Chapter 30
Enhancing Citizens' Participation via Recommender Systems

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ABSTRACT

With the introduction of Web 2.0, which includes users as content generators, finding relevant information is even more complex. To tackle this problem of information overload, a number of different techniques have been introduced, including search engines, Semantic Web, and recommender systems, among others. The use of recommender systems for e-Government is a research topic that is intended to improve the interaction among public administrations, citizens, and the private sector through reducing information overload on e-Government services. In this chapter, the use of recommender systems on eParticipation is presented. A brief description of the eGovernment Framework used and the participation levels that are proposed to enhance participation. The highest level of participation is known as eEmpowerment, where the decision-making is placed on the side of citizens. Finally, a set of examples for the different eParticipation types is presented to illustrate the use of recommender systems.

MOTIVATION

The rapid increase of information on the Internet is currently a key issue when one is looking for relevant information. In the political sector, the amount of available information about candidates and political parties is also drastically increasing. This is becoming a significant issue for voters when they face election processes that require them to select their representatives from a big list of candidates since, in many cases, the candidates are relatively unknown to their constituents.

In this chapter, the use of recommender systems for *e-Elections* is presented as an alternative to solve the problems of information overload.

Recommender systems are computer-based techniques that attempt to present information about products that are likely to be of interest to a user. This technique is mainly used in *e-Commerce* in order to provide suggestions on items that a customer is, assumable, going to like.

Yager (2003) distinguishes between recommender systems and targeted marketing by considering that a recommender system is a "participatory" system in which the user intentionally provides information about his preferences. In a targeted marketing effort, the recommendation is based on extensional information, which is nothing but information predicated upon the actions or past experiences with respect to specific objects.

According to Yager (2003), recommender systems, which are used in *e-Commerce*, can be classified as "targeted marketing" since they use information that is based on the actions or past experiences of users. The accuracy of the recommendation in this type of method depends directly on users' participation. In targeted marketing, the main objective of the recommendation is to increase the margin of sales by recommending products that the users are likely to find appealing.

Given that we focus on recommender systems, which could contribute to improved citizens' participation in *e-Government*, the definition of Yager (2003) for recommender systems is used in this chapter with the assumption that, in *e-Government* systems, the users are willing to participate in the process of providing information about their preferences.

The chapter is structured as follows: First, Section 1 gives the motivation. Then, Section 2 gives a brief introduction about the e-Government framework used. Section 3 gives a brief introduction on Electronic Participation (eParticipation). It discusses the growth of research on e-Participation and presents the definitions of participation. Section 4 gives a brief overview of the systems architecture for the fuzzy recommender system used in the *SmartParticipation* project. Then, Section 5 gives a brief introduction and scope of the *SmartParticipation* project. It introduces three maturity models for e-Collaboration, e-Democracy, and e-Community. Then, Sections 6 and 7 provide discussion and outlook of the project. Finally, concluding remarks are presented in Section 8.

ELECTRONIC GOVERNMENT FRAMEWORK

The European Commission (2010) defines *e-Government* as the use of information technologies to improve the interaction between public administrations, citizens, and the private sector. Three types of relationships are defined for *e-Government*: Administration-to-citizens (A2C), Administration-to-Business (A2B), and Administration-to-Administration (A2A).

Meier (2012) describes an *e-Government* framework developed at the University of Fribourg that consists of three levels: Information and Communications, Production, and Participation. It is shown in Figure 1(a).

The lowest level provides information and communication for *e-Government*. It focuses on the design of communal Web portals. The second level consists of the actual public services (e.g., electronic procurement, taxation, and electronic payments, among others). The third level refers to citizen participation. This chapter focuses on the participation level; more specifically, *e-Democracy*.

The term *eDemocracy* refers to the use of information and communication technologies that enable citizens to exercise their rights and fulfill their obligations in the information and knowledge society in a time- and place-independent manner.

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