

# Chapter VIII

## Ontology-Based Personalization of E-Government Services

**Fabio Grandi**

*Università di Bologna, Italy*

**Federica Mandreoli**

*Università di Modena e Reggio Emilia, Italy*

**Riccardo Martoglia**

*Università di Modena e Reggio Emilia, Italy*

**Enrico Ronchetti**

*Università di Modena e Reggio Emilia, Italy*

**Maria Rita Scalas**

*Università di Bologna, Italy*

**Paolo Tiberio**

*Università di Modena e Reggio Emilia, Italy*

### ABSTRACT

*While the World Wide Web user is suffering from the disease caused by information overload, for which personalization is one of the treatments which work, the citizen who gets ready to use the e-Government services which are made available on the Web is not immune from contagion. This seems a good reason to try to prescribe a personalization treatment also to the e-Government user. Hence, we introduce the design and implementation of Web information systems supporting personalized access to multi-version resources in an e-Government scenario. Personalization is supported by means of Semantic Web techniques and relies on an ontology-based profiling of users (citizens). Resources we consider are collections of norm documents (laws, decrees, regulations, etc.) in XML format but can also be generic Web pages and portals or e-Government transactional services. We introduce a reference infrastructure, describe the organization and present performance figures of a prototype system we have developed.*

## INTRODUCTION

In this Chapter, we present our research activities concerning the implementation of Web information systems supporting personalization for e-Government (**eGov**) applications (ECeGov, n.d.; USeGov, n.d.). More precisely, our work makes use of temporal database and Semantic Web techniques to provide *personalized* access to multi-version resources and services made available on the Web by the Public Administration (**PA**), aimed at improving and optimizing the involvement of citizens in the e-Governance process. The achievement of a high level of integration and involvement of the citizens in the eGov and e-Governance activities, the necessity to fairly deal with different categories of citizens (including disadvantaged ones, with a potential risk of increasing digital divide), the requirements to support flexible, user-friendly, precise, targeted and non-baffling services, all claim for the personalization of the services offered and of the information supplied. In this respect, eGov is suffering from a general problem due to the quick growth of information and services becoming available on the Internet, which makes the task of retrieving the resources of interest more and more difficult. Hence personalization based on user profiling is one of the most interesting solutions proposed to fulfill the needs of individual users and guide them towards a useful navigation.

In particular, we consider ontology-based user profiling and personalized access to online resources (internally available in multi-version format), which may range from guided browsing of PA informative Web sites and portals to selective querying collections of norm documents, and to enactment of customized services implementing administrative processes. Notice that, although all these kinds of resources are already available in existing eGov Web information systems, personalization is either completely absent or at most “predefined” in the Web site structure/contents or service definition/workflow, as for example

in eGov portals organized according to the “*life events*” metaphor.

For instance, the Italian eGov portal (<http://www.italia.gov.it>), which is the main national portal to all the informational and transactional services provided by PAs, is composed of five main sections: “*I am...*”, “*Life Events*”, “*Thematic Areas*”, “*Online Forms*”, “*Online Services*”. The main sections are further organized as hierarchical multi-level directories, which allow citizens to locate and access online resources. In this way, the paths to access specific resources of interests for an individual citizen have been hardwired in the portal structure by human experts and the citizen starting from the home page must follow, without any other kind of navigational aid, the right link sequence in order to locate and enjoy the desired resources. For example, in order to retrieve a norm concerning support to female entrepreneurship, one have to follow the link sequence:

“I am...” » “Woman” » “Women and Work” » “The Law for Female Entrepreneurship”

or, in order to find information on tax allowances for retired persons, the link sequence:

“Life Events” » “To Pay Taxes” » “Retired Person” » “Which Taxes on the Pension?” » “The Allowances”

Also other eGov portals usually show a similar organization and functionalities. For instance, the U.S. eGov portal (<http://www.usa.gov>), is organized into four main sections: “For Citizens”, “For Businesses and Nonprofits”, “For Government Employees” and “For Visitors to the U.S.”, yet with a basically hierarchical multi-level structure. For example, an American citizen looking for recent norms ruling voting rights has to follow, starting from the home page, the link sequence:

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