

ebXML for Implementers

**OASIS Symposium,
San Francisco 2006
Pim van der Eijk**

Agenda

- Introductions
- B2B Integration Reference Models
- ebXML initiative and history
- B2B architecture patterns and ebXML
- ebXML Specifications
 - Business Process
 - ebXML Collaboration Protocol Agreements
 - ebXML Messaging
 - ebXML Registry
- Case Studies
- Conclusion

Scope and Goal

- Provide overall understanding of infrastructure specifications in ebXML framework
 - Using real-life (detailed, working) examples
- Show how layers work together to provide complete working solutions
 - From Business Process down to ebXML messages
- All infrastructure specifications (not Core Components)
- Describe how ebXML is used for large-scale, real-life problems today
- Hopefully, encourage adoption

Audience and Tutorial Objectives

- (Potential) users of ebXML for eCommerce, eGovernment or eHealth integration
- High-level technical people
 - Architects, designers, project managers
- After this tutorial, you should know enough about ebXML to be dangerous...

Speaker Introduction

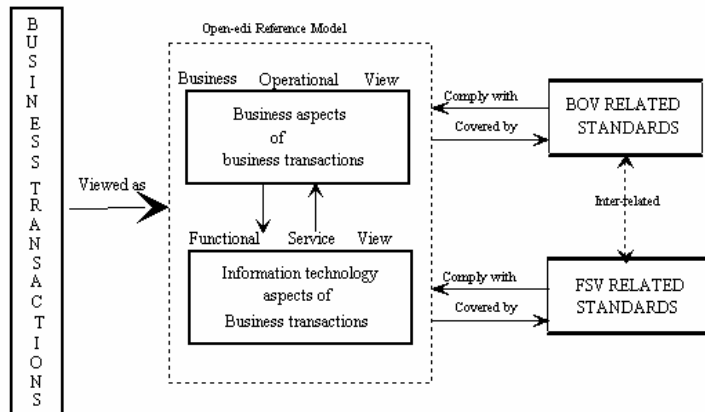
- Pim van der Eijk
 - OASIS European Representative (2001-..)
 - Sonnenglanz Consulting, <http://www.sonnenglanz.net/>
- ebXML experience
 - Worked for B2B integration software company around 2000
 - Co-author, *Professional ebXML Foundations* (2001)
 - Interoperability Pilot Project (XML Europe 2003)
 - Four vendors, steel industry B2B scenario
 - UK Connecting for Health (two projects, 2004)
 - Netherlands Criminal Justice System (2004-2006)
 - Netherlands e-Health infrastructure project (2004)
 - Other Netherlands eGovernment projects (2006)

Reference Models for B2B integration

Why a reference model?

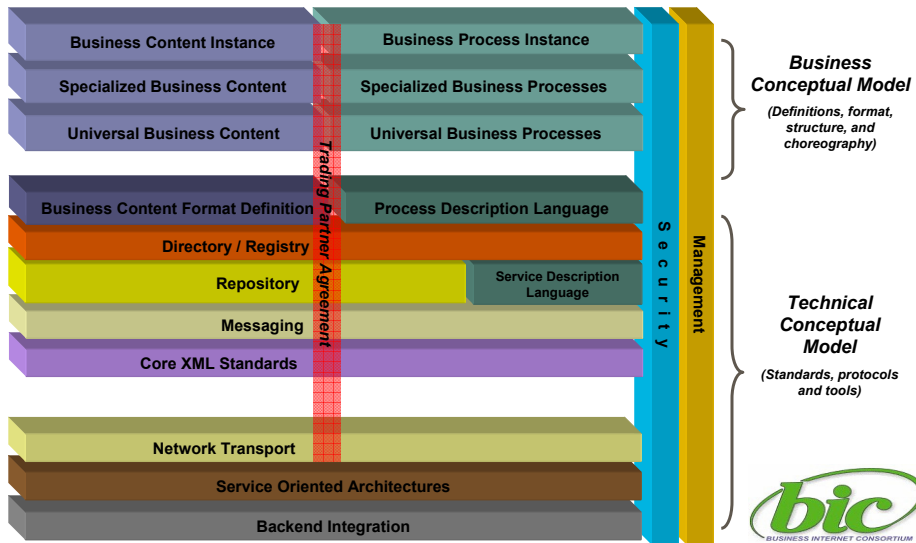
- Support requirements specification for **complete solutions**
- Describe purpose of individual specifications and standards
- Understand layering (“protocol stack”)
- Identify relationships and “missing pieces”
- Compare frameworks

Open EDI reference model



Source: ISO/IEC 14662, "Information Technology – Open-EDI Reference Model"

Business Internet Consortium



The ebXML initiative

Founding organizations

- UN/CEFACT
 - United Nations Centre for Trade Facilitation and Electronic Business
 - Created and maintains the UN/EDIFACT standards for Electronic Data Interchange (EDI)
 - Made assessment in 1998/1999:
 - EDI widely used ... in (very) large companies
- OASIS
 - Organization for Advancement of Structured Information Standards
 - Creates and maintains XML interoperability specifications, broad industry support



The ebXML initiative

- Joint initiative by OASIS and UN/CEFACT
 - 9/1999 open invitation to e-business community to join
 - Series of plenary meetings
 - Between 11/1999 and 5/2001
 - Specifications delivered on schedule in 5/2001
- Goals:
 - “Create a single **global electronic marketplace** where enterprises **of any size** and in **any geographical location** can meet and conduct business with each other”
 - Provide a “**modular**, yet **complete** electronic business **framework**”
- Approach
 - Semantic interoperability
 - Modular framework
 - Leverage EDI experience, XML, Internet, Web technology

ebXML modules

- Messaging
 - Transport, routing and packaging
- Collaboration Protocols and Agreements
 - Bilateral trading configuration agreements
- Business Process
 - Technical Framework and Library
- Registry
 - Information Model and Services
- Core Components
 - Technical Framework and Library

ebXML “phase 2”

- Transitional phase, from May 2001 to August 2003
- Continued technical development in OASIS and UN/CEFACT
 - Joint Coordinating Committee
- Updated v2.0 versions became OASIS standards
 - ebXML Messaging Service (ebMS; 2002/04)
 - Registry Information Model (ebRIM; 2002/04)
 - Registry Services (ebRS; 2002/04)
 - Collaboration Protocols & Agreements (CPPA; 2002/11)
- UN/CEFACT plenary endorses all ebXML OASIS standards
- Emerging implementations and software support

ebXML “phase 3”

- ISO standardization 15000-1 to 5
 - CPA, Messaging, Registry (2004/05)
 - Core Components (2005/09)
- Reaffirmed OASIS and UN/CEFACT cooperation commitment
- Large scale deployments starting
 - UK/Norway Healthcare, US Automotive
- Updated OASIS specifications
 - ebXML registry v3 (2005/05)
 - ebXML Business Process v2.0 (2006/??)
 - ebXML Messaging v3 (2006/??)
 - ebXML CPA v2.1/3 (2006/??)
- New OASIS ebSOA TC
 - “Advancing architectural patterns for using Service Oriented Architecture in electronic business”
 - <http://www.oasis-open.org/committees/ebsoa/>

E-Business Architecture Patterns for “extended enterprise”

IBM patterns for e-business

- Classification of successful e-business architectures into a series of *patterns*:
 - Business patterns
 - Self service
 - Collaboration
 - Information aggregation
 - **Extended enterprise**
 - Integration patterns
 - Access integration
 - Composite patterns
 - Application integration
- URL <http://www-106.ibm.com/developerworks/patterns/select-pattern.html>
- URL <http://www-128.ibm.com/developerworks/patterns/retired-EE.pdf>

Extended enterprise

- *Business pattern* addressing the interactions and collaborations between business processes in separate enterprises.
- Five *application patterns* for business-to-business integration
 1. Document exchange
 2. Exposed Application
 3. **Exposed Business Services**
 4. **Managed Public Processes**
 5. Managed Public and Private Processes

Common Drivers

- Common Business Drivers:
 - Improve organizational efficiency
 - Reduce latency of business events
 - Support Structured Exchange with business partners
- Common IT Drivers
 - Leverage existing skills
 - Leverage legacy systems
 - Backend application integration
 - Minimize application complexity

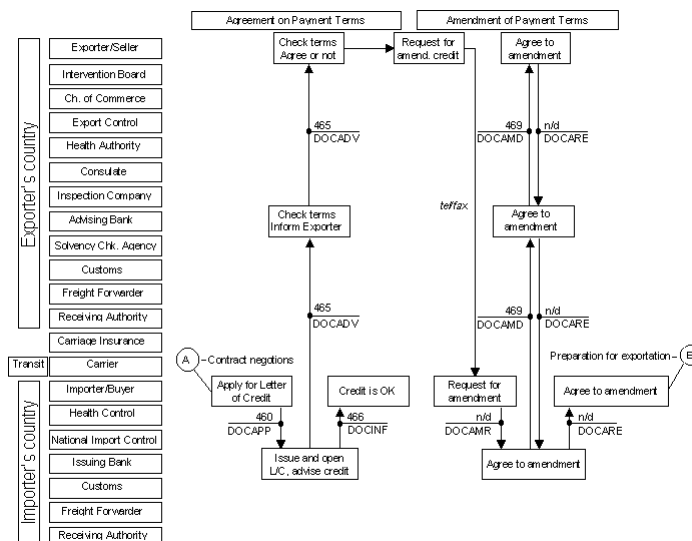
Business Service Interface

- Provide access to *services* instead of *applications*
 - Partner doesn't need to know application specifics
 - Service may invoke multiple applications in sequence or combination
 - Service may perform (intelligent) routing, transformation
 - Allows legacy systems to be upgraded or replaced without disrupting external users
 - Implemented using Message Oriented Middleware (JMS, MQ) or Web Services

Public Processes and Agreements

- **Standardized Public Processes**
 - Avoid dominant-partner mandated interactions and infrastructure
 - Enable a supplier to use a single business process with multiple customers
 - Enable a buyer to use same process with multiple suppliers
 - Long-running business interactions
 - Quote > Order > Ship > Invoice > Pay ...
 - May use a **Business Service Interface** for implementation
- **Trading partner agreements**
 - Bilateral configuration
 - Service level agreements

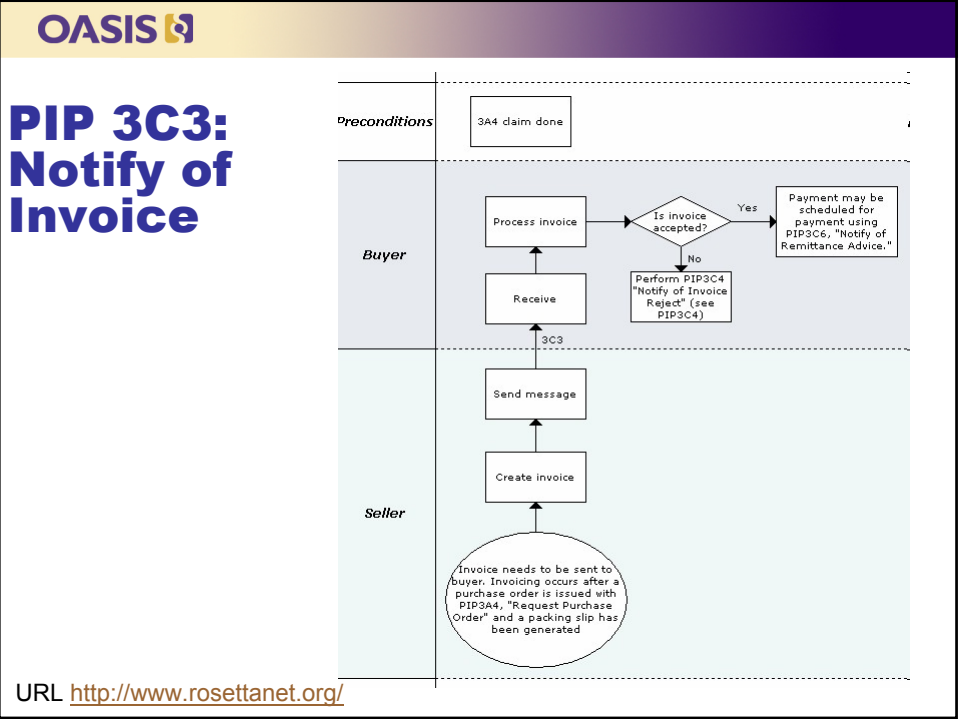
Business document exchanges express business transactions between two business partners, possibly in a long-running multiparty collaboration



URL <http://www.unece.org/trade/itt/>

How does ebXML fit in?

- *Managed public processes is what ebXML is designed to support:*
 - Real life **business** interactions are long running and complex
 - Even though their implementation may use business services as building blocks
 - Industry standard collaborations are in the interest of companies large and small
 - Thirty million SMEs (Small and Medium Size Enterprises) in Europe alone ... the engine for economic growth, prosperity, jobs ... many not using EDI today
 - Trading Partner Agreements express bilateral configuration and business agreements
 - Real life business requires sophisticated **security** and **reliability** requirements

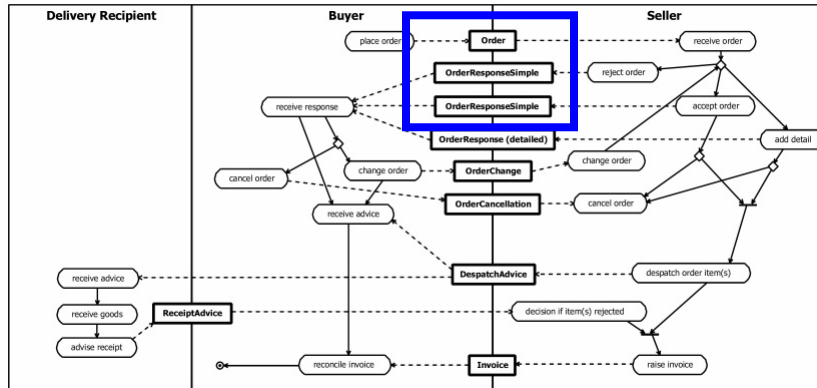


ebXML Business Process

ebXML Business Process

- XML representation for **public** business processes (collaborations)
 - Independent of business partner's *internal* processes
 - Separate from binding to a particular (set/pair of) partner(s)
 - Key concepts from UMM (UN/CEFACT Modelling Methodology)
- Provides definitions for:
 - Partner Roles
 - Business Documents
 - Signals
 - Business Transactions
 - Business Collaborations
 - Choreography: (conditions on) transitions between transactions
- Application scenarios
 - Support automatic *configuration* of ebXML e-business monitoring tools (Business Activity Monitoring)
 - Simulation
 - Generation of CPA templates

UBL Example *UBL 1.0 SBS Order with Simple Response*



URL <http://docs.oasis-open.org/ubl/cd-UBL-1.0/>

UBL and UBP

- Universal Business Language
 - OASIS TC creating a set of XML business documents for e-Commerce
 - Small Business Subset (SBS)
- Universal Business Processes
 - Public Processes for UBL document exchange
 - Designed for UBL SBS 1.0 by Stephen Green and Sacha Schlegel
 - Toolset for ebBP to CPA generation

Logical Business Document Definitions

```

20 ><BusinessDocument name="UBL 1.0 SBS Order" nameID="Order_UBL1SBSOrderWithSimpleResponse_BD"> [3 lines]
24 <BusinessDocument name="UBL 1.0 SBS Order Denied" nameID="OrderDenied_UBL1SBSOrderWithSimpleResponse_BD">
25 <ConditionExpression expressionLanguage="XPath1" expression="/AcceptedIndicator=false"/>
26 <Specification targetNamespace="urn:oasis:names:specification:ubl:schema:xsd:OrderResponseSimple-1.0"
27 name="Order Response Simple - Order Denied" nameID="OrderResponseSimpleOrderDenied_UBL1SBSOrderWithSimpleResponse_SP"
28 location="http://docs.oasis-open.org/ubl/cd-UBL-1.0/xsd/maindoc/UBL-OrderResponseSimple-1.0.xsd" type="schema"/>
29 <Specification targetNamespace="urn:oasis:names:specification:ubl:schema:xsd:OrderResponseSimple-1.0"
30 externalDocumentDefRef="urn:oasis:names:tc:ubl:xpath:OrderResponseSimple-1.0.sbs-1.0"
31 name="Order Response Simple SBS - Order Denied" nameID="OrderResponseSimpleSBSOrderDenied_UBL1SBSOrderWithSimpleResponse_SP"
32 location="http://docs.oasis-open.org/ubl/cs-UBL-1.0-SBS-1.0/xpaths/xml/Path/OrderResponseSimple-XPPath.xml" type="other"/>
33 </BusinessDocument>
34 <BusinessDocument name="UBL 1.0 SBS Order Accepted" nameID="OrderAccepted_UBL1SBSOrderWithSimpleResponse_BD">
35 <ConditionExpression expressionLanguage="XPath1" expression="/AcceptedIndicator=true"/>
36 <Specification targetNamespace="urn:oasis:names:specification:ubl:schema:xsd:OrderResponseSimple-1.0" name="Order Response Simple - Order Acc
37 <Specification targetNamespace="urn:oasis:names:specification:ubl:schema:xsd:OrderResponseSimple-1.0" externalDocumentDefRef="urn:oasis:names
38 </BusinessDocument>

```

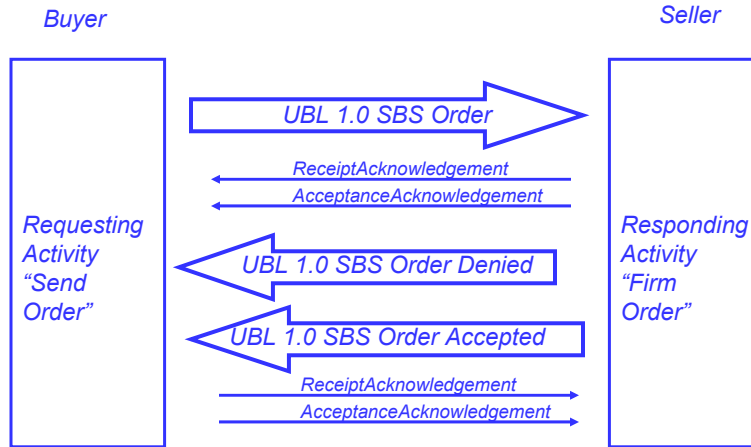
ebBP Business Collaboration and BTA

```

<ProcessSpecification xmlns="http://docs.oasis-open.org/ebxml/bpeb/2.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  name="UBL 1.0 Small Business Subset Order With Simple Response" nameID="UBL1SBSOrderWithSimpleResponse_PS" specificationVersion="2" instanceVersion
  <Documentation>
  <Signal nameID="ra2" name="ReceiptAcknowledgement"> [2 lines]
  <Signal nameID="rae2" name="ReceiptAcknowledgementException"> [2 lines]
  <Signal nameID="aa2" name="AcceptanceAcknowledgement"> [2 lines]
  <Signal nameID="aae2" name="AcceptanceAcknowledgementException"> [2 lines]
  <Signal nameID="ge2" name="GeneralException"> [2 lines]
  <BusinessDocument name="UBL 1.0 SBS Order" nameID="Order_UBL1SBSOrderWithSimpleResponse_BD"> [3 lines]
  <BusinessDocument name="UBL 1.0 SBS Order Denied" nameID="OrderDenied_UBL1SBSOrderWithSimpleResponse_BD"> [4 lines]
  <BusinessDocument name="UBL 1.0 SBS Order Accepted" nameID="OrderAccepted_UBL1SBSOrderWithSimpleResponse_BD"> [4 lines]
  <Package name="UBL1SBSOrderWithSimpleResponse" nameID="UBL1SBSOrderWithSimpleResponse">
  <Documentation/>
  <CommercialTransaction name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_CT" isGuaranteedDeliveryRequired="true"> [18 lines]
  <BusinessCollaboration name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_BC">
  <Role name="Buyer" nameID="Buyer_UBL1SBSOrderWithSimpleResponse"/>
  <Role name="Seller" nameID="Seller_UBL1SBSOrderWithSimpleResponse"/>
  <TimeToPerform/>
  <Start name="Start Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_ST"> [2 lines]
  <BusinessTransactionActivity name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_BTA"
  <BusinessTransactionRef="CreateOrder_UBL1SBSOrderWithSimpleResponse_CT" hasLegalIntent="true">
  <TimeToPerform/>
  <Performs currentRoleRef="Buyer_UBL1SBSOrderWithSimpleResponse" performsRoleRef="Initiator_UBL1SBSOrderWithSimpleResponse"/>
  <Performs currentRoleRef="Seller_UBL1SBSOrderWithSimpleResponse" performsRoleRef="Responder_UBL1SBSOrderWithSimpleResponse"/>
  </BusinessTransactionActivity>
  <Decision name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_Decision"> [8 lines]
  <Failure name="Failure" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_Failure"/>
  <Success name="Success" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_Success"/>
  </BusinessCollaboration>
  </Package>
</ProcessSpecification>

```

“Create Order” Business Transaction



Commercial Transaction “Create Order”

```

41 <CommercialTransaction name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_CT" IsGuaranteedDeliveryRequired="true">
42 <RequestingRole name="Initiator_UBL1SBSOrderWithSimpleResponse" nameID="Initiator_UBL1SBSOrderWithSimpleResponse"/>
43 <RespondingRole name="Responder_UBL1SBSOrderWithSimpleResponse" nameID="Responder_UBL1SBSOrderWithSimpleResponse"/>
44 <RequestingBusinessActivity name="Send Order" nameID="SendOrder_UBL1SBSOrderWithSimpleResponse_ReqBA"
45 IsAuthorizationRequired="true" IsIntelligibleCheckRequired="true" IsNonRepudiationReceiptRequired="true" IsNonRepudiationRequired="true">
46 <DocumentEnvelope name="UBL 1.0 SBS Order" nameID="Order_UBL1SBSOrderWithSimpleResponse_DE"
47 businessDocumentRef="Order_UBL1SBSOrderWithSimpleResponse_BD" IsAuthenticated="transient" IsConfidential="transient" IsTamperDetectable="transient"/>
48 <ReceiptAcknowledgement signalDefinitionRef="ra2" nameID="RA2_UBL1SBSOrderWithSimpleResponse" name="RA2"/>
49 <ReceiptAcknowledgementException signalDefinitionRef="rae2" nameID="RAE2_UBL1SBSOrderWithSimpleResponse" name="RAE2"/>
50 <AcceptanceAcknowledgement signalDefinitionRef="aa2" nameID="AA2_UBL1SBSOrderWithSimpleResponse" name="AA2"/>
51 <AcceptanceAcknowledgementException signalDefinitionRef="aae2" nameID="AAE2_UBL1SBSOrderWithSimpleResponse" name="AAE2"/>
52 </RequestingBusinessActivity>
53 <RespondingBusinessActivity name="Firm Order" nameID="FirmOrder_UBL1SBSOrderWithSimpleResponse_ResBA"
54 IsAuthorizationRequired="true" IsIntelligibleCheckRequired="true" IsNonRepudiationReceiptRequired="true" IsNonRepudiationRequired="true">
55 <DocumentEnvelope name="UBL 1.0 SBS Order Denied" nameID="OrderDenied_UBL1SBSOrderWithSimpleResponse_DE"
56 businessDocumentRef="OrderDenied_UBL1SBSOrderWithSimpleResponse_BD" IsPositiveResponse="false" IsAuthenticated="transient" IsConfidential="transient"
57 IsTamperDetectable="transient"/>
58 <DocumentEnvelope name="UBL 1.0 SBS Order Accepted" nameID="OrderAccepted_UBL1SBSOrderWithSimpleResponse_DE"
59 businessDocumentRef="OrderAccepted_UBL1SBSOrderWithSimpleResponse_BD" IsPositiveResponse="true" IsAuthenticated="transient" IsConfidential="transient"
60 IsTamperDetectable="transient"/>
61 <ReceiptAcknowledgement signalDefinitionRef="ra2" nameID="RA2_UBL1SBSOrderWithSimpleResponse_B" name="RA2"/>
62 <ReceiptAcknowledgementException signalDefinitionRef="rae2" nameID="RAE2_UBL1SBSOrderWithSimpleResponse_B" name="RAE2"/>
63 <AcceptanceAcknowledgement signalDefinitionRef="aa2" nameID="AA2_UBL1SBSOrderWithSimpleResponse_B" name="AA2"/>
64 <AcceptanceAcknowledgementException signalDefinitionRef="aae2" nameID="AAE2_UBL1SBSOrderWithSimpleResponse_B" name="AAE2"/>
65 </RespondingBusinessActivity>
66 </CommercialTransaction>

```

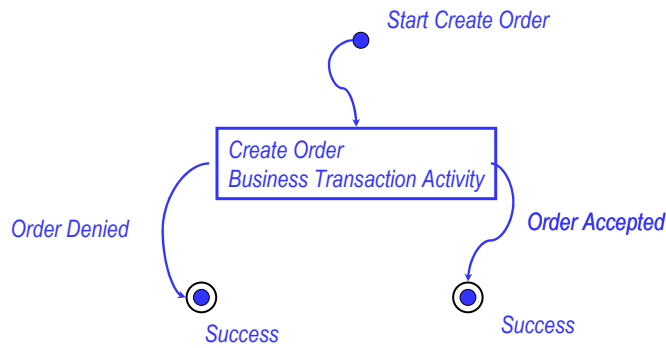

Business Transactions (1)

- Business Transaction Patterns (from UMM)
 - Four BTPs with Response document:
 - Commercial Transaction, Query-Response, Request-Confirm, Request-Response
 - Two BTPs without response document:
 - Notification, Information Distribution
 - Determine use of “Signals”
- Requesting Business Activity
- Responding Business Activity (optional)
- Associated Document Envelopes:
 - Logical business documents and/or attachments
 - business *semantics* (positive response or “business failure”)
 - Instruct ebXML middleware to mark document as
 - having validated source (authenticated)
 - being confidential (to be encrypted)
 - and/or tamper proof (signed message digest)

Business Transactions (2)

- For requesting and responding Business Activity, specify requirements:
 - (and available time) for *acknowledgements* of receipt or acceptance
 - to use intelligibility checks
 - to use of a transport protocol that *guarantees delivery*
 - to digitally sign messages (*non-repudiation* of sender)
 - to digitally sign message receipts (non-repudiation of recipient)
 - to verify sender is *authorized* to perform activity

“Create Order” Choreography



Choreography in ebBP

```

67 <BusinessCollaboration name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_BC">
68 <Role name="Buyer" nameID="Buyer_UBL1SBSOrderWithSimpleResponse"/>
69 <Role name="Seller" nameID="Seller_UBL1SBSOrderWithSimpleResponse"/>
70 <TimeToPerform/>
71 <Start name="Start Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_ST">
72 <ToLink toBusinessStateRef="CreateOrder_UBL1SBSOrderWithSimpleResponse_BTA"/>
73 </Start>
74 <BusinessTransactionActivity name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_BTA">
75 <BusinessTransactionRef="CreateOrder_UBL1SBSOrderWithSimpleResponse_CT" hasLegalIntent="true">
76 <TimeToPerform/>
77 <Performs currentRoleRef="Buyer_UBL1SBSOrderWithSimpleResponse" performsRoleRef="Initiator_UBL1SBSOrderWithSimpleResponse"/>
78 <Performs currentRoleRef="Seller_UBL1SBSOrderWithSimpleResponse" performsRoleRef="Responder_UBL1SBSOrderWithSimpleResponse"/>
79 </BusinessTransactionActivity>
80 <Decision name="Create Order" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_Decision">
81 <FromLink fromBusinessStateRef="CreateOrder_UBL1SBSOrderWithSimpleResponse_BTA"/>
82 <ToLink toBusinessStateRef="CreateOrder_UBL1SBSOrderWithSimpleResponse_Failure"/>
83 <ConditionExpression expressionLanguage="DocumentEnvelope" expression="OrderDenied_UBL1SBSOrderWithSimpleResponse_DE"/>
84 </ToLink>
85 <ToLink toBusinessStateRef="CreateOrder_UBL1SBSOrderWithSimpleResponse_Success">
86 <ConditionExpression expressionLanguage="DocumentEnvelope" expression="OrderAccepted_UBL1SBSOrderWithSimpleResponse_DE"/>
87 </ToLink>
88 </Decision>
89 <Failure name="Failure" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_Failure"/>
90 <Success name="Success" nameID="CreateOrder_UBL1SBSOrderWithSimpleResponse_Success"/>
91 </BusinessCollaboration>
92 </B2BProcess>
  
```

Collaboration Protocol Profiles and Agreements

CPP, CPA and ebBP

- Two layers:
 - ebBP defines business partner-*independent* information and configuration
 - Partners referenced using *Role* labels
 - CPP/CPA defines partner-*dependent* information and configuration binding
 - Partners and partner systems identified
- Collaboration Protocol
 - *Profiles* (CPP): one partner's e-business capabilities
 - *Agreements* (CPA): specific bilaterally agreed configuration
 - In practice CPA are often created from scratch (without ebBP and without CPPs)

Anatomy of a CPA

- CPA Metadata (validity, ID)
- Per Party
 - Messages Party can Send (Action Bindings)
 - Messages Party can Receive (Action Bindings)
 - Certificates (if used) for signing, encrypting and/or SSL
 - Delivery channels
 - Transport Bindings
 - Document Exchange
- Packaging

PartyInfo

```

7 <tp:PartyInfo tp:partyName="Buyer" tp:defaultMshChannelId="Buyer_Channel" tp:defaultMshPackageId="ebMS2MshSignalPackage">
8 <tp:PartyId tp:type="string">Buyer</tp:PartyId>
9 <tp:PartyRef xlink:href="http://www.buyer.com"/>
10 <tp:CollaborationRole>
11 <tp:ProcessSpecification tp:version="1.0.3" tp:name="UBL 1.0 Small Business Subset Order With Simple Response" xlink:type="simple"
12 xlink:href="http://docs.oasis-open.org/ubl/cs-UBP-1.0/ebBP/ebxmlbp-2.0_ubl-1-sbs-order-with-simple-response-1.xmi#UBL1SBSOrderWithSimpleResponse_P5"
13 tp:uid="bp:id:um.oasis.names.draft.bps:ubl-1-sbs-order-with-simple-response"/>
14 <tp:Role xlink:type="simple" xlink:href="http://docs.oasis-open.org/ubl/cs-UBP-1.0/ebBP/ebxmlbp-2.0_ubl-1-sbs-order-with-simple-response-1.xmi#Buyer_UBL1SBSO
15 <tp:ServiceBinding>
16 <tp:Service tp:type="http://docs.oasis-open.org/ebxmlbp/ebbp-2.0" Create Order</tp:Service>
17 <tp:CanSend>
18 <tp:ThisPartyActionBinding tp:action="Send Order UBL 1.0 SBS Order" tp:id="BuyerSendActionBinding_1" tp:packageId="SellerOrderPackage">
19 <tp:BusinessTransactionCharacteristics
20 tp:isAuthorizationRequired="false" tp:isIntelligibleCheckRequired="false" tp:isNonRepudiationRequired="false" tp:isNonRepudiationReceiptRequired="false"
21 tp:isConfidential="none" tp:isAuthenticated="none" tp:isTamperProof="none"/>
22 <tp>ActionContext tp:binaryCollaboration="Create Order" tp:businessTransactionActivity="Create Order" tp:requestOrResponseAction="Send Order"/>
23 <tp:ChannelId>Buyer_Channel</tp:ChannelId>
24 <tp:ThisPartyActionBinding>
25 <tp:OtherPartyActionBinding>SellerReceiveActionBinding_1</tp:OtherPartyActionBinding>
26 </tp:CanSend>
27 <tp:CanReceive> [8 lines]
28 <tp:CanReceive> [8 lines]
29 </tp:ServiceBinding>
30 </tp:CollaborationRole>
31 <tp:DeliveryChannel tp:channelId="Buyer_Channel" tp:docExchangeId="Buyer_docExchange_NoDsig_NoXmlenc_NoRm" tp:transportId="Buyer_transport_Http"> [3 lines]
32 <tp:Transport tp:transportId="Buyer_transport_Http"> [8 lines]
33 <tp:DocExchange tp:docExchangeId="Buyer_docExchange_NoDsig_NoXmlenc_NoRm"> [3 lines]
34 </tp:PartyInfo>

```

Channel, Transport, DocExchange (minimalistic)

```

99 <tp:DeliveryChannel tp:channelId="Seller_Channel" tp:docExchangeId="Seller_docExchange_NoDsig_NoXmlenc_NoRm" tp:transportId="Seller_transport_Http">
100 <tp:MessagingCharacteristics tp:syncReplyMode="none" tp:ackRequested="always" tp:actor="urn:oasis:names:tc:ebxml-msg:actor:PartyMSH"
101 <tp:ackSignatureRequested="never" tp:duplicateElimination="never"/>
102 </tp:DeliveryChannel>
103 <tp:Transport tp:transportId="Seller_transport_Http">
104 <tp:TransportSender>
105 <tp:TransportProtocol tp:version="1.1">HTTP</tp:TransportProtocol>
106 </tp:TransportSender>
107 <tp:TransportReceiver>
108 <tp:TransportProtocol tp:version="1.1">HTTP</tp:TransportProtocol>
109 <tp:Endpoint tp:uri="http://SonyVaio.lan:4082/exchange/Seller"/>
110 </tp:TransportReceiver>
111 </tp:Transport>
112 <tp:DocExchange tp:docExchangeId="Seller_docExchange_NoDsig_NoXmlenc_NoRm">
113 <tp:ebXMLSenderBinding tp:version="2.0"/>
114 <tp:ebXMLReceiverBinding tp:version="2.0"/>
115 </tp:DocExchange>
116 </tn:PartyInfo>

```

A more complex example

```

179 <tp:DeliveryChannel tp:channelId="Buyer_Channel" tp:docExchangeId="Buyer_docExchange_Dsig_NoXmlenc_Rm" tp:transportId="Buyer_transport_Http">
180 <tp:MessagingCharacteristics tp:syncReplyMode="none" tp:ackRequested="always" tp:actor="urn:oasis:names:tc:ebxml-msg:actor:PartyMSH"
181 <tp:ackSignatureRequested="always" tp:duplicateElimination="always"/>
182 </tp:DeliveryChannel>
183 <tp:Transport tp:transportId="Buyer_transport_Http">
184 <tp:TransportSender [2 lines]
187 <tp:TransportReceiver>
188 <tp:TransportProtocol tp:version="1.1">HTTP</tp:TransportProtocol>
189 <tp:Endpoint tp:uri="http://SonyVaio.lan:4080/exchange/Buyer"/>
190 </tp:TransportReceiver>
191 </tp:Transport>
192 <tp:DocExchange tp:docExchangeId="Buyer_docExchange_Dsig_NoXmlenc_Rm">
193 <tp:ebXMLSenderBinding tp:version="2.0">
194 <tp:ReliableMessaging>
195 <tp:Retries>3</tp:Retries>
196 <tp:RetryInterval>PT2H</tp:RetryInterval>
197 <tp:MessageOrderSemantics>NotGuaranteed</tp:MessageOrderSemantics>
198 </tp:ReliableMessaging>
199 <tp:PersistDuration>P1D</tp:PersistDuration>
200 <tp:SenderNonRepudiation>
201 <tp:NonRepudiationProtocol>http://www.w3.org/2000/09/xmldsig#</tp:NonRepudiationProtocol>
202 <tp:HashFunction>http://www.w3.org/2000/09/xmldsig#sha1</tp:HashFunction>
203 <tp:SignatureAlgorithm>http://www.w3.org/2000/09/xmldsig#rsa-sha1</tp:SignatureAlgorithm>
204 <tp:SigningCertificateRef tp:certId="Buyer_signing_cert"/>
205 </tp:SenderNonRepudiation>
206 </tp:ebXMLSenderBinding>
207 <tp:ebXMLReceiverBinding tp:version="2.0">
208 <tp:ReliableMessaging>
209 <tp:Retries>3</tp:Retries>
210 <tp:RetryInterval>PT2H</tp:RetryInterval>
211 <tp:MessageOrderSemantics>NotGuaranteed</tp:MessageOrderSemantics>
212 </tp:ReliableMessaging>
213 <tp:PersistDuration>P1D</tp:PersistDuration>
214 <tp:ReceiverNonRepudiation [5 lines]
220 </tp:ebXMLReceiverBinding>
221 </tp:DocExchange>

```

Channel uses Reliable Messaging

Channel uses Digital Signatures for Non-Repudiation

ebXML Messaging

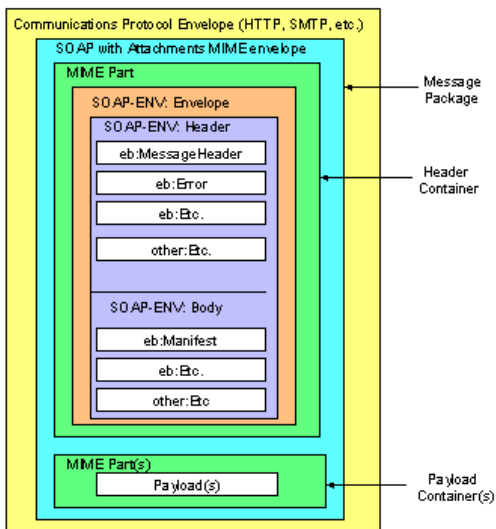
Messaging in ebXML

- Message Structure
 - Header information
 - Payload enveloping (Business Documents)
- Messaging Protocol
 - Basic behavior of Message Service
 - Basic functionality, like routing, correlation
 - Reliable Messaging
 - Sending Acknowledgments; retrying messages when not acknowledged (in time)
 - Security
 - Setting/verifying digital signatures; encrypting payloads
- Key to retrieve configuration information from CPA:
 - From, To, Service, Action, CPAId

ebXML Messaging

- Version 2
 - OASIS Standard
 - ISO 15000-2
 - Multiple interoperable software implementations
 - Open Source implementation available
 - In production today
- Version 3
 - Under development in ebXML Messaging TC
 - Provides alignment with Web Services, functional extensions

Message Structure



- SOAP-with-attachments
 - Message is a single MIME container
 - SOAP 1.1 envelope in first MIME part
 - Other MIME parts for payload
- Extra ebXML info, namespace-qualified
 - Signatures
 - Reliable Messaging

ebXML Message Header

- Standard Header Information
 - SOAP envelope with ebXML extensions
 - Party Identification of *From* and *To* Party
 - Collaboration Information (CPA used)
 - Service and Action (links to CPA to BP)
 - Message Identification and Correlation information
- Reliable Messaging Header elements
 - (Requests for) Acknowledgments
- Security Header Elements
 - Signatures of signed payloads

Sample Messages (1)

- CPA with no reliable messaging and no digital signatures
- UBL Order
 - From Buyer to Seller
- UBL Order Response Simple
 - From Seller to Buyer
- Structures
 - MIME Container
 - ebXML SOAP header


```

POST http://SonyVaio.lan:4082/exchange/Seller HTTP/1.1
Content-Type: multipart/related; type="text/xml"; boundary="----
=_Part_0_23594703.1145557140122"
SOAPAction: "ebXML"
Host: SonyVaio.lan:4082
Connection: close
Content-Length: 9812

-----=_Part_0_23594703.1145557140122
Content-Type: text/xml
Content-Transfer-Encoding: binary

<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
... Stuff deleted ...
</soap:Envelope>

-----=_Part_0_23594703.1145557140122
Content-Type: application/xml
Content-Transfer-Encoding: binary
Content-Disposition: attachment; filename=Order.xml
Content-Id: <A1145557139942.4491@SonyVaio>

<Order xmlns="urn:oasis:names:specification:ubl:schema:xsd:Order-1.0"
... Stuff deleted ...
<</Order>

-----=_Part_0_23594703.1145557140122--

```

HTTP header

ebXML
SOAP
envelope

UBL
Order
Payload

Order Message SOAP Header

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
3   xmlns:xlink="http://www.w3.org/1999/xlink"
4   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5   xsi:schemaLocation="http://schemas.xmlsoap.org/soap/envelope/ http://www.oasis-open.org/committees/ebxml-msg/schema/envelope.xsd">
6 <soap:Header xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
7   xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
8   http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
9 <eb:MessageHeader eb:id="ID144606501145557139962SonyVaio" eb:version="2.0" soap:mustUnderstand="1">
10 <eb:From><eb:PartyId eb:type="string">Buyer</eb:PartyId><eb:Role>Buyer</eb:Role></eb:From>
11 <eb:To><eb:PartyId eb:type="string">Seller</eb:PartyId><eb:Role>Seller</eb:Role></eb:To>
12 <eb:CPIAId>Buyer: Seller: UBL 1.0 Small Business Subset Order With Simple Response: NoDsig_NoXmenc_NoRm</eb:CPIAId>
13 <eb:ConversationId>PL0110/03-001234</eb:ConversationId>
14 <eb:Service eb:type="http://docs.oasis-open.org/ebxmlbp/ebbp-2.0">Create Order</eb:Service>
15 <eb:Action>Send Order UBL 1.0 SBS Order</eb:Action>
16 <eb:MessageData>
17 <eb:MessageId>M1145557137789.4484@SonyVaio8368009045880005557</eb:MessageId>
18 <eb:Timestamp>2006-04-20T18:18:57.789Z</eb:Timestamp></eb:MessageData>
19 </eb:MessageHeader>
20 </soap:Header>
21 <soap:Body xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
22   xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
23   http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
24 <eb:Manifest eb:id="ID35716381145557140032SonyVaio" eb:version="2.0">
25 <eb:Reference eb:id="ID320453351145557139942SonyVaio" xlink:href="cid:A1145557139942.4491@SonyVaio" xlink:type="simple"/>
26 </eb:Manifest>
27 </soap:Body>
28 </soap:Envelope>
~

```

Order Response SOAP Header

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope"
3   xmlns:xlink="http://www.w3.org/1999/xlink"
4   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5   xsi:schemaLocation="http://schemas.xmlsoap.org/soap/envelope/ http://www.oasis-open.org/committees/ebxml-msg/schema/envelope.xsd">
6   <soap:Header xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
7     xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
8     http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
9     <eb:MessageHeader eb:id="ID147850421145557451840SonyVaio" eb:version="2.0" soap:mustUnderstand="1">
10      <eb:From>
11        <eb:PartyId eb:type="string">Seller</eb:PartyId> <eb:Role>Seller</eb:Role></eb:From>
12      <eb:To>
13        <eb:PartyId eb:type="string">Buyer</eb:PartyId> <eb:Role>Buyer</eb:Role>
14      </eb:To>
15      <eb:CPAId>Buyer:Seller:UBL 1.0 Small Business Subset Order With Simple Response:NoDsig_NoXmenc_NoRm</eb:CPAId>
16      <eb:ConversationId>PL0110/03-001234</eb:ConversationId>
17      <eb:Service eb:type="http://docs.oasis-open.org/ebxmlbp/ebbp-2.0">Create Order</eb:Service>
18      <eb:Action>Firm Order UBL 1.0 SBS Order Denied</eb:Action>
19      <eb:MessageData>
20        <eb:MessageId>M1145557451400.2777@SonyVaio600811122449660161</eb:MessageId>
21        <eb:Timestamp>2006-04-20T18:24:11.400Z</eb:Timestamp>
22        <eb:RefToMessageId>M1145557137789.4484@SonyVaio8368009045880005557</eb:RefToMessageId>
23      </eb:MessageData> </eb:MessageHeader>
24    </soap:Header>
25    <soap:Body xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
26      xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd http://www.oasis-open.org/committees/ebxml-n
27      <eb:Manifest eb:id="ID13581321145557451880SonyVaio" eb:version="2.0">
28        <eb:Reference eb:id="ID113810481145557451830SonyVaio" xlink:href="cid:A1145557451830.2779@SonyVaio" xlink:type="simple"/>
29      </eb:Manifest>
30    </soap:Body>
31  </soap:Envelope>

```

Sample Messages (2)

- CPA with:
 - Reliable Messaging with standalone toParty acknowledgments and duplicate elimination
 - No Digital Signatures
- Structures
 - Order Message ebXML SOAP Header
 - Receipt Acknowledgment
 - Order Response Message ebXML SOAP Header
 - (Receipt of Order Response omitted)

Order Message

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
3   xmlns:xlink="http://www.w3.org/1999/xlink"
4   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5   xsi:schemaLocation="http://schemas.xmlsoap.org/soap/envelope/ http://www.oasis-open.org/committees/ebxml-msg/schema/envelope.xsd">
6   <soap:Header
7     xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
8     xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
9     http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
10    <eb:MessageHeader
11      eb:id="ID192663491145559911066SonyVaio" eb:version="2.0"
12      soap:mustUnderstand="1">
13      <eb:From><eb:PartyId eb:type="string">Buyer</eb:PartyId><eb:Role>Buyer</eb:Role></eb:From>
14      <eb:To><eb:PartyId eb:type="string">Seller</eb:PartyId><eb:Role>Seller</eb:Role></eb:To>
15      <eb:CPAId>Buyer:Seller:UBL 1.0 Small Business Subset Order With Simple Response::NoDsig_NoXmlenc_Rm</eb:CPAId>
16      <eb:ConversationId>PL0110/03-001234</eb:ConversationId>
17      <eb:Service eb:type="http://docs.oasis-open.org/ebxmlbp/ebbp-2.0">Create Order</eb:Service>
18      <eb:Action>Send Order UBL 1.0 SBS Order</eb:Action><eb:MessageData>
19        <eb:MessageId>M1145559909404.9443@SonyVaio4720597220251699965</eb:MessageId>
20        <eb:Timestamp>2006-04-20T19:05:09.404Z</eb:Timestamp>
21      </eb:MessageData><eb:DuplicateElimination/>
22    </eb:MessageHeader>
23    <eb:AckRequested eb:id="ID170500861145559909724SonyVaio" eb:signed="false" eb:version="2.0"
24      soap:actor="urn:oasis:names:tc:ebxml-msg:actor:toPartyMSH" soap:mustUnderstand="1"/>
25  </soap:Header>
26  <soap:Body xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
27    xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
28    http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
29    <eb:Manifest eb:id="ID92608321145559911187SonyVaio" eb:version="2.0">
30      <eb:Reference eb:id="ID179373041145559911046SonyVaio" xlink:href="cid:A1145559911026.9446@SonyVaio" xlink:type="simple"/>
31    </eb:Manifest>
32  </soap:Body>
33 </soap:Envelope>

```

Order Message Receipt Acknowledgment

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xlink="http://www.w3.org/1999/xlink"
3   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4   xsi:schemaLocation="http://schemas.xmlsoap.org/soap/envelope/ http://www.oasis-open.org/committees/ebxml-msg/schema/envelope.xsd">
5   <soap:Header xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
6     xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
7     http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
8     <eb:MessageHeader eb:id="ID217790731145559959466SonyVaio" eb:version="2.0" soap:mustUnderstand="1">
9       <eb:From><eb:PartyId eb:type="string">Seller</eb:PartyId><eb:Role>Seller</eb:Role></eb:From>
10      <eb:To><eb:PartyId eb:type="string">Buyer</eb:PartyId><eb:Role>Buyer</eb:Role></eb:To>
11      <eb:CPAId>Buyer:Seller:UBL 1.0 Small Business Subset Order With Simple Response::NoDsig_NoXmlenc_Rm</eb:CPAId>
12      <eb:ConversationId>PL0110/03-001234</eb:ConversationId>
13      <eb:Service>urn:oasis:names:tc:ebxml-msg:service</eb:Service>
14      <eb:Action>Acknowledgment</eb:Action><eb:MessageData>
15        <eb:MessageId>M1145559957844.4969@SonyVaio2859898212273207866</eb:MessageId>
16        <eb:Timestamp>2006-04-20T19:05:57.844Z</eb:Timestamp>
17        <eb:RefToMessageId>M1145559909404.9443@SonyVaio4720597220251699965</eb:RefToMessageId>
18      </eb:MessageData></eb:MessageHeader>
19      <eb:Acknowledgment eb:id="ID227876351145559958144SonyVaio" eb:version="2.0"
20        soap:actor="urn:oasis:names:tc:ebxml-msg:actor:toPartyMSH" soap:mustUnderstand="1">
21        <eb:Timestamp>2006-04-20T19:05:58.144Z</eb:Timestamp>
22        <eb:RefToMessageId>M1145559909404.9443@SonyVaio4720597220251699965</eb:RefToMessageId>
23        <eb:From><eb:PartyId eb:type="string">Seller</eb:PartyId><eb:Role>Seller</eb:Role></eb:From>
24      </eb:Acknowledgment></soap:Header>
25    <soap:Body xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
26      xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
27      http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
28    </soap:Envelope>

```

Built-in
ebMS
Service

Acknowledged
Message

Order Response Message

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
3   xmlns:xlink="http://www.w3.org/1999/xlink"
4   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5   xsi:schemaLocation="http://schemas.xmlsoap.org/soap/envelope/ http://www.oasis-open.org/committees/ebxml-msg/schema/envelope.xsd">
6 <soap:Header xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
7   xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
8   http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
9 <eb:MessageHeader eb:id="ID39410151145560369656SonyVaio" eb:version="2.0" soap:mustUnderstand="1">
10 <eb:From><eb:PartyId eb:type="string">Seller</eb:PartyId><eb:Role>Seller</eb:Role></eb:From>
11 <eb:To><eb:PartyId eb:type="string">Buyer</eb:PartyId><eb:Role>Buyer</eb:Role></eb:To>
12 <eb:CPAId>Buyer.Seller:UBL 1.0 Small Business Subset Order With Simple Response.NoDsig_NoXmenc_Rm</eb:CPAId>
13 <eb:ConversationId>PL0110/03-001234</eb:ConversationId>
14 <eb:Service eb:type="http://docs.oasis-open.org/ebxmlbp/ebbp-2.0">Create Order</eb:Service>
15 <eb:Action>Firm Order UBL 1.0 SBS Order Denied</eb:Action>
16 <eb:MessageData>
17 <eb:MessageId>M1145560366521.5397@SonyVaio4648646050555087584</eb:MessageId>
18 <eb:Timestamp>2006-04-20T19:12:46.521Z</eb:Timestamp>
19 <eb:RefToMessageId>M1145559909404.9443@SonyVaio4720597220251699965</eb:RefToMessageId>
20 </eb:MessageData><eb:DuplicateElimination/></eb:MessageHeader>
21 <eb:AckRequested eb:id="ID293669541145560366551SonyVaio" eb:signed="false" eb:version="2.0"
22   soap:action="urn:oasis:names:tc:ebxml-msg:actorToPartyMSH" soap:mustUnderstand="1"/>
23 </soap:Header>
24 <soap:Body xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
25   xsi:schemaLocation="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd
26   http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd">
27 <eb:Manifest eb:id="ID2011341145560369656SonyVaio" eb:version="2.0">
28 <eb:Reference eb:id="ID247502961145560369656SonyVaio" xlink:href="cid:A1145560369656.5402@SonyVaio" xlink:type="simple"/>
29 </eb:Manifest>
30 </soap:Body>
31 </soap:Envelope>

```

ebXML Messaging Interoperability

OASIS Implementation, Interoperability & Conformance TC

- Conformance and Interoperability
 - Conformance Test Set for ebXML Messaging 2.0
 - Basis Interoperability Test Set for ebXML Messaging 2.0
 - Test Framework
- Current focus on Deployment templates

OASIS IIC Deployment Template

- OASIS ebXML Implementation, Interoperability and Conformance TC
 - <http://www.oasis-open.org/committees/ebxml-iic/>
- Community often wants to document *how* they use a spec to promote *interoperability*
 - ebXML Messaging contains many optional features and parameters
 - Not restricted to CPA information
- **Deployment Guide** documents:
 - The exact use of ebMS in a community
 - Additional profiling on message content and format
- **Deployment Profile Template** is a pre-structured guide, ready to be instantiated
- Recently generalized to other ebXML modules

Examples

- EAN-UCC Deployment Guide
 - http://www.oasis-open.org/committees/download.php/1715/EAN-UCC_ebMS_Deployment_Guide_10.doc
- HL-7 ebMS transport binding (concept)
- Netherlands Government
 - Hierarchy of profiles

ebMS Interoperability

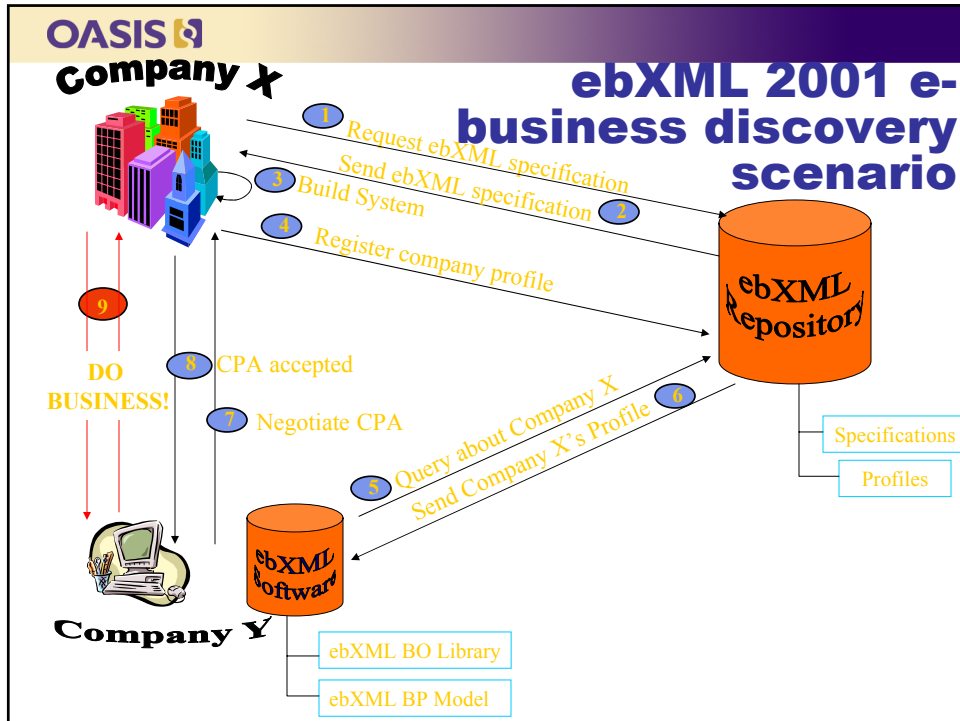
- Asia
 - <http://www.ebxmlasia.org/>
- Europe
 - CEN ISSS with OASIS
http://www.idealliance.org/papers/dx_xml03/html/abstract/02-06-01.html
 - ETSI <http://www.etsi.org/plugtests/History/2004ebXML.htm>
- Drummond Group
 - <http://www.drummondgroup.com/html-v2/ebXML-companies.html>
 - <http://www.ebusinessready.org/ebxml.html>
- STAR
 - <http://www.starstandard.org/sigs/infrastructure/default.htm>

ebXML Registry

Input from ebRR TC webinar slides

Registry vision in ebXML, anno 2001

- ebBP, CPA, Messaging provide modeling, configuration and execution of business transactions
- Vision of *dynamic e-business*: discovery of partners and negotiation of agreements
 - **Registry/Repository** provides registry/repository functions
 - CPP and negotiation protocol for CPA formation



OASIS

What is ebXML Registry? Answer from 2005 ebRR webinar

- A Service Oriented Architecture registry as well as a repository
 - Classification of any type of information
 - Managing relationships between information
 - Taxonomy hosting, browsing and validation
 - File/folder organization of information

What is ebXML Registry? (2)

- A content management system for secure, federated information
 - Provides services for sharing content and metadata between entities in a federated environment
 - Lifecycle Management (LCM) actions logged in an audit trail
 - Supports automatic versioning of objects

Use Cases

- SOA registry repository
 - ebXML or Web Services
- Web content management
- Controlled vocabulary
- Business process catalog
- Electronic forms
- ebXML core components catalog
- Domain-specific use cases
 - Electronic medical records (IHE-XDS)
 - Geological information systems (Open GIS)
 - Metadata store for grid computing

Federated Information Management

- Multiple ebXML registries may be federated together to appear as a single virtual registry/repository
 - Seamless information integration and sharing
 - Allows local autonomy over data
- ebXML registry relies on SAML – the federated identity management standard

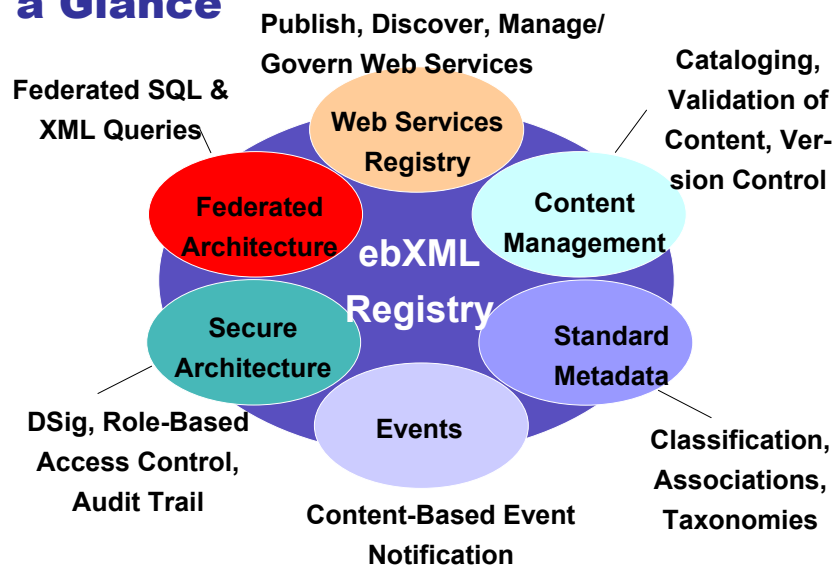
The Specifications

- ebXML Registry Information Model
 - Defines what metadata and content can be stored in the registry
- ebXML Registry Services and Protocols
 - Defines the services and service interfaces provided by the registry
 - Defines the API for accessing the registry
- ISO 15000 Standard, Part 3 and 4

Profiles Implement Business Context

- Enable interoperability within and across domains
- Define restriction/extension requirements of usage
- Current examples of profiles include
 - Web Services Profile
 - WSRP (Remote Portlets) Profile
 - Open GIS Profile
 - HL7 Profile
 - IHE Cross-Enterprise Document Sharing (XDS)
 - ebXML Core Components Profile

Key ebXML Registry Features at a Glance



Key Benefits of ebXML Registry

- Provides standard way to manage information assets
- Manages user-defined organization of and relationships among content and metadata
- Enforces user-defined standards for content
- Includes capabilities for managing and governance of information asset lifecycles

Key Benefits (2)

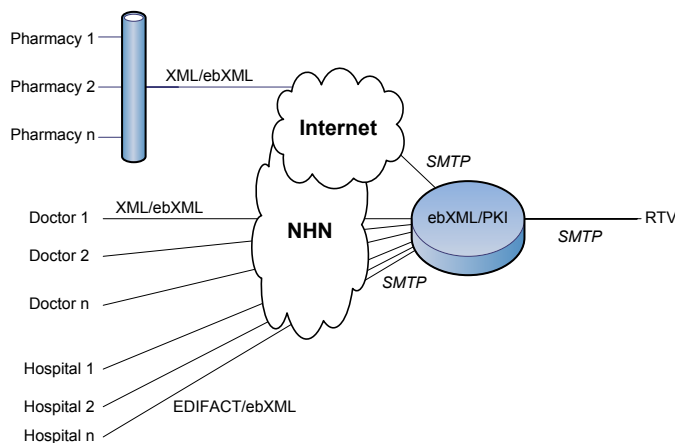
- Provides flexible mechanisms for content discovery
- Manages secure access to information assets
- Facilitates event-based delivery of information to appropriate personnel or systems
- Enables integration of information assets across organizational boundaries

Case Studies of ebXML deployments

Norway e-Health infrastructure

- National Insurance Scheme is cornerstone of Norwegian Welfare system
 - Provides benefits through the National Insurance Service (*Trygdeetaten*).
- Business case for e-health infrastructure:
 - Secure and reliable messaging
 - Better service at same or lower cost
 - Faster turnaround in claims processing
- Upgrade of the existing infrastructure
 - Support modern technology and standards
 - Connect more organizations, including General Practitioners' offices
 - Enable new services, including electronic transmission of prescriptions

ebXML services in the National Health Network



Applications (early 2006)

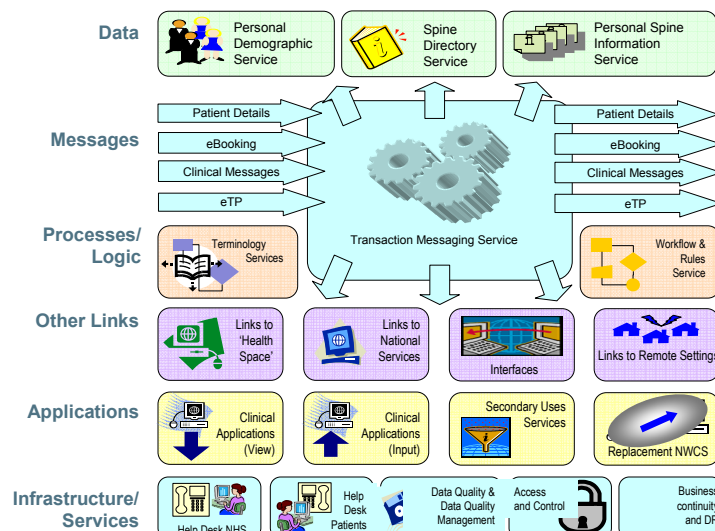
- Medical Certificate
 - 900 general practitioners at 350 offices (out of a total of 1850 offices) are using this application, covering access to 20% out of a total of 3.5 million medical records
- Doctors Request for Payment
 - Used by 500 doctors at 200 offices
- Pharmacies Request for Payment
 - All pharmacies in Norway are using this application, and transactions totaling 10 billion Norwegian Kroner (equivalent to 1.2 billion EURO, or 1.5 billion USD) annually are transacted using this application
- European Health Insurance Card (EHIC)
 - Two million cards have been produced
- Next project is electronic transmission of prescriptions

UK NHS Connecting for Health

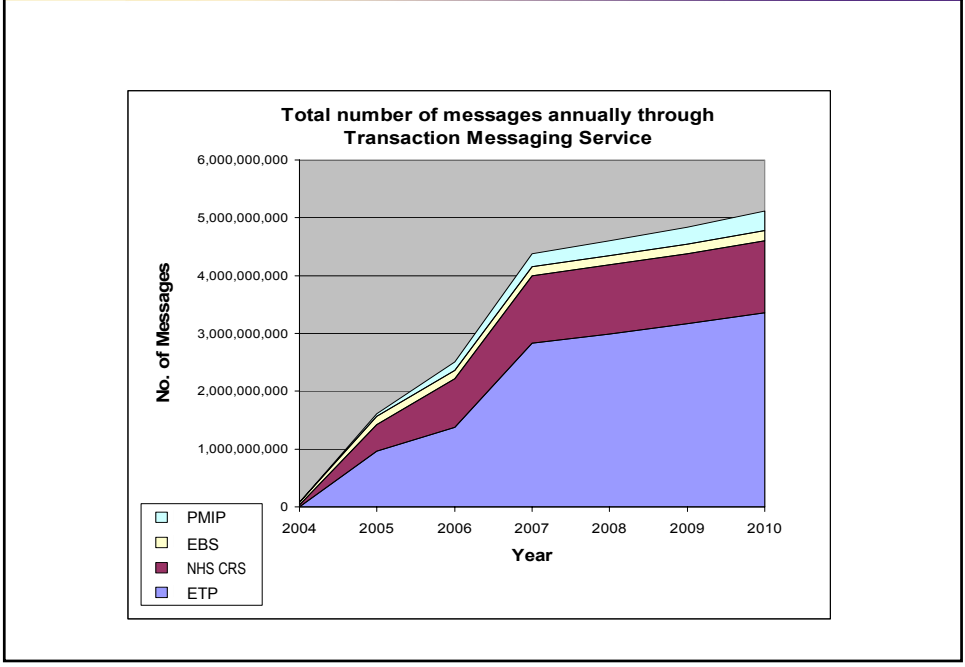
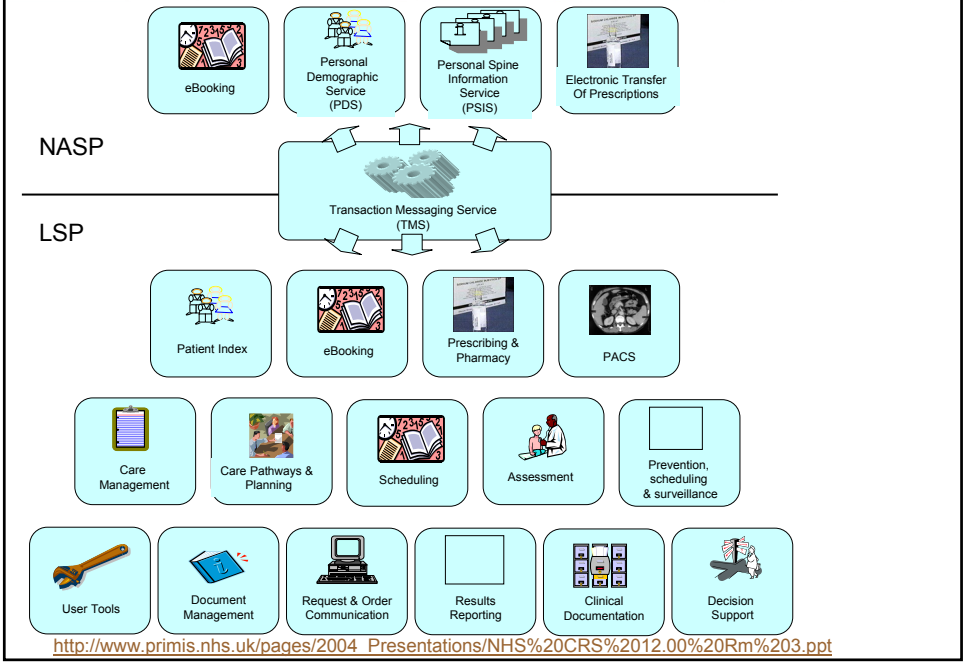
- Formerly known as “National Programme for IT” of the National Health Service
- Wanless Report April 2002
 - “A better use of information and communication technology within the NHS would improve efficiency and cut costs”
- NHS Care Records to enable details of the key events of a persons healthcare history throughout their life to be;
 - collected, stored & retrieved
 - made available at all times
 - across the whole country
 - to those with authority to view
- NHS CRS Data Spine
 - hosted by National Application Service Provider (NASP)
 - accessed from multiple Local Service Providers (LSP)

http://www.primis.nhs.uk/pages/2004_Presentations/NHS%20CRS%2012.00%20Rm%203.ppt

NHS Care Record SPINE

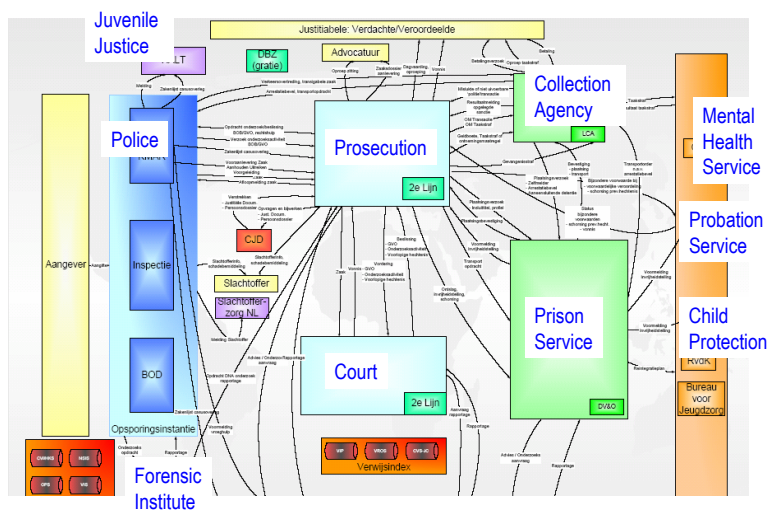


http://www.primis.nhs.uk/pages/2004_Presentations/NHS%20CRS%2012.00%20Rm%203.ppt



Netherlands Government

- Criminal Justice System
 - Joint initiative of Police, Prosecution, Courts, Ministry of Interior and Kingdom Relations, Ministry of Justice in the Netherlands to improve efficiency and quality by exchanging information electronically
- System of national government registries



ebXML in Criminal Justice System

- ebMS and CPA used for
 - Secure and reliable messaging based on open standards
 - Support of (multiple) heterogeneous payloads
 - Standard header/routing information
 - (Fast) Asynchronous messaging across multiple “hops” (intermediaries)
 - Flexible security options
- ebBP supports complex choreographies among large numbers of partners
 - http://www.oasis-open.org/committees/document.php?document_id=16436

More information

- Trygdeetaten
 - <http://www.oasis-open.org/casestudies/Trygdeetaten-A4.pdf>
 - http://www.oasis-open.org/events/adoption_forum_2005/slides/Gjorven.ppt
- UK NHS
 - http://www.ebxml.org/case_studies/NHS-ebMSG-casestudy-041206.pdf
- Netherlands government
 - <http://www.xtech-conference.org/2005/oasisosd/ebXMLMessaging.zip>

Energy Trade (Europe)

- European Transmission System Operators (ETSO) <http://www.etsso.org/>
- IEC 62325 (TC 57), Framework for deregulated electricity market communications
- ebXML used in production for Electronic Confirmation Matching

Automotive industry (North America)

- Automotive Industry Action Group (AIAG)
- Standards for Technology in Automotive Retail (STAR)
- “[Volkswagen] can cut \$1 million [...] using [...] ebXML-compliant collaborative-commerce software”
- “As ebXML becomes standardized, it will become the de facto way everyone does business”
 - Tony Scott, chief technology officer at GM.
- “By the end of 2007, GM expects to have its approximately 8,000 U.S. and Canadian dealers using its Retail Inventory Management (RIM) system [...] GM [...] has adopted Electronic Business XML (ebXML) as its communications protocol.”

IHE XDS (1)

- Integrating the Health Enterprise (IHE)
- Cross-Enterprise Document Sharing (XDS)
 - Registration, distribution and access across health enterprises of clinical documents forming a patient HER
 - Supports storage in existing applications
 - Supports indexing, query, retrieval

IHE XDS (2)

- Standards used
 - HL7, DICOM ..
 - SQL, SOAP with Attachments
 - ebXML Registry v2
 - Online Binding using SOAP
 - ebXML Messaging v2
 - Offline Binding Using SMTP
- More info at <http://www.ihe.net/>

Summary and Status

ebXML Today

- Advanced framework for B2B
 - State-of-the-art
 - Complete
 - Addresses complex choreographed interactions
 - Interoperable secure and reliable messaging
 - Advanced registry functionality
- Adoption steadily increasing
 - Large strategic projects
- Lacking visibility

Implementation Support

- Software
 - Open source implementations
 - <http://www.freebxml.org/>
 - Multiple large platform companies
 - Specialized B2B integration companies
 - Adapter suppliers
- Consulting
 - Many (of the larger international) consulting companies have references

More information

- ebXML portal
 - <http://www.ebxml.org/>
- ebXML-Dev mailing list
 - <http://lists.ebxml.org/archives/ebxml-dev/>
- Business Process
 - <http://www.oasis-open.org/committees/ebxml-bp/>
- Registry
 - <http://www.oasis-open.org/committees/regrep/>
- Messaging
 - <http://www.oasis-open.org/committees/ebxml-msg/>
- CPPA
 - <http://www.oasis-open.org/committees/ebxml-cppa/>
- Implementation, Interoperability and Conformance
 - <http://www.oasis-open.org/committees/ebxml-iic/>
- ebSOA
 - <http://www.oasis-open.org/committees/ebsoa/>

Q&A

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