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TITLE : What is e-Commerce? A B2B (Back-to-Basics) Standard Perspective: If it Walks like a Duck, Quacks like a Duck,, etc., It Must Be an "e-Duck"

SOURCE : Jake **Knoppers & David Clemis**

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TSACC-01-305

"WHAT IS E-COMMERCE? A B2B (= BACK-TO-BASICS) STANDARDS PERSPECTIVE: - IF IT WALKS LIKE A DUCK, QUACKS LIKE A DUCK,, etc., IT MUST BE AN "e-DUCK" "

Paper prepared for the

Open Forum on Standardization Enablement in Electronic Commerce

Ottawa, March 5-6, 2001

Sponsored by the

- Standards Council of Canada (SCC)
- Telecomunications Standards Advisory Council (TSACC)
- Information Technology Association of Canada (ITAC)
- Industry Canada

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1. BACKGROUND{PRIVATE }

1.1 This is one of a set of nine (9) contributions to the "Open Forum on Standardization in Electronic Commerce" (and is represented in bold type font). The complete set of short papers is as follows:

{PRIVATE }TSACC Doc. No.	Doc. Title
TSACC-01-305	**"WHAT IS E-COMMERCE? - A B2B (= BACK-TO-BASICS) STANDARDS PERSPECTIVE - IF IT WALKS LIKE A DUCK, QUACKS LIKE A DUCK, …, etc., IT MUST BE AN "e-DUCK""**
TSACC-01-306	"What is E-Commerce? - Common Terms and Definitions (with English and French Equivalents)"
TSACC-01-307	Business Transaction: Commitment Exchange added to Information Exchange
TSACC-01-308	Business Transaction: Unambiguous Identification of Entities
TSACC-01-309	Business Transaction Model: Key Components - Person, Process & Data
TSACC-01-310	Business Transaction Model: Classes of Constraints
TSACC-01-311	Business Transaction Model: Person Component
TSACC-01-312	Business Transaction Model: Process Component
TSACC-01-313	Business Transaction Model: Data Component

1.2 This contribution is based on ISO/IEC 15944-1 *Information Technology - Business Agreement Semantic Descriptive Techniques - Part 1: Operational Aspects of Open-edi for Implementation*.[1]

This ISO/IEC 15944-1 standard in turn utilizes thirteen (13) other international standards as normative references (including several in the area of security services) and in turn is based on the international standard ISO/IEC 14662:1997 *Information technology - Open-edi Reference Model/Technologies de l'information - Modèle de référence EDI-ouvert*.

The focus of this standardization work is that of the (electronic) business transaction and the business operational view (BOV) as the "WHATs" (not the "HOWs").

1.3 In international standards development work, the question of "What is e-commerce"? brings to the fore many of the same issues raised almost a decade ago with respect to "what is EDI?", i.e., electronic data interchange. The question of "What is EDI?" was resolved from a standardization perspective through the development of the international standard ISO/IEC 14662:1997 *Information technology - Open-edi Reference Model/Technologies de l'information - Modèle de référence EDI-ouvert*

1.4 "What is ecommerce?" was also one of the first questions asked by the Working Group on Electronic Commerce (WGEC) Telecommunications Standards Advisory Council of Canada (TSACC) when it started its work in fall, 1998.

1.5 This contribution incorporates both the results of this early Canadian TSACC WGEC work as well as international standards development work resulting in ISO/IEC 14662 with respect to "EDI" and now ISO/IEC 15944-1 with respect to "e-commerce".

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[1] The Project Editor for this new international standard, Mr. Paul Levine, (Telcordia, USA). He will be a speaker at the Open Forum. ISO/IEC 15944-1 is currently at the FCD Ballot stage. (FCD = Final Committee Draft).

Those wishing to see the complete final draft ISO/IEC 15944-1 standard and its annexes can access it via the ISO/IEC JTC1/SC32 website, URL = <<http://bwonotes5.wdc.pnl.gov/SC32/JTC1SC32.nsf>>, as document number "0618".

2. LINK TO PREVIOUS TSACC WGEC WORK

2.1 In October, 1998, Industry Canada, on behalf of the federal government of Canada, launched The Canadian Electronic Commerce Strategy, {See URL <<www.e-com.ic.gc.ca>>}, which presents a vision for Canada's future in electronic commerce and how it can be achieved. The Strategy establishes an overall framework, defines priorities for action and places these in the international context of borderless markets. Electronic commerce in turn is one of the six interlinked elements of the Government of Canada's Connecting Canadians Agenda. {See URL <<http://www.connect.gc.ca>>}.

2.2 In addition, the federal government tabled Bill C-54, later re-numbered as Bill C-6, *"The Personal Information Protection and Electronic Documents Act"*. Bill C-6 was passed by Parliament and is now in force.

2.3 In fall, 1998, Canada formed a select group, i.e., the Working Group on Electronic Commerce (WGEC), led by the Telecommunications Standards Advisory Council of Canada (TSACC) representing key private and public sector organizations to develop a "Canadian Standards Framework for Electronic Commerce" and to do so in the context of international standards development work. Canadian business, consumers, public interest groups and governments have a tradition of working together to achieve goals in Canada's interests - electronic commerce represents an emerging area where this tradition can be continued.

2.4 In order to be able to have a coordinated implementation of the Canadian Electronic Commerce Strategy, it is vital that all parties concerned are part of a cooperative approach through which they can develop a shared, common and non-technical view and understanding of "electronic commerce", i.e., a common "Electronic Commerce Model".

A practical and pragmatic way to achieve such a common understanding among diverse parties and perspectives is that of a "standards"-based approach. That is an approach which is precise, consistent, systematic, rule-based and focused on getting the basics right. These are all criteria which serve as keys to successful, cost-effective, widespread adoption and use of electronic commerce.

2.5 In 1999-2001, TSACC WGEC consultations and work resulted in a series of Discussion Papers. These TSACC WGEC Discussion Papers in turn served as the basis for Canadian contributions to international standards development work and in particular that of ISO/IEC 15944-1 *Information Technology - Business Agreement Semantic Descriptive Techniques - Part 1: Operational Aspects of Open-edi for Implementation*.

3.0 WHAT IS E-COMMERCE?: TAKING THE BROAD PERSPECTIVE

In the later 1980s and early 1990s, "EDI" was the buzz word". A common slogan was "EDI or DIE". EDI was focused on automated processing and data interchange among autonomous organizations, (e.g., enterprises and government agencies, now often referred to as "B2B" and "G2B").

The advent of the Internet significantly facilitated the use of EDI but even more importantly brought to the home and small business the ability to conduct business transactions via their PCs. For some reasons (still unknown) instead of being called "i-Commerce", "i-business", etc., to reflect the use of the Internet, the initial common buzz word became "e-commerce". Soon thereafter more "e-" terms came into being including, e-business, e-administration, e-government, e-logistics, e-tailing, e-medicine, e-eduction, etc., etc..[2] These "e-words" have a very high profile among users, suppliers, governments, public policy advocates, marketeers, financial services, standardizers, etc., alike. IT suffices to note that these concepts and terms have many different meanings in various contexts and perspectives.

[2] This proliferation of "E" words has led to many saying "e-nough".

At times what is worse is that quasi-religious debates of the nature of "how many angels sit on the head of a pin"? arise with respect to use of concepts such as "e-commerce", "e-business", "e-government", "e-eduction", etc. A broad perspective is needed.

The Canadian Electronic Commerce Strategy in its first section titled "What is Electronic Commerce? stated:

> *"Electronic commerce can be defined narrowly or broadly.... This document has adopted the broader definition, viewing electronic commerce as encompassing both the Internet and closed networks, as well as hybrid networks".* (p. 4)

The ISO/IEC JTC1 Business Team on Electronic Commerce (BT-EC) in its Report to JTC1[3] stated (p.9)

> *"BT-EC recognizes that Electronic Commerce (EC) can be defined in many different ways. But rather than attempting to provide a satisfactory definition, the Team has chosen to take a more heuristic approach to EC and to do so from a global perspective, i.e., world-wide, cross-sectorial, multilingual, various categories of participants (including consumers)".*

Consequently, this paper also takes a broad perspective on what is "e-commerce".

The phrase *"If it walks like a duck, quacks like a duck, swims like a duck, flies like a duck, etc., it must be a duck"* is an apt analogy from a standards perspective. What this approach states in essence is that if for an entity the set of properties and behaviours are the same and follow the same rules as for another entity, irrespective of what you call (or name) it, it must be the same thing.

The sections below identify some of the common properties and behaviours which follow the same rules common to e-commerce, e-business, e-government, e-tailing, e-medicine, etc., a.k.a. an "e-duck".

International standardization work also addressed the issue of "What is e-commerce"?, and concluded that:

> *"**e-commerce**: a category of business transactions, involving two or more Persons. Persons can be individuals, organizations and/or public administrations".*

(as taken from Clause 0.3 in ISO/IEC 15944-1 *Information Technology - Business Agreement Semantic Descriptive Techniques - Part 1: Operational Aspects of Open-edi for Implementation*).

In this context, e-government, e-tailing, e-logistics, e-medicine, e-education, etc., are but various categories of a business transaction....etc. Here it is important to identify the common, horizontal, "duck-like" properties and behaviours of all categories of business transactions, (e.g., as "e-ducks").

[3] ISO/IEC JTC1 N5296 "Report to JTC1: Work on Electronic Commerce Standardization to be initiated". 4 May, 1998, 74 p.

4.0 B2B = BACK TO BASICS: IDENTIFYING COMMON COMPONENTS OF "E-COMMERCE", "E-BUSINESS", "E-GOVERNMENT", ETC.[4]

4.1 BUSINESS TRANSACTION BASED

A core common component is that "e-" involves business transactions. A business transaction is defined as:

> *"**business transaction**: a predefined set of activities and/or processes of organisations which is initiated by an organisation to accomplish an explicitly shared business goal and terminated upon recognition of one of the agreed conclusions by all the involved organisations although some of the recognition may be implicit".*

A common example of implicit recognition of an agreed conclusion include "sale end [date]", "final offer must be made no later than [date]", "terms and conditions and price quoted valid for the next 15 minutes only". (The latter is common to many e-business transactions executed via the WWW and Internet.

It must be stressed that this generic definition of a business transaction is independent of whether a business transaction is executed within a "for-profit" or "not-for-profit" context. A business transaction involves the mutual exchange of values which can be of a monetary or non-monetary nature. It is also assumed that a business transaction is more than information exchange marketing, provision of an (online) catalogue, etc.[5]

The widely recognized and used, (e.g., in IT, telecommunications, financial services, transportation, public administration, etc.), international standard ISO/IEC 6523 defines "organization" as:

> *"**organization:** a unique framework of authority within which a person or persons act, or are designated to act, towards some purpose".*

Finally, due to the advent of the WWW and Internet, one can/should replace the term "organization" with "Person" in this definition of "*business transaction*".

4.2 COMMITMENT EXCHANGE IN ADDITION TO INFORMATION EXCHANGE[6]

A second defining characteristic of "e-commerce", "e-business", "e-government", etc., is that it is basically an exchange of commitments among the participating parties. Business transaction require both commitment exchange as well as information exchange.

Commitment is defined as:

> *"commitment: the making or accepting of a right, obligation, liability or responsibility by a Person that is capable of enforcement in the jurisdiction in which the commitment is made".*

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[4] All the terms/definitions which follow and which are in italics are quoted verbatim from international standards. Their sources and French language equivalents are found in TSACC-01-306 "What is E-Commerce? Common Terms and Definitions (with English and French Language Equivalents)", February, 2001.

[5] On the common, "standard" fundamental processes comprising a business transaction, see further TSACC-01-312 "Business Transaction Model: Process Component", February, 2001.

[6] See further, the background paper TSACC-01-307 "Business Transaction: Commitment Exchange added to Information Exchange", February, 2001.

From the perspective of the requirements of commercial and legal frameworks, information exchange is but one element in a business transaction for which the "end points" are "Persons" (natural or legal) and not technical components (which are the end points or "users" in most ICT standards).

Two key attributes of a business transaction which differentiate it from (general) information exchange is that business transactions involve:

(1) commitment exchange; and,

(2) that "Persons" are the end users, the "alpha", and the "omega" in their roles as buyers and sellers of goods and services.

4.3 PERSONS ARE THE ONLY ENTITIES ABLE TO MAKE COMMITMENTS, I.E., AS INDIVIDUALS, ORGANIZATIONS, AND/OR PUBLIC ADMINISTRATIONS

The integration of civil and common law based legal frameworks (as well as others, e.g., Japanese, Chinese, Korean, etc.), as well as properties and behaviours common to both natural persons and legal persons resulted in an international standard definition for "Person" (in the context of a business transaction) as:

> *"**Person:**[7] an entity, i.e., a natural or legal person, recognized by law as having legal rights and duties, able to make commitment(s), assume and fulfil resulting obligation(s), and able of being held accountable for its action(s).*
>
> *NOTE - Synonyms for "legal person" include "artificial person", "body corporate", etc., depending on the terminology used in competent jurisdictions".*

Many standardization and day-to-day real world aspects pertaining to electronic business transactions do not require one to differentiate among types of Persons as role players in a business transaction. However, minimal external constraints of a jurisdictional nature at times do require one to differentiate whether the Person in a business transaction is:

(1) an **individual**, (e.g., as a buyer with respect to privacy/data protection, consumer protection, and similar public policy requirements);

(2) an **organization**, (e.g., includes any one providing a good or service whether incorporated or not, social or not-for-profit organizations, labour unions, etc.); and,

(3) a **public administration**, i.e., any organization that has the added attribute of being authorized to act on behalf of a "regulator", (e.g., a government department, an "outsourced" public sector activity, etc.).

4.4 RULE-BASED

Computers are totally "dumb". Key barriers to widespread adoption and use of e-commerce within Canada and globally are:

- clarifying marketplace rules; and,
- building trust.

[7] This definition has been drafted with assistance from lawyers (public and private sector) with international expertise in both common and civil law to cover both the present material world and the emerging dematerialized world. It is also independent of any particular information technology, i.e., is medium neutral.

E-commerce requires the development and use of clear and predefined sets of rules, principles and guidelines. These rules should be able to formally specify the commitments and role(s) of the parties involved, the expected behaviour(s) of the parties involved as seen by other parties engaging in e-commerce, e-business, e-government, etc. Such rules are applied to:

- content of the information flows in the form of precise and computer-processable meaning, i.e., semantics of data; and,
- the order and behaviour of the information flows themselves, i.e., processes

Their combination provides a complete definition of the relationships among the parties concerned since it requires them to achieve a common semantic understanding of the information exchanged. They must also have consistent generic procedural views on their interactions.

By "rules", we mean:

- precise criteria and agreed upon requirements of business transactions representing common business operational and functional requirements;
- rules serving as a common set(s) of understanding bridging varied perspectives of the commercial framework(s), the legal framework(s), the ICT framework(s) that of public policy, standardizers, etc.; and,
- sets of rules which are clear and explicit enough to be understood by all yet at the same time can be specified from an ICT perspective using Formal Description Techniques (FDTs). [Note: A current and widely used FDT is Unified Modelling Language (or UML)].

It is assumed that such sets of rules, common data, distinct business processes, etc., will be captured in the form of lego block-like standards. Many of these already exist and are utilized world-wide. They require an IT-enabled version.

It is also assumed that suppliers of goods and services will utilize that combination of lego block standards applicable to their offerings.[8]

4.5 COMMITMENTS AMONG PERSONS BEING ESTABLISHED THROUGH (AUTOMATED) ELECTRONIC DATA INTERCHANGE

E-commerce activities take place "automatically" among the IT systems of all the parties, i.e., Persons, involved in an end-to-end electronic business transaction. The actual exchanges of electronic data and compliance with the rule sets agreed to are implemented by using automata or computer programs. As a result, the use of Open-edi means that only requirements for interchange among the IT systems among the participating Persons are considered, a.k.a., as "external behaviours". The rules and processes by which each party to a business transaction determines "go" or "no-go" decisions, a.k.a. as "internal behaviours", need not be known to the other parties (and whether these involve sophisticated computer programs or human intervention).

4.6 ALL PARTIES ACT AUTONOMOUSLY AND CONTROL AND MAINTAIN THEIR STATES

All parties to a business transaction are considered to be and act autonomously. As distinct and unique Persons they are responsible for the commitments entered into. The characteristic of autonomy is crucial from several perspectives

[8] See further the Open Forum paper TSACC-01-314 "What are and Why Standards: A Pragmatic and E-Commerce Perspective", February, 2001.

including the ability to commit, from a business operational perspective, technical requirements, legal requirements, audit, evidence and related traceability requirements. Just as commitment can exist at several levels, so can autonomy exist at several levels.

It is also important for all parties to an e-commerce business transaction to always have and be able to make available to the other parties a state description. As perceived by another party, a state description includes only the knowledge necessary for a particular process in an e-commerce transaction to take place. A "state description" is the characteristic(s) of a party at a given point in time in the process comprising a business transaction which allows the prediction of its behaviour (or possible ranges of behaviour). In short, the state of the information and place in the business transaction process of the IT system of the buyer and seller (as well as those of any agents or third parties involved) should be the same. For example, if one has agreed to purchase under condition "x", the seller then asks the prospective buyer to specify one of the possible methods of payment, i.e., as a specified range of behaviour). Another example is that of a buyer or seller having agreed to a business transaction, price, terms of payment, etc., i.e,. reached common state, the next decision to be made is that of method and "speed" of delivery. A third example, is that where the business transaction has for all essential elements been concluded, the seller offer the option of an extended warranty.

5.0 CONCLUDING SUMMARY - STANDARDIZATION PERSPECTIVE

From a standardization perspective, e-commerce, e-business, e-government, e-logistics, e-administration, e-medicine, etc, whether executed on a "for-profit" or "not-for-profit" basis, etc., require five essential elements for achieving interoperability from a business operational view perspective, just as existing computer and telecommunication standards have as a key objective "interoperability from an IT perspective. These five summary ("e-Duck") characteristics are:

(1) a clearly understood purpose, mutually agreed upon goal(s), explicitness and unambiguity;

(2) predefinable set(s) of activities and/or processes, predefinable and structured data;

(3) commitments among Persons being established through electronic data interchange;

(4) computational integrity and related characteristics; and,

(5) the above being specifiable through Formal Description Techniques (FDT)[9].

Does or will your "e-duck" require these five (5) characteristics? If not, it is deemed not to be a priority for standardization and likely falls outside of the standardization world.

[9]The Formal Description Technique (FDT) currently used in support of standardization in the area of e-commerce, e-business, e-government, etc., is "Unified Modelling Language (UML)". UML is being progressed as a new international standard ISO/IEC 19501-1 by ISO/IEC JTC1/SC27 titled "Information technology - Unified Modeling Language (UML) - Part 1: Specification"/«Technologies de l'information - Langage de modélisation unifieé (UML) - Partie 1: Spécification». UML is also used by the Object Management Group (OMG), the key source, UN/EDIFACT - CEFACT, OASIS, ebXML, etc.