Communications of the Association for Information Systems

Volume 20 Article 55

December 2007

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MAPPING ePARTICIPATION RESEARCH: FOUR CENTRAL CHALLENGES

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ABSTRACT

The emerging research area of eParticipation can be characterized as the study of technology-facilitated citizen participation in (democratic) deliberation and decision-making. Using conventional literature study techniques, we identify 105 articles that are considered to be highly relevant to eParticipation. We develop a definitional schema that suggests different ways of understanding an emerging socio-technical research area and use this schema to map the research contributions identified. This allows us make an initial sketch of the scientific character of the area and its central concerns, theories, and methods. We extend the analysis to define four central research challenges for the field: understanding technology and participation; the strategic challenge; the design challenge; and the evaluation challenge. This article thus contributes to a developing account of eParticipation, which will help future researchers both to navigate the research area and to focus their research agendas.

Keywords: eParticipation, literature review, eDemocracy, eGovernance

I. INTRODUCTION

Democracy and the formal political process are fundamentally dependent on effective communication and informed decision-making about public issues amongst citizens, politicians, officers, and other stakeholders who may be impacted by their collective decisions [Habermas 1996; van Dijk 2000]. eParticipation, therefore, involves "the extension and transformation of participation in societal democratic and consultative processes, mediated by information and communication technologies (ICTs)" [Sæbø et al. 2008]. New digital technologies and the rapid spread of the Internet and mobile communications have the potential to facilitate, change, and improve these patterns of democratic deliberation and decision-making. The emerging research area of eParticipation is therefore devoted to the study of these phenomena.

Emerging cross-disciplinary research areas such as eParticipation are difficult to work in because they do not have well-established theories, methods, or research questions. There are no dedicated journals, conferences, university departments, or research centers. Contributing researchers bring their own backgrounds and research styles with them, study different problems, and profile their work under different headings. There are also no standard textbooks or acknowledged seminal research contributions. In this context literature studies can serve as definitional treatises, which help researchers understand how they can target their work, form

alliances with other researchers, and establish a common language that is understood and accepted between researchers, practitioners, and funding agencies.

eParticipation represents such an early-stage emerging area. Though the term is in relatively common use in practice (see Section II), there are, as yet, few research contributions that use this label. There are, however, many articles which deal with highly relevant themes under different headings, such as eGovernance, eDemocracy, and eVoting. This article is the result of literature studies that focused on these and other themes and the disciplinary character of research in this area as part of the research work of Demo-net (the Network of Excellence in eParticipation funded by the European Union). The first objective was to identify the corpus of literature which can serve as the research foundation for the many eParticipation practices observed in society. This is in itself a difficult task in the absence of previous studies on the topic. The second task involved modeling the literature to understand its thematic shape, and this work is reported in Sæbø et al. [2008]. This article is, to our knowledge, the only existing holistic account of the research area, and the model is briefly summarized in Section II. In the present article we focus instead on the disciplinary character of eParticipation research and its relation to the conventional modes of a scientific discipline—problems, theories, and methods.

We first offer a preliminary account of eParticipation which is based on the earlier work in our study. Using conventional literature search techniques we identify a body of literature that is considered important to the study of eParticipation. We develop a definitional schema for a socio-technical research area (specifying important features of these types of research fields) and we use the schema to analyze the literature sample. The resultant picture (the map) is, as will be expected, far from coherent, but we use the analysis to make an initial characterization of the scientific nature of the research area and identify important research challenges for eParticipation. Explicit consideration of joint research goals and agendas represents an important step in the development of the research area.

This paper contributes to defining the emerging research area of eParticipation in three ways. First, it identifies a core literature that is considered significant for eParticipation research. In established disciplines, this is a relatively simple task that can be accomplished by a keyword search or by reading earlier literature studies. In an emerging research area, however, the task is more complex since it involves the establishment of an initial understanding of the area, the development of suitable keywords, and a prioritization of relevant contributions. The core papers used in this study are listed in Appendix 1. Second, it maps the core literature contributions to a definitional schema of a research area in order to understand the disciplinary characteristics of eParticipation. Emerging research areas can be expected to be fragmented, with many kinds of different research contributions. Understanding the central research concerns of the field in terms of conventional features of scientific disciplines, such as research challenges, theories, and methods is an important step in consolidating the efforts of researchers in disparate fields. The seven mappings listed in the tables in Section IV provide a resource for researchers to use when they seek contributions that relate to their own work. The final contribution of this paper is the consolidation of the many disparate fragmented research challenges that are identified in the literature into four central challenges, which are further specified in terms of their discipline characteristics (as defined in the definitional schema). Our intent is to provide a tool that will help researchers organize and coordinate future research efforts.

II. ePARTICIPATION—AN EMERGING RESEARCH AREA

In this section we summarize the thematic nature of eParticipation based on the earlier part of this literature study which is published in Sæbø et al. [2008]. This publication remains, to our knowledge, the only current study that is focused on the nature of the research area. We also establish the relationship of eParticipation with its closest neighboring research areas.

Governments seek to encourage participation in order to improve the efficiency, acceptance, and legitimacy of political processes. Citizens, nongovernmental organizations, businesses, lobbyists,

and pressure groups demand participation in order to further their own interests, either within the established political system or outside it through activism and civil disobedience. Participation is seen as an important component of public engagement [Lamb et al. 2004]. Participation contributes to deliberation, opinion forming, agenda setting, political decision making, and feedback mechanisms (where these can be thought of as stages of a policy-making cycle [cf. Goggin et al. 1990; Burstein 1991; Dye 1992]). The Internet can support participation through information, communication and extending the public sphere [Polat 2005] and by supporting civic communities [Dutta-Bergman 2005]. Participation is an important component of all democratic systems, and in some democratic forms (such as direct democracy) is the central component [Grönlund 2003a]. Participation activities can be thought of as social patterns or genres of recognizable structures and behaviors where the participants know how to act. Examples are: voting, the political debate, a political meeting, lobbying, and campaigning. In eParticipation, these activities are combined with emerging technologies such as chat technologies, discussion forums, electronic voting systems, group decision support systems, Web logging, and many others. Thus eParticipation activities can often be thought of as an evolution of a known social behavior that is facilitated by the medium of the Internet and other supporting technologies. For example, a net-based political discussion forum is an evolution of the political debate form that is facilitated by the infrastructure of the Internet and a particular supporting technology (the hierarchically threaded net discussion). Of particular interest to eParticipation researchers is the capacity of the technology to alter or extend the participation form [Mumpower 2001]. Macintosh [2004] characterizes eParticipation in terms of the level of participation, the technology used, the stage in the policy-making cycle that it addresses and "various issues and constraints, including the potential benefits."

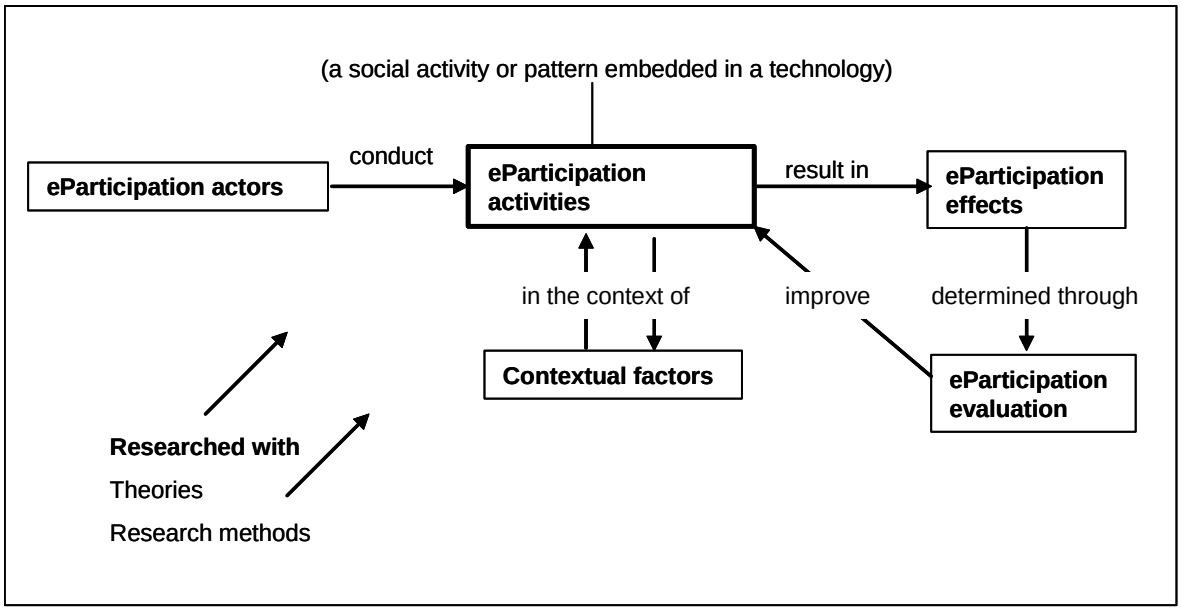

Figure 1. The Thematic Shape of eParticipation (adapted from Sæbø et al. 2008)

Though not extensively researched as yet (at least not under this label), eParticipation is rather widely practiced. The UN's Global eGovernment Readiness Report [2005] sets the UK, Singapore, and the United States at the top of its eParticipation readiness index. A more recent British Council report [Jansen 2006] lists 16 different eParticipation technologies in use and 40 different government-sponsored initiatives in Germany and the UK. Similar patterns are to be found not only in the western world, but in Asia (Singapore, South Korea), Eastern Europe (Estonia) and South America (Brazil and Mexico). However, government-sponsored eParticipation programs are far out-paced by the initiatives that citizens take to participate on the net. Political blogging is only the latest phenomena in this trend, where every issue is up for debate on the net, every citizen with an Internet connection has their own political voice, and the

mobile phone is the co-ordination medium of choice amongst subversive groups and organized civil disobedience [Pickerill 2004]. Research literatures on these phenomena are emerging, but the authors know of no reliable estimates of the extent of these practices. Neither is eParticipation limited to democratic contexts —the Internet can be an important medium for citizen mobilization in nondemocratic countries such as China, where it is carefully monitored and regulated [Abbott 2001; Huang 1998; Zheng and Wu 2005].

As a research area, eParticipation is related to several other fields, some of which are more fully developed. Its parent field can be considered to be eDemocracy, and eVoting is a close relative. Whereas:

> eDemocracy concerns itself with strengthening the mechanisms of representative democratic decision making through technology, eVoting and eParticipation focuses on the means for doing this, either directly through technology assisted voting, or, in the case of eParticipation, through support for citizen involvement in deliberation and decision-making processes. eDemocracy often concerns itself with normative accounts of how democracy should, or ought to develop (in relation to technology trajectories) and with structural democratic relationships in society. eParticipation better defines a set of technology-facilitated participatory processes, both deliberative and decision-oriented (which may or may not be democratic, or even in the political arena). [Sæbø et al. 2008]

Sæbø et al. [2008] also provide an account of the central thematic concerns of the research area (Figure 1).

The various eParticipation activities are conceptualized as a social activity or pattern of behavior (such as voting, attending a political meeting, petitioning) that is associated with an enabling technology that is usually Internet based. The technology facilitates or mediates the extension or transformation of the activities which are carried out by eParticipation actors. In many accounts the principal actors are citizens and politicians, but of course many other types of actor can be involved, and government bodies play an important role in promoting eParticipation. eParticipation activities are always carried out in particular contexts, and these contextual factors, which are frequently investigated in the literature [cf. Grant and Chau 2005], directly impact the outcome of the activity. An important limiting factor for eParticipation, for instance, is accessibility, or the issue of unequal access to eParticipation technologies (often discussed in relation to the digital divide [cf. Dutta-Bergman 2005]). eParticipation activities are also considered to result in outcomes or effects such as the engagement of civil society in the democratic process [Paivarinta and Sæbø 2006]. These effects can be evaluated, formally (by scientists) or informally, using many of the instruments common in social science research. Finally, eParticipation research is conducted with the help of a rather eclectic collection of theories and methods that are borrowed from several different disciplines. These methods and theories are elaborated on in this article.

III. RESEARCH STRATEGY

Webster and Watson [2002] suggest that literature reviews are an important part of the development of a research field. They offer the opportunity to synthesize and reflect on previous theoretical work, thus providing documented grounding for the advancement of knowledge. They suggest that the elements of a good literature review include a structured approach to identifying the source material and the use of a concept matrix or other analytical framework that leads to a coherent conceptual structuring of the topic. The article selection strategy, the definitional schema used as an analysis framework, and the analysis strategy are described in the next two sections.

ARTICLE SELECTION STRATEGY

Establishing a core literature for an emerging research area is difficult because few authors currently use eParticipation explicitly as a keyword for their work, even though they clearly write about the subject. We dealt with this difficulty by first developing an outline concept for eParticipation from the early internal work of the Demo-net project. This outline is too long to be given here but can be read in full in Sæbø et al. [2008]. Articles were selected by searching in three major library databases (ISI—Web of Science, EBSCO Host and IEEE Explore) following the guidelines suggested by Webster and Watson [2002]. eParticipation research is still unconsolidated in terms of having a clearly defined set of key outlets, making it difficult (and controversial) to select a limited number of major journals as the primary source for identification of literature (as suggested by Webster and Watson [2002]). However the three aforementioned databases provide adequate coverage (more than 8,000 journals in the science, social science, and humanities fields, including the major IS journals and important public administration journals). In addition, a number of relevant conference proceedings (e.g. HICSS) were searched. A list of search criteria was developed iteratively by the four researchers involved. Initially, the keywords eParticipation, eDemocracy, and eInclusion were used to identify relevant literature. Then a scan of the titles, keywords and abstracts of the initial results lead us to further extend our search using common phrases found in the initial sample. The following areas were searched:

- e-Democracy, using additional search phrases:
    - eDemocracy, electronic democracy, democracy and Internet, democracy and information system, digital democracy
- e-Participation, using additional search phrases:
    - eParticipation, electronic participation, e-Government and participation, e-Governance and participation, e-consultation, e-petition
- e-Inclusion, using the additional search phrase:
    - digital divide and participation (within the results of digital divide since digital divide returned more than 450 hits)

This method resulted in a library consisting of 651 references. The titles and abstracts were scanned to produce a preliminary identification of articles lying within the outline concept for eParticipation, resulting in a library of 250 relevant papers. Two researchers independently scored the abstracts and titles of the 250 relevant papers for relevance. Each paper was assigned a relevance score ranging from 1 to 10 (where 10 represents a clear match with the outline concept). The results of the two independent scans were compared and full text versions were retrieved, resulting in 105 full-text papers that were assigned a relevance score of 10. These papers are considered to represent a core literature for eParticipation research. The paper selection process ended in March 2007.

The authors and titles of these papers are listed in Appendix I.

A DEFINITIONAL SCHEMA

This section outlines a definitional schema for an emerging socio-technical research area, which will later be used to structure the literature analysis. The schema is derived from widely adopted understandings of the nature of scientific disciplines, and is thus suitable for investigating the discipline characteristics of eParticipation. Emerging research areas are, in Whitley's [1984] classification, fragmented adhocracies. They are characterized [Banville and Landry 1989] by low functional dependence (the extent to which researchers have to base their work on previous results and methods), low strategic dependence (indicating a relatively small need to convince other researchers of the significance of the problems and topics studied) and high strategic task uncertainty (indicating the presence of loosely coupled schools of thought with varying research agendas). Fragmented adhocracies display a diversity of research themes, goals, challenges, and motivations. They employ differing background reference disciplines and depend on a variety of previous theories and results. Standardization of research tools, methods, and the

interpretation of results are also lacking. We isolate the principle variables into a schema which is loosely based on a characterization of an emerging research area that is discussed in Liles et al. [1995]. A technology category is added to the definitional schema in order to retain balance in a socio-technical field that is dependent on Internet technologies, but more often researched in terms of its social characteristics. Our definitional schema therefore implies that, in order to understand the discipline characteristics of an emerging research area, one should investigate:

1. The way researchers articulate their research motivations and describe why the area is important;
2. The overlapping clusters of related thematic areas which contribute to the emerging research area;
3. The technologies that the researchers choose to investigate and develop;
4. The reference disciplines that the researchers bring to the field;
5. The theories that they choose to apply to the new domain;
6. The research methods used; and
7. The underlying challenges that provoke the research.

These characteristics are summarized in Table 1.

LITERATURE ANALYSIS STRATEGY

The analysis of the literature sample was carried out in two distinct phases. The first phase is conventional literature study textual content analysis. The entries in the tables in Section IV constitute the codes developed in the analysis. In many cases researchers are specific about the themes, motivations, theories, and methods they use, but in others analytical judgment is required in order to read between the lines of what they explicitly refer to. Therefore the analysis was conducted in parallel by the two authors who independently analyzed the full text papers and iteratively refined the resultant concepts. The second phase of the analysis is a retrospective analysis of the research challenges which are identified in Section V. The challenges are ordered into four major categories on the basis of thematic similarity and the resulting four central challenges are specified in terms of the definitional schema. This analysis results in a more precise specification of the nature of the four identified challenges in the area of eParticipation, including which themes, technologies, reference disciplines, theories, and methods are deemed appropriate for interested researchers.

Table 1. Definitional Schema for an Emerging Socio-Technical Research area

Category	Description
Motivations	Descriptions of the reasons or motivations for undertaking the research
Research themes	Research themes related to the principal area of study
Technologies	Descriptions of supporting or enabling technologies, which may also be the principal focus of some research
Reference disciplines	Those established disciplines which the new field draws upon for its themes, theories, and methods
Reference theories	Established theories which are imported into the new field in order to underpin its research work
Research methods	Established research methods which the new field imports to support its investigations
Research challenges	The questions or goals to which the research responds to

IV. THE ePARTICIPATION MAP

In this section we present seven mappings of the eParticipation research area, which correspond to the seven elements of the definitional schema. The resulting analysis is consolidated into an initial sketch of the characteristics of the area.

MAPPING 1: ePARTICIPATION RESEARCH MOTIVATION

Researchers display differing motivations for studying eParticipation which can be broadly described under three headings.

Participative imperative: Stakeholders in society (citizens in various roles and stakeholder groupings) have an intrinsic right to participate in the formation and execution of public policy, especially when it involves their interests. This principle is derived by argumentation from principles in philosophy and political science, and is commonly protected in democratic societies by law, convention, and practice. However the extent of this intrinsic right, the nature of the participation, and the democratic forms which enable it are open to debate. This research motivation can therefore be associated with a desire to understand, improve, or reshape societal participation forms.

Instrumental justification: Stakeholder participation in public affairs can be instrumental in more effective policy making and governance. This is because consultation with societal stakeholders can lead to improved public policies and encourage adoption and implementation of policy and services. This motivation is associated with the study of the effectiveness of government and policy making, and ways to improve them.

Technology focus: Information and communications technology has the potential to improve participation in the political process through: enhanced reach and range (inclusion); increased storage, analysis, presentation, and dissemination of contributions to the public policy and service debate; better management of scale; and by improvements to the process of organizing the public sphere debate. Many researchers study the role of technology, sometimes with a view to improving it.

Examples of these research motivations are illustrated in Table 2.

Table 2. Research Motivations for eParticipation

Research motivation	Examples	Example references
Participative imperative	The future of democracy	[Gimmler 2001; Ogden 1994; Snellen 2001]
	Extending the public sphere	[Dahlberg 2001]
Instrumental justification	Improving voting	[Oravec 2005; Rosenblatt 1999; Smith and Macintosh 2003]
	Improving the practice of parliamentary democracy	[Kakabadse et al. 2003; Macintosh et al. 2003; Potekar and Giragaonkar 2004; Seaton 2005]
	Improving political deliberation	[Papacharissi 2004]
Technology focus	Online participation	[Polat 2005]
	Digital cities and communities	[Fernandez-Maldonado 2005; Myles 2004]
	Impact of the Internet	[George 2005; Howard 2005; Koch 2005]

MAPPING 2: ePARTICIPATION RESEARCH THEMES

The eParticipation literature touches upon many other related literatures, many of them with a longer history. In this section we discuss the relationship between eParticipation and its associated themes. The intention is not to promote eParticipation as a covering term, but to establish a network of interrelated themes. Some of these themes relate to literatures that are well-developed in their own right, but not principally focused on participation. In Table 3, we provide a short definition of how the themes relate to eParticipation in the articles we examined, and point the reader to important references.

In practice these motivations overlap in most contributions, and this table is intended to provide some relevant examples, rather than a comprehensive analysis.

Table 3. eParticipation Research Themes

Research theme	Principal references
eDemocracy – changing or improving the shape of societal democracy in respect to participation	[Aikens 1998; Astrom 2001; Bimber 2001; Chadwick 2003; Gronau et al. 2005; Grönlund 2003b; Hoff et al. 2003; Kakabadse et al. 2003; Kampen and Snijkers 2003; Koch 2005; Macintosh 2004; Mahrer and Krimmer 2005; Masters et al. 2004; Moreno-Jimenez and Polasek 2003; Pejout 2004; Saebo and Paivarinta 2005; Seaton 2005; Siapera 2005; Snellen 2001; Tambouris and Gorilas 2003; Watson and Mundy 2001]
eGovernance – participation in institutional structures of authority and collaboration to allocate resources and coordinate or control activity in society or the economy	[Bingham et al. 2005; Moreno-Jimenez and Polasek 2005]
eAccessibility - making eParticipation available to people with handicaps or disabilities	[Jaeger 2004; Waddell 2000]
eActivism - spontaneous (that is: not organized by government) political activity or agitation mediated by ICT	[Chang 2005; George 2005; Kosmopoulos 2004; Lusoli and Ward 2004; Park 2002; Pickerill 2004; Rushkoff 2004]
eCampaigning – political campaigning on the net	[Park 2002; Rushkoff 2004; Stromer-Galley 2000]
eCommunity – how ICT applications shape the instantiation of communities with a political focus, such as local political discussion forums.	[Bekkers 2004; Chang 2005; Dutta-Bergman 2005; Fernandez-Maldonado 2005; Gross 2000; Huang 1998; Klein 1999; Luhrs et al. 2003; Macintosh et al. 2005; Myles 2004; Snider 2003]
eConsultation - stakeholder consultation with government (for instance in policy making) partly or wholly conducted over the Internet	[Al-Kodmany 2000; Grönlund 2003a; Jensen 2003b; Lamb et al. 2004; Macintosh et al. 2005; Macintosh et al. 2003; Macintosh and Smith 2002; Masters et al. 2004; Roeder et al. 2005; Snider 2003; Tambouris and Gorilas 2003; Whyte and Macintosh 2001; Whyte and Macintosh 2003]
eDecision making - use of decision making tools to facilitate participation in the political decision making process	[Evans et al. 2004; Moreno-Jimenez and Polasek 2005; Roeder et al. 2005; Turoff et al. 2002]

Research theme	Principal references
eDeliberation – participative consideration of a (political) topic through reasoned discussion on-line	[Aikens 1998; Albrecht 2006; Bekkers 2004; Dahlberg 2001; Huang 1998; Jensen 2003b; Lourenco and Costa 2006; Luhrs et al. 2003; Macintosh et al. 2003; Pejout 2004; Siapera 2005; Snider 2003; Whyte and Macintosh 2001]
eInclusion - examination of the availability of eParticipation to citizens across social boundaries (digital divide), particularly in relation to access to technology (and the possibilities engendered by technology)	[Ainsworth et al. 2005; Albrecht 2006; Belanger and Carter 2006; Dutta-Bergman 2005; Fernandez-Maldonado 2005; Jaeger 2004; Macintosh et al. 2003; Masters et al. 2004; Moreno-Jimenez and Polasek 2005; Padget 2005; Siapera 2005; Sipior and Ward 2005; Turoff et al. 2002]
ePetition – specialized form of participation in support of a particular proposition	[Macintosh 2004; Seaton 2005]
ePolitics – participation in party and group political processes	[Best and Krueger 2005; Gronau et al. 2005; Howard 2005; Koch 2005; Papacharissi 2004; Polat 2005; Rushkoff 2004]
ePolling – surveys of opinions using sampling techniques	[Koch 2005; Rosenblatt 1999; Westholm 2002]
eRulemaking – participation in the process that is used to create or promulgate, regulations	[Carlitz and Gunn 2002]
eVoting – participation through voting over the Internet or by other electronic means	[Drechsler and Madise 2002; Gibson 2001; Kenski 2005; Kosmopoulos 2004; Oravec 2005; Padget 2005; Prosser et al. 2003; Schaupp and Lemuria 2005; Smith and Clark 2005; Svensson and Leenes 2003; Xenakis and Macintosh 2005]

In this short analysis we can note that, although eParticipation is normally categorized as a branch of eGovernment, its most direct precursor is eDemocracy. Another close relative is eVoting, which focuses on the technological implementation of democracies' most central form of participation. Many researchers that contribute to these two literatures have a direct interest in eParticipation. Some themes are rather broad (governance) with only a tangential representation in this literature, whereas others depend on related literatures such as the digital divide (eInclusion), or virtual community (eCommunity). These discipline and theory relationships are examined in our presentation of eParticipation reference theories (Mapping 5).

MAPPING 3: ePARTICIPATION TECHNOLOGIES

Here, we categorize technologies which the authors in the literature sample identify as those that underpin eParticipation. We list the technologies and provide illustrations of typical uses for them in Table 4.

Though we here identify 13 technologies which have a direct relevance to eParticipation, it should be noted that none of them is exclusively an eParticipation technology. Instead authors refer to underlying, previously developed technologies (each with its own preexisting technical literature) that are adapted to an eParticipation use. Neither are the articles mentioned (with few exceptions) particularly technical in character—perhaps because of the choice of search terms for the literature sample. We conclude that there is really no such thing as a dedicated eParticipation technology, but that researchers consider some specific (usually minor) applications of generic technologies that often have a social or political focus rather than a technical one.

Table 4. ICTs and Their Uses

ICTs	Typical Uses	Principal references
Collaborative writing	Shared authorship of community documents	[Lourenco and Costa 2006]
Content management	Support of document publication	[Albrecht 2006; Macintosh et al. 2003; Paralic and Sabol 2001; Paralic et al. 2002; Saebo and Paivarinta 2005]
Data mining	Political and demographic information	[Howard 2005]
Decision support systems	Community decision making in contentious issues	[Evans et al. 2004; Turoff et al. 2002]
Geographic Information Systems	Visualization of spatial data, for example in land use planning processes	[Al-Kodmany 2000; Evans et al. 2004; Hudson-Smith et al. 2005; Kangas and Store 2003; Snellen 2001; Zhao and Lin 2002]
Knowledge technologies	Presentation and analysis of political content	[Paralic et al. 2002]
Multi-channel platforms	Augmenting off-line with on-line eParticipation, thus enhancing e-inclusion	[Westholm 2002]
Ontology and the semantic web	Organization of Web sites and conceptual organization of participation input	[Paralic and Sabol 2001; Paralic et al. 2002]
Security/encryption algorithms, digital signatures	Avoiding electoral fraud in e-voting	[Paralic and Sabol 2001; Prosser et al. 2003]
Text-analysis tools	Analysis of citizen input to policy-making	[Paralic and Sabol 2001; Paralic et al. 2002]
Visualization (including virtual reality)	Visualizing future developments, typically for design and planning purposes	[Hudson-Smith et al. 2005]
Web logging	Political activism on the 'net	[Johnson and Kaye 2004; Macintosh et al. 2005; Paralic et al. 2003; Stromer-Galley 2000]
Web virtual meeting places (chat-rooms, discussion forums)	Development of virtual political communities as a supplement to conventional forms of meetings	[Aikens 1998; Ainsworth et al. 2005; Chang 2005; Dahlberg 2001; Grönlund 2003b; Jensen 2003b; Klein 1999; Luhrs et al. 2003; Macintosh et al. 2003; Masters et al. 2004; Papacharissi 2004; Paralic and Sabol 2001; Paralic et al. 2003; Ranerup 1999; Roeder et al. 2005; Rose and Sæbø 2005; Saebo and Paivarinta 2005; Seaton 2005; Stromer-Galley 2000; Tambouris and Gorilas 2003; Westholm 2002]

MAPPING 4: ePARTICIPATION REFERENCE DISCIPLINES

In an emerging research area there is little commonality of theory or method since researchers come from different reference disciplines. We first identify seven disciplines that contribute in significant ways to our literature sample:

- **Communications:** the study of participation in societal communication processes
- **Computer Science:** the study of underlying participation technologies
- **Information Systems:** the study of the interaction of participation and computer systems in their social context
- **Social and Political Philosophy:** the branches of philosophy dedicated to discussing the social and political organization of society
- **Political Science:** the study of the nature of participation in political processes
- **Public Administration:** the study of the role of participation in the provision of public services and the professional management of government
- **Sociology:** the study of the nature and constitution of societies, including descriptive models of societal participation at the macro and micro levels and normative models of ideal forms of societal participation

The best represented (and probably the most influential of these reference disciplines) are social and political philosophy and political science. These disciplines underpin the current characterization of the area as participation *in the political process*, rather than in other facets of human interaction.

MAPPING 5: ePARTICIPATION REFERENCE THEORIES

In Table 5 we list both theories and examples of how eParticipation is operationalized in the research conducted within the reference disciplines.

Table 5. eParticipation Reference Disciplines, Theories, and Purposes

Theory	Purpose	Principal references
Communications		
Theories of language, e.g. semiotics & structuralism	Use of interlocutory models as paradigms of communicative interaction	[Fulla and Welch 2002]
Genre Theory [Päivärinta 2001]	Development of the theoretical concept of autopoietic cybergenre	[Rose and Sæbø 2005; Sæbø and Paivarinta 2005]
Discourse theory [Foucault 1989]	Showing the structures of power that constitute and determine an IT-enabled democratic activity	[Gustafsson 2002]
Computer Science		
Engineering techniques, ontology development	Discovery of technology solutions (e.g., software architectures) for participatory computer systems	[Paralic and Sabol 2001; Paralic et al. 2002; Paralic et al. 2003]

Information Systems		
Technology diffusion [Rogers 1995]	Integrating eParticipation ICTs with governmental policies and services	[Chadwick 2003; Chadwick and May 2003; Schaupp and Lemuria 2005]
Technology adoption [Markus and Robey 1988]	Beliefs, attitudes, opportunities, and threats to adoption of technology	[Schaupp and Lemuria 2005; Svensson and Leenes 2003]
Social cognitive theory [Hemingway 1998]	Reconciles human action and human agency to explain how citizens and governments impact systems development	[Whyte and Macintosh 2003]
Actor network theory [Latour 2005]	Influence of deliberative democracy models on democratic behavior	[Grönlund 2003a Grönlund 2003b]
Social and Political Philosophy		
Kant's doctrine of right and his theory of the state [Kant 1996]	The principle of publicity in the realm of law or the state that is instantiated by the participation of citizens through discussion and decision-making	[Gimmler 2001]
Habermas public sphere [1984, 1996]	Philosophical background of participation, asks how the Internet may alter the practice of politics	[Ainsworth et al. 2005; Albrecht 2006; Dahlberg 2001; DiMaggio et al. 2001; Gimmler 2001; Howard 2005; Jensen 2003b; Lourenco and Costa 2006; Pejout 2004; Polat 2005; Siapera 2005]
Philosophy of information [Dretske 1981]	A critical investigation of the conceptual nature and basic impact of information including its dynamics and utilization in social networks	[Ainsworth et al. 2005; Bimber 2001; George 2005; Howard 2005; Jensen 2003b; Lusoli and Ward 2003; Olsson 2004 Polat 2005]
Political Science		
Resource theory [Verba et al. 1995]	A soft rational choice framework that focuses primarily on the costs rather than the benefits of participation	[Best and Krueger 2005; Dutta-Bergman 2005]

Democracy models [Barber 1984; Held 1996; Paivarinta and Sæbø 2006; Premfors 2000]	Emerging patterns of electronic infrastructures that support services and dialogues pertinent to the functioning of the public sector	[Ainsworth et al. 2005; DiMaggio et al. 2001; Grönlund 2003b; Hoff et al. 2003; Lourenco and Costa 2006; Lusoli and Ward 2204; Mahrer and Krimmer 2005; Rose and Sæbø 2005; Siapera 2005]
Citizen associations [de Tocqueville 1945]	Educating citizens in public affairs, democratic practices, and creating independent citizen power bases	[Klein 1999]
Public administration		
Institutional and governance theory	The role of participation in the provision of public services and the professional management of government	[Bingham et al. 2005; Macintosh 2004; Roeder et al. 2005]
Habermas' theory of communicative action [1984], Renn, Webler, and Wiedmann's extension of Habermas's critical theory [1994], Quinn and Rohrbaugh's competing values theory [1983], Thomas's extension of Vroom's contingency theory [1995]	Selecting and evaluating Internet mediated interaction between government and citizens with the intent of stimulating more public participation	[Fulla and Welch 2002; Grönlund 2003b; Mumpower 2001]
Sociology		
Structuration Theory [Giddens 1984]	Examination of the conditions of society under which participation takes place	[Sæbø and Paivarinta 2005; Tambouris and Gorilas 2003]
Weberian theory [Weber 1978]	Explores the role of culture and modernization of society, raises the question of the effect of Internet technology on bureaucracy and economic institutions	[Chadwick 2003; DiMaggio et al. 2001]
Bourdieu's and Taylor's social theories [Bourdieu 1992; Taylor 1985]	Defines the understandings that underpin different forms of social practice and helps orient us in the context of deliberative methods	[Myles 2004]

Marxist forms of control, [Schiller 1996; Davis et al. 1997]	Exploitation of communications media to enhance elite control	[Abbott 2001; Huang 1998; Zheng and Wu 2005]
Frame alignment process [Snow et al. 1986]	Design issues and models for societal participation at the macro and micro levels	[Park 2002]
Displacement theory [Robinson et al. 1997]	The "crowding out" effect of new forms of communication (the new replacing the old)	[Dutta-Bergman 2005]
Communities of practice [Wenger 1998]	Virtual community-based approaches to deliberation and learning	[Bekkers 2004]
Social capital [Putnam 2000]. Information society [Bell 1977], network society [Castells 1996]	Social connectedness, interpersonal collaboration, and cultural participation and diversity	[DiMaggio et al. 2001; Dutta-Bergman 2005; Gibson 2001]

Though the range of theories in the literature sample is eclectic (and also therefore rather difficult to classify under disciplines), a well-used philosophical background to the eParticipation discussion is Habermas' conception of the public sphere [1984, 1996], while various democracy theories (often expressed as democracy models [cf. Paivarinta and Sæbø 2006]) provide a related theoretical focus.

MAPPING 6: ePARTICIPATION RESEARCH METHODS

All research is based on some underlying assumptions about what constitutes valid research and which research methods are appropriate. Methods can be discipline specific and often have a distinct ontological and epistemological orientation which relates to the discipline's common understanding of data, knowledge, and theory. These considerations are little discussed in the eParticipation area, so we limit ourselves to listing the most common research methods in Table 6.

The analysis reveals a preponderance of qualitative methods. The sparse use of quantitative techniques is a little surprising, since many of the issues discussed are society-wide phenomena and are thus well suited to survey work. There is little consistency in the choice of methods for investigating eParticipation phenomena, and there is varying methodological rigor. Many of the articles take the form of case studies which are typically project descriptions, system implementations, or national evaluations. Data collection can rely on interviews or personal involvement, with use of secondary sources such as policy documents for the national studies. However there is virtually no mention of case study methods, and we are often left to guess how the data was collected and analyzed. A group of methods was used to study the content of Web sites, often with a focus on the deliberation content: Web site content, discourse, and text analysis. Here the methodological component of the research was often in better focus. We classified some of the articles as action research because they were clearly concerned with developing eParticipation activities, but few of them made explicit reference to action research methods. There were some accounts of system design (for which the methodological approach is design science) and testing; these were normally accounts of the results without much concern for process. Much of the quantitative work was descriptive, with a few examples of theory building or hypotheses testing. Similarly there were some examples of well-executed theoretical

argumentation, but also some where the authors tended to use references to support their opinions.

The methodological approach to eParticipation studies is therefore rather inconsistent and lacking in rigor. This, however, is to be expected in immature research areas.

Table 6. eParticipation Research Methods

Method	Principal references
Case study, (also project or system description, national evaluation)	[Aikens 1998; Ainsworth et al. 2005; Bekkers 2004; Chadwick 2003; Chang 2005; Dahlberg 2001; Drechsler and Madise 2002; Evans et al. 2004; Fernandez-Maldonado 2005; Fulla and Welch 2002; George 2005; Gibson 2001; Gronlund 2003; Hoff et al. 2003; Huang 1998; Jensen 2003a; Jensen 2003b; Klein 1999; Macintosh 2004; Macintosh and Smith 2002; Mahrer and Krimmer 2005; Myles 2004; Papacharissi 2004; Park 2002; Pejout 2004; Roeder et al. 2005; Rose 2004; Saebo and Paivarinta 2005; Seaton 2005; Siapera 2005; Westholm 2002; Whyte and Macintosh 2002]
Grounded theory	[Albrecht 2006; Mahrer and Krimmer 2005]
Content analysis, textual or discourse analysis	[Ainsworth et al. 2005; Albrecht 2006; Gustafsson 2002; Macintosh and Smith 2002; Papacharissi 2004; Rose and Sæbø 2005; Saebo and Paivarinta 2005]
Web site analysis	[Siapera 2005; Stromer-Galley 2000]
Action research	[Aikens 1998; Al-Kodmany 2000; Hudson-Smith et al. 2005; Lourenco and Costa 2006; Macintosh et al. 2005; Macintosh et al. 2003; McFall and Williams 2004]
Experiment (system test)	[Evans et al. 2004; Lourenco and Costa 2006; Paralic et al. 2003; Tambouris and Gorilas 2003]
Quantitative methods (survey, secondary data source analysis, statistical analysis)	[Best and Krueger 2005; Bimber 2001; Dutta-Bergman 2005; Jensen 2003b; Johnson and Kaye 2004; Kenski 2005; Lusoli and Ward; Moreno-Jimenez and Polasek 2005; Rosenblatt 1999; Schaupp and Carter 2005]
Theoretical argument	[Bingham et al. 2005; DiMaggio et al. 2001; Gimmler 2001; Koch 2005; Kosmopoulos 2004; Moreno-Jimenez and Polasek 2003]

MAPPING 7: ePARTICIPATION RESEARCH CHALLENGES

The final mapping of this definitional analysis is concerned with the challenges that researchers respond to in the framing and execution of their work. Research is normally the development and presentation of a solution to a problem, the answer to a research question, or the development of new theories. Therefore the eParticipation research challenges constitute an important aspect of understanding the endeavors of the researchers involved. The eParticipation challenges are outlined in Table 7. The challenges outlined in Table 7 are further grouped under four main headings:

1. ***Understanding technology and participation*** refers to the development of theoretical accounts of the relationship between participation and technology.
2. ***The strategic challenge*** refers to a governmental or societal challenge to establish priorities and direction in eParticipation.
3. ***The design challenge*** refers to the socio-technical design of technologies and the participation and governance structures they are embedded in.

4. ***The evaluation challenge*** articulates the learning imperative—the necessity of learning from the eParticipation experience as a contribution to improving it in the future.

These research challenges are elaborated in Section V.

Table 7. Research Challenges

Research challenge	Principal references
Understanding technology and participation	
Effect of virtual communities or virtual cities on participation	[Dutta-Bergman 2005; Fernandez-Maldonado 2005; Hudson-Smith et al. 2005; Klein 1999; Myles 2004]
Understanding and evaluating the effect of ICTs on political participation	[Albrecht 2006; Best and Krueger 2005; Bimber 2001; DiMaggio et al. 2001; George 2005; Gustafsson 2002; Gronlund 2003; Howard 2005; Huang 1998; Kakabadse et al. 2003; Kampen and Snijkers 2003; Koch 2005; Lusoli and Ward 2204; Macintosh and Smith 2002; Pejout 2004; Polat 2005; Snider 2003]
Understanding the technologically mediated development of democracy forms	[Gimmler 2001; Grönlund 2003a; Kakabadse et al. 2003; Kampen and Snijkers 2003; Koch 2005; Rose and Sæbø 2005]
The role of political parties in online participation, campaigning	[Gronau et al. 2005; Howard 2005; Lusoli and Ward; Stromer-Galley 2000]
Understanding grassroots campaigning, activism	[Park 2002; Siapera 2005]
The strategic challenge	
Prioritizing eParticipation over managerial eGovernment projects	[Chadwick 2003; Mahrer and Krimmer 2005]
Extending participation in nondemocratic or lesser developed countries	[Abbott 2001; Chang 2005; Huang 1998; Zheng and Wu 2005]
Encouraging citizen involvement in voting and other participatory activities	[Lamb et al. 2004; Macintosh et al. 2003; Masters et al. 2004; Moreno-Jimenez and Polasek 2005; Tambouris and Gorilas 2003; Westholm 2002]
Improving legislative frameworks	[Bingham et al. 2005; Kosmopoulos 2004; Mahrer and Krimmer 2005]
Improving access, avoiding elite control and inequality, the digital divide	[DiMaggio et al. 2001; Dutta-Bergman 2005; Jaeger 2004; Jensen 2003a; Macintosh et al. 2003; Turoff et al. 2002; Waddel 2000]
The design challenge	
Technology design (particularly discussion systems)	[Lourenco and Costa 2006; Luhrs et al. 2003; Macintosh et al. 2003; Macintosh et al. 2005; Paralic et al. 2002; Paralic and Sabol 2001; Rose and Sæbø 2005; Turoff et al. 2002; Zhao and Lin 2002]

Research challenge	Principal references
Design and management of eParticipation activities (e.g. online debating, eVoting)	[Bekkers 2004; Masters et al. 2004; McFall and Williams 2004; Moreno-Jimenez and Polasek 2003; Prosser et al. 2003; Smith and Clark 2005; Snider 2003; Watson and Mundy 2001]
Designing on-line governance, participation in rule-making, transparency	[Bekkers 2004; Bingham et al. 2005; Carlitz and Gunn 2002; Fulla and Welch 2002; Kosmopoulos 2004; Moreno-Jimenez and Polasek 2003; Moreno-Jimenez and Polasek 2005; Snellen 2001; Whyte and Macintosh 2001]
Use of computer visualization techniques to facilitate consultation and decision making	[Al-Kodmany 2000; Evans et al. 2004]
Achieving security and trust (especially in eVoting)	[Drechsler and Madise 2002; Gibson 2001; Kenski 2005; Oravec 2005; Schaupp and Carter 2005; Smith and Clark 2005]
The evaluation challenge	
Evaluating eParticipation: technology, deliberation, state of the nation, activities	[Hoff et al. 2003; Jensen 2003a; Jensen 2003b; Papacharissi 2004; Roeder et al. 2005; Saebo and Paivarinta 2005; Svensson and Leenes 2003; Tambouris and Gorilas 2003; Whyte and Macintosh 2002]

THE MAPPINGS CONSOLIDATED: DISCIPLINE CHARACTERISTICS OF EPARTICIPATION

On the basis of the seven mappings, what can we understand about research on eParticipation? The area has a normative (essentially critical) element, concerned with defining optimal forms of civic participation—the participative imperative motivation. However, this is less pronounced than in its parent field, eDemocracy. Applied research, which is concerned with how to make improvements to practice either through improving policy making (instrumental justification), or supporting practice with technology (technology focus) is a more fundamental concern. It has a variety of thematic connections with other research areas, but not necessarily the same type of connections. eGovernance and eDemocracy tend to act as mentor fields, where researchers reference their work and generate their ideas. eVoting is a rather well-researched area in its own right, and though it is included in this review because it is the most widespread formalized participative act in democratic societies, some authors regard it as the study of the technological implementation of voting and as distinct from eParticipation [e.g. Macintosh 2004]. Most of the other thematic areas simply overlap. It is difficult to study participation without investigating: who can participate (eInclusion); online groups who consistently have some of the characteristics of eCommunities; and online communal decision making which is an important part of many forms of eParticipation. However one important difference highlighted by studying these thematic relationships is the question of the driving force behind eParticipation. Some themes (eInclusion, ePetition, eConsultation) assume that government is the driving force behind eParticipation initiatives, whereas others (eActivism, eCampaigning) focus more on the initiating role of civil society. All of the areas share a common preoccupation with technological instantiation through ICTs. We have used the term *technology* in a rather broad sense to include some forms of communications and computing infrastructure (Internet), generic applications (such as chat rooms), custom built applications (such as an ePetitioning system), and abstract computing-related concepts (such as ontologies).

The terminologies adopted vary considerably from article to article—often reflecting research areas that are dominated by social science researchers who are considering technological applications. Technical researchers who investigate radical or innovative programming solutions for eParticipation are less in evidence. The reference disciplines identified in the literature may

seem somewhat disjointed, but actually reflect a fairly consistent image of eParticipation. Participation is a communicative activity, and the technologies, or media, that support it are enablers. Participation is also studied as a political activity and is normally positioned within the domain of formal politics or political science—rather than as a wider societal communicative process. This makes it interesting for researchers who are studying democratic forms and processes. eParticipation does have a pure computing aspect (computing science), however it is also understood as information and communication technologies in their social contexts (information systems). The natural domain of eParticipation practice is often assumed to be public administrations who are responsible for setting many initiatives in motion but who also need to change in order to accommodate developments in political processes and communication with citizens.

An examination of the theories used in eParticipation confirms its immaturity; researchers borrow theories from their home discipline without consistency or internal reference to other eParticipation researchers. Most of the theories that have been chosen are descriptive social science theories. There is therefore no "theory of eParticipation" or any known attempt to develop one. The exceptions are some normative critical social theories with more philosophical overtones, and some applied theories in the fields of computer science and public administration.

The choice of methods is equally eclectic; however three groups of methods can be distinguished. The first is theoretical argumentation (which can be supported by almost any kind of data). This is used to establish the normative basis for eParticipation—how ICT-mediated participation should, or should not be conducted in pursuit of democratic or societal objectives. Here the argument is paramount and is supported by illustrative data. The second method group is concerned with documenting and understanding eParticipation initiatives; these are treated as case studies and a variety of data collection and analysis techniques are employed to investigate them. The third (rather undeveloped) group is interested in investigating the effects of eParticipation—where society-wide effects are in question and survey methods are indicated.

The eParticipation research challenges are elaborated in the next section.

V. FOUR CENTRAL ePARTICIPATION RESEARCH CHALLENGES

In this section we further discuss our four central research challenges for eParticipation. We use the definitional schema in Figure 1 to organize our discussion of the challenges by specifying appropriate motivations, research themes, technologies, reference disciplines, reference theories, and research methods.

UNDERSTANDING TECHNOLOGY AND PARTICIPATION

Understanding the relationship between technology and participation is a theme reflected through much of the literature we studied. From a macro perspective this is often expressed as the study of technology effects—what is the effect of a particular technology on society, democracy, deliberation, participation, and so on? Various quantitative methods are appropriate to this study, as are a variety of sociological and meta-level political theories. However, few eParticipation technologies are used widely enough to allow for any form of generalization, with the possible exception of discussion forums. Although eParticipation is often framed as a government-instigated project, it makes sense in this macro context also to study spontaneous participation on the net, blogging, for example. Spontaneous participation on the net is often associated with grassroots activism, social movements, or political campaigning. The micro-perspective can also be studied, as, for instance, a case study of the effects of a political discussion forum on a local community or the effects of virtual communities or virtual cities on participation. The study of technology effects, however, tends to be somewhat technologically deterministic, and it is equally valid to study the process whereby society constitutes the technologies it uses: how, for example, the political genre (practice) called "petition" is embedded or enacted in a technological system and instantiated as an ePetition. Many accounts of technology and social practice, such as

Castells' network society [1996], recognize the emergent interplay of practice and technology. Thus, in the

Table 8. Understanding Technology and Participation

Understanding technology and participation	
Motivation	Participative imperative, technology focus
Research themes	Potentially all; in particular: eDemocracy, eActivism, eCommunity, eConsultation, eDecision-making, and eDeliberation,
Technologies	Potentially all; in particular: Web logging and Web virtual meeting places (chat-rooms, discussion forums)
Reference disciplines	Communications, information systems, political science, and sociology
Reference theories	For example: genre theory, discourse theory, technology adoption, Habermas public sphere, democracy models, information society, network society, and actor network theory
Research methods	Case study, quantitative methods, survey, secondary data source analysis, statistical analysis, and theoretical argument

eParticipation area, participation both constitutes and is constituted by participation technologies. Actor network theory [Latour 2005] suggests a slightly different approach, where the interaction between practice and technology is viewed as an ensemble of technical and social objects, and the analytical difference between the two is minimal. In areas where discussions of technology and practice are relatively mature, such as information systems, accounts of the intertwined nature of the social and the technical (where the two are complementary or inseparable) are commonplace [Rose and Jones 2005]. These have yet to emerge in the eParticipation area but may become the norm.

The elaboration of the understanding of the technology and participation challenge is given in Table 8. Good understandings of the relationship between technology and participation underpin the next two challenges.

THE STRATEGIC CHALLENGE

eParticipation can be regarded as a societal or governmental challenge, where the challenge resides in establishing the strategic direction of change. At its most fundamental level, this research discussion is a normative [Sæbø et al. 2008] theoretical discussion that is rooted in social and political philosophy. It addresses the question: What are the desired forms of society and democracy and consequently participation? Much of this research is ethical in nature and thus is not easily approached through evidence-based research methods. A (secondary) debate concerns the technological means to implement the desired participation forms; however, this is largely influenced by the trajectories of technologies in society. There is little research which is able to reconcile both discussions. At a more practical level, an initial concern is to prioritize eParticipation over managerial eGovernment projects. Governmental projects in eService and eAdministration are assumed to have first order efficiency benefits—hard cash savings. The benefits of eParticipation agendas usually have second order benefits, such as trust, confidence, social capital, and voter satisfaction. The difficulty in establishing priorities for these agendas is largely responsible for the lack of interest in establishing meaningful eParticipation programs. eParticipation programs are often instigated to stimulate citizen engagement (in response to some form of perceived democratic deficit) but objectives, target groups, and eParticipation tools

need to be clearly articulated. Democratic deficits may, however, be alarmingly real in quasi- or non-democratic countries, and here the strategic challenge is for international society to devise ways of promoting electronic participation, perhaps through grassroots activism. eParticipation also requires various forms of infrastructure, for instance an appropriate legal framework. Most of the technological research work that has been accomplished in this challenge is related to infrastructure demands, rather than dedicated eParticipation tools. The last component of the strategic challenge concerns digital divide issues and equality of access. Technology in this respect is a neutral resource, and can even make inequalities greater—the strategic issue is therefore to ensure a broad equality of access, which is a prerequisite for a more "utopian" (as opposed to dystopian) form of eParticipation [Habermas 1996].

The strategic challenge is elaborated in Table 9.

Table 9. The Strategic Challenge

The strategic challenge	
Motivation	Participative imperative, instrumental justification, technology focus
Research themes	eDemocracy, eGovernance, eAccessibility, eCommunity, eConsultation, eDecision-making, and eInclusion
Technologies	Potentially all; in particular: content management, data mining, decision support systems, geographic information systems, knowledge technologies, multi-channel platforms, ontology and the semantic web, security/encryption algorithms, digital signatures, text-analysis tools, visualization (including virtual reality), Web virtual meeting places (chat-rooms and discussion forums)
Reference disciplines	communications, information systems, political science, and public administration
Reference theories	for example: technology diffusion, institutional and governance theory, Weberian theory, and communities of practice
Research methods	case study, action research, experiment, and theoretical argument

THE DESIGN CHALLENGE

Researchers who are close to practice often have a focus on design. Technologies are designed, but so are the governance practices that they must be embedded in. Computer scientists may focus on the design of artifacts such as argument visualization tools, geographical visualizations to help the planning process, secure algorithms for voting systems, or decision support systems designed to structure debate in consultations. However, public administration experts need to design governance structures which facilitate eParticipation, respond to its inputs, and offer feedback. Political systems also need to be adjusted to the new governance structures. Thus the design effort is socio-technical in nature. Moreover the technical design of many of the current technology systems used in eParticipation is trivial (in research terms) and the problems associated with these systems are more end user centric: engaging citizens, facilitating consultations, moderating debates, and building trust in voting systems. Nevertheless there is a considerable design challenge associated with emerging eParticipation technologies, for instance: multi-channel

Table 10. The Design Challenge

The design challenge	
Motivation	Instrumental justification, technology focus
Research themes	eGovernance, eCommunity, eConsultation, eDecision-making, eDeliberation, ePetition, eRulemaking, and eVoting
Technologies	Potentially all; in particular: decision support systems, geographic information systems, multi-channel platforms, security/encryption algorithms, text-analysis tools, and visualization (including virtual reality)
Reference disciplines	computer science, information systems, political science, and public administration
Reference theories	for example: engineering techniques, ontology development, institutional and governance theory, competing values theory, and Weberian theory
Research methods	case study, Web site analysis, action research, experiment, system test, and design science

platforms, security/encryption algorithms, text-analysis tools, visualization, and virtual reality. Action research and design science are appropriate research approaches for design tasks, and both technical, institutional, and governance theories can be brought into play.

The design challenge is elaborated in Table 10.

Table 11. The Evaluation Challenge

The evaluation challenge	
Motivation	Instrumental justification
Research themes	eDemocracy, eGovernance, eAccessibility, and eInclusion
Technologies	Potentially all; in particular: Web virtual meeting places (chat-rooms and discussion forums)
Reference disciplines	information systems, political science, public administration, and sociology
Reference theories	for example: semiotics, genre theory, discourse theory, technology diffusion, technology adoption, democracy models, institutional and governance theory, critical theory, and social capital
Research methods	case study, grounded theory, content analysis, textual or discourse analysis, Web site analysis, and quantitative methods (survey, secondary data source analysis, statistical analysis)

THE EVALUATION CHALLENGE

Though evaluation studies do not constitute a particularly large part of the literature that we studied, they represent an important part of the eParticipation challenge. Initiatives need to be evaluated in order to understand democratic, deliberative, and engagement effects; particularly in order to adjust strategies and refocus design efforts. Most socio-technical systems can be evaluated—including their research themes and embedded technologies, and a diversity of

evidence-based research methods have been used. However this diversity is problematic in studies that involve eParticipation. What should be evaluated, against which criteria, and through the use of which methods? How can the results of diverse evaluations be integrated to give broader pictures? How can the results be fed back into cross-disciplinary research and multidimensional practices?

The evaluation challenge is elaborated in Table 11.

VI. CONCLUSIONS

Emerging research areas are difficult to work in because of the many contradictions and uncertainties that are often encountered. We found little uniformity in researchers' interests, backgrounds, theories and methods in the body of literature that we judged to be particularly relevant to eParticipation. This is, however, to be expected in an immature research area, where researchers with different interests and disciplinary backgrounds negotiate a common basis for discourse. We provide a literature analysis based on a simple model (definitional schema) of a socio-technical research field as a contribution to that negotiation. The analysis provides a map of the research landscape, in which the different research contributions are mapped to the categories of the definitional schema. Like all maps, it gives a (simplified) structural overview of the research landscape, helping to explain the relationships between different, but related research interests. In this way we provide an initial picture of the discipline characteristics of the area—its approach to common facets of scientific endeavor. Researchers can use it to locate their work, to look for related interest fields or research contributions, and to strengthen their overall understanding of common projects. Through analysis of research challenges that many researchers addressed, we identified four central challenges for eParticipation research: understanding technology and participation, the strategic challenge, the design challenge, and the evaluation challenge. These challenges reflect the current published literature; however, through our reading of the literature, we can also speculate on the next and possibly most substantial challenge.

Technology does not, in itself, significantly advance democratic participation, nor does tinkering with governance structures and small-scale government interventions, nor do contributions of individual citizens. Neither does understanding why these artifacts and activities may not significantly advance participation. Thus we could posit that understanding the appropriate technological strategic design and evaluation methods for participatory activities may not be sufficient to promote deliberative and decisional participation. The existence of a technology does not necessarily mean that it will be used, and if citizens use the technology this does not necessarily mean that their contributions will lead to better deliberation or allow them to be included in the political decision making process. If electronic participation does foment a measurable difference, then it does not necessarily mean that inequality is reduced or democratic injustice is mitigated. We therefore propose a fifth challenge, the engagement challenge. This challenge invites a coordinated multidisciplinary effort from researchers that will advance eParticipation by supporting and encouraging a continued investment of resources and focused efforts from all parts of society.

ACKNOWLEDGEMENTS

This research was in part sponsored by Demo-net, the European network of Excellence in eParticipation. Our thanks to Øystein Sæbø and Leif Skiftenes Flak who carried out the initial literature search, and provided much help and guidance.

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APPENDIX I. CENTRAL ePARTICIPATION ARTICLES

Author(s)	Title
Abbott, J. P. (2001)	Democracy@internet.asia? The Challenges to the Emancipatory Potential of the Net: Lessons from China and Malaysia
Aikens, G. S. (1998)	A Personal History of Minnesota Electronic Democracy, 1994
Ainsworth, S., C. Hardy, and B. Harley (2005)	Online Consultation: E-Democracy and E-Resistance in the Case of the Development Gateway
Al-Kodmany, K. (2000)	Public Participation: Technology and Democracy
Albrecht, S. (2006)	Whose Voice Is Heard in Online Deliberation? A Study of Participation and Representation in Political Debates on the Internet.
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Bekkers, V. (2004)	Virtual Policy Communities and Responsive Governance: Redesigning Online Debates
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Bingham, L. B., T. Nabatchi, and R. O'Leary (2005)	The New Governance: Practices and Processes for Stakeholder and Citizen Participation in the Work of Government
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Chang, W.-Y. (2005)	Online Civic Participation, and Political Empowerment: Online Media and Public Opinion Formation in Korea
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Dutta-Bergman, M. J. (2005)	Access to the Internet In the Context of Community Participation and Community Satisfaction
Dutton, W., J. Steckenrider, D. Rosschristensen, L. Lynch et al. (1984)	Electronic Participation by Citizens In United-States Local-Government
Evans, A. J., R. Kingston, and S.	Democratic Input into the Nuclear Waste Disposal Problem: The Influence of Geographical Data on Decision Making Examined

Author(s)	Title
Carver (2004)	through a Web-based GIS
Fernandez-Maldonado, A. M. (2005)	Virtual Cities as a Tool for Democratization in Developing Countries
Fulla, S. and E. Welch. (2002)	Framing Virtual Interactivity between Government and Citizens: A Study of Feedback Systems in the Chicago Police Department
George, C. (2005)	The Internet's Political Impact and the Penetration/Participation Paradox in Malaysia and Singapore
Gibson, R. (2001)	Elections Online: Assessing Internet Voting in Light of the Arizona Democratic Primary
Gimmler, A. (2001)	Deliberative Democracy, The Public Sphere And The Internet
Gronau, N., E. Weber, and M. Uslar. (2005)	Institutionalization of a General Electronic Democracy through Electronic Democratic Parties - A General Concept with Focus on Germany
Grönlund, A. (2003a)	Emerging Infrastructures for E-democracy
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Lusoli, W. and S. Ward (2004)	Digital Rank-and-File: Party Activists Perceptions and Use of the Internet
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Communications of the Association for Information Systems

ISSN: 1529-3181