

SUMMARY OF THE WORKSHOP "SEMANTIC HELP: STATUS, RESEARCH OBJECTIVES, FIRST IMPLEMENTATION STEPS"

Josef Makolm¹, Silke Weiß²

What's the meaning of the term "Semantic Help"? For whom and for what could "Semantic Help" be useful? What are current research results and next steps relating to "Semantic Help"? And how can current research results be transformed into adequate practical applications? These were the main questions discussed in the workshop "Semantic Help: Status, Research Objectives, First Implementation Steps"³. The following text summarizes the concepts of "Semantic Help" as presented by five researchers, including the results of their final panel discussion.

Contributors of the Workshop:

[Olivier Glassey & Pierre Rossel](#)

[Tom van Engers](#)

[Michele Missikoff](#)

[Marijn Janssen](#)

[Stefanie Betz](#)

1. Transformation of law into e-Government

"Semantic Help" within public administration deals with adequate transformation of legal regulations into citizen-centric, interoperable and adaptive e-government applications [2]. Goal is the development of easy to use and feasible applications, with regard to the wishes and needs of all stakeholders. Stakeholders in the public sector are internal and external process partners, citizens or enterprises as well as their representatives which ask for public services, as well as the employees of public administration which set up the demanded public services. The world of administration processes is very complex, each request of a certificate triggers a process, and each interaction with an authority is part of a process [3]. It is impossible to draw a 1:1 map of these administrative processes, thus, modelling means abstraction [3]. Therefore it is very important to choose a suitable degree of abstraction, to

¹ Bundesministerium für Finanzen, 1020 Wien, Hintere Zollamtsstraße 4, josef.makolm@bmf.gv.at

² Bundesministerium für Finanzen, 1020 Wien, Hintere Zollamtsstraße 4, silke.weiss@bmf.gv.at

³ The workshop was held on as a part of the sixth international EGOV Conference 2007 at Regensburg, Germany, <http://www.egov-society.org/>

draw the processes neither too complex nor too simple, to emerge a useful proportion between management and reduction of processes complexity.

The success of public processes also depends on the way of their interconnection as well as on the way of orchestrating process parts and processes to cross-agency processes. Changes just of the wording of a law or modifications of responsibilities within or between agencies may result directly in changes of administrative processes. The adaptation of inflexible processes is very difficult and extremely time-consuming; e.g. sometimes complete process chains need to be changed, although only parts of the over-all process are affected by the change. Therefore it is important to create just loosely coupled connections between the process parts and between cross-agency processes. Loosely coupled processes make it possible to restructure or to change the affected processes easily.

Improvement of service delivery is also possible through the use of efficient web service orchestration techniques [4]. Basic conditions to use efficient Web Service orchestration technologies are: clearly defined responsibilities as well as the introduction of new process orchestration roles [5]. Furthermore softer forms to regulate the cross-agency processes are suggested e.g. implemented through Service-Level-Agreements instead of hierarchy control. Processes overlapping can be avoided by implementation of adequate process orchestration techniques. This means that the available (mostly) tight resources are used more efficient, because redundant effort does not take place [5].

2. The OPAL-BPAL framework

Furthermore the framework OPAL-BPAL (Object Process Action Language – Business Process onto Abstract Language) supports "Semantic Help". On the one hand the framework is based on a strong semantic logic and on the other hand it is based on formal mathematical fundament. The OPAL-BPAL framework supports the development of correct business processes. BPAL services enable the detection of inconsistencies, redundancies, missing parts of processes, and ambiguity. The services detect violated axioms but also the information needed to correct these violated axioms. The framework supports consequently the correct execution of process instances [3].

3. Folkology and Petri-Net Ontology

The combination of the knowledge models folksonomy with the ontology model offers further potential towards "best possible" support for the citizen. The result of the combination of both models is the so called "folkology" which bridges the advantages of both systems. Thus, an ontology includes the fuzzy logic of the users and a folkology is enriched by unambiguous semantic. The concept folkology upgrades the inter-communication between humans as well as the communication between humans and machines and also between machines. E.g. it is conceivable to implement this concept of folkologies through enlargement of the ontology language RDF; more precisely: through adding a tool to RDF. This tool should enable us to modify concepts and relationships within an ontology. Another possibility to achieve better search results is – if needed – to provide additional ontologies which represent the context partly in an inexact or contradictory manner, which describes the real life more precisely [1].

An algorithm based on a petri-net ontology also could provide "Semantic Help". This algorithm enables the automatic combination of business processes. The algorithm is advantageous if there are similar processes and combination of these processes is ad-hoc necessary [6].

4. Finding out Users' Intentions

Further benefit can be achieved by automatic gathering of implicit and intuitive knowledge from the service recipient as well as from the service provider. This on the fly generated knowledge provides support for the citizen as well as for the knowledge workers within public administration. In addition, through the gathered knowledge, it should be possible to adapt administrative processes individually and on the fly to the particular need of a certain user, which makes it possible to develop more user-friendly and individual search results.

Another objective of "Semantic Help" is to achieve a completely new understanding of services, with administrative processes oriented towards the wishes and needs of individual citizens and not towards the logic of the structure of the administration. "Semantic Help" means: to pick up the citizen on his individual standard of knowledge and support her/him "best possible".

5. Research and Implementation in Parallel

Another point is to implement the current technological potential as well as the current e-government approaches. It is clearly visible that a critical mass of theoretical concepts is achieved and now a smooth transition to practical implementation of the research results should happen. In practice it has turned out that a prompt implementation of research results as well as the parallel starting of research projects and use case projects is advantageous. Such use case projects are comparable with so called "Real Life Experiments". E.g. a real life experiment supplies real data for evaluation, and moreover a "human filter" contributes to develop more intelligent applications.

6. Resume

Finally it shall be mentioned that the workshop exceeded the expectations of the organisers. New innovative ideas as well as the combination of existing solutions were suggested. Besides, the workshop mirrored entirely the motto of the study group e|Gov Strategies⁴ which is "new thinking - thinking news". We would like to reemphasise that the research is currently occupied with the development of "Semantic Help" frameworks. However a simultaneous implementation of the current research results is possible and desirable.

⁴ The Study Group "e|Gov:Strategie" is a part of the Forum e|Government of the Austrian Computer Society. Austrian Computer Society: <http://www.ocg.at/>
Forum e|Government: <http://www.ocg.at/egov/>
Study Group e|Gov Strategies: <http://www.ocg.at/egov/strategies.html>

References and Presentations:

- [1] Olivier Glassey, Université de Lausanne, Switzerland & Pierre Rossel, Ecole polytechnique fédérale de Lausanne. ([presentation](#))
- [2] Tom van Engers, University of Amsterdam, Leibniz Center for Law, Amsterdam, The Netherlands. ([presentation](#))
- [3] Michele Missikoff, Italian national Research Council, Italy. ([presentation](#))
- [4] Marijn Janssen, Delft University of Technology, Faculty of Technology, Policy and Management, The Netherlands. ([presentation](#))
- [5] Marijn Janssen, Jeffrey Gortmaker, and René W. Wagenaar, Web Service Orchestration in Public Administration: Challenges, Roles, and Growth Stage, *www.ism-journal.com*, Springer, 2006.
- [6] Stefanie Betz, University of Karlsruhe, Institute AIFB, Germany. ([presentation](#))