical structure

The website violates the heuristic of match between system and the real world with how the solution is structured. This can both be a system bug or an intended feature but every time a user changes solution inside the EDEM platform they have to login again. This can both be confusing and since the authorization button is in the top it does not make logical sense to go on the top every time. This is not a solution breaking mistake but still does not make sense logically and is therefore a level 1 mistake.

Explanation EDEMH2/2- Logical structure

Another probably unintended bug is that the user must log in every time they switch between solutions. The authorization button is on the top of the page and the user must go back to this every time they get logged out. This can be time consuming and confusing for the user and decrease the user satisfaction with the platform.

Since the author of this master thesis could not login due to not being a Ukrainian citizen this problem couldn't be replicated. This error is based solely on the word of two E-Dem administrators, and this is also an argument for it being a level 1 error.

EDEMH3/1-Emergency Exits

The website violates the heuristic of User control and freedom with no clear emergency exits. This is compound error concerning several heuristics. When the user votes for a petition in E-petitions it does not give a way to go back on your vote without calling technical support. This is a level 3 error and a mistake without an emergency of this severity can be a direct threat to the integrity of the platform. Double clicking the heart does not take the users vote away from the petition.

EDEMH3/2- Undo/Redo

The website violates the heuristic of User control and freedom with not supporting undo/redo easily. In neither of the solutions, E-Consultations, Participatory Budget, OpenCity nor E-Petitions is it possible to undo the vote once they have been cast or undo the petition submitted with ease. This is a level 3 error since it can be a direct threat to the integrity of the platform.

Explanation EDEMH3/1 and EDEMH3/2-Emergency Exits

In the e-petitions system the user does not have an immediate emergency exit when voting. If a voter intentionally or by mistake votes by clicking the heart in a petition they can't cancel the vote. This can be a problem for people with dexterity issues, disabilities concerning attention and hyperactivity, visually impaired people and more. The only way to cancel out the vote is by contacting technical support which can be time consuming. This a clear level 3 error because unintentional voting can be very problematic and even harm the integrity of the different petitions. There are no workarounds for this without going through a time-consuming process since it concerns as many marginalized groups as possible and other users it is a clear level 3 error.

This problem is also present in the other systems of the platform like OpenCity, E-Consultations and Participatory Budget which makes this problem platform wide. This Heuristic is split into two but could probably be split into four with one for each system. This is split into two because EDEMH3/H1 was observed by the author of the master thesis during the walkthrough of the platform with EDEM experts while EDEMH3/2 is only confirmed by the expert interviews.

EDEMH4/1- Alternative Images text.

The website violates the heuristic of consistency and standard with not using Alt image tags. It is a platform convention through WCAG 2.1 and WCAG 2.0 to use alternative image text to let users that don't use the platform visually. Alternative text helps users understand the context on the website and since the EDEM platform doesn't use alternative image text on the main way of navigation to the platforms with text as image without alt image text this is a level 3 error.

Figure 5.7 EDEMH4/1 Menu Elements which are images without alternative text.

Explanation EDEMH4/1- Alternative Images text.

The Platform violates the WCAG 2.1 standard by using alternative image text for images. This is a major problem for every user that uses the platform non-visually through assistive technology like screen readers. One major problem is that the direct links to the different systems inside the platforms are the images of the name without any alternative texts. Users which do not primarily use vision to orient themselves around a website cannot use the platform because of this.

This is a clear level 3 error for two reasons. Firstly, it makes the platform impossible to use for a large group of people. Secondly it is an indicator of lack of awareness of universal design by the developers that made the platform. This is concerning because not including alternative text is indicative that several other WCAG 2.1 standards are broken.

EDEMH4/2-Naming

The website violates the heuristic of consistency and standard with naming two of the solutions E-consultations and E-Petitions. This can be confusing for the users about which service to use. This error is not platform breaking and by using the solutions new users can learn which solution inside the platform does what, therefore this is considered a level 1 error. This might be a mistake with the translation software and will not be emphasized during the interviews.

Figure 5.8 EDEMH4/2 E-Petitions and E-consultations Menu Items

Explanation EDEMH4/2-Naming

Two of the systems inside the platform have similar names while the function of each is vastly different. From only hearing the name E-petition or E-Consultation a novice user might become confused as to which to use.

This a level 1 error but can be argued not to be an error at all. Changing the name, a platform has marketed and profiled themselves as can be costly and time consuming for something that a user learns within some uses of both platforms. In medicine where the consequences of giving the wrong medicine are severe naming conventions are more used. Shown by the research of Jenkins and Vaida (Jenkins & Vaida, 2007). This can to an extent be used in front-end naming in ICT a swell even though the consequences are lesser. Avoiding similar names from the start would be the best for the E-Dem avoid confusion, but it might be too late to do anything about since the costs might outweigh the consequences. Another argument for this not being an error at all is because the names are vastly different in Ukrainian and are much more similar in English. With a more globalized world and a rising degree of immigrant from English speaking countries this can become a more prevalent problem in the future.

EDEMH6/1- Transferable Information

The website violates the heuristic of recognition rather than recall when delivering a petition, consultation, or open-city project. There is per now not any easy way for the users to see which projects they have sent in. The user must remember which petitions they have sent in and have to manually search after them. This is a major inconvenience and persons with cognitive disabilities can have major problems using the platform because of this. Since this is not platform breaking but still a major inconvenience this is a level 2 error.

Explanation EDEMH6/1- Transferable Information

As of the testing of the platform there is no way for the user to see which petitions, they have voted on, which OpenCity project they have sent in or which consultation service they have done. The user must remember which things they have done on the different systems. While this might not be platform breaking for most people, people with disabilities with cognition might have problems using the platform due to this. This is not platform breaking as the user can still use the platform with this problem present, but probably with a lesser degree of satisfaction. It can be argued that this should be a level 3 problem because of it

being a major inconvenience. The other level 3 problem can be seen as more severe and therefore EDEMH6/1 only gets a level 2 error.

EDEMH7/1- Accelerators

The website violates the heuristic of Flexibility and Efficiency in use by not utilizing accelerators for expert users. Examples can be faster ways the user's petitions, possibility to skip steps which are not important to the petitions in question. This is a minor error and is therefore level 2.

Explanation EDEMH7/1- Accelerators

The solution does not give expert users flexibility and efficiency in use by providing accelerators. These accelerators can for example be ways to skip steps that aren't important to action in the different systems. While this is not required it would improve the user experience. Since this is not platform breaking but still an error it receives a level 2 error grading. One can argue that this should be a level 1 error because it does not break the platform in any way. This is a problem that concerns all users, not only from marginalized groups and therefore receives a level 2 grading.

EDEMH8/1- Unnecessary fields

The website violates the heuristic of Aesthetic and minimalistic Design by having unnecessary fields in the dialogue when using the services. In the E-Petitions service the user for example has to choose a category. While it is important to categorize the petitions often the user doesn't know which category fits, and with many different categories this can be confusing for the user. There should be an option to skip this. Since this is a minor inconvenience and not a platform breaking error this is level 1.

Figure 5.9 EDEMH8/1 E-Petitions form

Explanation EDEMH8/1- Unnecessary fields

The website has unnecessary information loads and little to no explanation. When choosing a category there is an extensive list with a lot of categories and it is hard to know if and where the user's category fits. Even though it is important to categorize the inquiries it should be done in an easier way to conforms to the aesthetic and minimalistic design heuristic. This is not platform breaking but a major inconvenience and could affect for example users with cognitive disabilities in a major way. This is still necessary for the platform moderators and therefore only receives a level 1 error grading. It could be argued that this breaks the platform for some groups of people, but since choosing the wrong category doesn't affect the outcome of the action in any way it is categorized as level 1.

5.2   Societal and governmental barriers

5.2.1   Distrust

The theme distrust is made from the code distrust of the state and the code transparency. The theme distrust means "The data in the document indicates distrust of government

actions, plans or decisions or indicates interest in more transparency. This is valid both with individuals and organizations showing interest in transparency".

The codes in the theme distrust come up often in the texts analysed. The context this comes up in is that Ukraine has a low degree of transparency but is improving both technologically and the way of thinking has changed. Several documents show a trend that Ukraine has since 2016 implemented several solutions, memorandums, and commitments to more transparency in the future. People in Ukraine still to a lesser degree believe in the national government but increasingly believe in local governments. The number of memorandums and commitments the national government in Ukraine has made, is an indication that they are aware of the problem and are trying to fix it. This is in line with the preconceived theme that was expected, which was the expectation to find distrust in democracy. The theme distrust also comes up in the user interviews where one respondent states that "Me and my family don't vote in national elections" when asked about the response the interviewee states that it doesn't change anything anyway. When asked how they vote in local elections the same respondent said that the do vote, but not often. This indicates that the findings in the document data analysis about distrust in national government might be true.

There is a consensus with the interview subjects that they trust more in local than in national government. Generally, the interview participants say that because they can see the results and know the local government better than its easier to trust in these. Further the interview participants generally have a low degree of trust in national government, and they say that it is because they can't see the results from their political participation nor know the people that make the decisions. The findings in the user interviews indicate that the findings about low trust or even distrust in national government are correct.

This theme answers one part that is the groundwork for political participation. If this master thesis reveals that Ukrainian citizens experience barriers to a great extent when accessing public engagement platforms for political participation, one explanation of this can be the lack of trust in government.

5.2.2 Goals

The theme goals are made from the subtheme's civic activity and focus, these in turn are made by the codes. The theme Goals means "The data in the documents contains goals or the focus of individuals or organization with using e-democracy solutions such as the E-DEM platform". While this varies greatly this master thesis is focusing on the goals regarding civic activity and what the focus of the different groups were.

5.2.3 Civic Activity

The subtheme civic activity consists of the codes new Implementations, Goals, Demands for E-democratic Solutions and Future plans. The theme goals mean "The data mentions, describes or plans for future plans or goals with usage and the demands of said future plans or goals".

Platform Experts and Government Officials were actively trying to increase civic activity and political participation. This was not important to the developers as they were more focused on keeping the costs down and delivering a solution according to the specifications.

As said by in one of the expert interviews "This platform Is a one stop shop for-democracy". What is meant by this is that the E-DEM platform are all the solutions for civic activity together in one place to make it easier for users to participate. The interviewee also elaborates that that the E-DEM platform is very transparent which is in line with the goals found in the document analysis.

The user interviews indicate that Ukrainians participate in civic activity often and that having a platform where they can participate online would be a good thing and would be used. The interviewees have a low degree of knowledge of the E-Dem platform but the users that have used this like it a lot. One of the interviewees says that "Political Participation is the Ukrainian National Hobby", by this the person means that the Ukrainian people participate in politics thus giving a good basis for online public engagement platforms like the E-Dem platform. The users state that the barriers that can keep them from participating online is security issues, lack of trust and the lack of anonymity online. The trust is about the low trust in national government and that they don't want to interact with them. Further the lack of anonymity online means that their opinion might come back to haunt them in the future.

One user state that "I lost my job once because an employer found out that I had differing opinions than him with LGBTQ+ rights". This quote shows that there is a clear fear of repercussions and that there are actual repercussions with not being able to be anonymous.

The documents mention future plans several times and the timeline shows that more and more solutions are implemented over time. The future plans focus on transparency and how to make younger people vote. In the documents that cover requirements in future plans, accessibility for disabled people or elderly is never mentioned. Documents show that local governments have their own ICT solutions for E-democracy. Some of the local governments use self-made public engagement platforms, while others commercial solutions. Over 200 cities use the E-Dem platform which is made by an NGO and is free until 2023.

5.2.4 Focus

The subtheme Focus consist of the code's focus, attention, interaction, and creation. The theme focus means "The data mentions or hints to what the attention or focus of the individual was when interacting with the platform".

Platform Experts, Government Officials and Developers all agree that there is not enough focus on accessibility, inclusion, and universal design in Ukraine. Platform Experts, Government Officials and Developers also agree that they did not focus on accessibility, inclusion, and universal design. All experts agree that they do not have enough knowledge about universal design. This is solidified in the statement "Due to limited funding we cannot implement universal design everywhere". This also gives a possible explanation on why the focus was on other things than universal design.

The focus of the interviewees is to have a platform where they easily can share their opinions online. The users don't care much about voting or participatory budget but would like a platform where they can share their opinions in a more formalized way than Facebook, Twitter, or other Social Media.

5.3 Individual Barriers

5.3.1 Inclusion of marginalized Groups in ICT Solutions

The theme Inclusion of marginalized groups consist of the codes Universal Design, Accessibility, Inclusion, Web accessibility standards and concern over marginalized groups. The Theme inclusion of marginalized groups in ICT solutions means "The data includes positive mentions or indications of inclusion of marginalized groups or accessibility of these groups in ICT solutions".

The codes in the theme inclusion of marginalized groups comes up only in a few documents and a few times. The data to a great degree focuses on making it easier and better for young people to vote but does not mention disability or old age. The data mentions software barriers, hardware barriers and addresses these with solutions. Specifically, the E-Dem platform has in its requirements and demands that it needs to be accessed by mobile phones and that it should be possible to login with a Bank-ID or a national ID. This demand is set into context on how to make young people vote. This is directly related to the research question of this master thesis by addressing inclusion and which barriers users of public engagement platforms experienced.

All the users agree that elderly would have problems using platforms like E-Dem and E-Dem specifically. The reasons the users list is that they don't have enough knowledge of ICT technology, that they can't understand how to move around the UI and that would become confused by having to log in so many times. The users say that generally the ICT knowledge for elderly is low in Ukraine but also that there is a language barrier. The languages Ukrainian and Russian are closely related but due to the political tension between the country's users with a Ukrainian background state that if a site is in Russian, they won't use it and vice versa.

Besides the technical and language barriers the users also state that political participation platforms use a language that is complicated and hard to use. A participant states that "If I see a government site, I know it's going to take 3x the time to read because of the language", this quote shows that the users know that the political language is hard to read.

5.3.2 Web Accessibility Standards

The subtheme Web Accessibility Standards consist of the codes Web Accessibility Web Standard, CRPD, WCAG and WAI-ARIA attention, the theme Web accessibility Standards means "The data mentions or hints to web accessibility standards in general or some well-known web accessibility standards, this also includes usage, knowledge and thoughts on these".

Platform Experts, Government Officials and Developers all agree that they do not have enough knowledge about Web Accessibility standards. The coders say that "We do not have web accessibility standards in Ukraine". This is to a certain degree not true as Ukraine has signed and ratified the CRPD which directly concerns web accessibility albeit not directly with standards. The experts agree that they do not have enough knowledge about WAI-ARIA either. The coders agree however that there should be a state-wide standard for accessibility regarding code in Ukraine.

5.3.3 Universal Design and Web Accessibility Standards

The subtheme Universal Design consist of the codes Universal Design, Design for all, Accessible Design, and other variations of the word. The theme Universal design means "The data mentions or hints of Universal Design or any variations of the word, this also includes usage, knowledge and thoughts on this".

Platform Experts, Government Officials and Developers agreed that they did not have enough knowledge of universal design. All three experts' groups also agree that Universal Design was not mentioned when developing the solution. It is problematic if seen in context with the follow quote from one of the coders "We develop Products according to customer demands. If there are requirements of universal design, we cover these". This quote clearly states that if universal design was mentioned as a demand, it would be implemented by the coders.

 In the interviews Universal Design, Inclusive Design and Design for all was used. In the demands and requirements Platform Experts and Government officials agree that there we no requirements for the solutions to be universally designed or accessible for marginalized

groups of people. One of the Platform Experts says that there is a function in the E-Dem platform to increase contrast but says that this came as an initiative from the developers.

The interview participants that don't have disabilities state that government sites and E-Dem platform especially are not designed for them in mind. They say that web solutions in Ukraine are generally inaccessible and that if they want to use them, they need external help. Two visually impaired interviewees states about the E-Dem site that they can't use the OpenCity module because its only visually represented. This is in accordance with the heuristic analysis performed in this thesis. Further the interviewees with motoric impairments state that it is uncomfortable to use the website because it doesn't have an easy way to access it through the keyboard. One candidate state that "Even though I can use the E-Dem platform, I don't want to because it tires me too much", this supports the theme that users with disabilities don't use the democratic platforms as often and as effective as body-abled users.

The subtheme Web Accessibility Standards consist of the codes Web Accessibility Web Standard, CRPD, WCAG and WAI-ARIA attention, the theme Web accessibility Standards means "The data mentions or hints to web accessibility standards in general or some well-known web accessibility standards, this also includes usage, knowledge and thoughts on these".

Platform Experts, Government Officials and Developers all agree that they do not have enough knowledge about Web Accessibility standards. The coders say that "We do not have web accessibility standards in Ukraine". This is to a certain degree not true as Ukraine has signed and ratified the CRPD which directly concerns web accessibility albeit not directly with standards. The experts agree that they do not have enough knowledge about WAI-ARIA either. The coders agree however that there should be a state-wide standard for accessibility regarding code in Ukraine.

5.4 E-DEM Platform

5.4.1 E-Dem Past/Implementations

The theme E-Dem Past and Implementation consist of the codes E-Dem implementation and E-Dem platform specific Demands. The theme E-Dem Past and Implementation means "The

data contains Platform specific details, demands, information and actions of the E-Dem platform its past and its implementation".

The data mentions the E-Dem platform several times, both alone and together with other public engagement platforms. Most of the data talks about E-Dem in a positive or neutral way. The validity of the positive statements is double checked by checking connections with the author of the data and connections to the E-Dem platform. Documents showing demands of the E-Dem platform from various cities which have implemented or are thinking of implementing the platform do not mention inclusion, accessibility, or Universal Design. This theme directly helps answer the research question by addressing the E-Dem public engagement platform which is used in the master thesis.

5.4.2 User Views on Public Engagement Platforms

The theme Users on consist of the codes User Views, User centred development User Experiences and Feedback. The User Views on Public Engagements means "The data has any mentions that describe the users' views on Public Engagement Platforms, how the users view, use and the given feedback on Public Engagement Platforms including E-Dem but not excluding others".

The codes User Views, User Experiences and User Feedback is mentioned often with public engagement platforms and specifically the E-Dem platform. The data shows that users view public engagement platforms as either neutral or negative before implementations or during implementation. As user start using it the feedback is that it is somewhat positive, they say that public engagement platforms are easy and make public engagement easier. User experiences, views and feedback directly helps to answer the research question by addressing users directly.

Platform Experts, Government Officials and Developers disagree with each other on how customer feedback was handled. Platform Expert A says that customer feedback influenced future decisions while Platform Expert B says that customer feedback did not influence future decision. Expert B was the person who handled customer feedback. Platform Experts, Government Officials and Developers all got feedback through informal emails and this was not systemized in any way.

Platform Experts, Government Officials and Developers disagree on how user testing was done. Platform Experts say that there was some user testing and that this influenced the development, while developers do not mention this on their part. When asked about user testing one of the coders for example said "There are special emulators we used" which indicates that there was no actual user testing.

The users had a preconceived notion that the website was unsafe and hard to use. After using the website, the interviewees liked the solution and felt as if it was easy to interact with. This is not true with the interview candidates with disabilities. The body-abled users state that the more they used the site the more they trusted it and understood how it worked, while disabled users never came out of the unsafe and hard to use phase.

5.5 Summary

People in Ukraine distrust the national government, and to a lesser degree local government. There is a trend that shows that the trust in both local and national government is rising slowly. Ukraine has since 2016 implemented several solutions to increase transparency. This is shown both in the interviews and document analysis. This is in accordance with the literature review and information shown both in the literature and this thesis solidifies the statement that Ukraine has problems with governmental distrust thus creating a barrier towards ICT participation.

Some other barriers to participating online are the fear of repercussions or lack of anonymity, language or wording and distrust in the government or the fear that their opinion doesn't matter anyway.

Ukraine's goals are more civic activity, but this is often halted by low economical investment. E-democratic ICT solutions and it focuses on making it easier and better for young people to participate politically. E-Democratic solutions focus on making it easier for young people to participate while keeping the costs down.

Online political participation platforms and E-Dem specifically is not accessible to elderly or users with disabilities due to lack of Universal Design in the solutions. Ukrainians often participate politically both online and traditionally with debates, protests and marches and

there is a clear divide between who and which groups are able to participate online. Especially younger people participate online.

Inclusion, accessibility, and Universal Design is not mentioned in the data together with barriers. The data focuses on inclusion of some groups like young people and people who primarily use mobile devices when interacting with ICT solutions. It is not specified if the users of mobile devices use voluntarily or because of lack of alternatives. While more mentioned in the interviews than the document analysis inclusion still has little traction and there is little knowledge of universal design in Ukraine.

Users view public engagement platforms as something neutral or negative. Users experience with public engagement platforms are mostly somewhat positive. User feedback is that the platforms are easy to use and make public engagement easier.

The E-Dem platform is generally regarded positively or neutral in the data material. The requirements for the E-Dem platform do not mention inclusion, accessibility, or universal design. The E-Dem platform to a large degree finishes projects it commits to. User views were somewhat taken into consideration, but experts disagree to which extent.

6 Discussion

6.1 Societal and Governmental Barriers

6.1.1 Distrust

The results showed that people in Ukraine distrust the national government, and to a lesser degree local government. There is a trend that shows that the trust in both local and national government is rising slowly. Ukraine has since 2016 implemented several solutions to increase transparency. This is shown both in the interviews and document analysis.

While the Ukrainian government tries to increase the level of trust on a national level with referendums and solutions, it does not look like the user's care. The user interviews show that the trust in government has gone up slightly since the orange revolution and the political problems in the country but not in a remarkable way. This can be due to ongoing tumults with Russia in the east or because of ongoing scandals being uncovered of corrupt politicians. The related research on this topic shows the same as the findings in this master thesis but does not purpose a way to change this. One possible way that needs to be investigated further is by promoting and encouraging use of Online Public Engagement Platforms as the E-Dem platform to show that their opinions matter and have an effect. The findings in this thesis are that the user is often sceptical towards online participation solutions, but after using it become both more satisfied and that they see that their opinion matters.

Ukraine has launched several campaigns to increase transparency and is for example posting government documents and their respective progress plans online. There can be several problems with this as things are. The data shows that users don't trust the government and that government documents are hard to read. Ukrainian citizens might not read these documents and thus these have a lesser impact. Further Ukrainian citizens might not read these simply because they don't trust the information in them. The Ukrainian government has a long way to go with reassuring the citizens that the information is factual and making it readable. One recommendation on the basis of this master thesis is to go through the government issued documents and testing them against well-known readability indexes such as Gunning Fog Index or Flesch-Kincaid Grade Level. This might be a possible solution

because the authors of these texts would become aware of the readability of their documents and they could also get input on what to change to score better.

6.1.2 Civic Activity

The results show that the social barriers to participating online are amongst others the fear of repercussions or lack of anonymity, language or wording and distrust in the government or the fear that their opinion doesn't matter anyway.

Participation Online also comes with some problems. First of all, the lack of anonymity and fear of repercussions makes the users fear using platforms like these and participate online. A user mentioned that they lost their job because they had a radical view of LGBTQ+ rights several years after they posted a social media post. This shows that the internet does not forget and what is posted stays forever. The lack of an option of being anonymous on several online participation platforms including the E-Dem platform makes it less likely that people with different opinions that the general consensus will participate. Online participation of all opinions needs to happen to have an actual exchange of opinions. The fear of repercussions and the lack of anonymity on these kinds of platforms must be investigated further to come up with a possible solution on how to increase political participation while decreasing these fears.

The user interviews shows that several candidates have experienced that something they wrote year ago backfired and were used against them. This is especially true with opinions that differ from the popular opinion. Ukraine is a conservative country with conservative views on marriage, sexual orientation, and abortion according to the interviewees. The users explained that they don't want to post about their political opinions online on neither social media nor a public engagement platform if their opinion is controversial. They also stated that this is directly related to them or someone they know experiencing repercussions because of their post history. The internet is forever and by posting with their full name or even having their Bank-ID tied to the account users post history can be found out and used against them. Stronger policies have to be adopted to avoid repercussions in cases like these and in practice different solutions can be tried. Anonymous posting or different login solutions can remedy this issue.

6.1.3 Goals and Focus

The results show that Ukraine's goals are more civic activity, but this is often halted by low economical investment. E-democratic ICT solutions and it focuses on making it easier and better for young people to participate politically. E-Democratic solutions focus on making it easier for young people to participate while keeping the costs down.

Ukraine as a country has goals for more civic activity but a low degree of investment towards this. A solution that the governments try to alleviate this issue is online political participation solution like the online public engagement platform E-Dem. The research is not conclusive not does it provide a substantial basis on the effect of public engagement platforms for more civic participation. This master thesis shows a trend towards user satisfaction around public engagement platforms and the need of a formalized place to discuss politics online, but this needs to be investigated further to come with a conclusive answer.

Online public participation platforms are a cheap and efficient way to increase public engagement if they are used. The problem specifically shown in this master thesis is that people have a negative perception of these, which gets better after using these solutions. The Ukrainian government has two viable solutions to remedy this. Either work to increase a positive perception of these solutions, or market them better so users can increase their perception by using these. Both solutions are costly and take time but will probably over time increase participation and thus costs will be lower. Online public engagement platforms are only cost-effective and efficient when they work properly. To have a good and efficient public engagement platform. The Ukrainian government and E-Dem specifically has to fix the aforementioned issues and aim to have an inclusive, accessible and usable public engagement platform.

6.2 Individual Barriers

Users from marginalized groups such as people with disabilities or elderly answered that they either don't use services like these, have unsuccessfully used services like these or have used services like these with help. In other words, people with disabilities and elderly don't or can't use online public engagement platforms. The reasons that are highlighted in this thesis is that the sites are not universally designed, the solutions are inherently not

accessible, the sites are made for a much younger and tech-savy audience or that the users simply do not know about these sites. While the latter is concerned with marketing the other problems are barriers concerning the design and intent og the services. The EGAP platform did not consider Universal Design in its procurement and at every step this hasn't been a concern for neither the administrators, coders, nor the municipalities using these. Universal Design of the platform could have been implemented if just one of the parts in the chain required Universal Design. According to the data there is little to no knowledge of Universal Design from the expert's parts but also the users who do not come from a marginalized group had little knowledge of this. This can be problematic because it is significantly harder to try to implement something that costs money if no one knows what it is. Further not only knowledge but also a will has to be in place for UD to become a part of web solutions in Ukraine. This can be done in several ways. The government could introduce new policies or demands to companies or governments and could accompany this with a practical guide on how to reach the standards. Ukraine has already ratified and signed the UN CRPD and could use this as a basis to introduce standards to Ukrainian Web Solutions. Another way of increasing the will is by gaining knowledge and understanding that it is both economically feasible and morally right to include everyone in the decision-making process. By having a knowledge base to draw from, private Ukrainian companies could implement UD as a way to earn money, by including disabled people as their customers. While the local and national government agencies could include UD because it is a moral obligation to include everyone.

The web solutions are made for a younger generation, and the scope of the projects as stated in government documents is to increase participation for young people. The interests and ways to market are different for young users and elderly users but these are not mutually exclusive. Instead of having the whole platform targeted at young users the marketing could be targeted at young users, and a separate marketing campaign targeting elderly. It is the goal of the Ukrainian government to increase civic activity as a whole but this is in these platforms overshadowed by the goal to increase participation from younger generations. The Ukrainian government and the developers, marketers and administrators of these platforms could think outside the box and have a neutral solution which suits all

groups and target their marketing efforts on different segments in order to fulfil different goals.

The barriers to online participation from marginalized groups stem from both disabilities but also social barriers such as the fear of repercussions or lack of anonymity. Which will be discussed in the next paragraph.

6.2.1 Web Accessibility Standards

It is hard to understand if the prevalence of Web Accessibility Standards come from the lack of will or lack of knowledge. The data shows that neither experts, developers or government officials know enough about WAI-ARIA, WCAG or other accessibility standards. The accessibility standards are not directly covered by the UN CRPD, which Ukraine has signed and ratified, but have to be used to reach the UN CRPD goals. While the data shows that the knowledge of web accessibility standards is low, it also shows that people think that they are important. There is a long way from thinking that it is important to using it, but it is a important first step. Further research is needed to uncover why the knowledge is low and how to increase both knowledge and usage of international web accessibility standards.

6.3 E-Dem Platform

The results show that online political participation platforms and E-Dem specifically is not accessible to people form marginalized groups who experience barriers because of who they are.

Online political participation is not accessible to elderly or people with disabilities according to the data in this thesis. Ukraine has recently included accessibility in the index for rating Online solutions and has earlier signed the UN CRPD. While Ukraine as a country seems committed to becoming more accessible it is not reflected in either the users' experiences or the from the point of view of the coders. When procuring the E-Dem platform accessibility was not focused on and the developers did not focus on accessibility because of this. Further the users state that elderly and people with disabilities would not be able to use web solutions for political participation. This is something that must change because it has

implications beyond having less political participation. As one of the experts who is an accessibility advocate mentioned, it is almost always people with disabilities who advocate for disability rights. In other words, by not including disabled people in the decision-making process online, the gap probably increases. Ukraine as a country has to commit to change accordingly and actually do it to increase the accessibility and political participation of marginalized groups.

7 Conclusion

The aim of this master thesis was to answer the following research question:

"To what extent do Ukrainian citizens experience barriers access public engagement platforms for political participation?"

This research question has partly been answered with data gathering through data analysis and semi-structured interviews and then analysed with thematic analysis and recursive abstraction. The data collected is from Ukraine with the implementation of the EDEM platform Online Engagement Platform as basis. The Ukrainian Pilot has been implemented in different places in Ukraine and with different features depending on the needs of the municipalities. The outputs and outcomes and the citizen experiences were key in answering the research question.

The answer of Citizens experiences together with outputs and outcomes and therefore the answer to the research question can give indicators on how future implementations of Online Public Engagement Platforms will be. The data analysed is from Ukraine, but the research shown in this project proposal can possibly be translated to other countries implementations.

The results have shown some trends towards which accessibility barriers Ukrainian citizens and especially Ukrainian citizens from marginalized groups experience, and an overview of the situation has been made with the document data analysis, user interviews and the expert interviews.

Ukrainian citizens to great extent experience barriers accessing public engagement platforms online for political participation. This is true both for disabled and body-abled citizens. The Public Engagement Platforms often use language that is hard to read and understand, do not have the proper anonymity tools, and do not focus on Universal Design and accessibility as a whole. Elderly, People with Disabilities, and people with low technical knowledge are left behind in the online political discussion due to not being able to use platforms and solutions online to participate. More and more political discussions and tools are going online and to preserve the democracy and include every group to have a fair discussion, things have to

change. More investigation is needed on how to best address these issues, but a probable good start is by following standards and conventions like the CRPD and WCAG 2.0/2.1.

7.1 Recommendations

The overarching policies on online public engagement tools should focus more on the inclusion of marginalized groups for example elderly, people with disabilities and people with differing political opinions. Policies should make both local and national governments obligated to show change and that they are committed to performing the policies. The deciding parties need to be held accountable for inclusion.

To increase the civic activity and political participation of online public engagement platforms, this master thesis has come up with three practical recommendations for governmental or private bodies to follow. The governmental or private bodies that intend to implement online public engagement tools need to practically think over the amount of political language used and the quality of this.

The computer literacy of the target groups has to be considered when implementing and procuring public engagement platforms and when designing these. The platforms procured and implemented must follow universal design standards (WCAG 2.0/2.1, WAI-ARIA) and to have an alternative to participate anonymously.

7.1.1 Future Research

This master thesis has uncovered several areas which need further investigation to uncover if these stand true and how to remedy these if needed.

This master thesis shows that further research needs to investigate how online public engagement platforms relates to anonymity and political participation. Research has shown trends to that people value their anonymity especially in relation to political participation and thus this must be investigated further. In addition, further research must investigate alternative log-in methods, both for anonymity reasons but also to give marginalized groups which might not have access to the same hardware options. This future research could be

conducted with both quantitative and qualitative methods to uncover firstly how many people it affects, and afterwards how it affects them.

Further research needs to investigate ways on how to increase computer literacy in a cost effective and feasible way. This is due to research showing a low degree of computer literacy amongst elders and other marginalized groups and a cost/effect analysis could easier determine how and to which degree the government needs to increase the computer literacy.

Lastly future research must investigate the knowledge of web accessibility standards and how to increase the usage of these. This master thesis has shown a trend towards a significant gap between developers and the knowledge of international accessibility standards, for example WCAG. WCAG is an internationally recognized standard, and if future knowledge proves that there is a low degree of knowledge on web accessibility standards, this too has to be remedied.

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Appendix A: Interview Guide Users

1.How do you use the Internet in your daily life?

2.How often do you use the "E-DEM" platform?

3.Which services do you use?

4.What are the typical scenarios in which you use it?

5.Can you tell me about last time you used it?

6.Have you ever experienced that a website or web solution was made for someone else in mind?

(If yes) Could you describe a situation where you felt that a web-solution was not made for you?

7.Do you have the same feeling while using "E-DEM" platform?

8.How "easy to use" do you think "E-DEM" is?

9.Do you think your grandparents would have problems using it?

10.In your experience, what do you feel are the incentives to use this kind of platform?

11.What are the barriers for using this kind of platform?

12.Have you ever experienced situations when your personal characteristics made it impossible, difficult, or uncomfortable to use this platform?

A.) Your identity, your disabilities, your political values etc

13.Could you describe a situation when using this platform has had a positive effect in your life?

14.How do you think technology helps people to participate more in social and political life?

A.) For example, Internet, social media, platforms like E-DEM, etc.

15.Is there anything else you'd like to add?

16.May I contact you if I have any other questions?

Appendix B: Interview Guide Experts

1.How do you use the Internet in your daily life?

2.What is/was your role with the EDEM Platform

3.What was the focus on the development?

4.What requirements were created on the EDEM platform?

5.What are the barriers for using this kind of platform?

6. What do you think needs to be in place for more civic participation?

7.Did you receive customer feedback?

a) How did you handle this?

8.Did you feel as if the project had allocated enough time to develop, learn about and plan the EDEM Platform?

9.What previous knowledge do you have about Universal Design

10.Was Universal Design mentioned in the planning of the platform

11.What are the Future plans for EDEM platform?

12.Is there anything else you'd like to add?

13.May I contact you if I have any other questions?