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A metamodel for the e-participation reference framework

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Abstract. E-participation projects are complex socio-technical constructs integrating different concepts such as participation techniques, stakeholders, objectives, information artefacts, and technical facilities. To conceptualise comprehensive solutions of e-participation projects in a holistic way – i.e. comprehensively integrating the different concepts forming an e-participation project –, enterprise architecture frameworks are increasingly studied. Effective use of enterprise architecture frameworks demands a comprehensive conceptualisation of e-participation projects, which should embark on a common metamodel. In this paper, we study existing conceptual models structuring the e-participation domain and metamodels of enterprise architecture frameworks. From the insights of the comparative analysis, the e-participation metamodel is developed using design science research. The metamodel provides the conceptualisation and taxonomy for an e-participation reference framework to develop comprehensive architectures in e-participation projects. It is presented in a UML 2.0 diagram and involves six viewpoints: Participation Scope, Participant Viewpoint, Participation Viewpoint, Data & Information Viewpoint, E-participation Viewpoint, and Implementation & Governance Viewpoint.

Keywords: Metamodel, E-Participation, Architecture Framework, Domain Model, E-Participation Project.

1   Introduction

Over the past decade, several attempts have been made to conceptualise the e-participation domain [9, 12, 19, 22, 29, 31, 32, 36, 37]. The concepts brought forward vary in their intended purposes and results. What they have in common is that they systemise the interdisciplinary research field and identify relevant concepts forming e-participation initiatives. Each of them can be seen as a kind of e-participation metamodel, understood as a conceptual definition and description of an e-participation project. The purpose of such a conceptual description can be

- To define a vocabulary of e-participation usable in design and implementation [26],
- To model the e-participation domain [9],
- To structure the e-participation research [36], or
- To contribute to the proper understanding of the domain [9].

An e-participation metamodel conceptualising an architecture of an e-participation project was identified as part of a reference framework for e-participation in our earlier research [25, 26]. To derive such a metamodel, this paper analyses e-participation models and enterprise architecture frameworks. Enterprise architecture frameworks are instruments consisting of conventions, principles, and practices that guide the development of an enterprise architecture [30]. An enterprise architecture is a conceptualisation of an enterprise (such as an e-participation project) with a common set of goals [33]. As such they can be a means to support the development and implementation of an e-participation project [26]. In this paper, we perform a comparative analysis of existing conceptual models of e-participation and develop an e-participation metamodel that systematically combines the results of existing research into one comprehensive model. As the objective of this work is to construct a metamodel as an artefact that guides the design of e-participation initiatives along an enterprise architecture framework, this research applies Design Science Research. Design science research aims to design artefacts that define ideas, practices, models, frameworks, and products to support the analysis, design, implementation and use of information systems [7, 17].

The remainder of the paper is as follows: Section 2 presents the comparative analysis of related work in e-participation. Subsequently, these results are further combined with a comparative analysis of metamodels of enterprise architecture frameworks in Section 3. Both sections provide the foundations for the metamodel for e-participation, which is introduced in Section 4. Finally, Section 5 provides concluding remarks.

2 Comparative analysis of related work in e-participation

Conceptual models present entities and their relationships, which characterise the e-participation domain. As such, they can be a means to structure e-participation projects and to identify relevant entities, their attributes and relationships. This section studies conceptual models and analyses them concerning viewpoints and entities identified.

To start with, e-participation literature often refers to the evaluation framework proposed by Macintosh and Whyte [13] (referred to e.g. in [10, 19]), which distinguishes three viewpoints described as overlapping (pp. 20-21): *Democratic* considering criteria to understand how e-participation affects democracy, *Project* considering the aims, objectives, and methods of public engagement, and *Socio-technical* considering to what extent ICT design affects the outcomes. Kubicek and Aichholzer state that this framework "*covers almost any aspect that has been mentioned in the literature as relevant or interesting in order to assess and evaluate (e-)participation*" ([10] p. 30), while at the same time admitting that these viewpoints are overlapping (ibid. p. 31) – i.e. Macintosh & Whyte's framework does not consider interrelations between these viewpoints. Furthermore, Kubicek and Aichholzer criticise the Project viewpoint as particularly heterogeneous, because it considers too many different aspects [10]. As an example, they mention that this viewpoint includes the participation process as well as managerial objectives.

In an earlier work, Macintosh presents an analytical framework for e-participation, which emerged from work for the OECD e-government group. This framework proposes to study the characteristics of e-participation projects based on the following ten key dimensions: level of participation, stages in the policy making lifecycle, actors, technology used, rules of engagement, duration and sustainability, accessibility, resources and promotion, evaluation and outcomes, and critical success factors [12]. This work is the basis for several further models emerging in literature over time, such as:

- In 2007, Wimmer presents an ontology for an e-participation virtual resource centre with the aim to structure information available in e-participation research [36]. It bases on Macintosh's work [12], yet reduces the core dimensions of the ontology to: stages in policy making, level of engagement, stakeholders and participation areas.
- In 2008, Kalampokis et al. introduce a domain model for e-participation, which aims to represent important aspects and relationships to characterise e-participation. The authors suggest three sub-domains: ICT tool, participation process, and stakeholder [9]. Finally, they combine the sub-domains into one model to visualise the key relationships between them.
- In 2008, Phang and Kankanhalli put forward a framework of ICT exploitation for e-participation initiatives [18]. The framework examines how suitable various ICT tools are to achieve e-participation objectives. The work is based on Glass' work [6], who analyses offline participation techniques with regards to achieving different objectives of citizen participation programs.
- In 2011, Sæbø et al. present an exploration of actors, activities, contextual factors, effects, and evaluation approaches addressed in the e-participation literature [22]. Medaglia visualises this exploration and adopts it as a guideline to analyse how the e-participation research field develops [15].
- Also in 2011, Smith et al. present a framework of e-participation analysis levels [29] based on the generic impact analysis and measurement reference system by Millard [16]. This framework differentiates results by their focus on operational objectives=outputs, on specific objectives=outcomes, and on general objectives=impacts.
- In 2014, Yusuf et al. introduce a model as the result of evaluating other frameworks [37]. The approach categorises entities of other models such as [9], and [12] in a new way and includes barriers and drivers of e-participation.
- In 2016, Porwol, Ojo, & Breslin propose an ontology for next generation initiatives [19], which aims at facilitating operations of e-participation initiatives and improving knowledge exchange between similar initiatives. The ontology covers the views Platform, Project, and Democratic Process[1].

A comparative analysis of entities included in the models studied above shows that each of these conceptual models focusses on and considers slightly different e-participation characteristics. The models in [9] and [36] are comprehensive but neglect objectives and a further differentiation of participation results as [29] provides. Porwol et al. focus on the comparison of different e-participation projects and do not consider specifics of participation processes and involvement of actors [19]. None of the models considered

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[1] based on the perspectives proposed in Macintosh and Whyte [13]

can provide a comprehensive picture of an e-participation project and, thus, cannot serve alone as an e-participation metamodel to be used to describe e-participation architectures in a reference framework.

The analysis and synthesis of above conceptual models leads us to a comprehensive list of structural elements of an e-participation project, which contains: stakeholder/actor, role, stage in policy-making, level of participation, participation area, participation activity, participation technique, participation process, ICT (application/ICT, tool, tool category, and technology), channel, objective, driver, barrier, input, output, outcome, impact. Each of the elements can further be analysed. For this paper, we investigate the stakeholders and actors proposed in the conceptual models. The following stakeholder/actor types list shows the union set of entities described in the literature: academia; advisory board, industry/business (in particular consultancies); elected representative; government executive; policy maker; political party/politician; citizen/citizen group; NGO/CSO; the media. Relevant roles that stakeholders can take over in an e-participation project are put forward e.g. in Kalampokis et al. [9], Macintosh (describing some activities that can be interpreted as roles) [12], Sæbø et al [21]. Furthermore, Rozanski & Woods put forward relevant roles in software engineering [20]. The roles, which the authors describe, can be both, internal (part of the project team) and external. The analysis of the actor/stakeholder roles results in the following list: input provider and lurker as participant; decision maker; administrator, consultant, evaluator, expert of the particular policy, facilitator, initiator, ICT developer, ICT maintainer; ICT provider, moderator, marketing/promotion, owner, project manager, and support staff.

Based on above analysis of conceptualisations of e-participation, and in particular on the works of Karalampokis et al [9] and Macintosh and Whyte [13], we select the following four viewpoints as an initial structure of the metamodel, which separates participation from management processes and methods – therewith also clustering above number of elements in a systematic way:

- *Participation Viewpoint* (participation process, democratic objectives),
- *Implementation & Governance Viewpoint* (managerial objectives),
- *E-participation Viewpoint* (socio-technical), and
- *Participant Viewpoint* (stakeholder, target groups).

However, our experience from past e-participation projects [see e.g. 23, 24] shows that the list of identified elements is not sufficiently complete to design the architecture of an e-participation project. In particular, elements to design managerial aspects (e.g. risks, which may hamper the achievement of objectives) or a data architecture are missing. As EA frameworks are used in the information systems domain to design complex socio-technical systems, we therefore analyse a selection of metamodels of EA frameworks to complement e-participation conceptual models (see next section).

3   Comparative analysis of enterprise architecture frameworks

Multiple (enterprise) architecture frameworks exist on the market [14] provided from commercial consultancies, industry consortia, governments or the military. The following frameworks are analysed in this research:

- The *Zachman Framework for Information System Architecture* [38] is a reference point for many EA frameworks published later on [28]. It presents an architecture-based systematisation of what needs to be defined and implemented in information systems development and enterprise engineering.
- *The Open Group Architecture Framework (TOGAF)* [33] is an industry standard for developing enterprise architectures (EAs). It represents an international approach, commonly agreed upon by many industry players, and it complements the Zachman Framework by e.g. providing a detailed architecture development method. TOGAF is the EA framework most often used in industry [3].
- The *Federal Enterprise Architecture Framework (FEAF)* [5] provides a framework for developing processes and information structures between U.S. agencies.
- The *Department of Defence Architecture Framework (DoDAF)* [35] serves as standard for military information system development, but is used also for enterprise architecture development outside the military domain.
- The *ArchiMate* Specification 2.1 [34] is an integrated architectural approach and language for enterprise modelling [11]. The Open Group qualifies ArchiMate as "fully aligned with TOGAF"[2] [4], even if some differences to TOGAF exist.

DoDAF states the purposes of a metamodel as (1) to define a vocabulary, (2) to specify data exchange semantics and formats, (3) to improve comprehensibility of EA data, and (4) to provide a basis for semantic precision. It proposes a conceptual data model, a logical data model and a physical exchange schema. The FEAF metamodel is called the Consolidated Reference Model [5] and aims to provide such a reference model. The TOGAF metamodel aims to formally structure the terms for ensuring consistency and guiding organisations [33]. It proposes a core model ("a basic model with the minimum feature set" [33]) and several extensions, e.g. for process or motivation. ArchiMate [34] defines the entities used in the modelling language.

In our comparative analysis (see **Table 1**), we map the architecture framework metamodel entities with the elements identified in e-participation frameworks in the previous section, leading to two additional viewpoints (informed by the EA frameworks studied): Since the e-participation metamodels (cf. previous section) do not cover data, which the project will produce, store, or edit in different activities, we add the *Data & Information Viewpoint*. In addition, the motivation aspect (vision, objectives, etc. driving the e-participation) is not covered in e-participation metamodels, hence we add the *Participation Scope Viewpoint*. This way, objectives can be defined at a higher level, and can be broken down subsequently into participation objectives, socio-technical objectives and operational objectives along with relevant measures.

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[2] See http://www.opengroup.org/subjectareas/enterprise/archimate [accessed 29 May 2016]

Table 1. Mapping entities identified in e-participation conceptual models with entities in architecture framework metamodels

Framework \ Viewpoint	Partici-pation Scope	Partici-pant	Participation	E-partici-pation	Data & Infor-mation	Imple-menta-tion & Govern-ance
Initial Set of E-partic-ipation Entities (Sec-tion 2)	Input, Output, Outcome, Impact, Objec-tive, Driver, Barrier, Guideline	Actor, Organi-sation Unit, Role	Policy-mak-ing Stage, Participation Level/Area, Participation Activity, Technique, Decision-making/Par-ticipation Process	Tool, Tool Category, Technology		Re-source, Promo-tion, Funding,
TOGAF [33]	Require-ment	Actor, Organi-sation Unit, Role	Process, Business Ser-vice, Func-tion, Event	Applica-tion/Tech-nology Component, Platform Service, Service In-terface	Data Entity	Location, Event
DoDAF [35]	Guidance	Actor, Organi-sation, Per-son/Or-ganisa-tion Type	Activity	System, Service, Service Channel	Re-source	Condi-tion, Measure, Capabil-ity, Lo-cation, Event
FEAF [5]	Goals, Assessts (Invest-ments, Pro-grames), Purpose	Person	Functions, Services, As-sets (Pro-cesses)	IT Assets, Application (System, Component, Interface), Infrastruc-ture (Plat-form, Facil-ity, Net-work), In-terface	Data Assets (Do-main, Subject, Topic),	Business Capabili-ties, Measure-ment Ar-eas/Cate-gories, Risk, Control
Archi-Mate [34]	Require-ment, As-sessment	Busi-ness ac-tor, Stake-holder, Busi-ness role	Product	Application Component, Interface, Application Function, System Software	Data Object	Location, Event

The comparison of elements of existing metamodels (Table 1) shows that it is not necessary to develop a new metamodel from scratch. However, there are two reasons for arguing the need for a customised metamodel for the e-participation domain:

1. The existing e-participation metamodels do not include some entities needed to design e-participation in a comprehensive way,
2. Existing Enterprise Architecture metamodels are too business-oriented or are not customised towards e-participation contexts.

As the e-participation metamodel should consider specific entities relevant to e-participation projects (e.g. particular stakeholder groups and roles to ease its application for e-participation experts) to effectively support the EA framework for e-participation [25, 26], we put forward a comprehensive e-participation metamodel. This metamodel is derived from above investigations by (a) selecting common entities in existing metamodels, and (b) adapting them to the needs and specifications of e-participation.

4   The e-participation metamodel

Six viewpoints structure the e-participation metamodel, which are derived from the above analysis of existing metamodels and which are described in more detail below:

1. *Participation Scope Viewpoint*: motivation and objectives of the project.
2. *Participant Viewpoint*: stakeholder engagement and management.
3. *Participation Viewpoint*: participation services and processes.
4. *Data & Information Viewpoint*: production and use of data.
5. *E-Participation Viewpoint*: e-participation tools and support of techniques.
6. *Implementation & Governance Viewpoint:* operations, administration and management of the e-participation project.

Relationships exist between these viewpoints as visualised in Fig. 1.

4.1   Participation Scope Viewpoint

The purpose of the *Participation Scope Viewpoint* is to capture the objectives, and to link them with measures to achieve them. Furthermore, it provides information needed by the owners to decide if they will carry out the project or not and the basis for further developments after a positive decision. Using this viewpoint makes it possible to determine the purpose of e-participation. It is also foreseen to estimate the potential impacts of e-participation throughout its lifecycle through a high-level view on how the objectives can be achieved by participation techniques. Stakeholders may be the owner and management as well as participants wishing to understand the purposes of participation. The Participation Scope Viewpoint employs scenario building to describe the participation vision. The analysis begins by determining which objectives support the vision. A solution for achieving these objectives is defined on a high level. Therefore, any entities of other viewpoints can be associated with entities from the Participation Scope, e.g. to determine actors' requirements or objectives.

Fig. 1. Overview of the e-participation metamodel

The figure is a UML class diagram of the e-participation metamodel, organized into the following labeled regions:

Participation Scope (associated with all entities*)
- Impact~ — leads to~ → Outcome~ — leads to~ → Output°~#
- Principle* — realises* → Objective*+
- Requirement*+ — realises* → Principle*
- Constraint*+ — (sets performance criteria for*)
- Outcome~ → Objective*+
- Objective*+ — supports → Vision°
- aims to achieve§

Participation
- Participation Technique# — tackles
- employs
- Channel
- Political Decision-making Process & — triggers & / contributes to &
- Participation Process &
- Participation Service* — has → Channel; supports/realises → Participation Process &
- Process#&
- Activity#° — part of°

Participant
- Role*+°#
- Actor/Stakeholder °*# & — has → Role*+°#
- governs*

E-participation
- Technology Component*
- governs*
- provides platform for
- Application Component*+ — includes*
- Performer°
- communicates with*
- accesses / updates*
- is performed by°
- consumes/produces°
- generates*
- triggers*+

Data & Information
- Data Entity*° — resides within* → Data Component*
- related with

Implementation & Governance
- Resource° — produces → Cost&
- in° → Location+*° &
- Measure*
- Event *+° & — is assigned to*
- Budget& — limits → Cost&
- Mitigation Strategy — is related to → Risk*

Legend: UML class diagram. Symbols represent the sources of the entities: * TOGAF, + ArchiMate, ° DoDAF, ~ Smith et al., # Kalampokis et al., § Phang and Kankanhalli, & Porwol et al.

A *Vision* is a mental image of the intended future [cp. inputs in 35] with regards to what the project aims to achieve and the context. A vision tackles participation levels, a policy cycle stage and participation areas. An *Objective* is the goal of e-participation. Objectives can be defined on different levels: general objectives (impacts), specific objectives (outcomes) and operational objectives (outputs) [16]. A *Principle is* "a qualitative statement of intent that should be met by" [33, p. 22] the e-participation architecture. Principles are "general rules and guidelines […] that inform and support the way in which an organisation sets about fulfilling its mission" [33, p. 235]. A *Requirement* is "a statement of need that must be realised" [34, p. 120]. An *Output* is an operational objective that the project generates through its construction [29]. An *Outcome* is a specific objective that describes a benefit for stakeholders [29]. An *Impact* is a general objective, i.e. a societal objective or public value that describes an overall goal [29]. A *Constraint* is an external factor or restriction influencing the way in which the project can be realised [33, 34].

4.2   Participant Viewpoint

The purpose of the *Participant Viewpoint* is to identify and manage the stakeholders, who are actively and passively engaged in the project or affected by the policy under consideration. It provides information needed to allocate roles to participants. Stakeholders of this viewpoint may be the owner and management, as well as participation analyst. Nevertheless, it is also for ICT engineers to derive access rights. The Participant Viewpoint employs stakeholder analysis. It needs to model Actor/Stakeholder, Role, Organisation type, Organisation. The enumeration Actor Type specifies the kind of stakeholder/actor, while the enumeration Organisation Type defines the kind of organisations. A *Performer* is any entity or complex of entities responsible to perform an activity and provide a capability [35]. A *Stakeholder* is "an individual, team, or organization (or classes thereof) with interests in, or concerns relative to, the outcome of the architecture" [33]. Stakeholder can be seen as "a motivational role […] that an actor may fulfil" [34]. An *Actor* is an organisational entity that is capable of performing behaviour [34]. An *Actor Type* is a particular kind of actor: citizen, elected representative, government executive, employee, policy maker, decision maker, politician, lobbyist, other. An *Organisation* is a self-contained unit of people and other resources with objectives [33, 35]. An *Organisation Type* is a particular kind of organisation: academia, government, industry, political party, non-governmental organisation, media, and advisory board. A *Role* is the part and the contribution an actor plays in the e-participation project [33], as e.g. administrator, decision-maker, policy expert, facilitator, moderator, input provider, lurker.

4.3   Participation Viewpoint

The purpose of the *Participation Viewpoint* is the design of participation services, processes and activities necessary to carry out the e-participation project. It considers the political decision-making processes and plans how to integrate participation processes

in a meaningful way. Participation analysts who are interested in planning the participation procedures are obvious stakeholders. In addition, the owners, managers, and participants who want to see how participation is carried out are stakeholders.

This viewpoint employs process analysis and management. The analysis is performed in two steps [27]: First, the decision-making processes are analysed. Afterwards the participation processes are planned. The planning needs to consider the participation techniques and the roles that perform activities in the processes as well as inputs and outputs. There is a need to model Event, Process, Activity, Participation Service, Channel, and Participation Technique. Furthermore, it is necessary to link Performer of related viewpoints and Objective of the Participation Scope Viewpoint. An *Activity* transforms input resources into output resources or changes the states of resources [35]. A *Participation Technique* is a method or instrument applied to involve or engage individuals or groups in the participation process [9].A *Participation Service* is a specific service to involve or engage target groups based on participation techniques employed. A *Process* is an entity that groups behaviour based on an ordering of activities [34]. Processes are differentiated in policy-making and participation processes. A *Decision-making Process* is a set of coordinated activities with certain start and end points that are performed by a government with the aim to set a policy on the political agenda, formulate a policy, decide a policy, implement a policy and/or evaluate a policy [1, 2, 8]. A *Participation Process* presents the activities to engage stakeholders in policy-making processes. An *Event* is a state change, inside or outside the e-participation initiative, which triggers activities or processes [33].

4.4   Data & Information Viewpoint

The *Data & Information Viewpoint* describes the data, which performers produce or consume within e-participation. The purpose of the viewpoint is the development of a data and information architecture. It aims to ensure that the information relevant in e-participation project operations is managed [according to the Data and Information Viewpoint in 35].Using this viewpoint makes it possible to conceptualise the data and information. Editorial team, marketing, ICT engineer are interested in these views: The editorial team and marketing to identify participation data and information, which are to be provided. ICT architects and engineers to design appropriate applications. The Data & Information Viewpoint describes the Resources, which performers produce or consume within e-participation. The entities are *Data Entity* representing data and information, *Data Component* to store data entities, and *Data Type*. A *Data Entity* is a specific encapsulation [33] or information that is materialised in any medium or form and communicated or received [35]. It is represented in a formalised manner suitable for communication, interpretation, or processing by humans or by automatic means [35].

4.5 E-participation Viewpoint

The purpose of the *E-participation Viewpoint* is the technical representation of the applications required to implement the participation architecture, its deployment and operation. It therefore describes the general architecture of the applications: their structure, distributions and how they are interconnected, and a technical description of the applications. Stakeholders are the ICT engineers, suppliers, developers and administrators, i.e. those who are responsible for implementing the ICT facilities supporting the participation. When employing the viewpoint, the requirements manager analyses the Requirements considering input by all stakeholders. The ICT engineers/architects and participation analysts in charge decide on the Application Components supporting the Participation Services and Requirements. Next, the ICT engineers select appropriate *Technology Components*, which provide the platform for the *Application Components*. Afterwards, they develop the software architecture. An Application Component is a group of interacting or interdependent ICT elements, which can be functional, physical or behaviour related [35]. A group of integrated application components form an e-participation tool or e-participation platform. A Technology Component is an "encapsulation of technology infrastructure" [33, p. 631].

4.6 Implementation & Governance Viewpoint

The purpose of the *Implementation & Governance Viewpoint* is the operational management of the e-participation project and governance of architecture implementation. It addresses the concern of determining the constraints of carrying out e-participation (e.g. of managerial or environmental nature) and evaluating the outcomes. Some likely stakeholders for the viewpoint are the project managers. The managers need to model the Budget by estimating the Costs of Resources. A Resource is something that is consumed or produced by an activity [35]. Resources include the underlying infrastructure necessary to construct the e-participation [29]. Project managers define a project plan and need to work out important Events. Furthermore, Measures are defined for Objectives consolidated. The viewpoint employs risk management [a risk management framework is e.g. described in 33pp. 313–317]. Mitigation Strategies are developed for Risks identified. A *Risk* describes a danger, which might influence if objectives are achievable.

5 Conclusion

This paper studied e-participation and enterprise architecture metamodels and derived from this research a e-participation metamodel, which serves as a structure in the design and implementation of e-participation projects. The research combined a comparative analysis of literature on conceptual models structuring the e-participation domain and metamodels of architecture frameworks. Comparative analysis showed that the different attempts complement each other, but a comprehensive approach is still missing. This paper combined the elements from the different models to develop a comprehensive metamodel for e-participation, and it is structured by the following six viewpoints:

participation scope, participant, participation, data & information, e-participation, and implementation & governance. The metamodel formalises the architecture of an e-participation project, the relationships between the entities, and enables an EA tool mapping. The latter is a particular additional value that the proposed metamodel provides in comparison with the existing e-participation metamodels resulting from the comparison with EA framework metamodels. Another benefit is that this metamodel integrates managerial as well as data and information aspects necessary to design the architecture of an e-participation project. Furthermore, the breaking down into viewpoints supports the stakeholders in managing the complexity, as particular stakeholders are able to focus on their concerns.

The research on the metamodel is part of research work putting forward an e-participation reference framework [25, 26]. This framework is designed to guide the design and implementation of e-participation so that the architecture enables project success with optimised processes and ICT, and a lower total cost of ownership. Its target group is the group of stakeholders responsible for designing and implementing an e-participation project. The strategic, top-down perspective on the project enables project management, initiators, owners, executives and decision makers to plan, organise, and combine their activities in a comprehensive way. The metamodel provides the base vocabulary and structural concept.

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