Chapter 13
A Complex Adaptive System Thinking Approach of Government E-Procurement in a Cloud Computing Environment

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ABSTRACT

The main focus on e-Procurement in this chapter will be the public (government) e-Procurement, which is part of a larger whole, namely e-Government. e-Procurement and e-Government are very important tools for the government to act in this fast changing society. But as for must business, the tools may be important, but the vision and the strategy to use these tools are much more important. Therefore the chapter discusses e-Government and e-Procurement in their strategic contexts, in which intelligence (contextual integrated information) is a key factor to survive. The reason is because the government is a Complex Adaptive System (CAS). Without intelligence and the agility of its structure and processes, the government will not survive, or at least it will be less efficient and effective in developing strategies and in executing these strategies. The game theory discussion will show that the flexibility and agility of the e-Procurement system (together with a good strategy) are key factors for a successful system; otherwise e-Procurement is more of weakness in the government’s value chain of procurement of goods and services. In the last part of the discussion on Cloud Computing and e-Procurement, the author argues that ERP systems (so called best practices) are not well adapted to other contexts than the simple context of the Cynefin Framework. Service Oriented Architecture solutions can provide better (adapted) solutions for e-Procurement. Cloud Computing in combination with SOA may be the next generation solution.

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A Complex Adaptive System Thinking Approach of Government E-Procurement

INTRODUCTION

The main focus on e-Procurement in this chapter will be the public (government) e-Procurement, which is part of a larger whole, namely e-Government. Therefore we will first discuss e-Government and its strategic context. Here we will show the importance of intelligence (contextual integrated information) in the decision making processes from the perspective of systems thinking.

In the next point we approach the procurement function from game theory. We will show that depending on the role that a government wants or has to play, the e-Procurement system has to be able to adapt to this role. Therefore the management of e-Procurement must enable and promote the agility of such system.

The need for different types of interactions with the environment will lead us to the discussion on Complex Adaptive System (CAS), more precisely on the dimensions and the characteristics of CAS and the agility to survive in a fast changing and dynamic environment. Also in this context the command and control (C2) and the Cynefin framework will be brought into the spotlight.

The last part of this chapter before the conclusions deals with Cloud Computing, and the technological framework in which we will place the e-Procurement.

For one person Cloud Computing is hype, for another it is a paradigm shift. We will not argue this, but we will investigate the full potential of Cloud Computing for e-Procurement. The actual platform of e-Procurement is formed by Enterprise Resources Planning (ERP) systems. Vendors of ERP systems are pretending that they sell the “Best Practices” solutions. However in this part, we will see that the notion (awareness) of being a CAS is very relevant for defining the structure, the processes and the functions of e-Procurement. In this context we will argue that Service Oriented Architecture (SOA) is providing – at this moment – the better solutions to orchestrate e-Procurement.

E-GOVERNMENT

Government

A government is a collection of institutions that act with authority and create formal obligations. A Government may administer or supervise a state, a set group of people, or a collection of assets (UNU-IIST-SP, 2008). Therefore an information system is needed to manage its functions and responsibilities, but a common characteristic for many governments is that the information systems of all the departments of the governments were in the beginning of Information Technology (IT) isolated and barely integrated.

The picture of an archipelago with a deep sea in-between represents better this situation. They were certainly not (inter)connected governmental departments, and every department had its own procurement service (automated or not). Later with the introduction of automated information systems, every island of the archipelago was automated differently and certainly not with integration of systems in mind. The Information Technology (IT) implemented by these governmental bodies was logically based on their own needs and way of working.

At the level of the (overall) system of government, this approach led often to incompatibilities and vulnerabilities, which result in considerable expenses due to the inability to collaborate or communicate between the different governmental bodies in an efficient and effective way, but worse the citizen is suffering from this: less service, more tax, and thus a less productive government.

Efforts to centralize the IT and/or to develop Enterprise Application Integration (EAI) were very costly projects and thus never fully executed. Luckily we are observing that the IT industry is moving towards an affordable form of technological integration solutions. This is not caused by an altruistic reflex of those companies, but by the Internet as the concept of interconnecting everything, everywhere at any time (Rabaey, 2012).
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