

Innovation on Public Services using Business Process Management

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Abstract. Innovation in Public Administration is an important way for stimulating and inspiring governments in their reform efforts toward more inclusive development. For public sector organizational complexity is a big challenge to solve in order to strive innovation. Business Process Management can be considered as a suitable tool to resolve such complexity and continuously improve quality in public services. At the same time is critical to close the gap between business and IT prospective. In the paper we present an experience regarding the application of Business Process Management in the modelling and analysis of e-government services with reference to a case study.

Keywords: e-government, Business Process, Services

1. Introduction

Innovation in Public Administration (PA) is an important way for stimulating and inspiring governments in their reform efforts toward more inclusive development. Citizen's inclusion is one of the European objectives that are clearly addressed by the Europe 2020 growth strategy [8] for the coming decade. With a reference to the guidelines given by Digital Agenda for Europe we believe that organization issues has to be considered carefully with regards to Information and Communication Technology (ICT). Innovation can be reach balancing the impact of technology and the changing in working practices.

Resulting complexity of public sector scenario has to be considered and resolved. We believe that Business Process Management (BPM) is a suitable tool in such a context. It supports PA experts providing methods, techniques, and software to model, implement, execute and optimize organizational Business Processes (BP) which involve humans, software applications, documents and other sources of information [9]. Recent works show that process modelling has been identified as a fundamental phase in BPM.

The quality of BP resulting from the modelling phase is critical for the success of an organization. However, modelling process is a time-consuming and error-prone activity. Therefore, techniques, which help organizations to implement high-quality processes, and to increase process modelling efficiency, have become a highly attractive topic both for industries and for the academy. Certainly many different commercial tools have been developed to support BPM, nevertheless for what concerns the modelling phase they mainly provide support for BP editing and syntactical analysis.

In the paper we present an experience regarding the application of BPM in the modelling and improvement of e-government digital services with reference to moving service. The approach we defined has been implemented in a tool chain we developed to enable automatic assessment of e-government solutions.

The paper is structured as follows. In the next section we report the main issue of BPM in PA. Section 3 refers to the state of the art. Section 4 introduces the proposed approach. Finally, Section 5 draws some conclusions.

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2. Business Process Management in Public Administration

BPM is as old as the discipline of industrial engineering. Localized implementations of process management (e.g. manufacturing processes, shipping processes, etc.) have been prevalent for years [4]. Generally speaking the process management approach involves [1] [2] the following phases:

- Documenting the process to obtain an understanding of how work flows through the process;
- The assignment of process ownership in order to establish managerial accountability;
- Managing the process to optimize some measures of process performance;
- Improving the process to enhance product quality or measures of process performance.

In public sector, the primary benefit of BPM is the “increased effectiveness and efficiency achieved from restructuring the organization along cross-functional processes”. Other benefits were noted [3]:

- By managing processes, the PA can better integrate perspectives and priorities with resource management (this is equivalent to the increased private sector focus on managerial accounting through activity-based management);
- Many new management initiatives require process management, and it is impossible to implement process management concepts under the old industrial-age management models;
- Process management opens the door for creative and innovative approaches to enhancing organizational performance;
- Process management allows the effective implementation of modern systems and standard software; i.e. most new implementations are process-oriented.

We can conclude that a systematic design and analysis approach is needed to support innovation in PA and to enable informed e-government development via a plan-do-check-act paradigm.

3. State of Art

The importance of fully functional e-government characterized by vertical and horizontal integration is clearly discussed in [5]. From our point of view the real benefits which e-government promises can be reached when system integration is implemented. The introduction of BP specification can contribute to such integration. Indeed BP potentialities and capabilities are relatively unexplored in e-government. An interesting survey dealing with issues in the application of process to e-government can be found in [6]. As far as we know the most comprehensive discussion on e-government business models is proposed by Janssen and Kuk [7]. In this work the authors address the importance of cross-organizational service delivery and propose a framework for studying e-government business model, which involves design and implementation of digital services toward the delivery to citizens. Our contribution considers the role of business model as addressed by Jansen and Kuk and it introduces characteristics that are directly process related considering an automatic and systematic approach toward BP improvement and e-government integration.

4. Process Modeling and Analysis

4.1. Proposed Approach

We introduce a user-friendly approach for BP assessment based on formal verification techniques. Starting from a semi-formal notation, well understood and largely used by domain experts such as BPMN [10], we provide a denotational mapping to a formal specification in the form of process algebra such as CSP [11]. This transformation makes possible formal and automatic verification [12]. The approach has been already applied, with encouraging results.

Our work aims at providing to BP and domain experts the power of formal verification techniques still allowing the usage of graphical notation with which they are already acquainted. The approach relies on the following three main steps: (i) Process specification and domain requirements selection via a user-friendly interface; (ii) Automatic mapping of the BP specification and of the set of requirements to CSP processes and to a set of goals, respectively; (iii) Formal verification of mapped processes with respect to the specified set of properties (goals). In case the verification phase ends highlighting some problems, the design process should be restarted taking into account the result of the verification step.

The approach illustrated in this article is supported by a plug-in available for the Eclipse Framework that can be freely downloaded at the BP4PA web page (<http://bp4pa.sourceforge.net/index.html>). The plug-in permits to have a fully integrated and user-friendly environment.

4.2. Moving services

The approach has been used to improve the delivery process associated to the moving service. This is part of the wide area of cooperation among civil registration services (which are managed locally by municipalities). The service permits to an Italian citizen, which has to move to a different municipality, to be registered, to get updated certificates and any other service regardless of its new geographical location. In particular the service under analysis supports in the most comfortable way the registration of a new address, delivering at the same time the request for updating relevant information reported in the driving license. Moreover such service supports the alignment of the information in all the Public Administration offices dedicated to trace moving of citizens.

Figure 1 shows the initial version of the BP. As many service the moving service foresees the interactions of stakeholders.

- The municipality where citizen has to be registered. This can be further decomposed in registry office, local police office and tax office.
- The Home Affairs Minister deputed to collect and to maintain up to date the information related to citizens using the INA/SAIA infrastructure.
- Tax Office is the national organization in charge of controlling the status of the Italian citizens with respect to tax obligations.
- CISIS (Italian inter-regional centre for information, statistical and geographical systems) is the association of regional authorities which, among a list of several activities, has to collect all the information requested for statistical purposes.
- INPS is responsible of the pension system. It is deputed to collect and maintain up to date the information related to the social citizens status.
- Transport Office is the National association devoted to control the traffic for what concerns driving licenses and policies.

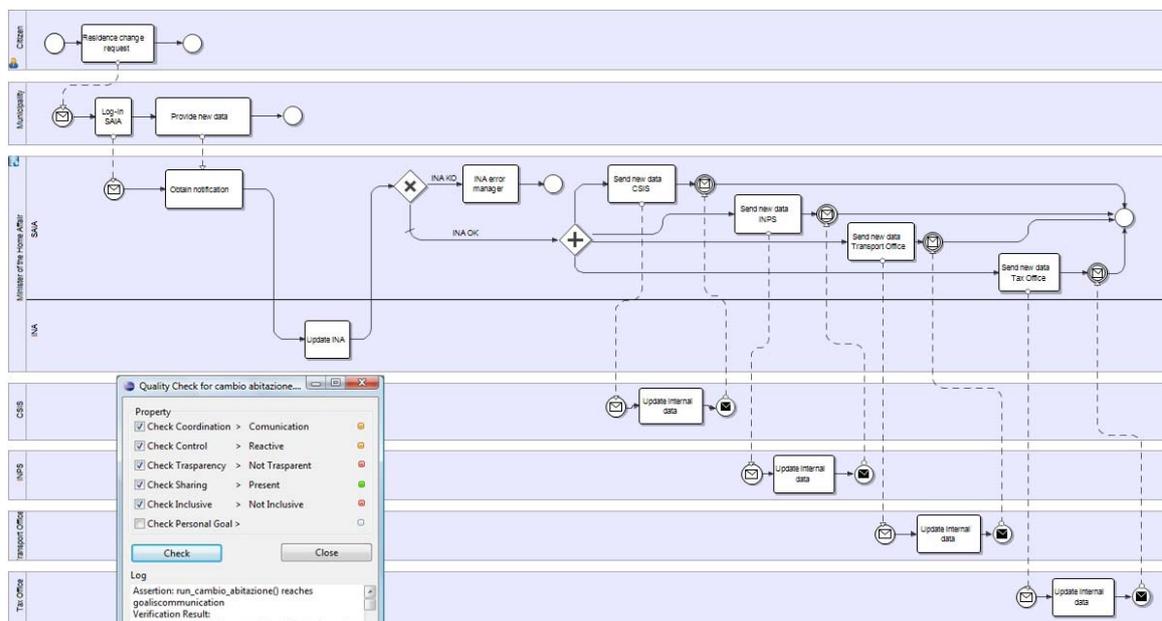


Figure 1 - Moving service first draft.

The service is implemented roughly applying a six-steps process.

- The citizen asks for activating and accessing the moving service. It is worth mentioning that the access can be provided at the municipality office or via Web when suitable authorizations and authentications mechanisms are set.

- The registration municipality collects the information from the citizen.
- The registration municipality sends such data to the Home Affair Minister via the SAIA infrastructure.
- The Home Affairs Minister is deputed to collect and to maintain up-to-date the information related to citizens.
- The Home Affair Minister communicates the updating data to de-registration municipality the Tax and Transport Office, and INPS so that citizens data are updated.
- The Home Affair Minister communicates the data, relevant for statistical purpose, to the CISIS.

After the first codification the approach has been applied, and it returned low marks. Based on the resulting feedbacks the moving service has been improved and the resulting process is shown in Figure 2.

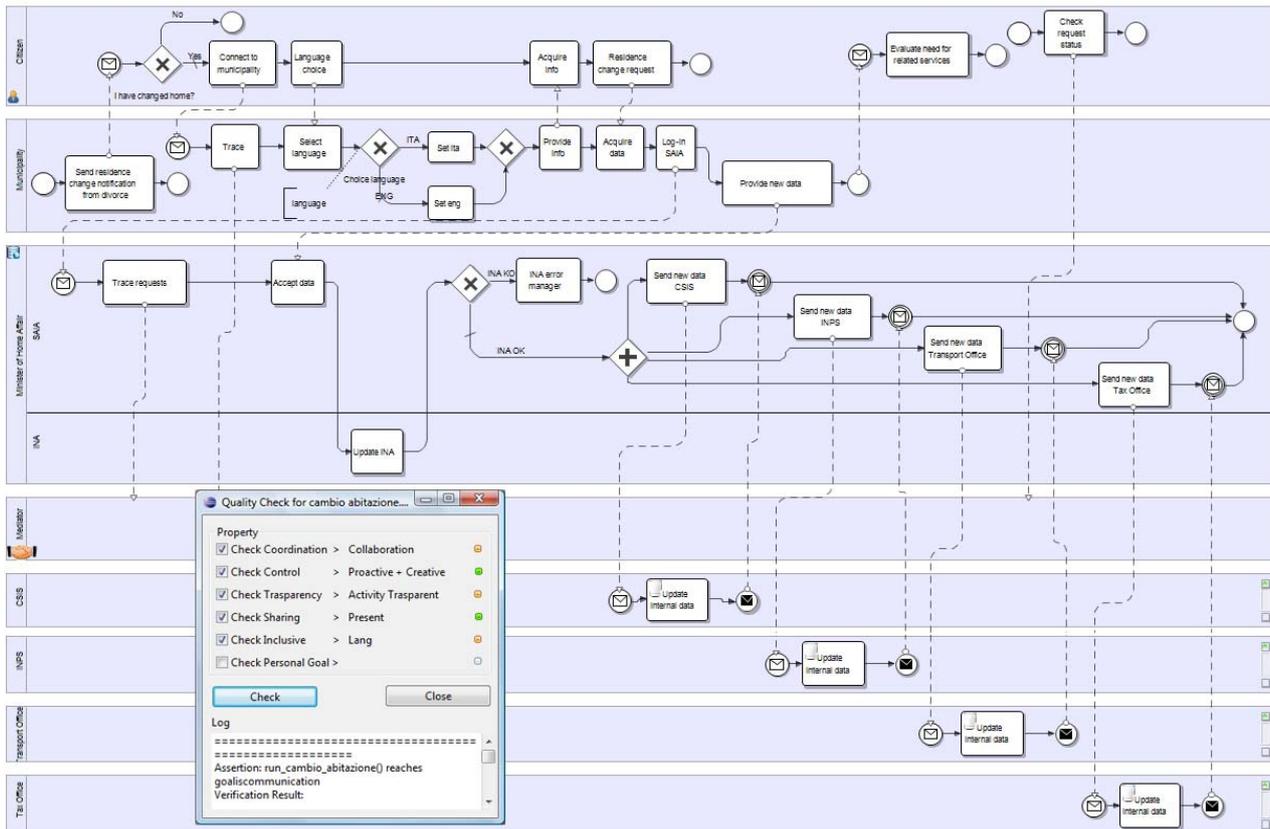


Figure 2 - Moving service improved model

5. Conclusion and Future Work

BPM has received much attention in the private sector management literature, and its benefits are well known. Much less has been written in the public sector management literature, and what has been written has been very general. The paper discusses the benefits of public sector process management. However, we are not so optimistic about public organizations being able to meet their legal mandate. Even though there are significant incentives, there are major cultural impediments, and it will be many years before we can assess the implementation effectiveness.

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