

ebXML At a Glance

Introduction

The Electronic Business (eBusiness) eXtensible Markup Language (XML) [ebXML] set of specifications enable electronic trading relationships between business partners and integrate new technologies:

- Communicating data in common terms (Core Components Technical Specification [CCTS] v2.0.1)
- Register and provide eBusiness artifacts and services (ebXML Registry Services [ebRS v3.0] and Registry Information Model [ebRIM v3.0])
- Technical configuration contract between business partners (Collaboration Protocol Profile and Agreements [CPP/CPA v2.0])
- Providing secure and reliable transport (ebXML Messaging Service [ebMS])
- Business processes (ebXML Business Process Specification Schema, [ebBP v2.0.3])

The business case was to provide a migration path for existing technologies, and enable Small-Medium Enterprises, using an integrated eBusiness approach.

The heterogeneous nature of eBusiness transactions require a flexible infrastructure/framework that supports simple service calls and complex document exchange.

The framework/architecture using ebXML components clearly separates messaging and business process layers, with integration through bindings.

Five specifications achieved ISO 15000 status. The ebBP v2.0.3 is progressing to OASIS¹ Standard and is anticipated to join the ebXML set in 2006.

For eBusiness, key integration patterns realize SOA benefits in a pragmatic iterative manner.

¹ Organization for the Advancement of Structured Information Standards (OASIS), www.oasis-open.org.

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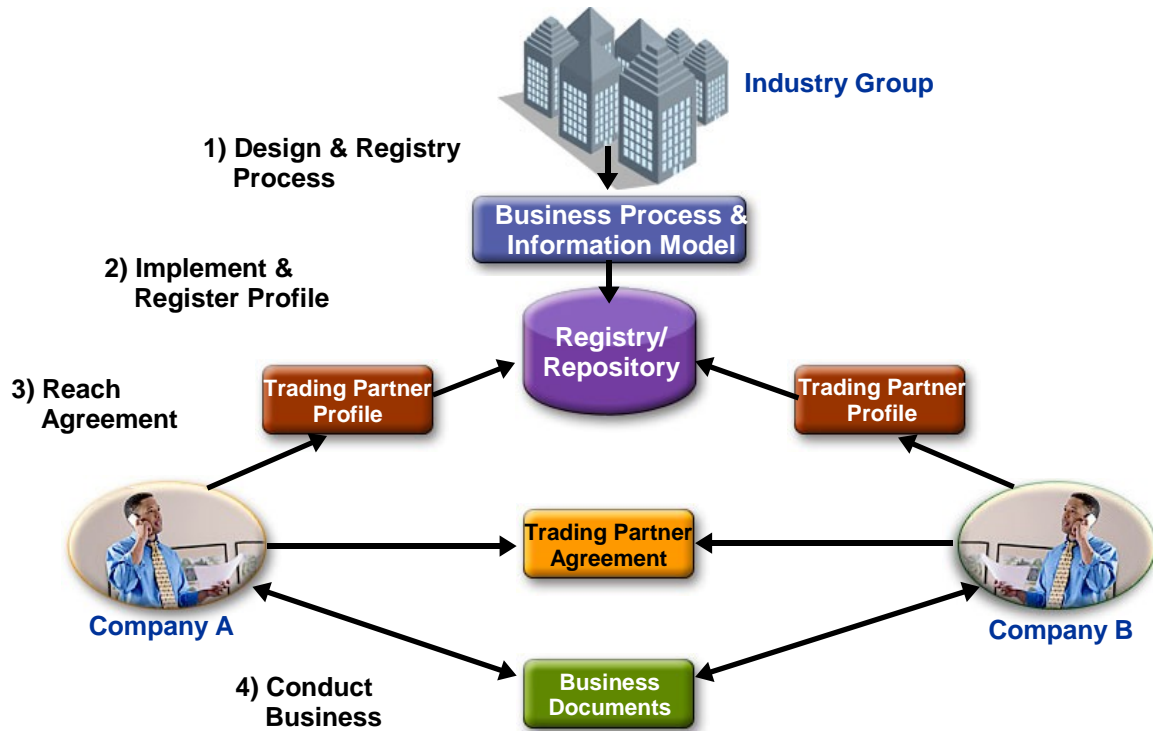


Figure 1 High Level Overview of ebXML Specifications

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ebXML Messaging

The ebXML Messaging Service defines a communications-protocol neutral method for exchanging eBusiness messages. The ebMS defines messaging functions, protocol and envelope intended to operate over SOAP (SOAP v1.1 and SOAP with Attachments). Binding to lower transport layers relies on standard SOAP bindings; ebMS complements them where required.

The ebXML Messaging Service v3.0 expresses compatibility to or use with web services technologies. The ebMS v3.0 leverages SOAP-based specifications and existing implementations that handle quality of service for reliability and security, and are composed in the ebMS context. Capabilities include:²

- Reliable processing
- Packaging services
 - Composition with addressing
 - Binding with enterprise systems
 - ebMS signalling
- Security: Authentication, authorization, and non-repudiation
 - WS-SOAP Message Security v1.0³
 - Digital signature
- Delegation of protocol functions to web services standards
- Application interface
- Compliant with WS-I Basic Profile v1.1, Simple SOAP Binding v1.0, and Attachments Profile v1.0

The ebMS v2.0 OASIS Standard was accepted as ISO/TS 15000-2 in May 2004. The v3.0 Committee Draft is anticipated in CY 2006.

² A more complete list can be found in the ebXML Messaging Service technical specification v2.0.

³ Extended support using WS-Security and security services will be addressed in a future version. A Security Services profile is anticipated.

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Business Applicability

Key ebMS v2.0 deployments include:

- The UK's National Health Service (NHS) deployed systems and services linking health care professionals. A transaction and messaging service provides the communications infrastructure to connect regional network clusters and national services. It is based on advanced technical standards like OASIS Security Assertion Markup Language (SAML) and ebMS, and is projected to handle 5+ billion messages by 2010.
- Norway's National Insurance Administration (NIA) uses ebMS. Current production system has transported ebXML messages for transactions totaling 1.2 billion EURO, or \$1.5 billion) thus far.
- In high-volume transactional environments, 20 European energy traders are using ebMS, like Deutsche Bank and Shell. Another 15 planned for 2006. There are 100+ users in the papiNet (paper industry) and EFETnet (energy trading) projects.
- General Motors developed a new inventory management system that will grow to 7,000 North American dealerships using ebMS. About 1,000 have integrated with inventory turnover improved by 11%.
- For SME, the Center for E-Commerce Infrastructure Development (CECID), The University of Hong Kong (HKU) and iASPEC Technologies released of Hermes Messaging Gateway v2.0 in March 2006.

References

- ebMS TC: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ebxml-msg
- ISO/TS 15000:2: <http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=39973&ICS1=35&ICS2=40&ICS3=&scopelist=>

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ebXML BPSS - Business Transactions and Collaborations

The ebBP (ebXML Business Process Specification Schema) defines a standard language to configure business systems for business collaboration execution between partners.

A business process definition, an ebBP definition, describes interoperable business processes that allow partners to achieve business goals.:

- Support process design/description
- Enable collaboration monitoring and validation
- Guide execution

The ebBP specifies the Business Transaction(s), choreography for using those in Business Collaborations (BC), and BC themselves. Business Signals are exchanged for technical state alignment between parties.

Core capabilities include:

- Standard and extensible business transaction patterns
- State alignment
- Business collaboration for two+ parties
- Composition: Visibility and relationships. Allows third parties to be visible in a business transaction, when their process definition exists elsewhere.
- Enabling use of hybrid, ebXML or Web Services
- Complex support for party/role definitions
- Enabling the process lifecycle: Improve linking constructs and transitions
- Use of semantic information to specialize processes

Enhancements are planned for multi-party, triggers, late binding and status visibility.

The OASIS v2.0.3 ebBP has been approved as a Committee Specification candidate.

Business Applicability

The ebBP is being used or evaluated in key domains - health care, eGovernment, criminal justice, textiles and eBusiness, primarily in Europe, Asia and Canada. An open-source editor has been released:

<http://sourceforge.net/projects/freeebxmlbp>.

Modular process definitions supporting UBL and small business have been released (see public ebBP site).

References

- ebBP TC: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ebxml-bp. The latest documents are posted at that public location.

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Collaboration Protocol Profiles and Agreements

The ebXML Collaboration Protocol Profile and Agreement provides a conduit between technical capabilities and partner expectations for business collaborations.

The Profile contains technical capabilities of a business partner. It outlines the capabilities and preferences of collaboration protocol features and properties for specific roles in component services and activities used in processes. It enables monitoring of sessions and verification of delivery channel features used in collaborative processes. The second set (Agreement) contains data to configure public, shared aspects in the business collaboration protocols.

The CPP/CPA v2.1 draft includes:

- Extension framework for alternative messaging, business process, and capabilities including ebBP alignment.
- Expanded transport capabilities for message exchange patterns
- Increased composability of multiple exposed services.
- Improved Party identification
-

The Collaboration Protocol Profile and Agreement v2.0 was approved as an ISO standard 15000-01 by ISO/TC 154 in March 2004. After ebMS v3.0 alignment, an OASIS v2.1 Committee Draft will proceed.

Business Applicability

CPP/CPA adoption increased in automotive – dealerships, supply chain, and inventory management – relative to the use of ebMS.

The Center for Disease Control (CDC) Public Health Information Network, European health care projects, and several telecommunication networks use this combo.

References

- CPP/CPA TC: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ebxml-cppa
- ISO/TS 15000:1: <http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=39972&ICS1=35&ICS2=40&ICS3=>

The Registry-Repository

In v3.0, the ebXML Registry and Repository provide services for registering, locating, and accessing information resources in a distributed (or federated), secure environment. Current v3.0 features include:

- Registry federation support
- Replicated content/metadata
- Security enhancements: XACML, SAML

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- Extensible service interfaces and protocols
- Definition of new service request and response types
- HTTP Binding to ebXML Registry Services interfaces
- Uses a REST style architecture
- Content management (validation, cataloging)
- Query enhancements

In May 2005, the two v3.0 specifications were approved as OASIS standards. The v2.0 specifications were approved as ISO 15000 parts 3 and 4 in March 2004.

Technical notes have been or will be published by the TC including: Core Components, Portal artifacts, and WS-I Basic Profile. Other profiles have been (or will be) developed to use of core or advanced features for Open GIS, HL7 and IHE XDR.

Adoption is growing in government and domain sectors:

- Governments of Norway, Finland: Implementing freebxml for a registry-based environment to assemble XML schemas and electronic forms.
- The UN/CEFACT Information Content Management Group (ICG) officially adopted the standard and freebXML Registry for their Information Content Management Architecture. The planned UN registry federation will store UN-defined and Core Component artifacts.
- EDIFRANCE launched a trial field of RepXML to manage CCTS – BIEs.
- A federated registry, The Korean ebXML Central Registry & Repository (REMKO) (www.remko.or.kr), linked several domains: iron and steel, trade sector and software providers.
- NIST is working with 'Integrating the Healthcare Enterprise' (IHE) on developing a Cross-Enterprise Document Sharing system (XDS).
- HL7, RosettaNet, and US Department of Defense, Sprint.

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References

- RegRep TC: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=regrep
- ISO/TS 15000:3, :4:
 - <http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=39974&ICS1=35&ICS2=40&ICS3=>
 - <http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=39975&ICS1=35&ICS2=40&ICS3=>

Standardizing Content

The ebXML Core Components Technical Specification (CCTS) presents a methodology for developing semantic building blocks to represent the general business data types in use. This enables reusable and commonly understandable data, using CC and Business Information Entities (BIEs). Developed in the United Nations (UN) Centre for Trade Facilitation and eBusiness (CEFACT), CC provide:

- Common modeling concept for objects/data
- Naming convention for definition of the generic semantic meaning in Dictionary Entry Names
- Fixed set of reusable data types for consistent business value representation

The ebXML CCTS v2.0.1 was approved by ISO in August 2005.

Business Applicability

Several other business document specifications leverage CCTS such as:

- OAGIS Business Object Documents (BoDs)
- Universal Business Language (UBL)
- CC concepts are also be used with ebRegRep in European pilot projects.

References

- CCTS: <http://www.untmg.org>
- ISO/TS 15000:5:
<http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=41022&ICS1=35&ICS2=40&ICS3=>

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Testing ebXML

ebXML IIC Overview

Focused on implementation, interoperability and conformance, this effort supports development of infrastructure and applications adhering to ebXML specifications and are able to interoperate. The v1.1 ebXML IIC Test Framework Deployment Template Profiles for ebMS v2.0 and CPP/PPA v2.0 have all been published as OASIS Committee Drafts. A profile is being developed for ebBP v2.0.x.

The OASIS TC has engaged with W3C and other groups in the US, Asia and Europe for testing standardization, like ECOM and KorBit in ebXML Asia, and CEN/ISSS and ETSI in Europe. EAN-UCC and France Telecom have also used the templates provided.

References:

- ebXML IIC TC: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ebxml-iic