Standardisation for Electronic Markets

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INTRODUCTION

Until not so long ago, electronic business was typically characterised by one-to-one relations—a customer doing business with a vendor. A big vendor would have business relations with a large number of customers, but these were all still individual one-to-one relations.

This *classic* B2B environment may be characterised by longstanding relations, quite frequently between a powerful customer and smaller suppliers. Here, the distribution of benefits was typically fairly uneven, with the big players reaping most of the benefits. Moreover, they would typically require their business partners to use a specific technology, which would suit their needs, but in many cases would be unsuitable for the small suppliers. As a result, there was not such a big need for standardised systems, because the *standards* were (implicitly) set by the big players for their respective networks anyway.

This situation is about to change with the proliferation of electronic marketplaces, each of which is characterised by a many-to-many relation (see Figure 1). This relation, in turn, is made up of a number of one-to-one relations, supplier—marketplace on the one hand and buyer—marketplace on the other.

One of the major consequences of this shift is the increased anonymity of buyers and sellers, who no longer do business directly, but through a mediator—the marketplace. Thus, the provision of adequate means to achieve the necessary level of trust is becoming crucial. Obviously, this needs to be supported by the marketplace.

BACKGROUND

The term *standard* may need some clarification—after all, it is used in many different contexts with fairly different meanings. Likewise, many different definitions have been proposed.

Webster's New Universal Unabridged Dictionary defines a standard as "An authoritative principle or rule that usually implies a model or pattern for guidance, by comparison with which the quantity, excellence, correctness, etc., of other things may be determined" (Webster's, 1992, p. 3026).

The *Oxford English Dictionary* says a standard is "The authorized exemplar of a unit of measure or weight; for example, a measuring rod of unit length; a vessel of unit capacity, preserved in the custody of public officers as a permanent evidence of the legally prescribed magnitude of the unit" (Brown, 1993, p. 3026).

The definition adopted by ISO[1] states that a standard is a document, "established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context" (ISO, 2004, p. 8).

In day-to-day life, standards encompass such diverse things as, for example, languages, currencies, country codes,

Figure 1. Many-to-many relations in e-markets

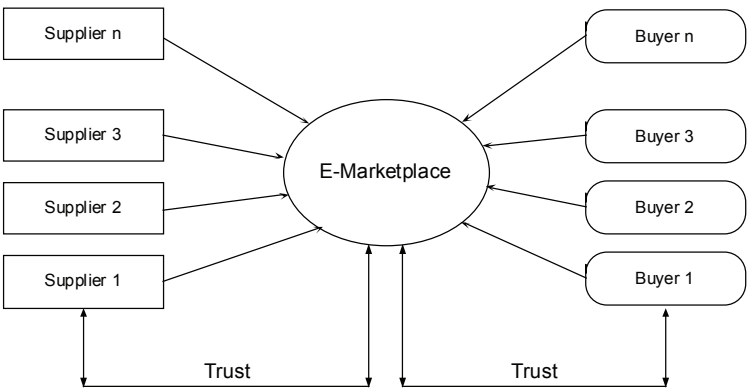
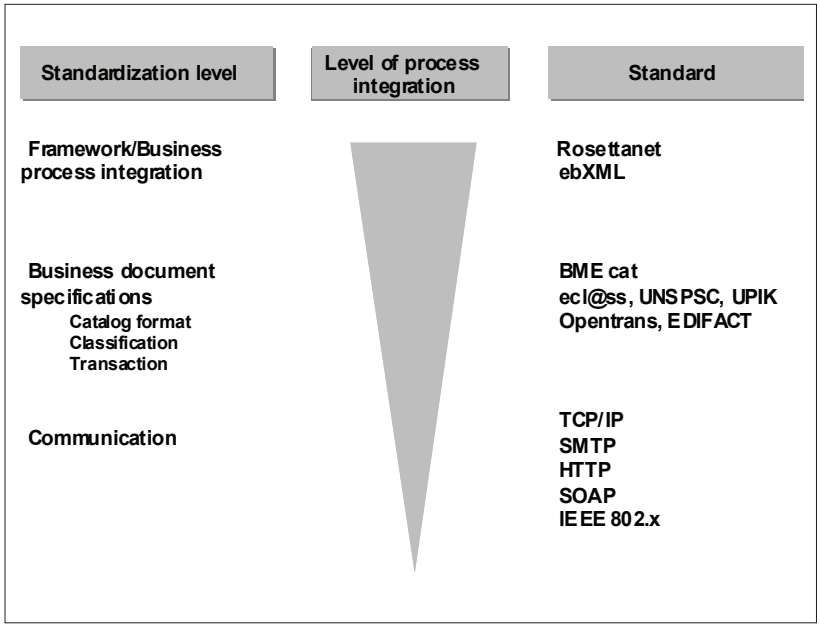


Figure 2. Taxonomy of e-business standards (Adapted from Gerst 2003)



voltage levels, and corporate letterheads. In the ICT[2]/e-business world, well-known standards include, for example, TCP/IP, ebXML, and EDIFACT.

Standards are set by a multitude of entities. Especially in the ICT/e-business sector a distinction between "de jure" and "de facto" standards may frequently be encountered. The former is used to denote standards produced by "formal" bodies, such as ISO or the ITU.[3] The latter refers to standards that are established through market mechanisms. Typically, this includes both proprietary standards (like MS-Word or SAP/R3; one company, or a group of companies, own the standard and the associated IPR), and "consortium standards," which are defined by an industry consortium[4] (frequently, though not necessarily, such specifications are freely available). Results of two recent studies suggest that industry does not see any particular differences in either the value or the impact of formal standards vs. those issued by major industry consortia (see Jakobs, 2005, and No-Rest, 2005, for further details). Therefore, in the following, no distinction between these types of standards will be made.

E-Business and ICT: An Integrated View

Figure 2 shows the different levels of process integration across the stack of standards-based, e-business-related services.

There are several prominent cases where those elements of the overall system that are frequently referred to as ICT infrastructure exert a significant influence on e-business and business processes. Issues like latency, scheduling or scalability may have considerable impact on an e-business application's performance. The same applies for clearly ICT-related technologies like grid-computing, which have enabling effects, with potentially enormous implications, on e-business.

Generally, technical standards play a crucial role in shaping not only the future form of the technology (Williams, Graham, & Spinardi, 1993) but also the nature and functioning of the organisation and the relationships between organisations (Tapscot, 1995). Consequently, the infrastructure standards affect the way in which organisations interact and do business electronically.

For example, whereas the standards for RFID technology would be *communication* standards (in Figure 2), they are essential in enabling organisations such as WalMart and the U.S. Department of Defense to integrate their global supply chain. In fact, this integration was triggered by the increased availability and maturity of RFID tags and readers. Here, elements and standards of the ICT infrastructure have been instrumental for the design and implementation of e-business systems.

Likewise, common network standards were critical to the success of Cisco's "global networked business model." This model was constructed based on the integration of all business relationships and the supporting communication within a "networked fabric." The global networked business