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# Identification in E-Participation: Between Quality of Identification Data and Participation Threshold

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**Abstract.** E-Participation projects have to consider a low participation threshold while maintaining security and data quality standards. While users often perceive complex regulations and logins as hurdles for participation, providers of solutions want to avoid misuse and in some cases have identified the participants uniquely. Not all levels of e-participation require the same quality of identification and authentication to produce reliable outcomes. Based on the first results of an Austrian e-participation project, the paper presents a model that tries to match these complex relations and examines which identification methods are seen as appropriate on which levels of e-participation based on the dimensions of quality of identification data and low participation threshold.

**Keywords:** E-Participation, identification, authentication, data quality

## 1 Introduction

Whenever an e-participation process is designed, a decision about the modes of user identification is mandatory. For decision-makers and citizens who are initiating an e-participation process (top-down and bottom-up setting) some guidance would be helpful. Such efforts are complicated by the complexity of e-participation processes and the large number of participation areas. [1]

As part of the nationally funded research project “E-Participation – authentication in democratic online participation”, that aims at developing an e-participation ecosystem, questions like “Which levels of e-participation ask for what sort of identification method? How can the tension between the desired low participation threshold and the need for security be conceptualized?” arose. The model in this paper builds on the idea that a matching of the levels of e-participation with electronic identification methods can be a useful orientation for future initiators of e-participation processes and that the modelling of e-participation processes with a focus on identification options can be helpful for the scientific community.

In the following the levels of e-participation (chapter 2.1) and a selection of electronic identification methods (2.2), which the model is based on, are introduced. After describing the methodology (3.) and the relevant dimensions (4.1, 4.2), authors will

present the model (5.) before describing limitations and suggestions on further research (6.).

## 2 Theoretical Framework

### 2.1 Levels of E-Participation: Definitions, State of the Art and Legal Aspects

When classifying e-participation processes, a useful framework, which is based on Glass' (1979) classification of the objectives of participation, was proposed by Phang/Kankanhalli [2]. By distinguishing four objectives of e-participation and matching them with the process of policy making, Phang/Kankanhalli map e-participation as described in extracts as follows:

stage in process of policy making	e-participation objective	appropriate means (e.g.)
agenda setting	input probing	online-survey questionnaires
formulating policy	information exchange decision-making supplement	web portal with online discussion visualization tools
implementation phase	education and support building	online chat
after implementation	information exchange	

**Fig. 1.** Mapping of e-participation objectives with stages of policy making

Another model includes performance indicators for each level [3]. Drawing on levels as presented by the Organization for Economic Cooperation and Development (OECD), Al-Dalou and Abu-Shanab emphasise that three basic levels (*information provision, citizen-consultation and citizen active participation*) would leave the final decision under the responsibility of the government [4, 5]. However, they also mention “*codetermination*” as proposed by Medimorec et al. [6] as a new level. Another classification is described by Ergazakis et al. [7], referring to the DEMO-net Excellence Network on e-Participation. They differ applied forms and areas of e-participation: *consultation* is distinguished from *deliberation, polling, voting, campaigning, electioneering, petitioning, decision making, service delivery, spatial planning, information provision, mediation and community building*. [7]. Further aspects relevant for examining participation threshold in e-participation processes are the role of mobile solutions as found in Wimmer et al. [8], and the effect of e-participation on the trust of citizens as examined by e.g. Kim et al [9]. An Austrian model conceptualizing (e-)participation is the one proposed in the standards for public participation. This model distinguishes *informative public participation, consultative public participation and cooperative public participation* [10] and was amended by the working group e-democracy of the Federal Chancellery [11] as follows: At the *information* level citizens are informed about a plan or decision without the opportunity to further influence it. *Consultation* refers to citizens stating their opinion. The third level is further divided into *cooperation (3a)*, where citizens can influence the decision, and *co-decision (3b)*, understood as a decision made commonly by participants and decision-makers.

## 2.2 Electronic Identification and Authentication

According to Art 3 paragraph 1 Regulation (EU) No 910/2014<sup>1</sup>, ‘*electronic identification*’ is defined as the process of using person identification data in electronic form uniquely representing either a natural or legal person, or a natural person representing a legal person. Art 3 paragraph 5 of the aforementioned regulation regulates *authentication* as an electronic process that enables the electronic identification of a natural or legal person, or the origin and integrity of data in electronic form to be confirmed.

This understanding does not correspond with how identification and authentication are currently defined by the Austrian legal framework (for more detailed information see [12]). As the project consortium consists of technical as well as legal experts and the technical understanding of those terms is not equal to the legal definitions, it has agreed on defining authentication and identification as is done by the Austrian E-Government-Act: Identification is understood as the process necessary to validate or recognize identity, while identity is the designation of a specific person by means of data which are particularly suitable to distinguish persons from each other, such as name, date of birth and place of birth. “Unique identity” enables the unmistakable distinction of one data subject from all other data subjects.<sup>2</sup> The process, which is necessary to validate or recognize authenticity is called authentication, while authenticity is understood as the genuine nature of a declaration of intent in the sense that the purported author of that declaration is in fact its actual author.<sup>3</sup> Unique identification in Austria is possible through the state-implemented citizen-card or mobile-phone-signature: Independent of technology, the so-called “link to a person” assures unique *identification* of a natural person<sup>4</sup> by a derivation of the number assigned to a person within the central register of residents. *Authentication* of the declaration of intent is made possible through an electronic signature.<sup>5</sup>

To summarize, unique electronic identification is the process equal to identification with an official document and the qualified electronic signature serves<sup>6</sup> as a means (of authentication) equal to a handwritten signature.

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<sup>1</sup> Regulation of the European Parliament and of the Council of 23 July 2014, published in OJ L 257/73 on 28 August 2014; this regulation shall apply from 1 July 2016 (Art 52 describes the entry into force further).

<sup>2</sup> These definitions are regulated in § 2 Nr. 4 (identification), Nr. 1 (identity) and Nr. 2 (unique identity) of the Austrian Federal Act on Provisions Facilitating Electronic Communications with Public Bodies (E-Government-Act), Austrian Federal Law Gazette (BGBl), part I, Nr. 2004/10, version BGBl I 2013/83; a former version is accessible in English <https://www.digitales.oesterreich.gv.at/DocView.axd?CobId=19380>.

<sup>3</sup> § 2 Nr. 5 and Nr. 6 E-Government-Act, Austrian Federal Law Gazette (BGBl), part I, Nr. 2004/10, version BGBl I 2013/83.

<sup>4</sup> § 4 Nr. 2 E-Government-Act, Austrian Federal Law Gazette (BGBl), part I, Nr. 10/2004, version BGBl I 2013/83.

<sup>5</sup> Other means, which can guarantee authentication are e.g. log files or a mobile TAN. The latter serves as a second factor of authentication through the Austrian mobile-phone-signature.

<sup>6</sup> apart from certain exceptions, see § 4 Federal act on Electronic Signatures, Austrian Federal Law Gazette (BGBl) I Nr. 1999/190 BGBl. I Nr. 2010/75.

### **3 Methodology**

Our central goal was to examine the appropriateness of e-ID options at the different levels of e-participation processes and how these can be mapped in a model based on already existing classifications and expert opinions. A qualitative approach was pursued: After a desk research, focus groups were held both with interested citizens (external focus group 1, November 2014) and experts (internal focus group 2, March 2015). As a part of the requirement analysis for the e-participation ecosystem to be developed, 10 expert interviews were held until March 2015.

The first focus group was a one hour moderated discussion starting with the clarification of basic definitions of identification and authentication, with around 20 participants (practitioners and activists with an interest in ICT and governance) in Vienna in November 2014. The goal of this focus group was to access the user perspective and to define areas of conflict and high interest.

Guided expert interviews with open questions [13] have been conducted with 10 experts in e-participation, e-governance and e-voting in Austria and the EU. Experts were defined as those with knowledge in the field of e-participation due to their profession [14], i.e. whose research interests were relevant for the topic or who had been running projects of this sort. The role of the expert interviews was to evaluate and further elaborate the findings from desk research for the requirement analysis of the project. Interview guidelines were set up in accordance with the project consortium. The interviews lasted from 40 to 60 minutes and were done in person (3), in written form (2) or by Skype recording (5). Interviewees are quoted anonymously (as interviewee A – J).

Focus group 2 consisted of the interdisciplinary scientific partners of the consortium with a strong legal and technical specialization, as well as three representatives of the Austrian Ministry of the Interior (e.g. the leader of the Austrian Election Commission). The results of this focus group lead to a depiction of relating six selected identification methods to seven forms of e-participation. Therefore, the dimensions risk/security and practicability/reasonability/low participation threshold were suggested in a first attempt. In a second step, these were amended to the following sub-questions:

- How strong is the link to a specific person? The quality of identity data is considered higher if an authority validated the identification data.
- How low-levelled or high-levelled can the electronic identification method possibly be without forming a too high participation threshold with regard to a particular form of participation?

## **4 Results**

### **4.1 Citizen Perspective**

With view to the citizen perspective, in focus group 1, it became clear that the topic e-IDs in e-participation is controversial and often polarizing. Two major areas of con-

flict could be identified: Firstly, in order to reach a big and diverse amount of participants, access to an e-participation process should be as low as possible (low participation threshold). Secondly, the level of risk resp. security often seems to contradict high participation rates from a user perspective. These dimensions are also reflected in the two perspectives of the model. The focus group showed that high quality ID are perceived as a hurdle for participation, and e-ID management can reduce manipulation, but could also be used to control citizens' activities. Compared to offline participation, there is a lack of trust in e-ID providers or organizations that run e-participation projects. Anonymous e-participation is not seen as a solution; however specific user groups are very critical regarding data security standards. The potentials of a comprehensive e-ID management are seen in the increasing reliability of results and the possibility to lower participation threshold by using different e-ID solutions. This was also reflected in the interviews, which point towards the importance of user empowerment by offering transparent processes (e.g. regarding data collection) and different e-ID options (cp. Interviewees F, D, B, J).

In the following, we describe the analytical dimensions used to create a two-dimensional model and how they were selected, based on desk research, interviews and focus groups.

#### **4.2 Vertical Dimension: Levels of E-Participation**

The levels of e-participation express the intensity of the influence of citizens during a participation process, based on the distinction proposed by Arbter [10] and amended by Parycek [11]. At the third level, Parycek distinguishes *cooperation* from *co-decision*. These levels of e-participation were amended and further divided into subcategories reflecting more concrete e-participation processes:

- The first step is information, meaning the provision of information to be accessed by participants.
- Participants are provided with more influence at the second step, consultation, divided into three subcategories: the statement of ideas, the addition of content and opinions (one-way-communication), annotation/commenting/discussion (two-way-communication) and the evaluation of content (e.g. to "like").
- Cooperation, defined as a collaborative preparation of results, builds the third step.
- Co-decision is understood as a possibility to vote on results or implementations.
- Decision is defined as a legally binding decision made solely by the participants.

#### **4.3 Horizontal Dimension: Identification Methods**

On this axis we focused on the following selected e-IDs relevant for Austrian citizens and according to technical requirements:

1. Unique identifications provided by the state (unmistakable distinction of citizens);
2. Application specific user management (like LDAP, Active Directory etc. used, f.i. in an enterprise for the identification of employees);

3. The number of an official document (e.g. passport), which is saved in a register; (A link to the corresponding register would not enable verification of the user, but at least verify if there is a document with this number at all.)
4. A reputation based processes of identification (a login with e.g. username and password and a confirmation of other users in the sense, that the user's real identity is equal to the one used in the participation process); similarly to a Social media login, this is risky due to the lack of verification of the identity data.
5. "Social IDs"; this category summarizes identification methods like OpenID, Facebook Connect, Google Connect, Twitter, Amazon, LinkedIn etc. (username and password)
6. No identification

Regarding the quality of identification data, interviewees point towards the bindingness of a decision as a main factor speaking for high quality of identification data. For some e-participation cases, e.g. youth participation, some experts are in favour of a lower participation threshold at the cost of security standards to ensure participation (I, J). Youth also seems to be more prepared to use real names for political participation (I). The integration of target group specific IDs plays a big role in e-participation. In particular practitioners emphasize a multidimensional solution on most e-participation levels to empower citizens (B, J), which is also reflected in the description of minimum standards in our model. In particular youth and citizens living abroad can be reached well through e-participation (I). Independent from target groups, it is almost impossible to separate the bindingness of a process from secure identification tools (B, D, E, J, K.). If decision making relies on an output based on participant numbers, the importance of the quality of identification data is increased.

#### **4.4 Context of E-Participation**

As it is difficult to detach e-participation from its context, we address the aspects e-participation is embedded in.

##### **4.4.1. Anonymous Participation and No Identification**

Anonymity and pseudonymity play a big role as a general option for users, in particular for a more critical target group (cp. interviewees I, B, F). Interviewee A points to the fact that identical solutions can be linked to different participation thresholds in different countries, depending on cultural factors, marketing and the recognition value of a solution. Often, there is a difference between the anonymity experienced by users and the technical possibilities. An advantage of anonymity might be that the content is more focused and personalization becomes less relevant. On the contrary, anonymity may lead to lower inhibition by users up to aggressive tones of a discussion. Nagiller [15] investigated news portals with comment functions, showing a high amount of abusive postings. She concludes that the use of real names results in less offences. The working group E-E-emocracy of the Austrian Federal Chancellery mentioned the danger of "flamewars" because of the perceived distance between users in an anonymous setting [11]. However, the thesis that the use of real names automatically mini-

mizes offensive comments could not be proved either. In contrast, interviewees state that offensive behavior plays a minimal role in official e-participation projects (B, I, J). Another advantage of anonymity is that peer pressure might become less relevant in online communication [11]. Interviewees emphasized the importance of anonymity, if a project allows for that option (D, F, I, J). A study conducted by Bernstein et al. [16] outlines that a large majority of users (over 90% of posts were anonymous) tend to choose anonymity if they have the choice to either enter no name, use any name or use a cryptographic identity mechanism on a discussion board. The question whether a huge amount of participants shall be reached is crucial (J, F). In any case, the declaration of a name and registration processes will form a participation hurdle. Technical advancements are often in favor of user privacy, although they have to be both known and implemented and usually lead to a more complicated process. Recent research on identity management has, for instance, concentrated on protecting user data [20]. Generally, anonymization and pseudonymization are complex categories. When speaking of anonymity, it should be clarified whether this refers to identification towards a system or the participants.

#### 4.4.2. Strategies to Lower Participation Threshold

As strategies to lower participation threshold for users, the use of solutions that are known from e-business cases as well as the use of widely accepted e-IDs were mentioned. Drawing on existing e-business cases might decrease participation threshold for particular IDs (cp. interviewee A), as users are already used to that sort of online identity management and tend to trust those things they already know. The implementation of basic e-government technologies like IDs guaranteed by the state into the corporate sector can lead to more acceptance of such technologies [17]. Increasing availability of such technologies in the private sector (like electronic signatures, online registration based on secure identity data or electronic RSA-delivery) could encourage citizens to also use those for e-government services. One example would be the transnational online opening of an account as implemented in the EU large scale pilot project STORK 2.0.<sup>7</sup> In particular experts from the practitioner domain were very open towards integrating Social IDs in e-participation processes. Offering such IDs in addition to other e-ID options was seen as a valid option that empowers users by providing them with alternative solutions (B, I, J). However, if many levels of the e-participation process are reflected in a particular solution (multi-level approach), due to the complexity of the system, one e-ID for all processes might be more applicable (B). Nevertheless, there seems to be a big potential for multi-level, flexible e-participation processes with voting options (in particular for a tech-savvy and politically interested target group) that can be used by smaller administrative communities or communes. Germany builds on such models in close cooperation with associations and the lessons learned from such projects should be further considered in the Austrian, but also European context (B, D).

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<sup>7</sup> <https://www.eid-stork2.eu/> (accessed 31 March 2015).



#### 4.4.3. Legal Framework vs. Standards

Identification methods have to meet legal requirements, e.g. those of data protection law. There is a tendency against more legal regulations regarding the implementation of e-participation processes (cp. interviewees F, I, D, E, H), however, a better standardization in the e-participation field is seen as advantage (F). Other experts criticize the lack of a unified access to e-government services for the general public (one-stop-shop) as well as a lack of a legal framework for e-participation [18]. EU Regulation No 211/20118 e.g. regulates the European Citizens' Initiative (ECI) and has been critically reviewed by Stein/Wenda [19].

## 5 Model

The following model originates from two tables created within the internal focus group. It is an attempt to conceptualise the use of e-IDs along the two perspectives quality of identification data and participation threshold and shall serve as a basis for further defining use cases, best practices and recommendations: Which e-ID options can or cannot be recommended as a minimum standard on a specific level of participation? Not all aspects of online identification and e-participation shall be comprehensively captured in one model, but this depiction shall be used as a basis for further verification by experts and the scientific community. The internal focus group discussed the model along the following two questions: Is the quality of the investigated identification data good enough to be used for a particular level of participation? How high-levelled can the e-ID possibly be without being regarded as a too high participation threshold for a particular form of e-participation?

stepmodel of e-participation	information	consultation			cooperation	co-decision	decision
		to state ideas, add content, opinions (one-way-communication)	to comment and discuss (give feedback, interaction, two-way-communication)	to evaluate content or intermediate results ("to like")	to prepare results in a collaborative way	to vote on results or implementations	to decide in a legally binding way (e.g. election concerning an institution, which aims at representing interests)
<b>e-identification-methods</b>	information access						
unique identifications implemented by the state (like the Austrian citizen card or STORK)	H						
applicationspecific user-management (LDAP, Active Directory, etc.)							
number of an official document saved in a register							
reputation based processes of identification							
Social IDs (OpenID, Facebook Connect, Google Connect, Twitter, Amazon, LinkedIn, etc.)							
no identification at all							L

Fig. 2. Matching of quality of identification data and participation threshold<sup>9</sup>

<sup>8</sup> Regulation (EU) No 211/2011 of the European Parliament and of the Council of 16 February 2011, published in OJ L 65/2 on 11 March 2011.

<sup>9</sup> Colour code: white: the quality of the identification data and the e-identification method are considered as appropriate for its use on the corresponding step of participation; light grey:

As mentioned, the model describes minimum requirements on the ID level. In favour of a wide distribution of e-identification methods, it is not advised against the use of eID methods with higher quality of identification data in general, in order to include users who prefer using these forms of e-ID over of methods with lower quality of identification data. Those e-ID methods can often be technically included, depending on their availability and dissemination. In the following we summarize experts' opinion and reasoning that lead to the depicted model.

For accessing information all identification methods would possibly prevent citizens from participating. Therefore it is recommended to design the participation process without the need of any identification of participants. However, the possibility to identify themselves can be provided to participants. The same applies to the step of consultation seen as an option to state ideas and add content in a one-way-communication-process.

For an interactive discussion process in the form of a two-way communication, it is recommended to use a form of identification, as the counterpart of a discussion is of interest. At this point the model shows a breaking point, from that it is recommended to make use of an identification method. It will depend on the individual case whether social IDs, a number of an official document saved in a register or an application specific user management will be the appropriate method of identification in such processes. This will further depend on the topic as well as the necessity to identify participants. In this process, the possibility of owning more than one social media account has to be taken into account, as well as the fact that the real identity of the user and his/her social ID do not necessarily have to correspond. There is no possibility of a secure verification in this case. A reputation based process of identification contains the additional component of other participants confirming that the identity of the user corresponds with the identity he or she participates with. On the level of consultation as a discussion, it is recommended to use reputation based processes of identification. If the use of a number of an official document saved in a register or an application specific user management is seen as more complex than other identification options, the decision should be made individually according to each case. The voluntary use of an electronic identification method implemented by the state should be possible.

The use of identification methods implemented by the state could hold back participants from participating in a discussion or evaluating content. Moreover, a unique identification is not necessary in a consultation. Therefore there is no need to only use identification methods implemented by the state on this level. Due to the insecurity of social IDs, which also applies to other levels of participation, their use is not recommended in general, but seen as a possibility on the steps of consultation in a discussion, for evaluation and on the level of cooperation, especially with regard to specific target groups. The use of a number of an official document saved in a register as well

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the identification method on the corresponding level of e-participation depends on the individual case and cannot be unconditionally recommended; dark grey: the use of this identification method on the corresponding level is – as a tendency – seen as resulting in a too high participation-threshold (H) or the quality of identification data is regarded as too low (L)

as the use of identification methods implemented by the state is considered as a potential participation hurdle. To keep participation threshold as low as possible, the mandatory use of such systems is not recommended on the level evaluation. It is recommended to use application specific user management or reputation based processes of identification as they provide a higher probability that the alleged author of a statement is the actual author.

On the level of cooperation, which basically means a collaborative elaboration of content or solutions, it may be appropriate to make use of e-ID methods that identify participants uniquely. Social IDs may be appropriate for decision makers not considering unique identification as greatly important, but preferring a high participation rate. Dependent on the requirements of the initiator of the cooperation, it is recommended to either use application-specific user management, a number of an official document saved in a register or reputation based processes of identification.

At the step of co-decision (and above all at the decision-level), it will most likely not suffice to aim for a high participation rate without knowing the identity of participants. Thus, for the processes co-decision and decision, not implementing an identification method or using social IDs is not advisable. Apart from this, all identification methods are seen as appropriate.

On the decision level, participants are provided with the most influence. Therefore, the use of secure identification methods providing a unique identification method is highly recommended. Application-specific user management is also an appropriate solution. The use of a number of an official document saved in a register or reputation based processes of identification can be appropriate, dependent on the individual case, and is thus not excluded.

## **6 Limitations and Further Research**

On the basis of these results, we conclude that the integration of target-group specific e-IDs, the creation of exciting and motivating use cases for existing e-ID models as well as building on already well received and known solutions can significantly lower participation threshold. However, the right method mix in e-participation will always depend on the scope of the project and the specific target group. Emphasis of further research will be on the development of use-cases, additional options for different e-participation levels (new forms of online identification may arise or gain more popularity) and on digital inclusion, on further evaluation and review of the model proposed through expert opinions. A workshop at the International Conference for E-Democracy and Open Government 2015 was held in May 2015. A quantitative survey is planned.

Limitations of the model can be seen in its dedicated focus on top-down processes. Some relevant and promising e-participation models like the supranational European Citizens' Initiative [20], despite some issues regarding stochastic elements and certification [21], work well on the basis of just mentioning a passport number without further validation of the identity document, are not mentioned separately. User assessment and usability testing are still necessary once specific projects are put into prac-

tice. The model proposed shall be seen as a first expert based depiction for categorizing and choosing e-ID options for specific e-participation processes.

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