Chapter 2
eGovernment

The European Commission refers to *Electronic Government* (*eGovernment*) as the use of information technologies to improve the interaction between public administrations, citizens, and the private sector. In this chapter, the reader will be presented with the different levels that are part of the eGovernment framework, which is used in this work, in order to understand to what extent *Electronic Participation* (*eParticipation*) is important to this work and what can be covered by the *Smart-Participation* project. The chapter is structured as follows: First, Sect. 2.1 gives a brief introduction about the framework used in this Ph.D thesis. Then, Sect. 2.2 describes the different tools that can be used to enhance a collaborative environment. Section 2.3 gives a brief introduction of *Electronic Democracy* (*eDemocracy*) and the process steps for *Electronic Voting* (*eVoting*) and *Electronic Elections* (*eElections*). In Sect. 2.4, some alternative communication and Web-based tools for community formation are presented. Section 2.5 presents some remarks about the eGovernment framework that is used by the *SmartParticipation* system. Finally, further readings are presented in Sect. 2.6.

2.1 eGovernment Framework

Three types of relationships are defined for *eGovernment*: Administration to Citizens (A2C), Administration to Business (A2B), and Administration to Administration (A2A). The eGovernment framework of the University of Fribourg is adopted from the work of Meier (2012), which is used by the *SmartParticipation* project and is a process-oriented maturity model with three primary levels. It is illustrated in Fig. 2.1.
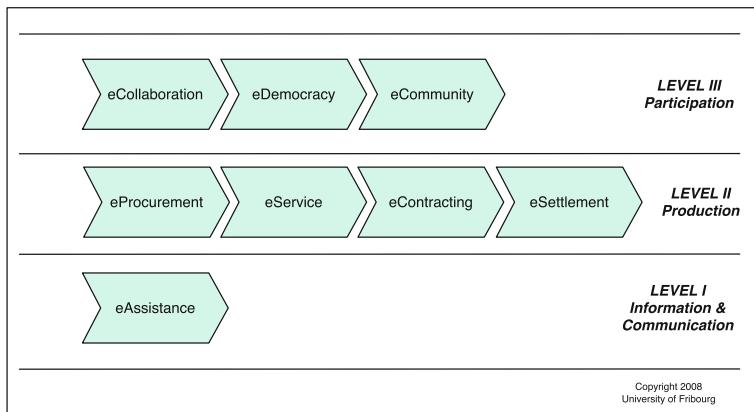
Fig. 2.1 eGovernment framework of the University of Fribourg. Adapted from Meier (2012)

2.1.1 Process Level I: Information and Communication

Electronic Assistance (*eAssistance*) corresponds to the lowest level, which provides information and communication facilities for *eGovernment*. It focuses on the design of communal Web portals; respectively, more extensive *eGovernment* portals, and the use of Web 2.0 technologies. For barrier-free Web access, compliance with the (WCAG) proposed by the (W3C) is imperative.

2.1.2 Process Level II: Production

The middle process level consists of administrative public services required for options A2A, A2C, and A2B. These services include management services for *Electronic Procurement* (*eProcurement*); traditional services, such as taxation, residents' registration, identification acquisition, *Electronic Health* (*eHealth*), and public education known as *Electronic Service* (*eService*); contracts based on digitally signed electronic documents are managed by *Electronic Contracting* (*eContracting*); and fulfillment elements, such as electronic shipment, electronic payment, and the assurance of data security and safety, are handled by *Electronic Settlement* (*eSettlement*).

2.1.3 Process Level III: Participation

Notably, the top level emphasizes civic collaboration and participation, requisites of a progressive and responsible knowledge society. Virtual forms of collaboration (*eCollaboration*), including the utilization of social and Semantic Web

technologies, enable the knowledge society to develop further. In addition to *eVoting*, communication platforms, including processes to build new communities and political networks (*eCommunity*), as well as stimulate participation and knowledge exchange between citizens.

In evaluating public services for *eGovernment*, most countries are focusing on information exchange and support for administrative processes in public affairs. In other words, governmental authorities have implemented process elements of the two lower levels (I and II), as shown in the eGovernment framework in Fig. 2.1.

2.2 eCollaboration

In the work of Meier (2012), important procedures and systems for computer-aided collaboration are described. The different tools that can be used to enhance collaborative environment in a Web-based information systems in *eGovernment* are briefly described in this section.

Document Management This section analyzes the components of a Web-based information system and deals with document administration.

Content Management Content management aims at planning and coordinating all activities for the supply and use of content.

Wiki Tools Wiki tools were introduced first by Ward Cunningham (Leuf and Cunningham 2001) and aim to facilitate users' ability to edit entries quickly and easily.

Use of Weblogs A Weblog, or short blog, is a frequently updated digital journal whose entries are displayed in a chronologically descending way. The editor (blogger) of a Weblog is either an individual person (private blog) or a group of people (corporate blog). A Weblog can be a textual or multimedia journal, or its content can be a linked collection dedicated to different matters and topics. Normally, the readers of a Weblog comment on the content.

Collaborative Working Environment Groupware systems are technically mature products for information exchange, workflow control, collaboration, and data management.

Virtual Organizations and Forms of Cooperation Depending on the complexity of the services, the administrative units must rethink their organization. Organizations and administrative units are undergoing changes due to market alterations and social developments. *eCollaboration* can also be considered a type of crowdsourcing, which is a distributed problem-solving and production process that involves outsourcing tasks to a network of people, also known as a crowd. This method can be used to accomplish tasks. The constituent characteristics of virtual organizations are:

- **Voluntary Cooperation of Several Independent Network Partners** The fusion of organizations to a virtual organizational network is voluntary and requires that the individual group members and the management body trust each other.
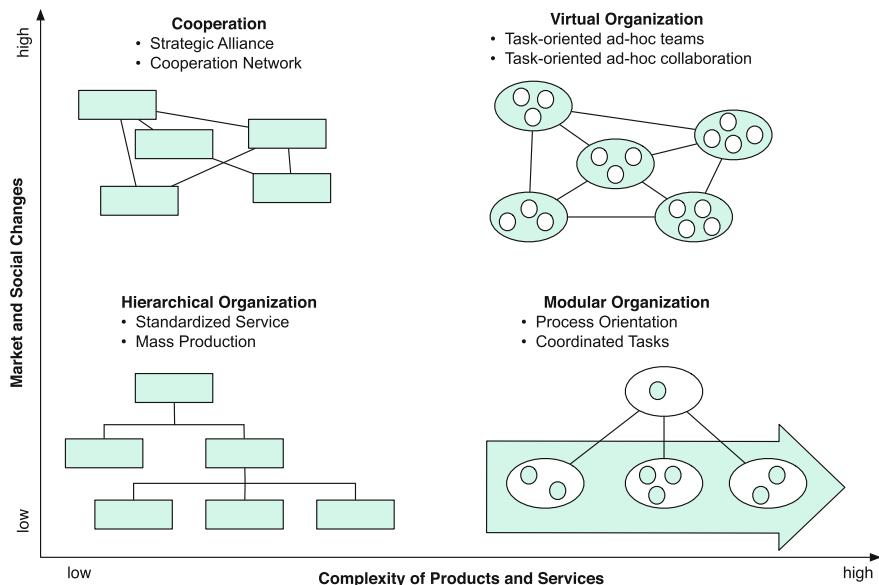
Fig. 2.2 Strategies of organizational development. Adapted from Meier (2012)

- **Common Goal** Every virtual organization formulates a common organizational goal and comes to an agreement regarding task sharing and collaboration.
- **Bundling of Core Competences** Virtual organizations try to obtain the required expertise through their network partners.
- **Utilization of Information and Communication Technology** Virtual organizations consequently use the possibility of electronic communication and the electronic exchange of service; for example, by running a collaborative portal. Such a platform is needed for information, communication, and handling of projects in the virtual organization.

Figure 2.2 illustrates four different options of organizations, depending on the complexity of the service and the dimension of the economical and social change.

2.3 eDemocracy

The term *eDemocracy* refers to the use of information and communication technologies to enable citizens to exercise their rights and fulfill their obligations in the information and knowledge society in a time- and place-independent manner. In his work, Meier (2012) mentions the importance of citizen participation in *eDemocracy* (e.g., *eElections* and *eVoting*). Meier defines the term *eDiscussion* as a stage in which citizens know more about the candidates or the subject during the

voting process. *eDiscussion* uses information and communication technologies, such as discussion forums, decision-making aids, and subscription services, to aid voters (users) in making decisions. According to Meier, the next stage of *eDemocracy*, following *eVoting* and *eElections*, is *ePosting*, which facilitates the publication of results and gives voters (users) the chance to open up discussion channels about *eVoting* and *eElections*.

2.3.1 Process Steps for eVoting and eElections

Electronic votes and elections differ from traditional voting and election procedures mainly in their subsequent and post-processing phases (refer to Fig. 2.3) if the advantages of electronic exchange relations are exploited. Through changed and expanded information and discussion of politics in the process steps of *eDiscussion* and *ePosting*, it is hoped that citizens will become more involved with political issues and engage in further community-building. Figure 2.3 distinguishes the following process steps:

eDiscussion Prior to a vote or election, citizens can enhance their own opinion-forming process by requesting not only information, but also opinions and evaluations from discussion forums. Furthermore, subscription services allow the citizens to draw on documents or bases of decision-making and learn about changes in and extensions of topical issues.

eVoting Within the timespan established by the authorities, citizens can fill out their electronic ballot and submit it. Before that, they identify themselves and register with a governmental institution; the subsequent vote, however, is made anonymously. The governmental institution can add an optional survey questionnaire to the ballot in order to, for example, get citizens' feedback on questions of procedure and implementation.

eElections The published *spiderweb* profiles of political candidates and additional information on their abilities and skills make it easier for voters to fill out the electronic ballot (during the *eDiscussion* step). Again, citizens must register by means of an election and checking card and request a valid ballot from the governmental institution before voting electronically. Requesting that voters answer additional optional questions may be beneficial.

ePosting The publication of voting and election results on the *eGovernment* portal for the associated governmental institution is directed at citizens but can also be studied and used by organizations and the press. To that end, suitable visualization and analysis tools can be offered so that electoral and voting behavior, and voting and election results, may be analyzed and discussed. Public blogs make it possible to comment on electronic votes and elections even after election day, enabling citizens to explore the relevant topics more deeply. Apart from actual voting and election results, voting and election cards and un-ambiguous identification numbers should be published. By these means, all citizens will be able to verify whether their vote has actually been registered and processed. This method is more transparent than
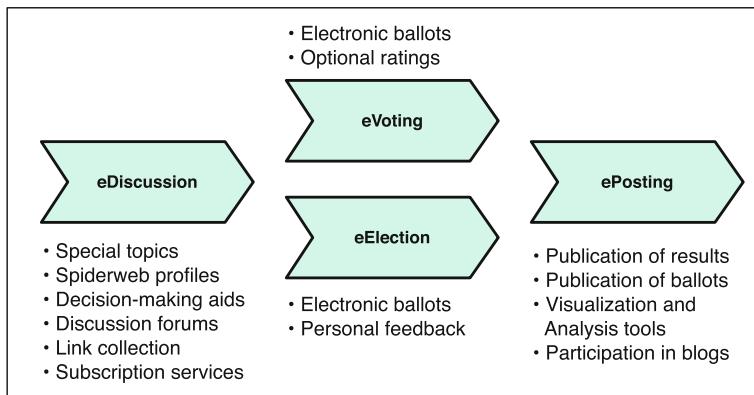
Fig. 2.3 *eVoting* and *eElections* as part of a process chain. Adapted from Meier (2012)

traditional votes and elections and will thus help to win the citizens' trust in *eVoting* and *eElections*. The description of the process steps for *eDiscussion*, *eVoting*, *eElections*, and *ePosting* shows that the use of electronic information and exchange relations increases citizens' involvement and stimulates public discussion.

2.4 eCommunity

The Internet is developing into an environment in which citizens display themselves, meet with others, exchange information and services, promote common projects, and overcome linguistic and cultural boundaries. This section presents some alternative communication and Web-based tools for *eCommunity*, as demonstrated by Meier (2012). Computers and communication channels not only serve collaborators in the administration, enabling them to handle their workload, but also make encounters and communities possible. In the same way that street cafes, markets, and exhibitions serve as points of encounter in real life, besides home and the workplace, the computer network of networks develops into a virtual location. Topic-specific, cultural, or scientific meeting points on the Internet engender a new kind of community-building.

Computer networks are populated by citizens and avatars[1]; Internet, or cyberspace, can enhance one's living environment. As in real living environments, infrastructures are developed for virtual spaces; platforms for exchange are supplied and services offered. In addition, rules of conduct and protective measures are implemented with the aim of safeguarding privacy and preventing misuses. Among the communities created on the Internet, two kinds are the most relevant:

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[1] In information society, avatars are images representing people who adopt a fictional identity on the Internet.

- **Communities of Interest** These comprise citizens who share interest in a common thing or hobby.
- **Communities of Practice** These comprise groups of citizens who participate in a project together for a governmental institution, investing time and knowledge.

Both kinds of communities can benefit from information and communication systems. Community support systems serve as meeting places for members, as well as a place for them to exchange know-how and master tasks or challenges. Thus, Web-based platforms not only facilitate the development of communities, but also make it possible for people to meet other community members and utilize the community's collective know-how.

2.5 Remarks on the eGovernment Framework

The European Union has been pushing different measurement plans that point to enhancement of the development of *eGovernment*. Consequently, 12 areas of services for citizens and eight areas for services for the business sector are proposed. These services can be placed in the first and second levels of the eGovernment framework used in this Ph.D. thesis: Information and Communication and Production (Sects. 2.1.1 and 2.1.2).

The *eGovernment* framework proposed by the University of Fribourg is a maturity model that also aims to include in its third level (refer to Sect. 2.1.3) three processes that can lead to a better participation. The approach proposed in this Ph.D. thesis for advising citizens on elections (*eDemocracy*) and the creation of political communities (*eCommunity*) is based on the generation of a fuzzy cluster and uses a modified version of the fuzzy c-means algorithm (FCM) that is described in more detail in Sect. 5.3.1. Future work will also include *eCollaboration* in the *SmartParticipation* platform.

2.6 Further Readings

- **Meier (2012)** "The reference book reviews and presents systematically the use of Internet in administration and politics. A process-oriented layer model defines the options of exchange and participation for all claim groups covering these topics: *eAssistance*, *eProcurement*, *eService*, *eContracting*, *eSettlement*, *eCollaboration*, *eDemocracy*, and *eCommunity*" (abs.).
- **Sloane (2011)** "Open innovation and crowdsourcing are among the hottest topics in strategy and management today. The concept of capturing ideas in a hub of collaboration, together with the outsourcing of tasks to a large group of people or community is a revolution that is rapidly changing business culture" (abs.).
- **XRDS Magazine (2011)** "This issue of XRDS is about how computer science can be used in service of democracy. There are so many projects under way—both inside and outside of government—aimed at improving governance with

information technology, that it would be impossible to capture even a narrow segment of these in a single issue" (abs.).

- **Lathrop and Ruma (2010)** "In a world where web services can make real-time data accessible to anyone, how can the government leverage this openness to improve its operations and increase citizen participation and awareness? Through a collection of essays and case studies, leading visionaries and practitioners both inside and outside of government share their ideas on how to achieve and direct this emerging world of online collaboration, transparency, and participation" (abs.).

- **Al-Hakim (2006)** "Interest in e-government, both in industry and in academia, has grown rapidly over the past decade, and continues to grow. Global E-Government: Theory, Applications and Benchmarking is written by experts from academia and industry, examining the practices of e-government in developing and developed countries, presenting recent theoretical research in e-government, and providing a platform to benchmark the best practices in implementing e-government programs" (abs.).

SmartParticipation
A Fuzzy-Based Recommender System for Political
Community-Building
Terán Tamayo, L.F.
2014, XXVII, 161 p. 66 illus., Hardcover