Domain Specific Process Modelling in Public Administrations – The PICTURE-Approach

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Abstract. In this paper a domain specific process modelling method for public administrations is presented. The public sector is facing an increased service level demand from citizens and companies which comes along with reduced financial scope. Higher process efficiency as well as time and cost savings are required to cope with this challenge. However, reorganisation projects in public administrations with established generic process modelling methods could only identify limited reorganisation potential and just led to small local improvements [1]. Therefore, we have created the domain specific modelling approach PICTURE. The PICTURE-method applies the domain vocabulary to efficiently capture the process landscape of a public organisation. Thus, PICTURE creates process transparency and is able to detect holistic reorganisation potentials within the entire administration.

Keywords: Domain Specific Modelling, E-Government, Process Building Blocks, Public Administration, Process Landscape.

1 Process Modelling in Public Administrations

Process models have been established as a broadly applied instrument in Business Process Management [2-4]. They are used to explicate the implicit knowledge of an organisation by modelling the processes and thus, lead to improved transparency.

Public administrations are facing specific conditions when they model their business processes and try to improve them. The common public administration service portfolio is much diversified and complex [5]. Municipal processes include more than 1,000 interconnected and interdependent services and underlying processes for citizens, companies, and other administrational parties [1]. Simultaneously, public administrations are large organisations with decentralized knowledge about the processes. Usually, there is no organisational unit that has detailed expertise about the entire process landscape. New challenges like cost reduction and an increased service level demand from citizens and companies induce reorganisation pressure on the public administrations [6]. In order to be able to timely implement changes in the organisation an overview about the actual process structure is required.

So far process modelling in public administrations has mainly been performed with generic (general-purpose) languages [1, 6]. These modelling languages, such as Activity Diagrams (AD) [7], Business Process Modelling Notation (BPMN) [8], or
Event Driven Process Chains (EPC) [9], are flexible instruments to describe diverse processes in many different domains. However, they do not consider in particular public administration and reorganisation specific questions like: (1) how can a very large number of processes be acquired efficiently, (2) what changes have what impact on the process efficiency, or (3) what processes, activities, or products depend on which legal regulations [10, 11]? This results in the conclusion that these generic approaches are not suitable to represent all relevant aspects of this domain. Therefore, there is a need for a new, administration specific modelling language.

In this paper we present the process modelling method PICTURE that has been developed to address the specific conditions of reorganisation projects in public administrations. PICTURE allows for an efficient modelling of the entire process landscape of an organisation. Thereby, the specific information which is relevant for a reorganisation project can be collected. This overall view allows for reorganisation decisions that are based on the consideration of structural analogies, potential synergy effects, and economies of scale. PICTURE takes the particular legal and political constraints within public administrations into account and indicates technical and organisational measures to improve the efficiency of the process landscape.

The remainder of this paper proceeds as follows. Firstly, based on the specific characteristics of the public sector, requirements for an administration specific process modelling method are defined. Subsequently, the PICTURE-method is described as a core contribution, which works to efficiently capture the process landscape of public administrations. Afterwards, the utility of the method in modelling projects at the University of Münster and at the City of Münster is illustrated. The paper closes with a summary of the results and an identification of further research.

The research method being used for developing the PICTURE-approach is based on the work from Takeda et al. [12], Song and Osterweil [13], and Avison et al. [14]. The work belongs to the design-science oriented research [15].

2 Requirements of a Domain Specific Modelling Method

Domain specific modelling methods have gained a lot of attention in the information systems community during recent years [16, 17]. Contrary to general-purpose methods, domain specific methods are created to solve problems within a particular area of concern [18]. They apply the specific vocabulary of a domain in order to describe this part of reality. As the constructs of a domain specific method come from the domain vocabulary, the domain experts understand the meaning of the constructs and are able to adequately apply them.

A domain specific method for public administrations must consider the particular characteristics of this field. The following requirements reflect the application area of a method for public administrations in the context of process reorganisation [19]:

1. The modelling method allows for a simple representation of the process landscape.
   To model the whole process landscape of a public administration with acceptable efforts a simple language is required. If a generic modelling method is used the meaning of the constructs is mainly not intuitive and their counterparts in the real world are hard to identify. However, even knowing which modelling language constructs to pick in a certain situation does not imply the knowledge of how to