Symbiotic Aspects in e-Government Application Development

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ABSTRACT

For e-Government applications, the symbiotic aspect must be taken into account at three stages: at design time in order to integrate the end-user, at delivery time when civil servants have to discover and interact with new services, at run time when ambient intelligence could help the interaction of citizens with specific services. In this article, we focus on the first two steps. We show how interoperability issues must concern application designers. We also present how semantics can help civil servants when they have to deal with e-government service frameworks. We then describe an actual application developed during the European Terregov project where semantics is the key point for simplifying the role of citizens when requesting for health care services.

Keywords: e-Government, Interoperability, Ontology, Semantics, Web Service

SYMBIOTIC ASPECTS IN E-GOVERNMENT APPLICATION DEVELOPMENT

According to the definition given in the Symbiotic Computing website¹, “Symbiotic computing is a basic idea that achieves an information processing environment, which autonomously supports human activities, by understanding human behavior and sociality in the real world.”

Initiatives occurring inside the e-Government domain can contribute to some aspects of this definition. Research in the area of e-Government combines the information and communication technology in public administrations with organizational changes and new skills in order to improve public services and democratic processes, and to strengthen support to public policies. The potential of e-Government goes far beyond the early achievements of online public services. New public services are user-centered and aim to support the interaction between citizens and administrations. They generally take into account the social profile of people, and try to deliver

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the most accurate information that citizen is looking for, or the most appropriate services that
the citizen can benefit from. This is particularly true in the social and health care domains.

When dealing with public services, two levels have to be considered: (i) the discovery of
the services that citizens can benefit from, and (ii) the enactment of such services. The first
level deals with the selection of services, based on capabilities and/or constraints; it is an area
of on-going research, and for example, travelers who are confronted with foreign Public Admin-
istrations could benefit of results in this domain. The second level deals with the execution of
selected services. New technologies like ubiquitous middleware technology could be effectively
employed for simplifying the access to some service functionalities. For example, physically
impaired people can highly benefit from the use of intelligent mobile devices capable of seam-
lessly interacting with distributed computational units embedded in the environment (ubiquitous
computing). At both levels human society and digital space interact with each other using dif-
ferent kind of technologies.

Developing user-centered applications and frameworks requires symbiosis among several
actors at design times: project managers, domain experts, human-machine interaction experts,
design experts and end-users. Particularly in the e-Government domain a better symbiosis be-
tween civil servants and systems actually delivering services is highly desirable. Civil servants
can be considered as a Community where usual hierarchy disappears. One issue is the emergence
of new roles based on new knowledge and has been identified with the so-called “social-ware”
technologies (Hattori et al., 1999).

From the perspective of cognitive informatics, delivering new e-Government services re-
quires the convergence of several research domains. The socio-economic research studies many
cases in Europe and all over the world to determine the criteria of their success or failure. It
produces guidelines useful to follow. A new e-Government also requires the definition of new
processes and a better integration of citizens’ and civil servants’ behaviors. Finally, knowledge
representation (ontologies) is the core of new semantic technologies and allows systems to
perform symbolic reasoning.

The work presented in this article is based on the results of the Terregov research project:
“Impact of e-Government on Territorial Government Services” (Terregov, 2008). A platform has
been developed in which semantics combines with more traditional technologies in order to enable
new capabilities and to overcome technical and cultural challenges. The design and development
of this e-Government Semantic Platform has been conducted with the financial support of the
European Commission. The goal of this platform is to let local government and government agen-
cies offer online access to their services in an interoperable way, and to allow them to participate
in orchestrated processes involving services provided by multiple agencies.

IMPLEMENTED SCENARIO

For a better understanding of the concepts analyzed in this article, we first present a scenario that
was implemented with the collaboration public administration of the Venice Region in northern
Italy. Public Administrations (PA) offer a number of services for citizens in the area of social-care
and health assistance for elderly and physically/mentally impaired people. The main use case is
the following. A citizen asks for some assistance service; a civil servant receives the request and
assembles the citizen profile (a set of relevant information about the citizen making the request);
domain experts meet and decide if the citizen is eligible for any service.

The Terregov platform supports the creation of the citizen profile, and the automation of
service selection. Domain experts have defined the eligibility criteria of each service, and have
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