E-Government Controls in Service-Oriented Auditing Perspective: Beyond Single Window

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ABSTRACT
Whereas e-government used to be focused mainly on digitalizing documents, the attention is currently shifting to the question how the main governmental functions service, care and control can be realized in the best way in an information age. In this respect, e-customs is a case in point. Worldwide Customs is transforming from the labor intensive paper work it used to be for ages to “e-customs,” where international trade is facilitated by fully exploiting the current global digital infrastructure. As a consequence, a shift in the distribution of responsibilities can be observed (so-called horizontal supervision). The authors show how this shift can be leveraged by further technical developments grouped under the label of Service-Oriented Auditing (innovative auditing services based on the Service-Oriented Architecture). A particular challenge is coordination. There is a need for better coordination of the numerous governmental and supply chain controls. They explore different coordination mechanisms to support this development.

Keywords: Auditing, Customs Control, e-Government, Service-Oriented Architecture, Single Window

INTRODUCTION
In E-government, most of the government functions and processes are carried out in the digital form over the Internet. Over time e-government is becoming a challenge at different levels of public administration (Signore, Chesi, & Palloti, 2005). To cope with this challenge, E-government is usually described in terms of stages of growth and E-government architectures (Janssen & van Veenstra, 2005). The most recent architectures are based on the Service-Oriented Architecture (SOA), while SOA has rapidly become the de-facto standard for modern information systems. SOA helps to streamline the business processes in a highly standardized manner. The Open Group (https://www.opengroup.org/projects/soa) and OASIS (http://www.oasis-open.org) define SOA as “a
paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains.”

When E-government uses SOA, this allows for a flexible and adaptive composition of services that communicate with each other via a general platform. However, there is also a need for management, control and monitoring of services (Papazoglou & van den Heuvel, 2007). The question how auditing can be integrated in a service-oriented architecture is not trivial. Against this background, we introduce a framework for Service Oriented Auditing (SOAu). Drawing on SOA technology, SOAu may be able to realize the vision of continuous and online monitoring (Kuhn & Sutton, 2010; Weigand & Bukhsh, 2011).

**Control** is considered as one of the three main government tasks, beside service and care (Prins, Broeders, Griffioen, Keizer, & Keymolen, 2011). Taking these functions as starting-point for IT development, rather than just digitalizing documents, is seen as an important step forward in managing the increased and sometimes overwhelming complexity of today’s e-government systems. This does not only jeopardize the audibility of the control function but also leads to inefficiencies both for government and business.

In this paper, we will consider the Customs and its trade facilitation as an E-government organization example. Customs controls are rapidly innovating from a labor-intensive and paper-based door-keeping function to international trade facilitation that explores the current global digital infrastructure (e-customs). However, the use of the modern technology in the automation of customs control has by far not been explored to its limits. The objective of this paper is to introduce the SOAu framework and evaluate it on the area of customs controls, while taking into account the evolving relationships between government and business. This paper is based on a design research approach. Hevner, March, Park, and Ram (2004) provide seven guidelines of the design research cycle, which consists basically of building artifacts and evaluating them. The artifact in our case (guideline 1) is the SOAu framework such as presented in the third section. The problem relevance (guideline 2) is explained in the upcoming section, where we sketch recent developments in customs control. The design evaluation (guideline 3) is performed by applying the SOAu framework to the customs control problem in the fourth section. As customs control is a particular instance of the governmental function “control,” the results make up a potential research contribution to e-government theory as well (guideline 4). Throughout the paper we relate to the state of the art in the research literature. Background literature specifically for SOAu is contained in the third section.

###RECENT DEVELOPMENTS IN CUSTOMS CONTROLS

In this section we discuss some of the recent developments in the field of customs. Customs control is a particular instance of the governmental function “control.” Customs is evolving rapidly and illustrates well the broader developments in e-government. In this section, we first provide an overview of developments in the last decade in terms of new concepts and major projects. Secondly, we describe the background and objectives of the research project we are involved in, the Extended Single Window project that prepares for next steps in these developments. The customs control area is being used to evaluate our SOAu framework.

####Conceptual Developments in Customs

In Europe, an important milestone in customs controls evolution has been the introduction of the Modernized Customs Code (MCC) (European Commission, 2008). It was adopted by the European Commission in April 2008 but to date the process of realization is still ongoing. The aim of MCC is to simplify legislation and administration procedures for both customs authorities and traders. Similar developments are observed in China and all over the world,
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