

EBXML

The Global Standard for Electronic Business

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The Internet and the World Wide Web have dramatically changed the way companies can do business. E-business, or business processes conducted over the Internet, has seen a dramatic increase in just a few short years – but there is still a long way to go especially for small and medium business use of the internet. Application of electronic information standards and supporting Internet technology are redefining business process on an unprecedented scale and pace. One set of standards which are enabling this evolution, some might say revolution, is the XML (Extensible Markup Language) family of standards. The Electronic Business Extensible Markup Language (EBXML) a joint project from UN/CEFACT and OASIS heavily uses XML, Public Key Infrastructure, and other internet standards to promote cost effective products for small, medium and large organizations.

Imagine organizations of all sizes connected through the internet enabled with robust applications that allow them to conduct business globally, securely and efficiently. Global business transactions once were the domain of the largest companies that could afford the complicated conversion from paper to electronic processes which required often expensive information exchange technology. Small to medium sized organizations engaged in the global economy only when they were forced to by their trading partners. Thus not receiving a sufficient ROI (Return on Investment). Large organizations achieved significant efficiencies and ROI by avoiding redundant interchange system development and conflicting information interchange formats.

The Future of Electronic Business

The outlook is very bright for users and implementers of e-commerce applications using EBXML and related standards. According to the Gartner Group, in 2001, 75% of fortune 500 companies are expected to use XML in at least one prototype project. 25% are expected to use XML in a at least one business process. For the year 2003, Gartner expects over 80% of application-to-application communication over public networks to be conducted using XML. And, over 75% of documents are expected to be matched with other formats than XML to support a blending of new applications an legacy system integration.

What is EBXML?

To understand EBXML, you must first understand XML, as well as standards designed to support electronic commerce. XML, a cousin of HTML, is a language used to define specific languages, which may be used in a variety of applications. One can create a specific data structure or business process description using XML that is easily verified for correctness by freeware tools.

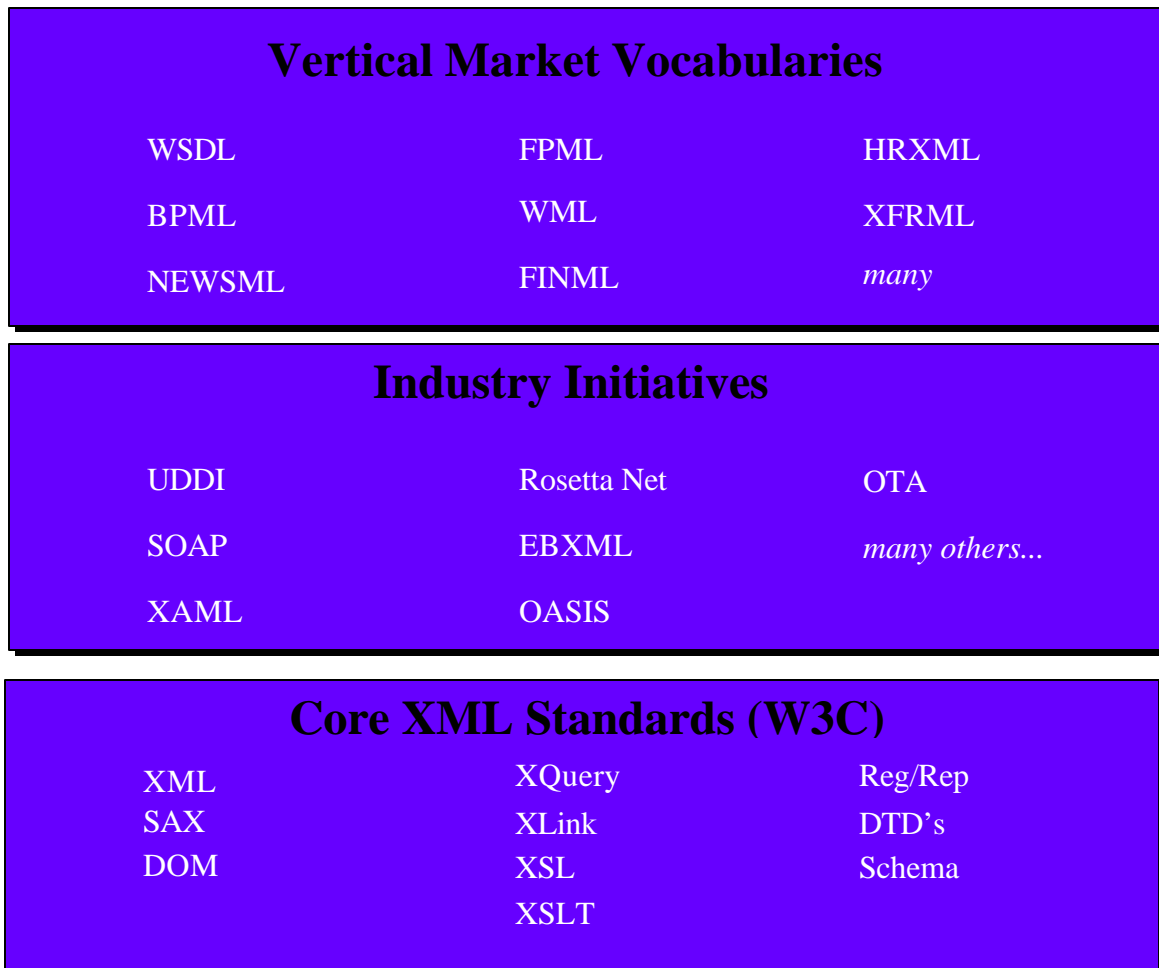
Early applications of XML, and its predecessor, SGML (Standard Generalized Markup Language, ISO 8879 1986) addressed the processes and structures related to document publishing, representation of Electronic Data Interchange (EDI), and exchangeable music and mathematic documents. But as processes became more sophisticated in functionality and scope (in both functionality and geography) other business processes were encoded in XML. Integration of software over the Web, an API *per se*, can be created using XML, just as easily as a document structure. The technology used to define documents and databases, information and the software processing it are becoming indistinguishable in regards to the information standards employed to execute mission critical business processes because of XML in general, and now EBXML in the e-commerce realm.

Prior to XML, standards required a lengthy development period. Under the auspices of the United Nations CEFAC (Center for Trade Facilitation and Electronic Business) and OASIS (Organization for the Advancement of Structured Information Standards), EBXML was developed under a rapid schedule and with a global scope in only 18 months. UN/CEFACT is one of only four international bodies that serve as a *de jure* body, or one that can enact legally binding standards. UN/CEFACT is involved with the development and direction of the world wide UN/EDIFACT standard commonly known as EDI. OASIS is the largest independent organization dedicate to the standardization of structured information standards and applications.

Representatives from a wide range of constituencies met over 18 months and finalized the EBXML specification in May of 2001 in Vienna, Austria. At this ratification meeting a proof of concept demonstration was shown where more than two dozen companies and organizations implemented EBXML to demonstrate that the architecture supported the business requirements defined early on in the process. Many of these companies are direct competitors. The result was a demonstration of a supply chain information environment based on EBXML standards. The demonstration was implemented without extensive development, demonstrating that the EBXML standards are relatively easy to implement, which should help the SME to participate in e-commerce to a greater extent.

Another Acronym Soup?

Electronic business process standards have evolved rapidly over the last few decades, resulting in a wide range of applications designed for many specific purposes. The resulting “acronym soup” is hard to keep track of and does not represent a unified, global view of business processing and transactions. In order to make sense of the many standards available, a logical organization is needed. The following diagram shows the OASIS Standards Model and attempts to illustrate whether currently available standards perform an infrastructure, industry integration, vertical market integration role.



OASIS Standards Model

Core XML standards based on XML provide the infrastructure for the development of broad reaching industry initiatives which support common business processes across vertical industries as well as vertical market vocabularies specific to a vertical market.

Current Technology

Various standards have been in use to conduct business electronically, and some, such as EDI (Electronic Data Interchange), have been in place for many years. The high cost of implementing these standards, and the rigidity of their underlying structures, limited their cost-effective use to a few larger organizations that could afford their integration and maintenance.

Development of EBXML to facilitate Global Trade

In 1999, UN/CEFACT and OASIS partnered to coordinate the development of a standard, EBXML, to replace the EDI electronic commerce standards currently in use. One that while offering the functionality required by the Large Organizations also offered ease of implementation and management to Small to Medium Enterprises (SME). What was needed was a standard for the creation and interchange of electronic business information that would speed standard development, reduce cost to implement, support and work world wide.

EBXML was coordinated by OASIS and UN/CEFACT and developed through the participation of hundreds of people, organizations, companies, and consortia from around the world. It is often said that the resulting standard, EBXML, supports anyone, anywhere to do business with anyone else over the Internet. Companies of any size can find each other over the Internet and conduct business through XML-based electronic messages. EBXML messages are consistent, are based upon well-developed business processes, work with clear business semantics, and allow business to be conducted according to standard or mutually agreed upon practices of trading partners, all of this using off-the-shelf software and business tools.

EBXML is open and easy to implement. Participation is free and open to anyone. EBXML is complimentary, not competitive, with existing standards, such as UN/EDIFACT, X12, etc., thus preserving much of the existing investment in these applications. Much of the focus was on the needs of smaller organizations. A plug-and-play architecture allows modular and incremental investment and development. Off the shelf applications, built in established open standards, enable affordable, rapidly developed implementations, even for small organizations.

Concepts of EBXML

The business processes supported by EBXML are expressed as process models and encoded in XML. All EBXML developed messages are encoded in XML as well. However, EBXML may transport any type of data such as binary content or EDI transactions. Also expressed in XML are trading partner agreements, as well as a business service interface to implement these agreements. A transport and delivery layer moves the XML (or other types of) information among partners, and a formal registry and repository acts as a container for these process definitions, vocabularies, and partner profiles.

Common business processes were modeled using established modeling standards such as UML (Unified Modeling Language) and are stored in a global registry. Business partners register their profiles as well. This consistency and detail enables seamless interoperability.

The EBXML Standard Overview

EBXML is composed of three infrastructure components and several other efforts such as ones focused on document creation, business process definition, etc. The infrastructure components are orthogonal in design. They may be used together or separately in implementing an infrastructure.

EBXML infrastructure components include:

- Collaborative Protocol Profile (CPP) – defines XML data structures which describe what each trading partner supports, the components necessary to conduct electronic commerce, such as data communications, security, processes, document types, telephone contacts, etc.
- Registry and repository – defines the access interfaces, security and information storage format for any information that needs to be widely, yet securely shared among trading partners or potential trading partners.
- Messaging – defines the means to move data between trading partners in a secure, reliable manner.

How EBXML was Created

Several working groups were formed to address specific areas of development of the EBXML standard, such as the development of requirements, common business models, trading partner profiles, registry and repository requirements, transport and routing packages, a technical

architecture for implementation, and quality review procedures. A separate working group addressed the need for effective marketing and educational materials, and finally, a team developed the working proof of concept system that was demonstrated at the Vienna ratification meeting in May.

Requirements were gathered from a broad range of user community representatives, and the entire development effort was coordinated with a steering committee to ensure that the various parts would work well together. Two other coordinating committees were also formed to insure close coordination between the groups: 1) the Architecture Working Group and the 2) Quality Review Working group. These working groups, with the steering committee, helped ensure that the multiple parallel work efforts integrated properly. As the program progressed three new work efforts were created: 1) security, 2) Proof of Concept (POC) for prototyping, and 3) CPP to ensure a more robust infrastructure.

The unique thing about EBXML, is that unlike most standard development efforts, it developed the entire infrastructure necessary to do electronic business. Most related standards only focus on one part, such as transport or registry.

Proof of Concept Demonstration

To speed development of the standard, a proof of concept workgroup was formed early in the 18 month effort to prototype the evolving standard components. At each quarterly EBXML meeting the prototype workgroup demonstrated integration of components and feed back was given to each workgroup on problems discovered in the implementation. The draft standards were then adjusted to reflect the feedback. Often the feedback was on ways to make the standards easier to implement and manage. These help ensure that the resulting standards would facilitate implement of cost effective implementation at SMEs. During the last meeting, in may in Vienna, more than two dozen vendors participated in the proof of concept demonstration. We anticipate that many of these vendors will implement product in 2001 based on EBXML.

Future Development and Maintenance

At the Vienna meeting in may, the 18 month old EBXML standards development effort was formally closed down. Responsibility for infrastructure components of EBXML were moved under OASIS, and document definition and process discovery/definition components were moved under the auspices of UN/CEFACT. A formal coordinating committee was formed to ensure that EBXML components remain coordinated and appropriately coupled.

For More Information...

For more information on EBXML see the Web Site at www.ebxml.org. Additional information is available at www.xml.org, a site covering all aspects of XML maintained by OASIS.