

Case Study 20: e-Government Service Provisioning and Adaptation by End Users

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Abstract. We present a service innovation scenario where semantic web services and visual process specification allow public sector workers to easily modify and adapt e-Government services and processes, thus responding to new challenges such as the implementation of the European Services Directive and other recent developments. Our use case is based upon a novel service delivery platform developed in the EU FP7 project SOA4All.

Background

Public administrations have to deal with hundreds of different procedures that are typically implemented in one or more legacy systems or even executed manually. At the same time, the increasing number of regulatory changes and new regulations asks public administrations to constantly adapt their procedures in a flexible and cost efficient way. For instance, the EU Services Directive [1], [2] requires administrations to implement a one stop e-Government approach where constituents can file requests for public services via a single point of contact, which coordinates all necessary activities.

As a consequence, public administrations need to constantly adapt their service offerings to the specific needs of each constituent. Considering the tight budgets together with the high costs that would be caused by a traditional software development process under such dynamic conditions, it becomes evident that new solutions are required. The fields of e-Government and End User Development (EUD) are particularly relevant: Public administrations typically have to deal with numerous administrative procedures, interacting with citizens, businesses, and other administrations [3]. Their IT infrastructure is often heterogeneous with disconnected island solutions, and many public services are still executed manually. Changes to existing or the implementation of new IT applications often require lengthy and costly software development processes that are mostly handled by external solution providers.

An alternative to dedicated software development projects by IT professionals is the so-called EUD where professional users who do not have programming skills are enabled to perform smaller development tasks by a user-friendly EUD tool. Such tools often rely on wizards, programming by example, or graphical programming. Different studies have shown a general positive attitude towards EUD among professional end users, and EUD activities are in fact already widespread in different organizational contexts. We are therefore confident that a technological solution allowing civil servants to create new or adapt existing administrative procedures with an appropriate EUD tool will not face unnecessary obstacles to its uptake.

The opportunity

In the EU FP7 project SOA4All, we investigate different key technologies that help to address such challenges based on advanced service technologies. We envision an open and flexible *Service Delivery Platform (SDP)* where administrative procedures are handled over a central internet portal that serves as a single point of contact between the public administrations and constituents. This SDP allows composing administrative procedures of semantic web services together with human tasks. Differentiating from existing service composition tools, we explicitly address civil servants with regular IT skills as our target users in order to create a large user

basis, leveraging the professional expertise and local knowledge of our users for creating and modifying effective administrative procedures.

Description of the innovation: a service delivery platform for the public sector

In the following, we describe how our proposed SDP can bring about innovative ways of delivering e-Government services using the example of the procedure to register a new business in the City of X. Barbara is a process expert in the public administration of the City of X in Germany. When the SDP is introduced in order to realize a constituent-friendly one-stop e-Government solution, her task is to create process models for selected standardised administrative procedures. In our example, Barbara models the process of registering a business using the process editor depicted in Figure 1.

Fig. 1. Web-based interface of SDP



Like the other tools of the SDP, the process editor has a simple web-based user interface that can be accessed via a standard Web browser. For each step of the process, Barbara selects either a human task or a semantic Web service. In order to simplify the modelling process, we have designed a new graphical process notation that contains just a few elements such as start, end, process step and connectors between these steps. Before the process modelled by Barbara is ready to be deployed, the responsible manager Claudia verifies that it complies with all legal requirements. Thus, the SDP allows several users to collaboratively design and discuss process models. Sometime later, the City of X decides to simplify payment procedures for its citizens and to support payment by credit card in addition to the traditional invoicing scheme.

Consequently, all administrative processes that involve a payment need to be adapted. Thanks to the SDP, this modification is rather simple and therefore the workload for these adjustments can be distributed among the employees. In our example, Egon handles the incoming “Registration of a Business” requests. As a domain expert he is able to modify the existing process model to choose an alternate payment service depending on the constituent’s selection in the registration form of the city’s Internet portal. In the final phase, the modelled process is executed via the SDP. For instance, the Spanish citizen Jose uses the Internet portal to register his newest coffee shop: In order to expand his Spanish business, he decides to invest into a new branch in the City of X.

Usually this process would take up a considerable amount of time and money. But with the single-point-of-contact principle already implemented, Jose is able to manage the entire procedure via the web interface from his office in Madrid. In the corresponding form of the city's Internet portal, he fills in all required information including his preferred payment method. The according administrative procedure is then handled by Egon, who executes any human tasks involved in the procedure while the other steps are executed automatically.

Advantage of the innovation in comparison with existing solutions

The main advantage of the envisioned SDP in comparison with state of the art solutions is a substantial efficiency gain because:

1. The platform allows the automation of processes and workflows that were (semi-)manual before.
2. Civil servants can handle simple process development tasks themselves instead of requiring a more expensive and potentially longer IT development project.
3. Development tasks that cannot be handled by end users will be faster and cheaper due to the seamless interaction among parties over the platform.
4. The SDP is also a shared process repository so that new processes or modifications become immediately visible to all users, reducing propagation times and costs.
5. The modularity of the underlying service-oriented architecture (SOA) allows public administrations to buy only those services they really need, reducing the TCO of their IT infrastructure.

Conclusions and outlook

Public administrations constantly face new challenges that require adapting their mode of operation like the EU Services Directive. Implementing such requirements demands a flexible IT infrastructure. Combining the principles and technologies of SOA, semantic web services, Web 2.0, and lightweight process composition, the SOA4All SDP will help to realise such an advanced infrastructure that will allow civil servants with average IT skills to handle typical administrative procedures. Using web-based tools, civil servants can search, model, annotate, modify, share, analyse, and execute administrative procedures in the form of lightweight processes. Currently, we are developing a first version of the SDP. As soon as it is ready, we plan to evaluate it with end users from the public sector and other domains.

References

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