

Chapter 4.6

Electronic Commerce Strategy in the UK Electricity Industry: The Case of Electric Co and Dataflow Software

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ABSTRACT

This paper investigates the collective use of a simple modeling technology by highly complex, heterogeneous and numerous groups of stakeholders who heavily depend upon it to mediate their interactions. We use economic theory, design theory, complex systems theory and business process modeling concepts to analyze deregulation and business to business interaction in

the UK electricity industry, and the strategic business and IT response of Electric Co, a large electricity supply company. The relevance of this study comes from its investigation of a novel example of the shaping of a whole sector's e-business through regulatory law and thus we are concerned with enterprise and inter-enterprise systems not purely with ERP systems. We focus on model-based business interaction and its effect upon the business and consumer behaviors of a

whole country's electricity sector. This sector is a socio-technical system; so business processes and consumer behaviors are not only shaped by the regulator's legally enforced business to business process interaction model, but the opinions of businesses and the public also influence how the regulator updates its model. Thus business behaviors, consumer behaviors and the model interact to shape each other. By moving from intra to inter-organizational business processes we seek to demonstrate and explain the value of models in e-business where the complexity of interacting business systems involves many thousands of parameters. We show how developments in technical standards and business process management are related to inter-organizational interaction and coordination.

INTRODUCTION

Networks of businesses are complex systems that are joined by complex interrelations (Anderson, 1999). These interrelations take the form of business processes that join the elemental businesses. Business process modeling literature seeks to describe business processes from different perspectives, according to different objectives or goals. To do this, it uses modeling constructs such as Curtis, Kellner, and Over's three constructs of agent, role and artifact to do so (Curtis, Kellner, & Over, 1992). This paper illustrates the use of regulatory power over modeling methodology sophistication. By moving from intra to inter-organizational business processes it demonstrates and explains the value of models in e-business where the complexity of interacting business systems involves many thousands of parameters (Scheer & Habermann, 2000). The importance of this study is that it moves away from the single firm Enterprise Resource Planning (ERP) system perspective. Here we focus upon enterprise and inter-enterprise systems and not purely upon

ERP systems. Rather, this study focuses upon model-based business interaction and its effect upon the business and consumer behaviors of a whole country's electricity sector.

The relevance of this study comes from its investigation of a novel example of the shaping of a whole sector's e-business through regulatory law. It is also an example of a collective use of a simple modeling technology by highly complex, heterogeneous and numerous groups of stakeholders who heavily depend upon it to mediate their interactions. Most interestingly it is a socio-technical system; so not only are business processes and consumer behaviors shaped by this legally enforced model, but the opinions of business and the public also influence how the regulator updates the model. Thus business behaviors, consumer behaviors, and the model shape *each other*.

The business processes that embody business-to-business (B2B) interaction can be decomposed into sub-processes; and sub-processes into sub-sub-processes *ad infinitum* (Rescher, 2000). For example, the production process for a car can be decomposed into the main production processes of all the first tier suppliers to the car company, whose brand appears on the front of the car. These main production processes can be further decomposed into those of second tier suppliers and so on. Additionally, all the on site business processes of all these companies can be also be decomposed, seemingly, *ad infinitum* and so can the business processes that are the interactions between suppliers and customers. This has both theoretical and practical implications.

Theoretical Implications

The infinite decomposability of business processes is a possible reason for why there is no theoretical basis for business process model constructs. In the literature, these constructs use supporting theories from semiotics (Falkenberg et al., 1998; Stamper, 1987; Liu, 2000), Shannon's Communications

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