From Software-Based To Knowledge-Based Policy Implementation and Compliance

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ABSTRACT

Law-making is inextricably bound up with the developments of e-government. Yet translating legislation into administrative processes and services has been extremely complex, taking a long time and involving many manual tasks. This problem is further complicated by the increasing amount of legislation and the frequent changes of legislation. Recent technology innovations enable a shift from implementation and maintenance of e-government services by software configuration and engineering towards implementation and maintenance based on knowledge representation. Despite the many benefits such as faster, cheaper and easier implementation, adoption has been limited. In this paper we describe these developments and compare software-based with knowledge-based implementation and maintenance. Based on a case study, we identify success factors and challenges from moving towards knowledge-based implementation and maintenance in the aspects of motivation, architecture, technique, expertise and finance.

Keywords: Administrative Organizations, Compliance, E-Government, Knowledge Engineering, Knowledge-Intensive Organization, Knowledge Representation, Maintenance, Policy Implementation, Software-Intensive System, Success Factors

INTRODUCTION

Electronic government (e-government) refers to the use of Information Technology (IT) to enable and improve the efficiency of government services (Carter & Bélanger, 2005). E-government systems need to be continuously adapted to reflect political and societal changes, and to provide up-to-date services according to legislation. While IT is considered as an enabler of e-government, the increasing changes in legislation require that IT systems support faster implementation of legislation against low cost. This should ensure compliance with legislations at all times. Not being agile and flexible to adapt can hinder realization of changes. Society poses demands like safety, security, equality and so on (Step 1, Figure 1) which

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can be realized by developing and making new policies which are often materialized in legislations (Step 2). Those requirements and challenges consequently need to be realized by changing the e-government systems operated by administrative organizations to provide services (Step 3) which results in improved service provisioning (Step 4). Changes can be large and even requires the development of a complete new system, or smaller by having new releases or minor updates. Legislation allows politicians to reflect on societal demands. Administrative organizations implement the legislation and provide services to civil society. For this purpose they created business processes which are supported by software applications running on IT-infrastructure. These e-government systems support the activities and processes of the staff who are working in administrative organizations. One of the pressures faced by administrative organizations is that they must comply with legislation despite the frequent introduction of new legislation and changes to existing legislation. **Compliance** is about the extent to which processes and systems in operation conform the requirements determined by legislation.

E-government systems are a typically software-intensive. Software-intensive system can be defined as “any system where software contributes essential influences to the design, construction, deployment, and evolution of the system as a whole” (ISO/IEC, 2007, p. 1). The traditional way of implementing new policy or adapting existing one is by changing the software code. For example the Software Configuration Management (SCM) can be used, which is the discipline of controlling the changes of complex software systems (Estublier et al., 2005). Information analyst determines what needs to be changed, software programmers implement these changes in the systems and thereafter the new or revised system is tested. Typically a number of persons are involved having expertise from different disciplines. However, typical SCM methods do not address, describe and explain the links between legislation aspects that require certain functions delivered by a software system and the system itself (Ramesh & Jarke, 2001). Although SCM are commonly used to identify changes, analyze the impact of changes, and track changes in system versions, the e-government services’ dependency on legislation cannot be adequately

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Figure 1. The relationship among legislation, e-government system and public services
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