



UNIVERSITY OF  
CALGARY

# **ebXML and Agent- Mediated e-commerce**

**A tutorial report for SENG 609.22**

**Agent Based Software Engineering**

Prepared By: Anny Lin

**Course Instructor: Dr. Behrouz H. Far**

## Table of contents

|  |          |
|--|----------|
| <b>TABLE OF CONTENTS .....</b>                     | <b>1</b> |
| <b>ABSTRACT.....</b>                               | <b>2</b> |
| <b>INTRODUCTION.....</b>                           | <b>2</b> |
| <b>MODULES OF EBXML ARCHITECTURE .....</b>         | <b>2</b> |
| <b>BUSINESS PROCESS SPECIFICATIONS.....</b>        | <b>2</b> |
| <b>PARTNER PROFILES AND AGREEMENTS (CPPA).....</b> | <b>3</b> |
| <b>REGISTRY AND REPOSITORY.....</b>                | <b>3</b> |
| <b>MESSAGING SERVICE .....</b>                     | <b>3</b> |
| <b>CORE COMPONENTS .....</b>                       | <b>3</b> |
| <b>USE CASE SCENARIO OF EBXML.....</b>             | <b>3</b> |
| <b>WHY EBXML? .....</b>                            | <b>4</b> |
| <b>ADOPTION PHASES .....</b>                       | <b>4</b> |
| <b>CURRENT EBXML SPEC STATUS .....</b>             | <b>5</b> |
| <b>EBXML AND AGENT-MEDIATED E-COMMERCE .....</b>   | <b>5</b> |
| <b>CONCLUSION .....</b>                            | <b>5</b> |
| <b>REFERENCE.....</b>                              | <b>6</b> |

## **Abstract**

ebXML could replace Electronic Data Interchange (EDI) be the next standard for electronic business information transaction in the next few years. This paper hope to explain what is ebXML and what would adopting to ebXML mean to agent-mediated e-commerce.

## **Introduction**

With in the increase exponential growth of e-commerce, business large and small tries to get on the web and sell their product and service. In order for Company to sale to another company (Business to Business), there needs to be a common standard of exchanging business data. In addition, most company's web operation (front end) is not tight to operation such as inventory (back end) of the company's system. This means that the company will have several different database system and software for different functional area of the company. The proliferation of technology and data not to mention the amount of work involve in manually enter the same set of data into their company different systems in different areas (e.g. accounting, shipping, inventory, sales).

Some large companies uses Electronic Data Interchange (EDI) to tight their operation together, as well as exchange business information with other companies. However EDI is propriety and requires dedicated communication channel between companies. It is has significant start cost. To small business, EDI could be way too expensive and to large company it discourages short-term partnership and vendor changing.

With the vision of developing a technical framework that will enable XML be utilized for electronic business data exchange in a consistent manner, an international initiative was started by OASIS (Organization for the Advancement of Structured Information Standards) and UN/CEFACT (United Nations Centre for Trade Facilitation and Electronic Business) in Sept 1999 which produced ebXML (electronic business eXtensible Markup Language). Recently, at a Java Developer Days presentation, Sang Shin, one of the presenters, said that "The next big thing is Business (B2B) Web Services and ebXML is the only standard-based technology ready for it. [Shin]"

## **Modules of ebXML Architecture**

ebXML consists of the following Modules. They can all be used individually

- Business Process Specifications (CPPA)
- Partner Profiles and Agreements
- Registry and Repository
- Messaging Service
- Core components

## **Business Process Specifications**

Business process specification describes the role, relationships and responsibilities of two partners. As well it content the interface definitions, the collaboration definitions and the implementation definitions It is machine interpretable and can be modeled with UMM

(UN/CEFACT Modeling Methodology). Further details and examples of this can be found at [www.ebxml.org](http://www.ebxml.org)

## **Partner Profiles and Agreements (CPPA)**

CPP (Collaboration Protocol Profile) defines a Party's Message-exchange capabilities and the Business Collaboration it supports. The purpose of CPP is to ensure interoperability between two parties. CPP is contained in the registry and can be query by business partners.

CPA (Collaboration Protocol Agreement) states how the two parties will interact in performing the chosen Business collaboration. It is derived from CPP's of the trading partners. Two parties doing business with each other should use an identical copy of CPA. CPA is used by the trading parties' computing systems to set up runtime environment for the exchange of business messages.

For more details please see [Collaboration-Protocol Process and Agreement Specification v2.0](#).

## **Registry and Repository**

The Registry allows the sharing of information between interested parties so they can integrate their business process base on the ebXML specification. It contains parties' Registry Object that includes XML document, DTD, business process models, CPP, CPA etc. Type of registry operations includes submitting, managing, searching, retrieving, and removing. These operation are performed through an registry interface.

Please see [Registry Services Specification v2.0](#) for further details.

## **Messaging Service**

ebXML uses SOAP with Attachments as payload envelope (MIME) to transport non-XML data. The messaging Service can run over HTTP, SMTP, and FTP.

For technical details please see [Messaging Service Specification v2.0](#)

## **Core Components**

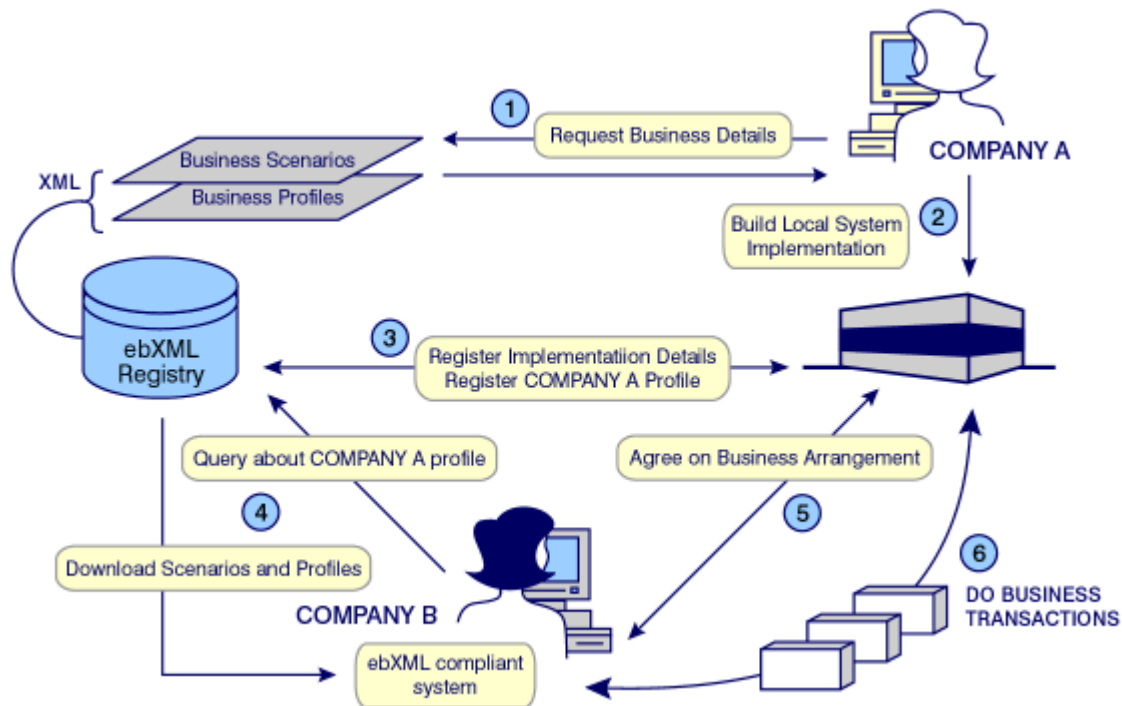
Core Components is a set of common data items that captures real world business concepts. The idea is that many business processes are common across industry domains. They are reusable pieces of contents and use industry-neutral notations. The core components enable interoperability amount different industry domains.

Library of core Components are available for download or view at the registry. This helps companies to determine the requirements for their own implementation. For further convention on Core Components please see <http://www.ebxml.org/specs/index.htm>

## **Use Case Scenario of ebXML**

A company will review the content in ebXML Registry. This company should be able to determine the requirement for their own implementation of ebXML. This company would then build its ebXML implementation and register its Profile into the repository. Other companies can query the business profiles and if the profile matches, a business

arrangement will be agreed upon and the two companies can do business transaction.  
[Mertz]



## Why ebXML?

There are many initiatives to develop standard to use XML to enable B2B information exchange. Some of these initiatives include Eco Framework (CommerceNet), BizTalk Frameworks (Microsoft), and RosettaNet. With RosettaNet's decision to incorporate ebXML into its next revision and SUN's recent (October) announcement of Secure Trading Agent implemented in Java for B2B integration, ebXML is one of the most hyped about and publicly endorsed standard. The standard is openly developed and allow parties irrespective of size to conduct Internet-base electronic business.

In addition, ebXML allows:

- Business process, CPP (Collaboration Protocol Profile), and CPA (Collaboration Protocol Agreement) over WSDL (Web Service Definition Language),
- ebXML over UDDI (Universal Description, Discovery and Integration),
- message service over SOAP (Simple Object Access Protocol).

## Adoption Phases

ebXML can be adopted over three phase.

1. Simple Web Service  
This phase is consumer-focused. Many companies outside of North America have already done this.
2. EAI web Service

This phase enables business internal integration. It ties the front and back end of the business together. Some business have already started this process.

### 3. Business Web Service

In this phase, all players in the value chain would be tight together allowing business process integration.

## **Current ebXML Spec Status**

- ebXML Registry Specs, Registry Information Model v2.0 and ebXML Registry Service Specification v2.0 have been approved as OASIS standard
- ebXML Messaging v2 has been approved as OASIS standard
- ebXML CPPA v2 has been submitted to OASIS members for consideration as an OASIS as standard
- ebXML Core Components v1.85 has been release for public review

## **ebXML and Agent-mediated e-commerce**

Along with ebXML gaining more momentum and companies big and small deciding to implement ebXML, many problems with currently face agent mediated e-commerce is solved. Agent can search the repositories for partner(s) satisfying a user's criteria and make agreements automatically and negotiate contract dynamically. This will have impact on economy as the agents enables the semi-automation of business and inter-business processes.

## **Conclusion**

With endorsements of many international standards associations and involvement of stakeholders from all side of e-commerce in the standard, ebXML has fast becoming the most ready standard for electronic transfer of business data. ebXML is has a modular architecture and can be adopted in phases are flexible (compared to EDI which is the current standard) and can be adopted to fit many industries. It is cheap and it is a solution that's scalable to fit the budget of various sizes of companies. In addition it is an open process and there are already a open source code base for the adoption of ebXML. This will increase the ability of Agent-Mediated e-commerce and create a seamless market place on the Internet for consumers and business of any size alike.

## Reference

- [BPSS] Business Process Specification Schema v1.01  
[http://www.ebxml.org/specs/ebBPSS\\_print.pdf](http://www.ebxml.org/specs/ebBPSS_print.pdf)
- [CPPA] Collaboration-Protocol Process and Agreement Specification v2.0  
<http://www.ebxml.org/specs/ebcpp-2.0.pdf>
- [MS2] Messaging Service Specification v2.0  
<http://www.ebxml.org/specs/ebMS2.pdf>
- [Mertz] D. Mertz Understanding ebXML  
<http://www-106.ibm.com/developerworks/xml/library/x-ebxml/index.html?dwzone=xml>
- [RS2] Registry Service Specification v2.0  
<http://www.ebxml.org/specs/ebrs2.pdf>
- [Shin] S.Shin, “ebXML Primer”  
<http://ca.sun.com/en/events/presentations/devdays/sang-devdays.pdf>