Methodology and Software Components for E-Business Development and Implementation:
Case of Introducing E-Invoice in Public Sector and SMEs

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EXECUTIVE SUMMARY

Many benefits from implementation of e-business solutions are related to network effects which means that there are many interconnected parties utilizing the same or compatible technologies. The large-scale adoption of e-business practices in public sectors and in small and medium enterprises (SMEs)-prevailing economic environments will be successful if appropriate support in the form of education, adequate legislative, directions, and open source applications is provided. This case study describes the adoption of e-business in public sectors and SMEs by using an integrated open source approach called e-modules. E-module is a model which has process properties, data properties, and requirements on technology. Therefore e-module presents a holistic framework for deployment of e-business solutions and such e-module structure mandates an approach which requires reengineering of business processes and adoption of strong standardization that solves interoperability issues. E-module is based on principles of service-oriented architectures with guidelines for introduction into business processes and integration with ERP systems. Such an open source approach enables the spreading of compatible software solutions across any given country, thus, increasing e-business adoption. This paper presents a methodology for defining and building e-modules.

Keywords: *E-Business, E-Invoice, E-Module, Interoperability, Public Sector, SME, Strategic Planning Of Information Systems*

ORGANISATIONAL BACKGROUND

Large-scale adoption of e-business practices is a complex task from many aspects and one of extremely important is the fact that all approaches, standards, guidelines or solutions should be

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widely accepted by collaborating organizations or at least interoperable. In that respect public sector can play important role because its e-government and e-business oriented momentum can trigger rest of the society to come into play especially SMEs which do not have resources and knowledge of multinational corporations. The interrelation of business and public sector is subtle but it is noticeable and quite important. On one hand free market should develop with as little government influence as possible (Smith, 1976) according to the *laissez-fair* principle and on the other, certain extent of government involvement is desirable in achieving broader public interest goals. According to Max Weber's theory of bureaucracy, main axis of public sector value chain (Porter, 1996; Heintzman, 2005) consists of providing public services and developing legislative. More recent approaches which deal with e-government broaden the perspective of public sector and it is defined as a mean to "achieve better government" (OECD, 2005), assist society with effectiveness and efficiency (Hachigian, 2002), acquire transparency, increase revenue growth, reduce costs of public administration, transform relationships with citizens, businesses, and government (Gartner Group, 2000; World Bank, 2009). Such approach fosters transformation in delivery of public services, increases effectiveness of public administration, and leads to stable and viable development of economy. Therefore it is important to notice that supportive business processes from public sector value chain could significantly influence economy and the most direct example of such approach is public procurement. The importance of public procurement has been recognized across EU and that is why European Commission included public procurement in its large scale pilot projects. Pan European Public Procurement Online (PEPPOL, 2008) is a pilot project with aim to develop good practices and implement standardization in this supportive family of business processes of public sector value chain but of great significance to the economy. By such approach public sector can influence Adam Smith's "invisible hand" and direct it towards adoption of e-business thus increasing competiveness of economy. This and other large scale pilots launched by European Commission such as Secure idenTity acrOss boRders linKed – STORK (STORK, 2009), Simple Procedures Online for Cross-border Services – SPOCS, SPOCS (2009) together with other EU directives and recommendations develop important e-business and e-government guidelines for member states but it must be noticed that there is still significant freedom left in implementation approaches which is solved within national borders of every member state. In many countries government sector is the largest single buyer and by such position it can impose standards and good practices which can have wide positive impact way beyond simple procurement logic. This is particularly important when small and medium-sized enterprises (SMEs) are majority of business sector and are expected to play a substantial role in the development and restructuring of economies. Some SMEs will certainly be able to cope with technological and business issues related to e-business implementation and practices, but the vast majority will be excluded from this process. If nothing is done, these companies will be left aside which will have tremendous impact on overall development of society. The reason for such situation lies in the fact that every development and implementation of information system is complex from technological point of view and requires deep insight into business processes in order to find out their operational and strategic significance which leads to decision how they should be supported by information and communication technologies (ICT). This gives companies competitive edge and increases overall competitiveness of economy. Such comprehensive analysis requires deep and at the same time heterogeneous knowledge, consumes organizational resources for significant time and entails strict methodology which, to the certain extent, reduces the risks of implementation. There are many published examples of this complexity and barriers which should be overcame to implement complex software solutions. One illustrative case is presented in study of adoption and implementation of IT in two public sector organizations where is shown how various factors, such as manage-