



Electronic Government, an International Journal

ISSN online: 1740-7508 - ISSN print: 1740-7494

<https://www.inderscience.com/eg>

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DOI: [10.1504/EG.2024.10063344](https://doi.org/10.1504/EG.2024.10063344)

Article History:

Received:	09 November 2022
Last revised:	08 October 2023
Accepted:	30 December 2023
Published online:	03 July 2024

Kunta.live – a tool for participatory decision-making in local governments

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Abstract: This paper presents a tool for participatory decision-making in local governments using crowdsourcing and e-democracy. The concepts of crowdsourcing and participation are discussed from the perspective of decision-making in local governments and an overview of existing tools and solutions for citizen participation in decision-making is given. The enabling/limiting aspects of national, as well as EU-level legislation related to crowdsourcing and participation are also discussed. The process design perspective, describing changes in the process of decision-making when utilising crowdsourcing, is considered. Furthermore, new phases and steps are proposed to the process of decision-making when utilising crowdsourcing and participation through the Kunta.live platform. The requirements for a platform that enables direct democracy and the obstacles that arise in the adoption of this kind of a platform are examined. Finally, theories on public decision-making and the opportunities and limitations in utilising software to supplement decision-making are discussed and topics for future research to promote utilisation of ICT, Web 2.0 technologies and e-democracy software for policy decision-making are indicated.

Keywords: concept; technologies; techniques; design; crowdsourcing; participation; participatory decision-making; e-democracy.

Reference to this paper should be made as follows: Leppäniemi, O., Lipping, T. and Stenvall, J. (2024) 'Kunta.live – a tool for participatory decision-making in local governments', *Electronic Government*, Vol. 20, No. 4, pp.479–498.

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Tarmo Lipping received his DrTech in Signal Processing in 2001 and MBA degree in 2013 from Tampere University of Technology. In 2001–2002, he was Postdoctoral Research Associate at Dartmouth College, NH, USA. In 2002–2003, he was the Director of the Biomedical Engineering Center and held professorship in Biomedical Engineering in Tallinn University of Technology. Since 2004, he is a Professor of Signal Processing in Tampere University. During 2019–2023 he served as the Director of Pori University Consortium. During his career, he has been Principal Investigator of numerous academic and industry-related research projects; and he is the author or co-author of over 100 research articles and has supervised over 50 Masters' and seven Doctoral theses.

Jari Stenvall is a Professor in Management. He has worked as a Supervisor for a total of 46 dissertations. He has extensive international experience and networks. He has received recognition for his international research activities. In his projects, He has participated in cooperation and learning between professionals, regional development, change management, development of service innovations, utilisation of information technology in organisations and urban development within the framework of a smart city. He has a total of about 160 scientific publications.

1 Introduction

Local governments use the opportunities offered by digital platforms and the capacity and willingness of non-governmental actors to participate in regional affairs to a limited extent. Csáki (2020) describes the phenomenon as “There are regions where eParticipation projects are still in their infancy”. Usually, cases are handled internally by officials and trustees. There is a need for the concept of participatory decision-making to be clarified, explaining the role of actors and functions enabled using technology. Mees et al. (2019) note that there is a need for government actions to become more collaborative and responsive. Alternative forms of citizen engagement can be created with the use of information technology (Van Montfort et al., 2021). The use of technology also has consequences that must be taken into account such as changes in the operating process and regulation.

In public decision-making, case initiation, preparation, and evaluation are largely the responsibility of individual authorities, a kind of gatekeepers (Joensuu and Niiranen, 2018). Majority of the available literature supports for instance assembly-oriented participation while voting-based decision-making has a smaller role. This kind of imbalance highlights the authorities' power in agenda-setting (Nelimarkka, 2019). Thus, the quality of the preparation depends largely on the authority's skills, knowledge, and the time available. In her article, Ledger stated that officials' skill levels are low and there are instances of self-interested and unethical behaviour (Ledger, 2020). The authority may become a significant bottleneck in the decision-making process because their role as a gatekeeper is at the heart of the action. However, it is possible to share responsibility in decision-making by utilising the residents' knowledge, time, experience, and skills. When a case is put on a committee's agenda, the committee members i.e., the next gatekeepers, are decisive in terms of their skills, knowledge, and available time to look into the issues concerning the case and to determine what kind of attitude they are going to take

regarding the decision. These are the most relevant steps in the local government decision-making process. The skills, attitude, knowledge, and time available are limited when there are only a few people dealing with the case (Ianniello et al., 2019; Rafique et al., 2023). In the worst scenarios, the case is decided with incomplete information, lack of skills, and in a hurry. At the same time, using technology and activating citizens more effectively can break down bottlenecks and create a new kind of information society.

This article reviews various ways of using digital tools and platforms for citizen participation. Examples of existing participatory decision-making solutions are discussed and compared with the Kunta.live platform, implemented by the authors. Kunta.live enables the implementation of every step of the local government's decision-making process by utilising participation, but the platform can also be used alongside current systems, bringing participation into the process. The matters where electronic participation can provide significant improvements are pointed out and the limitations and requirements posed by the legislation are discussed. Subsequently, the Kunta.live platform is introduced in more detail and the ways it affects the decision-making are considered. The concept of participatory decision-making enables many functions that are already in use in other areas of society to be brought more strongly into public decision-making. Finally, the advantages of and obstacles in the adoption of participatory tools for local government decision-making are discussed.

The following research questions are addressed:

- 1 Which are the phases where participation and crowdsourcing can be used to enable participatory decision-making?
- 2 What are the enabling/limiting factors posed by the legal framework on participatory decision-making?
- 3 What kind of requirements should be met by a platform enabling citizens to participate in public decision-making?

We focus on the gap in the study of local decision-making that utilises citizen participation, examining the current order and practices of local decision-making, and the possibilities or limitations set by the legal framework.

1.1 Crowdsourcing, e-democracy, and participation platforms in public decision-making

Participatory decision-making is a way to make public decision-making utilise citizens' power for the common good. In the current model, decisions are made in committee meetings and the schedules can be slow, depending on the meeting intervals. If the cases are poorly prepared, they can be returned for a new round of preparation. The return is decided by the official or committee before or during the meeting. A higher institution such as the council, may also retrospectively revoke cases already decided and handle them again. This can lead to delays of months or even years. By using crowdsourcing and participation in decision-making, it is possible to achieve much higher transparency, efficiency, financial savings, and better quality (Rexha and Murturi, 2019; Lenart-Gansiniec, 2021; Lenart-Gansiniec and Sułkowski, 2020)

The concept of participation refers to the implementation of policies and providing channels of influence for citizens. The different commitments of the local government as well as external pressure make it necessary to enable participation (Royo et al., 2014).

The key is to provide citizens with a time- and place-independent, genuinely participatory, user-friendly way to participate in decision-making in the home community. The term ‘e-democracy’ refers to the electronic channels used in decision-making (Bindu et al., 2019; Lindner and Aichholzer, 2020). However, these channels may be the systems implemented for individual functions, the application platforms more commonly used for other communications such as the social media platforms, or electronic devices for other communications. The steps identified in the development of e-democracy are emerging, interaction, transaction, and seamless integration (Klassen et al., 2017).

The term ‘crowdsourcing’ refers to the voluntary provision of a service, in this case, local government decision-making, without separately agreed-on compensation, with the content produced jointly by the participants (Lenart-Gansiniec, 2021). Chiu et al. (2014) describe crowdsourcing as “distributing work to a large number of workers”. This production of content involves the creation, preparation, collection of background information and opinions through direct democracy. The term ‘crowdsourcing’ was first introduced by Howe in 2006 (Liu et al., 2021; Bhatti et al., 2020; Chittilappilly et al., 2016). Bhatti et al. (2020) define crowdsourcing as “a method of solving a specific set of functions by outsourcing and utilising distributed human computational capabilities through the Internet”. Erickson (2011) defines crowdsourcing as “tapping the perceptual, cognitive or enactive abilities of many people to achieve a well-defined result such as solving a problem, classifying a dataset, or producing a decision”. Consequently, the crowd plays the key role. Thus, by using the crowd in executing tasks, the company, user, or community can outsource problem-solving and increase transparency, speed, and quality at the same time. It is more likely that better results will be gained when using crowdsourcing for simple tasks rather than more complex tasks (Rexha and Murturi, 2019).

Most countries in the world have plans for e-democracy and participating citizens. Actions have already been implemented in many countries. Klassen et al. (2017) have studied e-governance projects implemented in South Korea, where in 1998 Kim Dae Jung launched 18 projects for developing e-governance, including public-oriented government services, business process reengineering for administrative efficiency, information sharing among agencies, renewing government information infrastructure, enhancement of public authorities’ ICT skills, and improving legal and institutional arrangements. Van Eijk (2014) has studied citizen participation in Dutch municipalities. Van Eijk (2014) finds that measures differ widely, with some municipalities trying to innovate while others do not take advantage of participation. She states that the total number of inhabitants correlates with the amount of participation. The more inhabitants, the higher the level of participation. Also, she found that citizen participation is often not seen as an end in itself but is more likely to achieve better acceptance of decisions and increase justification (Van Eijk, 2014). When crowdsourcing is digital, two benefits can be achieved compared to conventional methods of communication: decision-making comes closer to the citizens involving wider audiences, and costs can be significantly reduced (Aitamurto and Chen, 2017). In this era of e-governance, the quality of participation, responsiveness, and commitment are highlighted. The Pew Research Center stated that 31% of internet users use the government’s social media channels (Klassen et al., 2017).

Table 1 Examples of participating services for citizens

<i>Name</i>	<i>Country</i>	<i>Topic</i>	<i>Level</i>	<i>Strengths</i>	<i>Weaknesses</i>
Kansalaisaloite	Finland	Initiation	National	Official status, well-known	Performs only one small task, no digital connections to other phases
X-Road	Estonia	Platform for other services	National	Official status, well-known	Does not independently provide a solution for any step
Osale.ee	Estonia	Initiation, voting, consultation	National	Official status, well-known	Limited features for decision-making process
Mygov.in	India	Initiation, voting	National	Official status, well-known	Limited features for decision-making process
Oma Stadi, Helsinki	Finland	Budgeting	Local	Focuses only on implementing budgeting, acquires material for a single purpose in a versatile way	Performs only one small task, no digital connections to other phases
Osallistuva budjetointi, Tampere	Finland	Budgeting	Local	Focuses only on implementing budgeting, acquires material for a single purpose in a versatile way	Performs only one small task, no digital connections to other phases
Decidim	Implemented in Spain, used in many countries: Finland, Spain, the USA, EU, Brazil, France...	Initiation, voting, meetings, agendas, minutes, debates, elections, consultation, budgeting	All	Widely used in many locations, comprehensive entity	Limited integration to other data sources
CitizenLab	Implemented in Belgium, used in many countries: Belgium, Netherlands, France, the UK, Denmark, Chile...	Initiation, budgeting, surveys, voting	Local	Projects well collected	Everything is organised in the form of projects Only some steps of the decision-making process

Crowdsourcing, e-democracy, and participation enabling platforms seem to be still underutilised. Most of the applications implement only a certain aspect of the decision-making process: kansalaisaloite.fi¹ in Finland, for example, implements only the function of formulating and delivering initiatives; X-Road² in Estonia offers a platform to collect applications implemented by others; Mygov.in³ engages citizens in India in initiatives and voting; participatory budgeting in Tampere⁴ and Helsinki⁵ in Finland allow the citizens to participate in the allocation of money used for the development of individual areas. Involving citizens more comprehensively in public decision-making is challenging, because in matters aimed at involving them in individual tasks, there are hardly any measures for more comprehensive citizen participation in every decision-making phase.

In many countries, participation platforms have only been introduced at the national level whereas local tools are less often used. At all levels of public governments, social media services have been used to promote participation, even though these measures have not been directly integrated into the decision-making process. In Saroj and Pal (223), these channels are used to share important information, interacting and seeking opinions related to the matters under discussion.

Research.com⁶ listed 20 citizen-engagement software in August 10, 2023, many of which provide platforms for creating services to citizens concerning licences, payments or other public services. Some of the listed software also provide solutions for participating citizens to decide selected matters. Most of the selected systems are commercial, but there are also a couple of open-source systems such as Decidim and Consul, which can be freely used for participating citizens. Consul provides solution for several phases of public decision-making process: proposals, voting, and participatory budgeting, while Decidim is closest to Kunta.live in terms of features, providing solutions for every phase of the decision-making process. The most significant difference between Decidim and Kunta.live is in collecting agendas and minutes from decision-making boards' websites. Decidim does not provide solution for that, but in Kunta.live agendas and minutes can be acquired from websites by using Web scraping. This feature enables Kunta.live to utilise existing systems, while other systems have to replace existing systems, transfer data manually or build integrations into them. Other software solution to be mentioned include Bang the Table, PublicInput, CentralSquare, CivicPlus, Insights, Consul, Zencity and District Engage. Table 1 presents some examples of participatory services for citizens.

2 Local decision-making in Finnish and EU context

Examples of crowdsourcing tools used in Finnish local government are limited. The authorities listen to citizens using web survey forms or through social media platforms. Majority of the actions are one-way, hence genuine dialogue is still missing. Local governments mainly publish news and events, and citizens do not usually react to them. Falco and Kleinhans (2018) describe the situation as follows: “we seem to still be locked in the one-way communication ‘paradigm’ where citizens are more receivers rather than conscious producers or creators of information, data, ideas, solutions, and decisions in the context of public policies”. Correspondingly, survey forms filled in by citizens rarely initiate a dialogue between the authorities, politicians and citizens. There are actions in some local governments to execute inclusive budgeting, involving a single or a limited number of projects or targets. Inclusive budgeting and platforms for participating citizens

are exploited in some cities such as Tampere or Helsinki. Falco and Kleinhans (2018) identify three levels of interaction:

- 1 information sharing
- 2 interaction
- 3 civic engagement, involvement, and collaboration.

Apparently most local governments are still stuck at the first level.

2.1 Legal context

Participatory decision-making consists of the local government decision-making process, enriched by the power of citizens and technologies enabling electronic co-creation between citizens and local government authorities. The requirements of local government decision-making derive from the law, local government regulations, authority behaviour, citizen behaviour, and technological restrictions. However, the main goal is to enable seamless, transparent actions that consider different points of view with as little effort as possible but reaching as large a portion of the citizens as possible to participate in the public decision-making process and enabling direct e-democracy. In Finland, actions concerning the decision-making of local governments are regulated by Local Government Act 410/2015 (Finland's Ministry of Finance, 2015). The European Union regulates actions inside Europe and directs the enactment of national laws (Royo et al., 2011; Christensen and Læg Reid, 2020). The regulation creates convergent practices but also limits possible changes in the stages of the process by setting stricter requirements. The problematics of regulation from the participation perspective has been identified in local government decision-making (Royo et al., 2011; Christensen and Læg Reid, 2020).

Local Government Act 410/2015 regulates the decision-making process in Finnish local government and formulates uniform procedures for the authorities, committee members and citizens on how to use public power. In Finland, the local government should have a council, a board of directors, and an audit committee. The council wields the highest power in the local government and the audit committee is responsible for monitoring the legality of the local government's actions. The council may, if necessary, reconsider a case. Cases dealt with by the council are decided by the board of directors, but the council can also decide to consider individual matters. Decisions taken by the committees and officials are forwarded to the council for information, which may reconsider the matter if needed. The members of the council are elected every fourth-year local elections. The minimum number of members for the council is determined according to the population of the local government area. Normally, the council members together with the local government authorities decide to establish several committees dealing with issues concerning specific areas of life. The council delegates decision-making power to the committees in cases that are defined in the administrative regulations. The committee members are selected by negotiation between political parties (Finland's Ministry of Finance, 2015).

Local Government Act 410/2015 regulates participation and the possibilities to influence decision-making, but how and when participation should be enabled is not strictly defined. The council takes responsibility for these operating models. The law gives examples of how participating and influencing can be arranged, but every local

government can decide how the functions are implemented. These examples include (Finland's Ministry of Finance, 2015):

- consultations and discussions
- finding out the opinions of residents before making a decision
- electing representatives of service users to local government institutions
- arranging opportunities to participate in the planning of the local government's finances
- designing and developing services together with service users
- supporting the planning and preparation of matters on the initiative of residents, organisations and other communities.

The second research question deals with legal factors enabling and limiting participation. Ministry of Finance in Finland sets both enabling and limiting requirements for participation. The methods of participation are largely limited to initiatives and consultative votes. At the same time, however, participation is enabled by setting requirements for taking initiatives. Every resident has the right to make an initiative concerning the local government's actions. The council may decide that a local referendum be held on a case concerning the local government. The referendum is consultative. All those entitled to vote shall have an equal right to vote. The vote is secret. Matters belonging to the institution may be decided at an ordinary meeting, an electronic meeting or electronically before a meeting (electronic decision-making procedure). Except for public meetings of the committee and other institutions, the decision-making process of the institution may take place in a closed electronic decision-making process. The matter is considered after all the members of the institution have expressed their views and the time limit has expired (Finland's Ministry of Finance, 2015).

There will also be legal requirements for participation from the EU level, although their binding force is lighter. The European Union's (EU) actions to increase participation are diverse. Directive 2003/35/EC (European Parliament, 2003) and regulation 1367/2006 (European Parliament, 2006) are concerned with participation in environmental issues. There are also a couple of directives and regulations concerning participation in research work: Regulation (EC) No 2321/2002 (European Parliament, 2002) and Decision (EU) 2017/1324 (European Parliament, 2017), for example, but no directive can be found related to participation in decision-making. In 2017, European Union member states and EFTA countries signed the 'eGovernment Declaration'⁷ which aims to ensure high-quality, user-centric digital public services for citizens and seamless cross-border public services.

The EU seems to have taken more of a guiding and supportive approach to participation in decision-making rather than strict regulation. At the same time, difficulties in exploiting directives and regulations to improve inclusion have also been explored. Kiiver (2009) found that many EU countries have laws that are inconsistent with EU rules on participation and have their own interpretations of the guidelines. Kavrakova (2021) found the same kind of results. According to her research results, the European Citizens' Initiative was introduced as a board to increase participatory democracy but found it to be "an agenda-setting instrument, challenging to use and with

limited legislative impact” (Kavrakova, 2021). As a rapporteur of the European Parliament, Scholz published a draft report entitled “Citizens’ dialogues and citizens’ participation in the EU decision-making” dealing with participation basics, actions, shortcomings, and plans in the EU. The report emphasises the importance of the participation of the public (Scholz, 2020).

The EU launched a collaborative platform called Joinup⁸ for eGovernment professionals in 2011. In Joinup, public administrations, businesses, and citizens can “share and reuse IT solutions and good practices and facilitate communication and collaboration on IT projects across Europe”. The EU eGovernment Action Plan Steering Board⁹ published conclusions, principles, and targets in a new Digital Government Policy in January 2022. Many of the principles presented are related to participation. Targets like “democratic life and public services online will be fully accessible for everyone” and “user-friendly services will allow citizens of all ages and businesses of all sizes to influence the direction and outcomes of government activities more efficiently and improve public services” emphasise the importance of participation. The target “Government as a Platform, as a new way of building digital public services, will provide a holistic and easy access to public services with a seamless interplay of advanced capabilities, such as data processing, AI, and virtual reality” highlights the importance of technologies. The EU launched the Digital Government Compass to “act as an umbrella policy to ensure the complementarity of initiatives and include a monitoring and reporting framework based on an objective assessment of progress and a joint consideration of results with member states”. The three principles of the Digital Government Compass are human-centric public services, resilience, and innovation: Government as a Platform.

The regulation of public decision-making affects the concept in many ways. The strengths, weaknesses, opportunities and threats of participation and crowdsourcing in local decision-making by the legal framework are indicated in Table 2. The SWOT analysis has been made by comparing the impact of the legal framework governing public decision-making on technology utilisation from the local crowdsourcing and platform development perspective. The exploitation of participation and crowdsourcing is affected in many ways by regulation (Schmidhuber et al., 2022; Randhawa et al., 2019). Regulation is also limiting the development of crowdsourcing and digital platforms (Cammaerts and Mansell, 2020).

Table 2 SWOT analysis considering the impact of legislation governing public decision-making on technology utilisation from the local crowdsourcing and platform development perspective

<i>Strengths</i>	<i>Weaknesses</i>
<ul style="list-style-type: none"> • Harmonises practices • Local government should have a plan how to utilise participation 	<ul style="list-style-type: none"> • Loose requirements • Legislation does not allow certain matters to be dealt with by crowdsourcing
<i>Opportunities</i>	<i>Threats</i>
<ul style="list-style-type: none"> • Opportunity to increase reliability, transparency, participation • Cost reduction 	<ul style="list-style-type: none"> • Real participation is lacking • Actions missing

Regulation harmonises practices by giving examples of participation and stating broadly what actions can be taken. However, it also requires that plans are made to implement participation. Regulation offers an opportunity for reliability, transparency, participation and reduction of costs by using the power of citizens and technology. At the same time, regulation sets some limitations. Regulation requirements are loose and can lead to uncertainty about what needs to be done, which may cause a lack of response. The mere handling of cases by crowdsourcing is also partially prevented as decisions are required by law to be taken by a committee, council or official. However, this could be circumvented by returning a matter dealt with through crowdsourcing to the committee or official, to confirm the decision. Clear threats to participatory decision-making coming from regulatory shortcomings include a lack of action and a lack of genuine participation.

The Local Government Act regulates but also offers opportunities to utilise technology in many of its sections. Table 3 describes the limitations and the sections in the law that encourage participation and the use of technology.

Table 3 Aspects in the legislation limiting and encouraging the use of technology in local government decision-making

<i>Limiting</i>	<i>Encouraging</i>
Regulations may entrust an administrative task to a party other than an authority only if so provided by law	Residents and users of services have the right to participate in and influence the activities of the area
In the administrative regulations, the council may delegate its powers to other local government institutions as well as to trustees and officials	The council must provide diverse and effective opportunities for participation
Competence may not be delegated in cases when the council is required to decide under this or any other provision of law	A resident, as well as the association and foundation operating in the area, have the right to take initiative in cases concerning the operation of the area
Competence in a case involving the use of administrative coercion may be delegated only to the institution	A referendum initiative can be taken by at least 4% of the residents over the age of 15
The cases to be dealt with must be specified on the agenda and a time must be specified in which the case can be dealt with in the electronic decision-making procedure	The local government must inform how citizens can participate in and influence the preparation of decisions
The case was considered after all the members of the institution had expressed their views and the time limit had expired	The strategy must consider the possibility for the residents of the area to participate and influence
The case shall be referred to the meeting if a member so requests or fails to make known her/his views	The administrative rules shall lay down the necessary provisions for the delegation of powers to the decision-making and administrative procedures
	The case can be dealt with in an electronic decision-making process

Source: Finland's Ministry of Finance (2015)

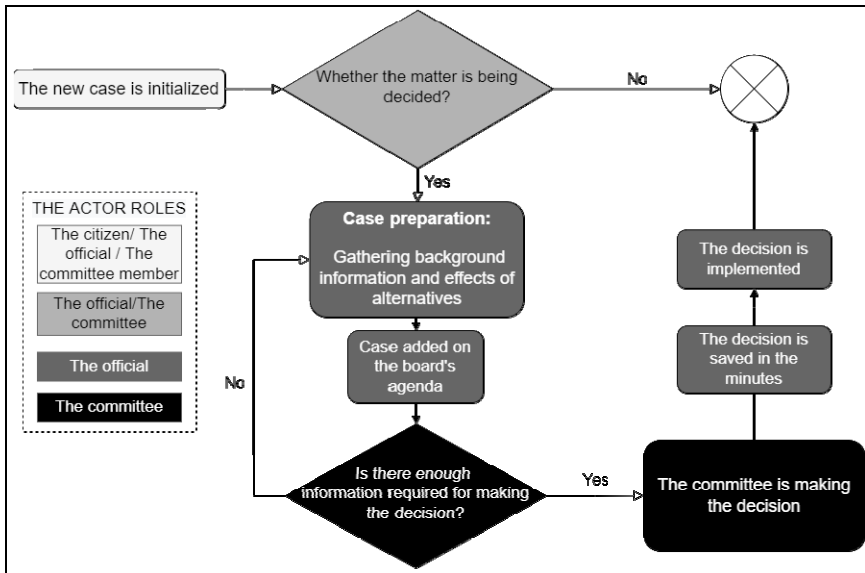
In the Finnish local government context, the Local Government Act is the primary legislation when implementing public decision-making. The Act sets restrictions on the

actions but largely enables the utilisation of new technologies and techniques if there are local governments brave enough to try to depart from established practices.

2.2 Local decision-making process in Finland

The processes of decision-making in Finnish local governments are congruent with the operating framework created by the legislation. Broadly speaking, the local government’s decision-making process has seven phases (Figure 1). Firstly, the case is initialised by an official, citizen, company, association, or politician. Secondly, it should be decided whether or not to pass the matter on to the respective committee. Thirdly, if taken to the committee, background information should be gathered, the effects of the decision should be considered, and the case should be prepared for the committee responsible for decision-making. Fourthly, the matter is added to the committee’s agenda. Fifthly, the committee evaluates if there is enough information for a decision. If more information is needed about the case, it is sent back for preparation. Sixthly, if there is enough information, the committee makes a decision. Seventhly, the decision is saved in the minutes and executed after the appeal period. If a claim for rectification of the decision is made, it is processed by the designated institution.

Figure 1 Conventional decision-making process in Finnish local governments



Admittedly, in principle, it would be possible for the local government council to delegate decision-making power over the desired issues to direct democracy in the same way that it delegates certain decision-making powers to various councils, committees of directors, and institutions. Also, it would be technologically possible to make final decisions through crowdsourcing; however, this is at least partially limited by the Local Government Act (Finland’s Ministry of Finance, 2015). The law assigns the decision-making power to the council, but it would be possible to deal with specific cases

using crowdsourcing, in the same way as the council delegates decision-making power to committees.

3 Participatory decision-making enabled by Kunta.live

3.1 Platform for participatory decision-making: Kunta.live

In this paper, we introduce the platform called Kunta.live for collecting data in support of local government decision-making and sharing it with citizens over easy-to-use user interfaces. The main reason for implementing Kunta.live is to enable local decision-making to utilise crowdsourcing and achieve a higher level of citizen participation. Kunta.live is built upon open-source tools employing state-of-the-art technology. A more detailed description of the technology choices and technical issues related to Kunta.live are beyond the scope of this paper and will be presented elsewhere. The front page of the platform introduces services and presents the available functionalities, which are:

- viewing local government committees' schedules and agendas
- viewing meeting agendas
- viewing cases to be dealt with and related proposals
- writing initiatives
- voting on initiatives
- writing alternative proposals
- writing and saving background information on cases
- voting on proposals.

The platform is used by starting from the front page and navigating to the target or by choosing the target straight from the menu. A new case initiative is made on the platform as indicated in Figure 2. Initiatives are voted on and a selected number of initiatives are added to the committee's agenda, as described in step 2 of the figure. All the committee meetings are shown on the platform. It is possible to filter the view and show only the meetings for one committee. After choosing the meeting, the agenda will be shown and the desired case can be chosen from the list. Next, case information will be shown together with alternative proposals for it. New proposals can be saved. Also, more background information is provided for participation in the case preparation phase (see Figure 2). Proposals are voted on from the same view. In the initial application, initiatives can be written. Submitted initiatives are shown and it is possible to vote on the case's importance. The last phase shown in Figure 2 where Kunta.live is utilised is decision making, which can be done by voting on proposals.

3.2 Effects of utilising Kunta.live on the decision-making process

When specifying the requirements for a platform enabling e-democracy, the possible users and use cases (i.e., places and times of use) should be considered. In Figure 2, the phases of the decision-making process where the crowdsourcing platform Kunta.live is

involved are indicated in green. These are points where technology can add value to the process. At the same time, technology changes the process and transfers power from trustees and officials to the participant involved in the process through technology. Next, we go through the steps where additional value is generated using technology. Initialising cases is usually done by the authorities or committee members, but there is also a demand in the law, Local Government Act 410/2015, that every citizen has the right to create an initiative for the committee to handle (Finland's Ministry of Finance, 2015). Case initiation is the first phase in the decision-making process where the participatory decision-making concept is applied. Participation is done by using a webform in Kunta.live. With this form the residents describe the case in text format, adding web links and other media such as images, audio or videos that should be taken into account. Other users can add their comments and facts about the case on the comment web form.

The next phase in the process is estimating which cases will be handled and prioritizing the cases. In the traditional process, this step is performed by the authorities, but in the participatory decision-making concept, it is natural to use the power of citizens in evaluation by voting. Everyone can support cases by voting for them. The case's urgency affects the time when the case will be decided. In the participatory process, citizens set the urgency by selecting a value for the case on a ten-point Likert scale. For the initialisation phase, there will be a set time limit for passing a certain number of cases to decision-making. Naturally, the most urgent cases will be decided first. Cases that are already on an agenda cannot be added to the initiative rating application. By rating and commenting on the initiatives, participants can refine the idea and improve the initiative even before the actual processing in the preparation phase. Even rejected initiatives can be kept and presented openly. At a later phase, a rejected initiative may become topical, and can be dealt with again. By reading and using the initiatives given before, it is possible to propose new cases using the power of crowdsourcing.

Moving forward in the process, background information for the case is gathered for preparation. All the data obtained in the initialisation step will be exploited in the preparation phase. In addition, with the participatory process, background information is collected using a web form, which may include text, audio, videos, images, real-time visualisations, measured data affecting the case, etc. The collected data is rated by voting. The most relevant or the information voted for most rise to the top of the list, so it is easier to see what should be taken into account.

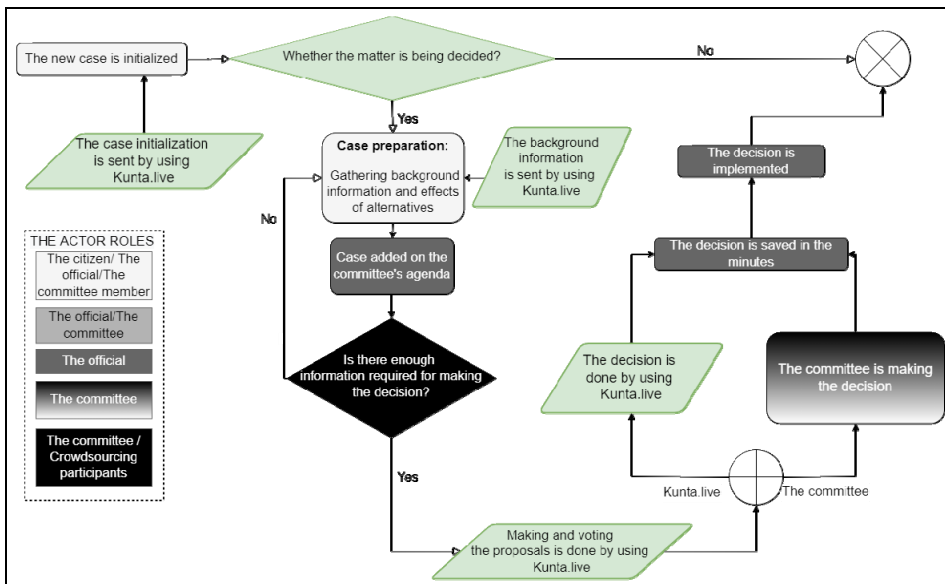
With the information collected through the electronic platform, committee agendas can be created automatically for everyone to read. In addition, there will always be cases created by officials and they can be added in the conventional way. Agendas represented in electronic format have several advantages over traditional paper agendas. Electronic agendas can contain links to real-time discussions or facts about the case as well as supplementary material in the various formats described above. At the same time, the preparation of the proposal for a decision can be refined by using crowdsourcing and voting. Participants can write proposals through the electronic application form and after the agreed time limit, there may be competing proposals for a decision, which can be voted on. After the time limit, the proposal with the most votes will be put on the agenda.

At each step of decision-making where Kunta.live is involved, time limits are set for citizens to provide their input. After that time limit, no further contributions can be made. Otherwise, the participatory platform enables citizens to take part in decision-making in a time- and location-independent manner as long as they can be identified. Cases that contain secret information are more complicated and cannot be processed openly due to

sensitivity. User access management and strong identification are required to process cases that contain secret information through the electronic application. Only people with permission to handle them are allowed to read or deal with such cases. Consequently, cases that contain secret information will not be implemented at least in the first stage of the adoption of the Kunta.live platform. As Local Government Act 410/2015 states, local referendums can be made whenever the council or the committee decides, but when using the participatory decision-making process, referendums are carried out electronically in every phase of the process and in every selected case.

The traditional and the participatory decision-making processes are not mutually exclusive. The decision-making process can use a hybrid model, where selected phases or cases use the traditional process, and all the others use the participatory process. According to Local Government Act 410/2015, a local government council or committee can make changes in management rules and allow use of a participatory decision-making process in selected phases or cases. The biggest bottleneck is not the law, but the will of the local government, more precisely, their authorities and committee members, to involve the citizens more effectively and to use their power regularly in the decisions, preparation, and initiatives made in their local government.

Figure 2 Proposed model for local government decision-making using the Kunta.live platform



4 Discussion

Srapilov et al. (2023) highlighted the need for the development of public administration as a part of the information society. At the same time, Mergel et al. (2023) found that the change towards true digital public administration is urgent and public services supported by Artificial intelligence have emerged. Batista et al. (2022) described e-governance, implemented with the help of ICT, as a link between the government and stakeholders. As digitalisation progresses and management requirements change towards a model that

takes citizens better into account, the demand for electronic administration and electronic citizen-oriented services has become a basic assumption (Pour et al., 2022; Hooda and Singla, 2020; Lee-Geiller and Lee, 2019).

There are several reasons for the failure of e-government and thus the small number of implementations, but a crucial problem is the lack of citizens' participation and acceptance. Pour et al. found that "the positive relationships between perceived usefulness and perceived ease of use with the intention of use" is important but security and trust have no role in improving usefulness (Pour et al., 2022). At the same time, Höchtl and Edelmann (2022) state in their study related to Vienna that increasing information security and reliability are important issues together with fast internet, increasing awareness and web accessibility. Reddick and Norris' (2013) research using statistical models highlights the importance of demand. Based on Oliychenko and Ditkovska (2022), the systems' approach does not produce the desired results in the organisation of electronic administration in the context of rapid changes in the economy and society, but a synergistic approach works better.

This study focuses on how public decision-making can be modified using the participatory concept with modern technologies and on the challenges that lie in the regulations and processes. We propose the Kunta.live platform to help citizens to participate in local government decision-making. In his article, Petrik (2009) describes the following common political issues for an e-democracy system to solve:

- 1 accessible and transparent processes
- 2 high sample size
- 3 influential commercial lobbies
- 4 equal opportunities for all citizens to participate.

Kunta.live solves all of these challenges by offering everyone the opportunity to participate through a single platform. The decision-making phases are accessible and transparent for Kunta.live users and everyone can observe actions in every phase of the process. When Kunta.live achieves a large number of users, the sample size grows and at the same time influential commercial lobbies may find themselves taking advantage of the platform. In addition, Aljarallah and Lock (2020) considered usability, security, performance, transparency and flexibility to be the most important features for a platform.

Crowdsourcing is a technique that enables citizens to participate in public decision-making. The power of the crowd can be utilised when the aim is to increase transparency and to engage people to become genuinely involved in deciding on common issues. These actions involve content production and voting. The legal framework is described in Finland's Local Government Act 410/2015 and the European Union has guiding principles even if there are no specific directives or other strictly regulated guidelines. In the long run, however, the most influential factor in the successful use of a software as an enabler of participation and e-democracy is how participation is ultimately considered and whether participation can genuinely influence public decision-making.

At the beginning of the paper, we defined the goals for utilising Kunta.live as a platform to enable participating and reaching as large proportion of citizens as possible. Kunta.live can be implemented to support the decision-making and the crowdsourcing phases in the process. It is possible to utilise social media platforms or crowdsourcing

platforms like Amazon Mechanical Turk in individual phases; however, supporting the whole process is harder with these platforms, because their intended use is much wider, and they are harder to configure to meet all requirements. By designing and implementing a platform for a specific purpose, it is possible to tailor the properties according to the requirements of the particular decision-making process.

One may ask how the level of participation can be measured. Aitamurto and Saldivar (2017) found that people participate because they want to improve, learn and solve problems. There is no exact standard for measuring participation. If the aim is to express the participation enabled by the local government, one way is to calculate the percentage of the matters to be decided where citizens have been given the chance to participate. If the aim is to measure how actively the citizens participate, one way is to count the number of participants or the amount of material they produce.

In this study, the phases in the local decision-making process were identified where crowdsourcing and participation could be introduced to increase efficiency, transparency and public awareness. Also, the possibilities and limitations posed by the legal framework were indicated. It was found that although the legislation enables participation and crowdsourcing on many occasions, further development is needed to clarify the requirements and take into account the possibilities offered by state-of-the-art technology.

A couple of issues were raised in the discussions with the local government authorities when launching Kunta.live. These issues are not handled in this paper, but they merit further investigation. The first issue is related to identity theft and disruptive behavior, a cause for concern when strong identification is not used. However, using strong identification may reduce user-friendliness and exclude users who cannot use strong identification. The EU has come to the same conclusion, and their solution is electronic identification (eID) within the EU. Also, the EU eGovernment Action Plan Steering Board concurred. In the future, researchers should focus more on developing practices to increase smooth personal identification in Internet environments without the need for technical skills or endangering the user experience. Authorities also stated that adopting a new channel of participation alongside existing ones may cause more work and they may need to hire a new employee to monitor and produce content for this channel. It is true that many local governments already have their channels for citizen participation, but as previous studies show, local government participation is usually only one-way, and genuine participation is missing. Local governments have many opportunities to innovate and launch new services. However, it is a challenge to select the most sensible options and naturally the threshold to participation increases whenever something new is offered.

5 Conclusions

Direct democracy or real participation in public decision-making is still quite rare, even though there are many statutes, laws and petitions demanding action. The concept of participatory decision-making is still not an integral part of municipal administration. The development of electronic systems and their utilisation in public decision-making has for the most part progressed slowly and even electronic voting is not used in most countries. Services aimed at inclusion are usually developed to implement only one step related to decision-making. Local governments also use systems for participation, for example,

social media platforms, which are intended for a different kind of communication between people and not specifically for participation in decision-making. The authors of the article have implemented the Kunta.live service to implement the entire decision-making chain and this distinguishes Kunta.live from most other services. Kunta.live is a fully functional implementation, but not in production use for now. Kunta.live fills the gap in the participation of public decision-making, supplementing the organisation's set of tools. It differs from other systems that offer various stages of the decision-making process in that it does not demand changes of the current systems, but works alongside them. Agendas and minutes can be read into Kunta.live by editing the configuration case by case. Kunta.live is designed and implemented by finding out the decision-making processes and adapting them to a digital format to make use of participation and crowdsourcing. The platform offers applications for drawing up initiatives, drawing up and reading agendas from other systems, drawing up and reading minutes from other systems, drawing up decision proposals, voting, collecting background information and applications for admin users to manage contents and functions.

More research is needed in the future on adding direct democracy to larger entities. Participatory budgeting implementations are an example of a working individual implementation of direct democracy but, for example, implementing the decisions of an entire board with direct democracy assisted by artificial intelligence would be a good way to dismantle bureaucracy, increase transparency and speed up processes. At the same time, it would be possible to transfer the resources saved from maintaining the boards to other areas deemed important.

Acknowledgements

The research leading to these results has received funding from The Finnish Cultural Foundation/Satakunta fund and The Satakunta Higher Education Foundation.

References

- Aitamurto, T. and Chen, K. (2017) 'The value of crowdsourcing in public policymaking: epistemic, democratic and economic value', *The Theory and Practice of Legislation*, Vol. 5, No. 1, pp.55–72.
- Aitamurto, T. and Saldívar, J. (2017) 'Motivating participation in crowdsourced policymaking: the interplay of epistemic and interactive aspects', *Human-Computer Interaction*, Vol. 1, No. 18, pp.1–22.
- Aljarallah, S. and Lock, R. (2020) 'An investigation into sustainable e-government in Saudi Arabia', *The Electronic Journal of e-Government*, Vol. 18, No. 1, pp.1–16.
- Batista, N.V., Carreiras, H. and Ramos, A.M. (2022) 'Electronic government maturity index: proposal to evaluate the maturity of local government portals', *Electronic Government*, Vol. 18, No. 1, pp.45–69.
- Bhatti, S.S., Gao, X. and Chen, G. (2020) 'General framework, opportunities and challenges for crowdsourcing techniques: a comprehensive survey', *Journal of Systems and Software*, Vol. 167, p.110611.
- Bindu, N., Sankar, C.P. and Kumar, K.S. (2019) 'From conventional governance to e-democracy: tracing the evolution of e-governance research trends using network analysis tools', *Government Information Quarterly*, Vol. 36, No. 3, pp.385–399.

- Cammaerts, B. and Mansell, R. (2020) 'Digital platform policy and regulation: toward a radical democratic turn', *International Journal of Communication*, Vol. 14, pp.135–154.
- Chittilappilly, A.I., Lei, C. and Amer-Yahia, S. (2016) 'A survey of general-purpose crowdsourcing techniques', *IEEE Transactions on Knowledge and Data Engineering*, Vol. 28, No. 9, pp.2246–2266.
- Chiu, C., Liang, T. and Turban, E. (2014) 'What can crowdsourcing do for decision support?', *Decision Support Systems*, Vol. 65, No. C, pp.40–49.
- Christensen, T. and Lægreid, P. (2020) 'Balancing governance capacity and legitimacy: how the Norwegian Government handled the COVID-19 crisis as a high performer', *Public Administration Review*, Vol. 80, No. 5, pp.774–779.
- Csáki, C. (2020) 'An attempt to build an eparticipation program from scratch: the case of a district municipality', in Hofmann, S. et al. (Eds.): *Electronic Participation. ePart 2020. Lecture Notes in Computer Science*, Vol. 12220, Springer, Cham.
- Erickson, T. (2011) 'Some thoughts on a framework for crowdsourcing', in *Workshop on Crowdsourcing and Human Computation*, pp.1–4.
- European Parliament (2002) 'Regulation (EC) No 2321/2002 of the European Parliament and of the Council of 16 December 2002 concerning the rules for the participation of undertakings, research centres and universities in, and for the dissemination of research results for, the implementation of the European Community Sixth Framework Programme (2002–2006) (Text with EEA relevance)'.
- European Parliament (2003) 'Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC – Statement by the Commission'.
- European Parliament (2006) 'Regulation (EC) No 1367/2006 of the European Parliament and of the Council of 6 September 2006 on the application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies'.
- European Parliament (2017) Decision (EU) 2017/1324 of the European Parliament and of the Council of 4 July 2017 on the participation of the Union in the Partnership for Research and Innovation in the Mediterranean Area (PRIMA) jointly undertaken by several Member States.
- Falco, E. and Kleinhans, R. (2018) 'Beyond information-sharing. A typology of government challenges and requirements for two-way social media communication with citizens', *Electronic Journal of E-government*, Vol. 16, No. 1, pp.18–31.
- Finland's Ministry of Finance (2015) 'Local Government Act 410/2015' [online] <https://www.finlex.fi/fi/laki/ajantasa/2015/20150410> (accessed 3 March 2022).
- Höchtel, B. and Edelman, N. (2022) 'A case study of the 'Digital Agenda of the City of Vienna': e-participation design and enabling factors', *Electronic Government, an International Journal*, Vol. 18, No. 1, pp.70–93.
- Hooda, A. and Singla, M.L. (2020) 'Reengineering as a strategic stance for e-governance success – mediating role of core competencies: a mixed method study', *Transforming Government: People, Process and Policy*, Vol. 14, No. 2, pp.205–235.
- Howe, J. (2006) 'The rise of crowdsourcing', *Wired Magazine*, Vol. 14, No. 6, pp.1–4.
- Ianniello, M., Iacuzzi, S., Fedele, P. and Brusati, L. (2019). 'Obstacles and solutions on the ladder of citizen participation: a systematic review', *Public Management Review*, Vol. 21, No. 1, pp.21–46.
- Joensuu, M. and Niiranen, V. (2018) 'Political leaders and public administrators: interaction patterns and pictures in Finnish local government decision-making processes', *Public Policy and Administration*, Vol. 33, No. 1, pp.22–45.
- Kavrakova, A. (2021) 'Participation of European citizens in the EU legislative procedure', *ERA-Forum*, Vol. 22, No. 2, pp.295–310.

- Kiiver, P. (2009) 'German participation in case: a comparative view on domestic parliamentary clearance procedures', *German Law Journal*, Vol. 10, No. 8, pp.1287–1296.
- Klassen, T.R., Cepiku, D. and Lah, T.J. (2017) *Routledge Handbook of Global Public Policy and Administration*, Routledge, London, ISBN: 1138845221.
- Ledger, T. (2020) 'The logic of appropriateness': understanding non-compliance in South African local government', *Transformation: Critical Perspectives on Southern Africa*, Vol. 103, No. 1, pp.36–58.
- Lee-Geiller, S. and Lee, T.D. (2019) 'Using government websites to enhance democratic e-governance: a conceptual model for evaluation', *Government Information Quarterly*, Vol. 36, No. 2, pp.208–225.
- Lenart-Gansinieć, R. (2021) 'The effect of crowdsourcing on organizational learning: evidence from local governments', *Government Information Quarterly*, Vol. 38, No. 3, p.101593.
- Lenart-Gansinieć, R. and Sułkowski, Ł. (2020) 'Organizational learning and value creation in local governance: the mediating role of crowdsourcing', *The Learning Organization*, Vol. 27, No. 4, pp.321–325.
- Lindner, R. and Aichholzer, G. (2020) 'E-democracy: conceptual foundations and recent trends', *European E-democracy in Practice*, pp.11–45, Springer, Cham.
- Liu, B., Zhong, W., Xie J., Kong, L., Yang Y., Lin, L. and Wang, H. (2021) 'Deep learning for mobile crowdsourcing techniques, methods, and challenges: a survey', *Mobile Information Systems*, Vol. 2021, pp.1–11.
- Mees, H., Uittenbroek, C., Hegger, D. and Driessen, P. (2019) 'From citizen participation to government participation: an exploration of the roles of local governments in community initiatives for climate change adaptation in the Netherlands', *Environmental Policy and Governance*, Vol. 29, No. 3, pp.198–208.
- Mergel, I., Dickinson, H., Stenvall, J. and Gasco, M. (2023) 'Implementing AI in the public sector', *Public Management Review*, pp.1–13.
- Nelimarkka, M. (2019) 'A review of research on participation in democratic decision-making', presented at *SIGCHI Conferences: Toward an Improved Trading Zone Between Political Science and HCI*, *Proceedings of the ACM Human-Computer Interaction*, Vol. 3, CSCW, Article 139, pp.1–29.
- Oliychenko, I. and Ditkovska, M. (2022) 'Formation and development of e-government in Ukraine: synergistic approach', *Electronic Government, an International Journal*, Vol. 18, No. 2, pp.181–197.
- Petrik, K. (2009) 'Participation and e-democracy how to utilize Web 2.0 for policy decision-making', *Proceedings of the 10th Annual International Conference on Digital Government Research: Social Networks: Making Connections between Citizens, Data and Government*, pp.254–263.
- Pour, M.J., Sherkat, M.H. and Asarian, M. (2022) 'Citizens' intention to use e-governance in Iran: the challenge of e-good governance implementation', *Electronic Government, An International Journal*, Vol. 18, No. 3, pp.293–322.
- Rafique, Z., Habib, S. and Rosilawati, Y. (2023) 'Legal, political and administrative barriers to citizen participation in local governance: an inquiry of local government institutions', *International Journal of Public Administration*, Vol. 46, No. 4, pp.256–268.
- Randhawa, K., Wilden, R. and West, J. (2019) 'Crowdsourcing without profit: the role of the seeker in open social innovation', *R&D Management*, Vol. 49, No. 3, pp.298–317.
- Reddick, C.G. and Norris, D.F. (2013) 'E-participation in local governments: an empirical examination of impacts', in *Proceedings of the 14th Annual International Conference on Digital Government Research*, pp.198–204.
- Rexha, B. and Murturi I. (2019) 'Applying efficient crowdsourcing techniques for increasing quality and transparency of election processes', *Electronic Government, an International Journal*, Vol. 15, No. 1, pp.107–128.

- Royo, S., Yetano, A. and Acerete, B. (2011) 'Citizen participation in German and Spanish local governments: a comparative study', *International Journal of Public Administration*, Vol. 34, No. 3, pp.139–150.
- Royo, S., Yetano, A. and Acerete, B. (2014) 'E-participation and environmental protection: are local governments really committed?', *Public Administration Review*, Vol. 74, No. 1, pp.87–98.
- Saroj, A. and Pal, S. (2023) 'E-governance through social media: an analysis on the use of Facebook and Twitter by Indian Government', *Electronic Government*, Vol. 19, No. 3, pp.304–331.
- Schmidhuber, L., Hilgers, D. and Randhawa, K. (2022) 'Public crowdsourcing: analyzing the role of government feedback on civic digital platforms', *Public Administration*, Vol. 100, No. 4, pp.960–970.
- Scholz, H. (2020) 'Citizens' dialogues and Citizens' participation in the EU decision-making (2020/2201(INI)', European Parliament [online]. https://www.europarl.europa.eu/doceo/document/AFCO-PR-689799_EN.pdf (accessed 7 May 2022).
- Srapilov, S.M., Alibayeva, G.A., Zhatkanbayeva, A.Y., Baimakhanova, D.M. and Razzak, N.R. (2023) 'Problems of improving public administration in the context of digitalisation and informatisation', *Electronic Government*, Vol. 19, No. 5, pp.586–606.
- Van Eijk, C. (2014) 'Growing access to local decision-making? Explaining variation among Dutch municipalities in the institutional measures to promote citizen participation', *Journal of Urban Affairs*, Vol. 36, No. 2, pp.256–275.
- Van Montfort, K., Siebers, V. and De Graaf, F. (2021) 'Civic crowdfunding in local governments: variables for Success in the Netherlands?', *Journal of Risk and Financial Management*, Vol.14, No. 1, p.8.

Notes

- 1 <https://kansalaisaloite.fi> (accessed 5 August 2023).
- 2 <https://e-estonia.com/solutions/interoperability-services/x-road/> (accessed 6 August 2023).
- 3 <https://www.mygov.in/> (accessed 5 August 2023).
- 4 <https://www.tampere.fi/osallistu-ja-vaikuta/vastaa-kyselyihin-ja-osallistu-suunnitteluun/osallistuva-budjetointi> (accessed 5 August 2023).
- 5 <https://omastadi.hel.fi/> (accessed 5 August 2023).
- 6 <https://research.com/software/best-citizen-engagement-software> (accessed 19 August 2023).
- 7 <https://digital-strategy.ec.europa.eu/en/news/ministerial-declaration-egovernment-tallinn-declaration> (accessed 3 March 2022).
- 8 <https://joinup.ec.europa.eu/> (accessed 3 March 2022).
- 9 <https://digital-strategy.ec.europa.eu/en/policies/egovernment> (accessed 3 March 2022).