Conceptual Model of Business Services
Availability vs. Interoperability on
Collaborative IoT-enabled eBusiness Platforms

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Abstract. Modern business background can be seen as a logical effect of eBusiness, advanced integrated networks, Internet of Things (IoT), and software services. In such an environment, the IoT-centered application deployment and delivery models have revolutionized the way businesses interact, collaborate and transact with customers, suppliers, partners, employees and shareholders. Hence, with wide deployment of the distributed inter-enterprise Service Delivery Platforms (SDPs) over the Internet, there is an urgent need to understand and solve service traffic issues of the fast evolving architectures. Accordingly, the purpose of our work is to develop a conceptual model for performance analysis of software services availability vs. interoperability in order to facilitate enterprises to attach their customers more tightly by an effective service delivery, which in turn optimizes business processes at different steps. Thus, we introduce and deliberate in this chapter a hypothetical model for the performance analysis of services availability and interoperability on the IoT-enabled inter-enterprise SDPs. We also figure and analyze imperative performance features of the model. The related open issues and future work are briefed correspondingly.

1 Introduction

In order to expose the role and the meaning of the IoT (Internet of Things) in/for the eBusiness and business services delivery, we have used the following definitions of it:

- “A global network infrastructure, linking physical and virtual objects through the exploitation of data capture and communication capabilities.

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This infrastructure includes existing and evolving Internet and network developments. It will offer specific object-identification, sensor and connection capability as the basis for the development of independent cooperative services and applications. These will be characterized by a high degree of autonomous data capture, event transfer, network connectivity and interoperability” [45, 47].

- “A world where physical objects are seamlessly integrated into the information network, and where the physical objects can become active participants in business processes. Services are available to interact with these ‘smart objects’ over the Internet, query and change their state and any information associated with them, taking into account security and privacy issues” [46, 47].

- “In the future the Internet of Things may be a non-deterministic and open network in which auto-organized or intelligent entities (Web services, SOA components), virtual objects (avatars) will be interoperable and able to act independently (pursuing their own objectives or shared ones) depending on the context, circumstances or environments” [47, 48].

Besides, the emergence of the virtual enterprises and inter-enterprise virtual platforms is the opportunity to enable productivity gains as well as flexibility and responsiveness to customer and market dynamics that enterprises need to be competitive in today’s environment. But, to take advantage of this opportunity and to succeed in this new environment, enterprises need to create service delivery and communication strategies that establish tighter connections among their employees as well as with partners and suppliers. Central to this focus is the service architecture that powers the enterprise interactions with customers, between enterprises on this platform, as well as the processes for delivering value to customers and shareholders.

To enable enterprises to implement business strategies that are truly driven by a customer focus, it is required:

- create an instant and seamless connection across enterprises: linking people, processes, systems and networks so the customers are better served;
- provide seamless access to critical communications and business information to facilitate better, faster decisions and enable a more competitive enterprise;
- deliver personalized services needed to build long-term customer relationships.

Today’s business environment can be seen as a logical effect of eBusiness and advanced integrated networks, including the IoT, that have transformed business processes. The new “Net” and its applications deployment models have revolutionized the way businesses interact, collaborate and transact business with customers, suppliers, partners, employees and shareholders [1 ÷ 7, 51].

Thus, the purpose of our work is to develop a model enabling enterprises to attach their customers more tightly by an effective service delivery enabling business processes at every step of the way.