

Introduction to the Digital Government and Business Process Management (BPM) minitrack HICSS'55

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Abstract

Digital Government (e-Government) provides support for processes, activities and e-government resources within organizations involved through information and communication technology (ICT), focusing on value delivery to citizens. Collaborative business processes span several organizations, with different actors and heterogeneous technologies and systems, leading to complex interactions within different e-Government models and available technologies. Business Process Management (BPM) provides support for the business processes lifecycle, defining phases and activities to provide services or products with value for end users. Successful inter-organizational processes management and enactment within e-Government collaborative organizations will lead to better conceptual and technological integration, not only with each other but with citizens and users in general. Although in the last decades many advances have been made in the integration of BPM foundations and technological platforms to e-Government settings, several challenges still remain open.

1. Introduction

Digital Government (e-Government) provides support for processes, activities and e-government resources within organizations involved through information and communication technology (ICT), focusing on value delivery to citizens. Collaborative business processes span several organizations, with different actors and heterogeneous technologies and systems, leading to complex interactions within different e-Government models and available technologies [1]. A key challenge to support Digital Government processes is to provide support and improve the ability to interact with each other in an

easier, more secure and more adequate way, ensuring the quality of the results to all users involved.

Business Process Management (BPM) [2][3][4] provides support for the business processes lifecycle, defining phases and activities for process discovery and modeling, process analysis, process re-design, process monitoring and evaluation, aiming at continuous process improvement. This support must cover different scenarios, as well as the integration and co-existence of heterogeneous technologies, software and information systems. Also, registering and integrating data from collaborative business processes execution to be able to apply process mining [5] in order to discover process models, check model's conformance and enhance models, presents several challenges. Moreover, these processes can present several variants depending on conditions such as the organization in which they are deployed, laws and regulations, actors involved, among others. Business processes families [6] also present several challenges within an e-Government setting.

BPM constitutes a real asset for enhancing the services of an organization and their coordination, as well as the resulting value for participants and actors involved, as well as citizens. Successful inter-organizational collaborative process management and enactment within e-Government organizations will lead to better conceptual and technological integration, not only with each other but with citizens and users in general. To this end, it is necessary to devise new ways to deal with the complexity of e-Government collaborative process definition, modeling, enactment and evaluation.

The "Digital Government and BPM" minitrack focuses on Digital Government with a perspective on collaborative processes. New ideas on how to deal with the definition, modeling, enactment, monitoring and analysis of e-Government collaborative processes will enable ways of improving the e-Government experience for both organizations and citizens, taking into account conceptual, technological, interoperability, agile, and

social dimensions. We invited and selected papers that deal with any aspect involved in the identification, design, analysis, implementation, enactment, integration, operation, evaluation, performance and use of BPM principles and existing/emerging BPM approaches for discussing inter-organizational collaborative process models, architectures, ICT integration and support, as well as case studies on the application of BPM to e-Government scenarios.

2. Sessions

At this year's conference, the minitrack is organized in one session with two papers in it.

First, the work entitled "Building Urban Resilience: A Dynamic Process Composition Approach" by Penadés et al., tackles the urban resilience topic which has turned into a strategic goal for the administration of a city. The authors illustrate how process technology can play a crucial role in the digital transformation of urban resilience frameworks by providing both conceptual and operational support to the resilience building processes. Namely, the operationalization of urban resilience processes is addressed by means of the process family modelling approach in order to deal with the natural diversity of urban resilience. The BPMN notation was used to model the overall process and concept of process family was applied to model the variability intrinsic to the city resilience frameworks. The application of this research to the multidisciplinary Smart Mature Resilience (SMR) project (<https://smr-project.eu/home/>) is shown, in particular the digital transformation of its resilience maturity model, by defining the resilience building policies as process families. Thus, on one hand, a given policy can be implemented in different ways according to the context of a city, and, on the other hand, it is opened to door to partial implementations of policies according to the convenience or capabilities of the city. The proposed notation results from the combination of PESOA and Provop, which are two well-known approaches to flexible process modelling, plus an extension to cope with temporal dependencies among policies derived from the SMR model. A transformation process converts the flexible specification into plain BPMN models, which can be then executed and monitored in a process engine. As a result, by obtaining a process specification it is allowed the enactment, monitoring and measuring of the process.

Afterwards, Delgado & Calegari present their work "Discovery and Analysis of E-Government Business Processes with Process Mining: a case study", in which they present a step-by-step application of process mining over real data from the Uruguayan e-Government processes. The e-Government context

includes a centralized Interoperability Platform for e-Government organizations to interact with each other through services. The platform registers the interactions within organizations (i.e., message flows) whereas each organization is in charge of registering their internal activities' execution within a centralized traceability system that is also provided. The authors applied their previously defined methodology for organizational data science projects, which provides guides to traverse from the selection of business processes and manipulation of raw execution process data (in this case traced within a centralized traceability system), to analyzing its quality, improving it and filtering the resulting event log to be used as input for process discovering. The case study is presented by describing the activities that were carried out within each phase and discipline, providing insight and guides for applying process mining to a complex e-Government setting. Three phases are defined: Enactment, Data and Mining/Analysis, and five Disciplines: Process & Data Extraction and Integration (PDE), Process & Data Quality (PDQ), Process & Data Preparation (PDP), Process & Data Mining and Analysis (PDMA), and Process & Data Compliance (PDC), with several activities, roles and artifacts. Existing process mining tools such as Disco and the ProM framework are used to discover process models and visualize most common paths and variants for three selected processes. A detailed analysis and evaluation of the three process are provided, also discussing fundamental questions on the processes execution that were identified at the beginning of the project, providing insight on several improvement opportunities for the process and the traceability system, including which data and how it is registered within the system, also pointing out quality characteristics and missing data.

3. References

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