

# Service-based architecture of Access-eGov system

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**Abstract.** The paper describes functional architecture of Access-eGov system – a platform for integration of e-Government services on a semantic level. Design follows principles of peer-to-peer and service-oriented architectures, with implementation of Web Services. The overview of main system components is presented, together with the brief functional description.

**Keywords:** e-Government, Semantic Web, ontologies, annotation, service-oriented architecture.

## 1 Access-eGov system – objectives and functionality

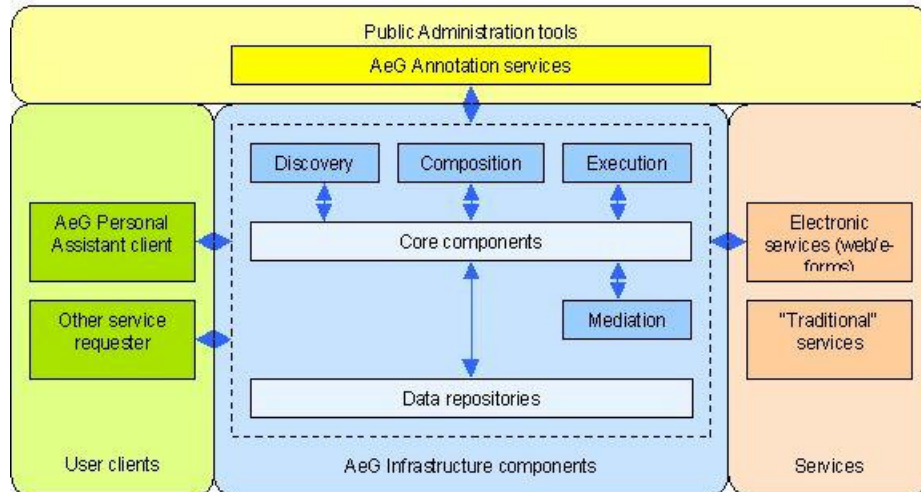
The *Access to e-Government Services Employing Semantic Technologies* (Access-eGov) is an international EU IST project No. FP6-2004-27020. It has started in January 2006 and it is planned for 36 months. The main objective of the project is to develop a common platform for integration of e-Government services, based on Semantic Web technologies and distributed architectures.

The two basic categories of services will be provided for citizens and business users of the Access-eGov system. Firstly, it is a meta-service, which will identify proper e-Government services relevant to the given life event or business episode, according to the (semantically expressed and described) user's needs and requirements [1]. Secondly, after finding relevant services, the Access-eGov system will generate a scenario consisting of elementary government services. These services can be of a "hybrid" nature, i.e. a combination of traditional and electronic e-Government services. A specialized interface, named as Virtual personal assistant, is intended to guide users in the space of available services.

## 2 Architecture design

The requirement of integration of the existing e-Government services implies a modular, extensible, distributed, and flexible architecture composition. Concerning the interoperability between different types of legacy systems used within public service backend, an implementation of Web Services in conjunction with service-oriented and peer-to-peer architectures was chosen as the most promising approach. The approach based on these technologies will prove far more feasible, but will be

challenging since research is still necessary in this field of distributed application architecture. The figure below (Fig. 1) gives an overview of the system components.



**Fig. 1.** Overview of the Access-eGov system components [2].

The core components consist from in-memory object model for semantic web services ontologies, web service entry point that makes infrastructure components available to personal assistant and annotation services (Connection manager), security and notification services. These components are mediated on the data level to avoid possible data heterogeneity problems [3]. The mediation will be based on mappings expressed with the mapping ontology and designed for the mapped domain ontologies.

All the necessary system data are stored in the persistence layer and are accessible by unified API. Several repositories were identified according to the type of stored data, namely:

- § *life events / goals repository* for managing goals and generic scenarios associated with the life events,
- § *service repository* for storage of descriptions of the e-Government services registered for the specific already orchestrated scenarios,
- § *ontology repository* containing domain ontologies and associated mappings for mediators,
- § *process context repository* for storage of the context (state) of the processes executed for the orchestrated life event scenarios,
- § *security data repository* containing user login information and access rights.

Discovery, Composition, and Execution modules are responsible for semantic matching of goals and services, its dynamic composition into complex sequences, and invoking composed services of orchestrated scenarios.

On the administration side, the annotation services are included into a web-based tool providing functionality for semantic description of particular services, for management of life events and goals.

Personal Assistant client is a thin web-based client that provides a functionality of user and profile management, scenario execution management, and life events / goals discovery.

### **3. Conclusion, future work**

The modular architecture of Access-eGov system, based on web services, was briefly described in the paper. After the detailed analysis of available resources, the WSMO / WSMX was chosen as the most promising platform and environment for implementation. In the next phase of the project, this choice will be proven on the three pilot applications – in the Public Administration organizations from Germany, Poland, and Slovakia.

**Acknowledgments.** The Access-eGov IST project No. FP6-2004-27020 is co-funded by European Commission.

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