What is (was) ebXML?

“Creating a Single Global Electronic Market”

- A modular suite of technical specifications
- Developed by OASIS and UN/CEFACT
- Enables communications using open standards

What was expected from ebXML?

- Lowers the cost/complexity of electronic business
- Facilitates global trade and puts SMEs and developing nations in the picture
- Expands electronic business to new and existing trading partners
- Converges current and emerging XML efforts
- Eliminates dependence by supporting any language, any payload, any transport

ebXML Specs - Modular Suite

- Technical Architecture
- Business Process Specification Schema
- Registry and Repository
- Collaboration Protocol Profile and Agreement
- Message Services
- Core Components (2004)
In Other Words …

Business Requirements must drive Technology Solutions

Embody Best Trade Practices in Standard e-Business Processes

Utilizing a Prescriptive Methodology to yield Predictable Results

… otherwise
Information System Architecture (ISA)
John Zachman
(IBM System Journal Volume 3, No 3, 1992, page 590-616)
General Perception

- Too Complex
- Too Technical
- Not in plain English
- Not for the Business Persons (Users)
- No guidance how to implement
- …

In the Beginning …

One Document
…
… for Everyone

Recap: Principles for BCF solution

- Business requirements drive technology solutions
- Embody best practices in collaborative e-Business standards
- Focus on expected business results
- Applicable to both:
  - Analysis
  - Implementations
BCF = Interoperability at the Business Layer

• The Benefits
  – Complete Framework for Business and Technology Understanding and Integration
  – Provides the means for legally binding Internet enabled Business and Administrative Communities
  – Rationalized and Standardized Processes and Information
  – Allows any Technology Implementation without changing the Business Requirements
  – Protection of existing Investments
  – Allows Software Producers to provide “Plug and Play” SME Solutions

So What is Missing?

• Acceptance of Business Collaboration Models as the foundation to define Business Requirements to drive the implementation
• Acceptance of an ebXML CC Library (maintained by UN/CEFACT) for use by all domains/sectors (industries and governments)
• The need for UN/CEFACT to step forward in its efforts to align/establish global procedures and best practices for all domains/sectors
• Global cooperation and coordination

Thank You!

• More Questions?
  – Email to:
    – klausn@attglobal.net

• For more Information
  – BCF Project Web Site (online 15 August)
  – www.bcf-project.org
Interoperability Framework and Standards in Hong Kong

Dr. David Cheung
Director
Center for E-Commerce Infrastructure Development
The University of Hong Kong
Hong Kong SAR, China

APEC Symposium on ebXML for Internet Paperless Trading and Collaborative eBusiness
July 21-23 2004, Bangkok, Thailand

Who We Are
- Center for E-Commerce Infrastructure Development (CECID)
  - An e-commerce R&D center in University of HK
  - ~20 full time staffs
- Primarily funded by R&D grants from HKSAR Govt
  - Project Phoenix: Establishment of ebXML Software Infrastructure in HK
  - Project Pyxis: eBusiness Interoperability Software Platform based on Open Standards
- Also provide R&D outsourcing services to industry

Agenda
- Interoperability – key to paperless trading
- Hong Kong Interoperability Framework
- Hong Kong Digital Trade and Transportation Network
- Open source software to enable interoperability
- Smart interoperability device

Interoperability – Paperless Trading
- Paperless trading is national and corporate competitiveness
  - Automation on B2B collaboration
  - Integration of business processes between trading partners
  - Interoperability
- Interoperability: different info systems to work together
- XML was invented to address interoperability problems
- XML is only a tool that can’t solve problems itself
- More challenges to meet...
Three Dimensions of Interoperability

- Standardization enables **mass interoperability**
- XML - a tool for standardization

**Messaging**

**Data**

Process

**Messaging**, **Data**, **Process**

Interoperability Frameworks

- A standard/guideline for a community to use technology standards
- eGovernment Interoperability Frameworks, e.g. in HK and UK
- European Interoperability Framework
  - European Union (EU) agreement for joining up public admin info systems across nations in EU
  - Based on open standards and open source software
- Pan Asian E-Commerce Alliance
- Alliance of eTrade agents in various Asian economies to define standards and use of standards to facilitate cross-border trade
- Hong Kong Digital Trade and Transportation Network

Streamlined procurement process

- Sony Music
- HMV
- Delivery of CDs

Dangerous Goods Declaration with ebXML

1. Paper submission
2. Web submission
3. XML submission

**Standardized DG manifest in XML**

Interoperability Frameworks

- A standard/guideline for a community to use technology standards
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- Hong Kong Digital Trade and Transportation Network
Hong Kong Interoperability Framework for eGovernment

- Guidelines for using and developing standards for G2G and G2B joined-up services
- General Principle
  - If a suitable international standard, use it. Otherwise, develop our own.
- Technical interoperability
  - Guidelines for adopting technical standards for specific data exchange applications
- Data interoperability
  - XML Schema Design and Management Guide
- Process interoperability is next target

XML Schema Design and Management Guide for HKSAR Govt

- XML schema modeling methodology for developing e-gov applications
- Based on ebXML Core Components & UBL approach
- Standardized Common Schemas
  - person's name, HKID#, address, etc.
- Central Data Registry
  - www.xml.gov.hk
- Already applied in real cases
  - Center for Health Protection
  - Dangerous goods declaration
  - Weather info publishing
- One of OASIS eGovernment best practices
  - http://egov.xml.org

Technical Interoperability Guidelines

- Interoperability
  - Environment (government)
  - Use the specifications related to e-commerce (EDI)
  - Interoperability
  - Simple transaction exchange
  - Data exchange
  - Document exchange

XML Schema Design and Management Guide

- XML schema modeling methodology
  - ebXML Core Components & UBL approach
- Standardized Common Schemas
  - person's name, HKID#, address, etc.
- Central Data Registry
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  - Weather info publishing
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### Digital Trade and Transportation Network in Hong Kong

- Electronic platform to enable efficient and reliable data exchange between logistics players in 9 industries.
- To enhance HKSAR’s competitiveness as a transportation and logistics hub in the region.
- Accenture report estimates:
  - Investment of HK$3 billion over 17 years.
  - Benefits of HK$11.8 billion.
- Messaging infrastructure:
  - ebXML + Web Services
  - 60 business docs and 10 workflows identified.

### Messaging Architecture

ebXML is core messaging protocol.
XML as Canonical Format for Data Transformation

- Transformation among 60 document types and 7 message formats - horrendous job!!!
- Forming a DTTN Standards Group to define an XML document standard for 60 documents
- How to define mapping data between different message formats - big challenge!!!

<table>
<thead>
<tr>
<th>Transformation Type</th>
<th>Supported message types</th>
<th>Supported data formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 document types</td>
<td>XML v1.0, XML v1.1, XML v1.2, eXSLT</td>
<td>XSLT, XSL-FO, XSL-FO 1.0, XSL-FO 1.1, XSL-FO 1.2</td>
</tr>
</tbody>
</table>

Hermes ebMS Handler

- Implemented ebXML Messaging Service V2
- Open-sourced since September 2002
- Recorded downloads from 60+ countries
- Passed ebXML Asia Committee Interoperability Test
- Developers from an European vendor taking Hermes to enter Europe Interoperability Test
- Next version aims at multiple protocols: ebXML + WS-Reliability
- Many production cases in Hong Kong and overseas
  - Sony Music and HMV: procurement of CDs, VCDs and DVDs
  - HKSAR Govt and shipping companies (e.g. OOCL): submission of dangerous goods manifests to HKSAR Govt
  - Spherion in Australia: transaction of training services with Telstra
- Some international vendors use Hermes to develop commercial products

ebMail

- ebBusiness mailer for small businesses - low cost and simple
- Provides user interface for composing and viewing documents easily and exchange documents through ebMS V2 over HTTP
- No dedicated Internet connection and server required
- Supports data import from and export for office applications, e.g. spreadsheet
- Extensible through plug-in modules for handling different business processes and documents
- Being deployed in Malaysia Customs to communicate vessel info
- Developed POC in Japan to support oil drum recycling
- Universal Business Language (UBL) support in next version
- ebXML + UBL e-commerce mailer → Mosaic of E-Commerce?
Problems of Hub-and-Spoke Model

- **Hub**
  - Not scalable - huge effort in supporting new document type and format

- **Spoke**
  - Thin client (web browser): human interface not for system-to-system integration
  - Complicated B2B and backend integration: high cost and lack of expertise
  - Smart interoperability-aware device to address these problems

B2B Connector (Project Elf)

- Standalone device for B2B exchange
- **Plug-and-play**, Internet-based, low-cost
- Support conversion between different e-doc standards
- Extensible through plug-in modules
- New standards and converters
- Core technology: ebXML + UBL
Project Elf - Smart Interoperability Device

- Client-based device to consolidate interoperability requirements of all 3 dimensions
- Extensible through plug-in modules
- New standards and converters
- Easy to deploy (plug-and-play) internet-based, low-cost
- Core messaging technology: ebXML, AS2, HTTP
- Core content standards: UBL, GDS/EPC, RosettaNet

Multiple ways for backend integration
- File & directory base
- Web services
- Web Interface

Conclusion

- Interoperability - key e-business success factor
- Standardization on three interoperability dimensions → mass interoperability
- Open source software to enable interoperability
- Smart interoperability device to commoditize B2B applications

Thank you

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ebXML Adoption for Paperless Trading and Business Collaboration in Korea

2004, 7

Dr. Jasmine Jang

Agenda

- Status of e-Business Infrastructure in Korea
- ebXML Adoptions in Korea
  - E-Business Collaboration Model
  - Successful Integration Case: GePS
  - Successful Collaboration Case: SRM in Steel Industry
  - ebXML Adoptions in Korea
  - Lessened Experiences
- Future Directions

Korea e-Commerce Market Volume

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Unit: USD Billion)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47.93</td>
<td>99.15</td>
<td>147.54</td>
<td>185.34</td>
</tr>
</tbody>
</table>

(Source: Korea National Statistical Office)
Korea e-Readiness

South Korea, the world’s most densely penetrated broadband market at 27% of the population.

<table>
<thead>
<tr>
<th>Country</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>6.26</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Britain</td>
<td>6.27</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sweden</td>
<td>6.20</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Norway</td>
<td>6.11</td>
<td>7</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Finland</td>
<td>6.08</td>
<td>5</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>USA</td>
<td>5.84</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Singapore</td>
<td>5.02</td>
<td>6</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4.00</td>
<td>6</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>7.37</td>
<td>6</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Switzerland</td>
<td>7.96</td>
<td>10</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Canada</td>
<td>7.92</td>
<td>11</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Australia</td>
<td>7.86</td>
<td>10</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Germany</td>
<td>7.83</td>
<td>13</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Korea</td>
<td>7.73</td>
<td>14</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>Australia</td>
<td>7.05</td>
<td>15</td>
<td>16</td>
<td>12</td>
</tr>
</tbody>
</table>

(Source: Economist Intelligence Unit 2004)

e-Government Capacity of Korea

UN (Benchmarking e-Government, 2002-6)

- Web presence measure
- ICT infrastructure measures
- Human capital measures

Korea e-Business Trends in Korea

- e-Market Place
- Online Shopping Mall
- Web Site

- Present
- Seamless Collaboration
- Service Integration
- e-Transformation
- Product-centric
- Process-centric
- Product & Process Integrated
- RFID

ebXML Adoptions in Korea

- E-Business Collaboration Model
- Successful Integration Case - GoPS
- Successful Collaboration Case - SRM in Steel Industry
- ebXML Adoptions in Korea
- Lessened Experiences

(e-Business stage)
**Business Collaboration Infrastructure in Korea**

- **e-Trade**
- **G2B**
- **SMEs**
- **G4B**
- **G4C**
- **B2B**
- **Web Service**

**Successful Integration Case in Korea**

**GePS (Government e-Procurement System)**

- EDI: Procurement EDI system
- XML/EDI: Procurement EC system
- ebXML: Government e-Procurement System

- 1997-1999
- 1999-2002
- 2002.9 ~

- > 91.5% of tender is executed online
- > 15 million people / 1.7 billion dollars

- Total amount of e-Tendering: 17,023 million $
2. Linkage with External Systems

- Adopting XML exchange between GePS and external systems
- We have built and applied domestic standard for the ebXML based documents and data for various users and different systems, like global standard in TBG6.
- It was important to make joint efforts for collaboration.

GePS Performance in 2003

Bidding
- 52,000 cases of domestic biddings online
- 7 million users
- $9.9 billion

Contract
- 10,425 cases
- $8.3 billion
- Transfer payment via Internet Banking
- E-Payment of $9,000
- E-shopping mall: 21,000 products of frequently transacted items

Payment
- 20 643,760
- 28 875,735
- 9 10,238,455
- 8 39,568
- 33 1,010,548
- 21 52,569
- 47 88,876
- Total 166 12,949,511

Global Standardization of UN/CEFACT TBG6 in 2004
- Reviewed 10 doc. of TBG6 and 11 doc. of GePS considering characteristics and role
- 5 Documents from both TBG6 and GePS are commonly used for the same purpose

Korea GePS Documents

<table>
<thead>
<tr>
<th>Description of documents</th>
<th>No. of documents</th>
<th>No. of transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchasing request</td>
<td>20</td>
<td>643,760</td>
</tr>
<tr>
<td>Contracts</td>
<td>28</td>
<td>875,735</td>
</tr>
<tr>
<td>Bidding documents</td>
<td>9</td>
<td>10,238,455</td>
</tr>
<tr>
<td>Guarantee</td>
<td>8</td>
<td>39,568</td>
</tr>
<tr>
<td>Payment</td>
<td>33</td>
<td>1,010,548</td>
</tr>
<tr>
<td>Communication</td>
<td>21</td>
<td>52,569</td>
</tr>
<tr>
<td>General Doc., etc.</td>
<td>47</td>
<td>88,876</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>166</strong></td>
<td><strong>12,949,511</strong></td>
</tr>
</tbody>
</table>
The winner of the first UN Public Service Award (PSA) 2003

**Effects of GePS**

- **Saves transaction costs**
  - Cuts about $2.7 billion per year
  - Shared information with external systems
    - bonds, supplier performance records and financial data

- **Opens bidding markets**
  - Number of bidders increase three times

- **Improves responsiveness**
  - On line payment within 4 hours

- **Enhances business transparency**
  - Bid information is publicized in online real time

- Reduces room for arbitrary decision of contracting officers

**Successful Collaboration Case in Korea**

**SRM (Supplier Management System) B2Bi in Steel Industry**

- On-line
- Off-line

**Implications**

- Connection with Sales planning system and Production system
- Sharing stock information
- Connection with Invoice and tax account
- Supplier can assure stable production period
- Enhanced the effectiveness of business process

**Effects**

- Accuracy of estimated needs: 40% → 90%
- Stock cost of supplier: 202Bw → 104Bw
- Supplier can assure stable production period

**SRM B2Bi System deployed full ebXML**

- B2Bi, Registry
- Business Messages / Signals
- Data Transformers
- Partner's ERP
- Member's ERP

**Seamless Process Collaboration in Steel Supply Chain**

- Purchase Plan
- Production Plan
- Shipping Plan
- Payment
- Request Delivery
- Invoice
- Delivery
Lessoned Experiences in Korea

- Prefers ebXML document based on core component
  - Saves cost and developing time
  - Enhances the business collaboration and interoperability
- Verified scalability and reliability of ebXML message transfer
  - Is considered as recommended technology via eAC ITG interoperability test
  - Offsets the hurdles of enlarged volume of XML messages due to reliable messaging
- Needs to inform ebXML widely
  - Is difficult to expand to adopt ebXML because of low awareness in market
- Needs harmony with web service
  - Is well executed only between two partners but, multiple collaboration ....
  - Both hands of ebXML and web services
- Increases the importance of interoperability more and more
  - There are lots of different types of e-business system

Further Directions

- Promotion of using electronic documents
- Integrated Single Window Systems
- Standard based Collaboration
Thank you

Jasmine Jang (jasmine@kiec.or.kr)
- KIEC, Head of EC Standard Team
- ebXML Asia Committee CCTG, Co-Chair
- ISO TC 154 Korea, Member
- Ph. D. (Management Engineering)