Global Blueprint for Interoperability at the Business Layer

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Global e-Business Advisory Council
UN/CEFACT Techniques & Methodologies Group (TMG) Chair
Former ebXML Chair

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What is (was) ebXML?

"Creating a Single Global Electronic Market"

ebXML enables anyone, anywhere to do business with anyone else over the Internet

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

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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

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ebXML Specs - Modular Suite

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

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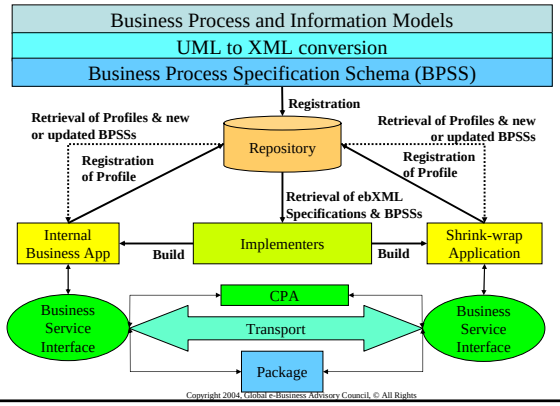
ebXML Architecture



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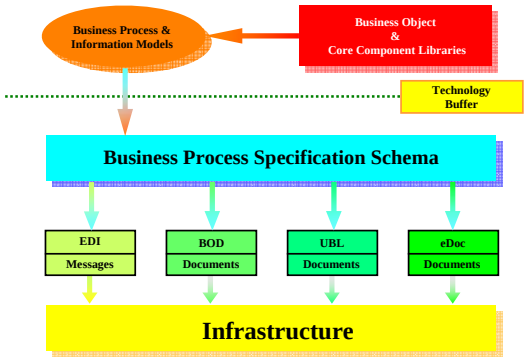
Utilizing different Payloads



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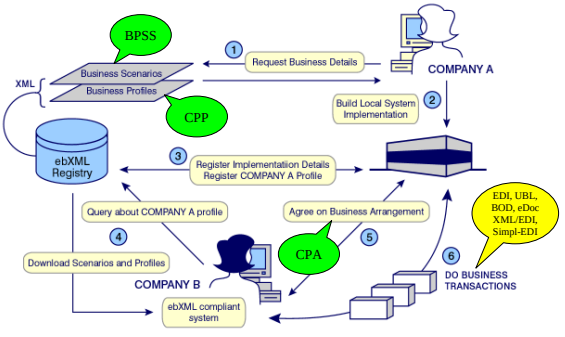
ebXML in Action



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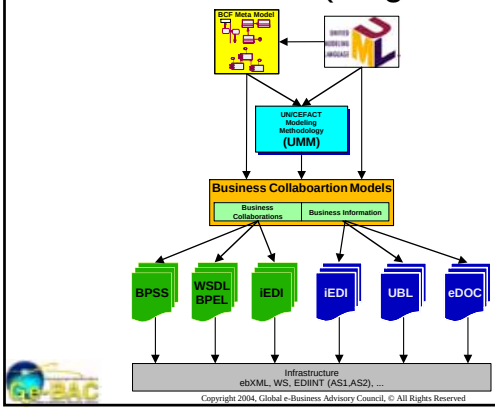
BP and ebXML (Original Idea)



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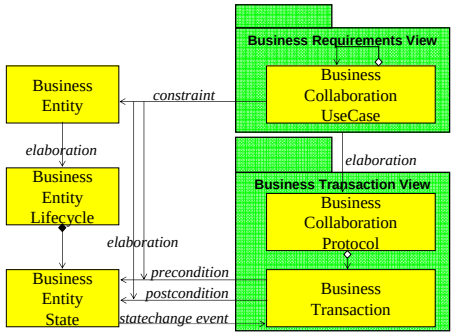
Public Process Definition



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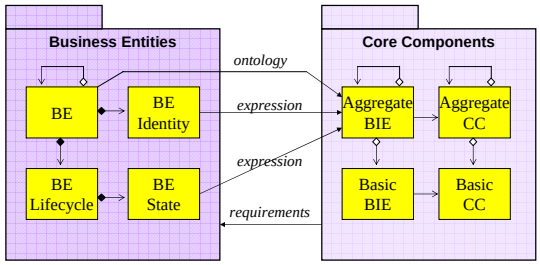
Public Information Definition



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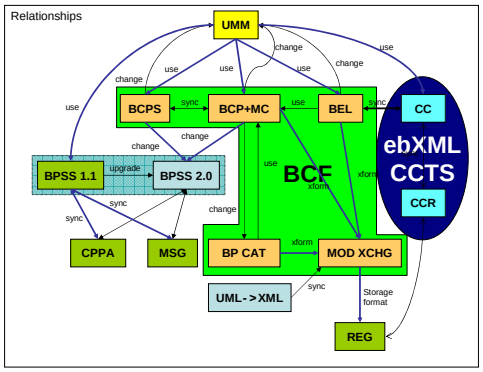
ebXML Technical Specifications



Legend:

UMM = UN/CEFACT Modeling Methodology

BCPS = Business Collaboration Protocol Specification

BCP+MC = Business Collaboration Patterns and Monitored Commitments

BEL = Business Entity Reference Library

CC = Core Component Specification & Supplements

BPSS 1.1 = Business Process Specification Schema short-term fixup

BPSS 2.0 = BPSS next generation

BP CAT = Common Business Process Catalog

MOD XCHG = Business Process Information Model Exchange Schema

CCR = Core Component Realization

UML->XML = UML to XML Design Rules

CPPA = OASIS ebXML CPPA

MSG = OASIS ebXML Messaging

REG = OASIS ebXML Registry

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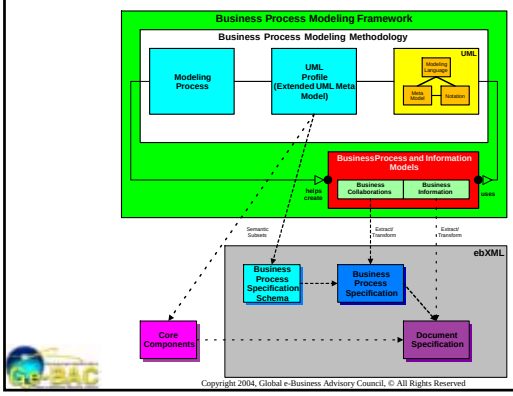
BP and ebXML (Final Result)



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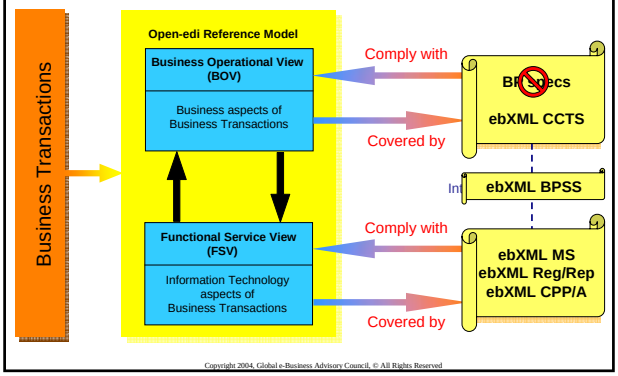
ISO Open-edi Reference Model



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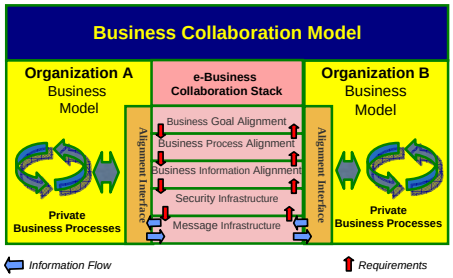
Real World Business Collaboration



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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

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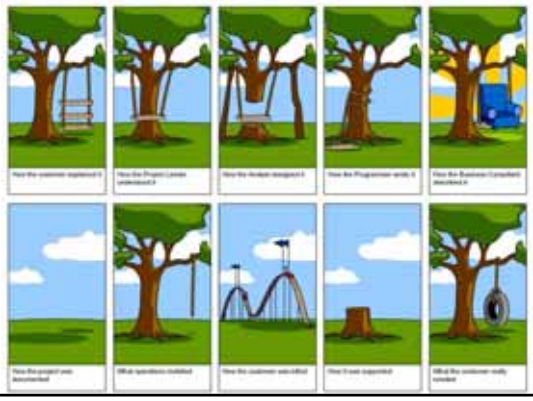
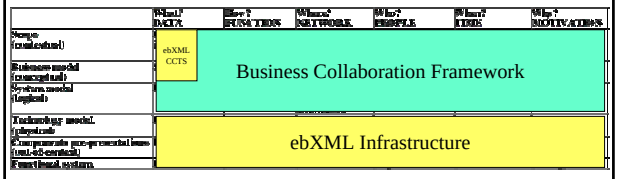
… otherwise



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



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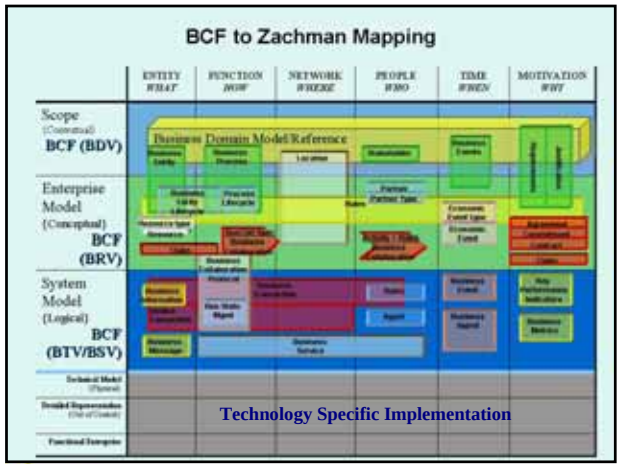

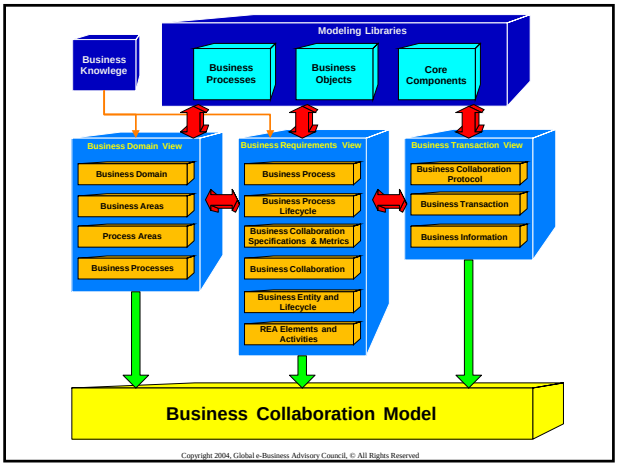

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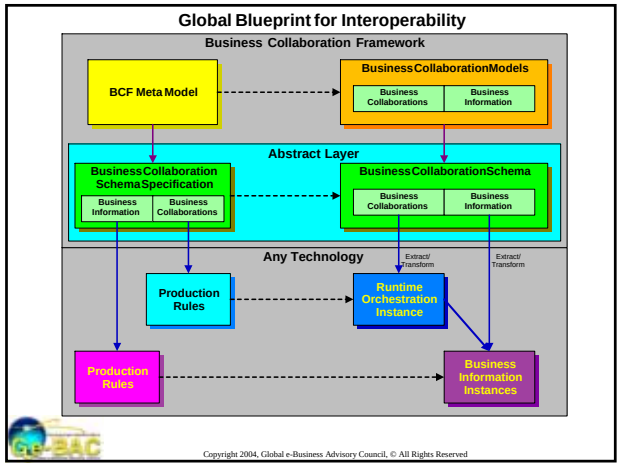

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General Perception

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

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In the Beginning …

One Document …

… for Everyone

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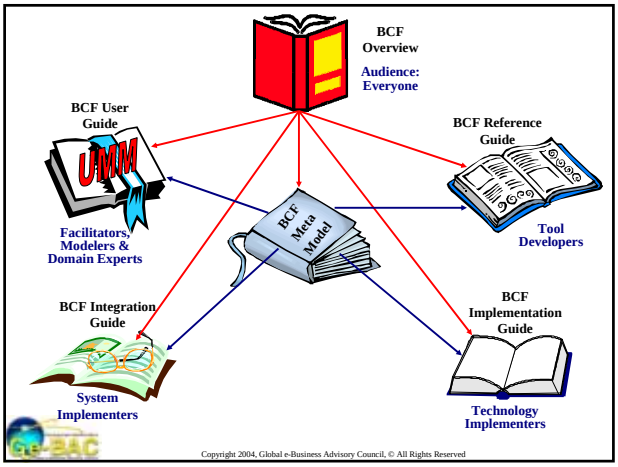

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Recap: Principles for BCF solution

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

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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

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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

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Thank You!

- More Questions?
  - Email to:
  - klausn@attglobal.net
- For more Information
  - BCF Project Web Site (online 15 August)
  - www.bcf-project.org

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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 e-Business
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

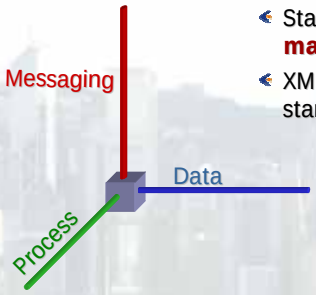
Agenda

- 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

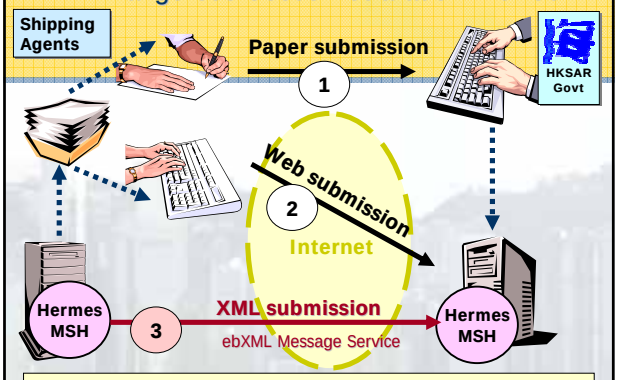
- Paperless trading is national and corporate competitiveness
  - → Automation on B2B collaboration
  - → Integration of business processes between trading partners
  - → Interoperability
- Interoperability: different info systems to work together
- XML was invented to address interoperability problems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

Three Dimensions of Interoperability

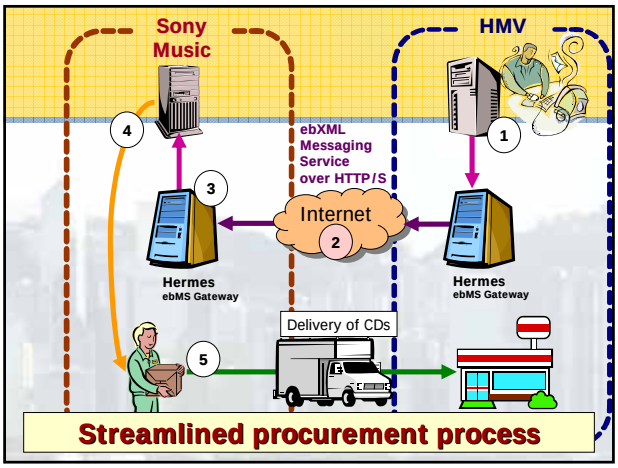


- Standardization enables **mass interoperability**
- XML – a tool for standardization

Dangerous Goods Declaration with ebXML



Standardized DG manifest in XML



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

Hong Kong Interoperability Framework for eGovernment

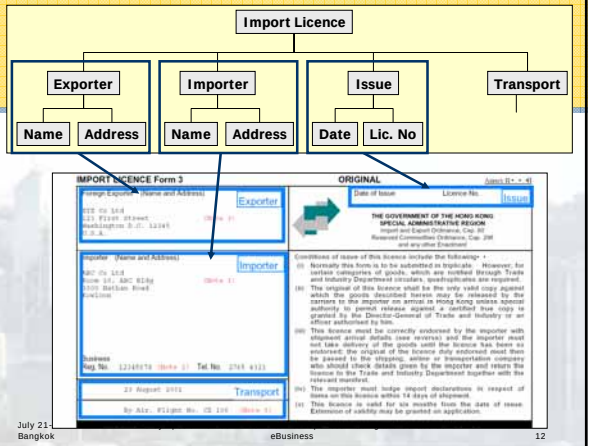
- Guidelines for using and developing standards for G2G and G2B joined-up services
- General Principle
  - If a suitable international standard, use it. Otherwise, develop our own.
- Technical interoperability
  - Guidelines for adopting technical standards for specific data exchange applications
- Data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

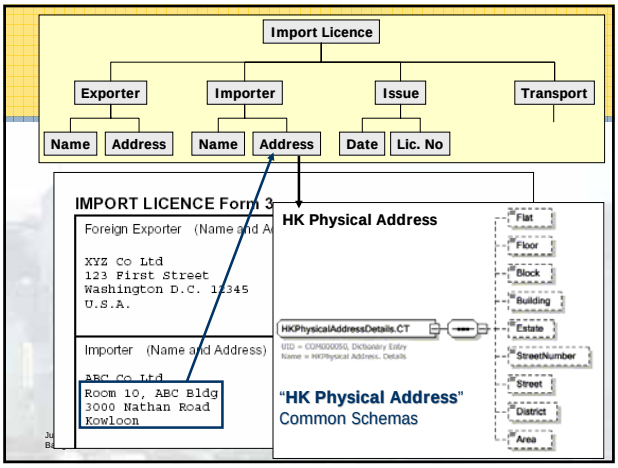
Technical Interoperability Guidelines

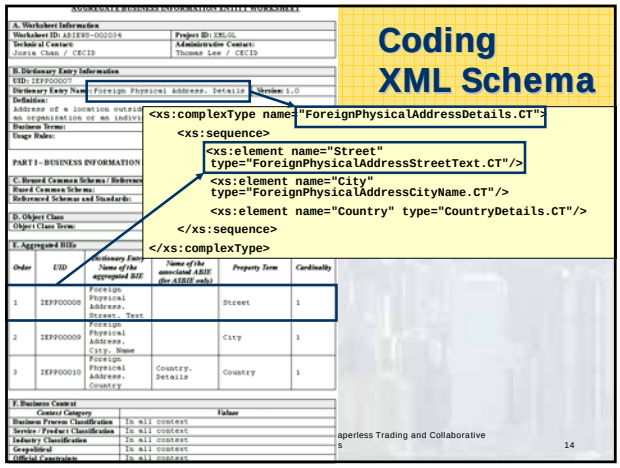
Interoperability area	Recommended specification(s)	Are the specifications relevant to submissions under ETO ?	Remarks
Simple functional integration in an open environment (e.g. information retrieval from a remote application)	The suite of core Web Services standards : SOAP v1.1 for remote service invocation WSDL v1.1 for remote service description (where necessary) UDDI v2 for the publication and discovery of remote service descriptions	No	When project teams select tools to implement Web Services, they are recommended to take into consideration the tools' conformance to the WS-I's Basic Profile 1.0.
Reliable document exchange between application systems in an open environment for business document-oriented collaboration	ebMS v2	B/Ds will promulgate explicit requirements where relevant	Standards for reliable messaging are also emerging under the Web Services framework. Joined-up applications that are following Web Services standards should agree among the stakeholders on whether to adopt ebMS or some alternate protocol for reliable document exchange. Although ebMS is not widely supported by the major vendors, its open source implementations can be considered

XML Schema Design and Management Guide for HKSAR Govt

- XML schema modeling methodology for developing **e-govt 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://egovernment.xml.org





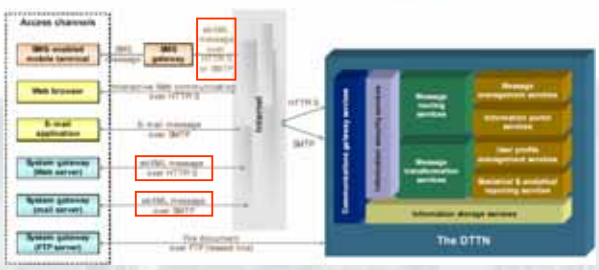


Digital Trade and Transportation Network in Hong Kong

- 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

Extracted from DTTN study report by Accenture

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!!!

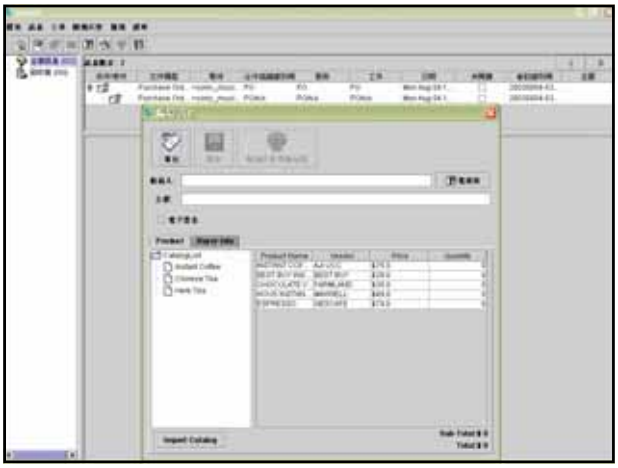
Supported message format (sender)	Canonical message format (the DTTN)	Supported message format (recipient)
• XML v1.0 • Microsoft Excel • Text in CSV format • UN/EDIFACT • ANSI X12 • Cargo-IMP	• XML v1.0	• XML v1.0 • Microsoft Excel • Text in CSV format • UN/EDIFACT • ANSI X12 • Cargo-IMP • SMS

Hermes ebMS Handler

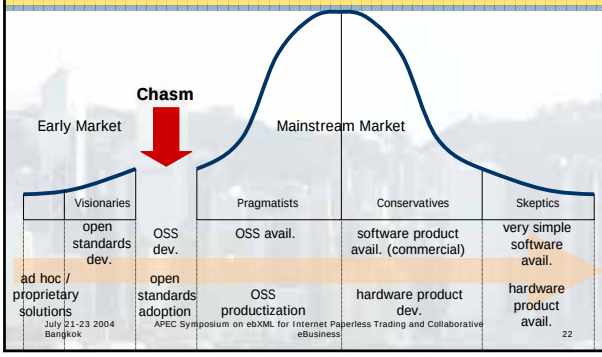
- Implemented **ebXML Messaging Service V2**
- Open-sourced since September 2002
  - Recorded downloads from 60+ countries
- Passed **ebXML Asia Committee Interoperability Test**
- Developers from an European vendor taking Hermes to enter Europe Interoperability Test
- Next version aims at multiple protocol: 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

- **eBusiness mailer for small businesses** – low cost and simple
  - Provides user interface for composing and view 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**?



Technology Adoption Life Cycle



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**

- **eBusiness Router**

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

http://www.cecid.hku.hk
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Asia-Pacific Economic Cooperation

ebXML Adoption for Paperless Trading and Business Collaboration in Korea

2004. 7

Dr. Jasmine Jang

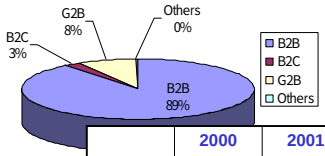
KIEC

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

Status of e-Business Infrastructure in Korea

Korea e-Commerce Market Volume



(Unit: USD Billion)

	2000	2001	2002	2003 (Estimate)
B2B	43.61	90.99	130.87	165.17
B2C	0.61	2.15	4.13	4.95
B2G	-	5.86	12.10	14.85
Other	3.71	0.35	0.44	0.33
Total	47.93	99.15	147.54	185.34

(Source : Korea National Statistical Office)

Korea e-Readiness

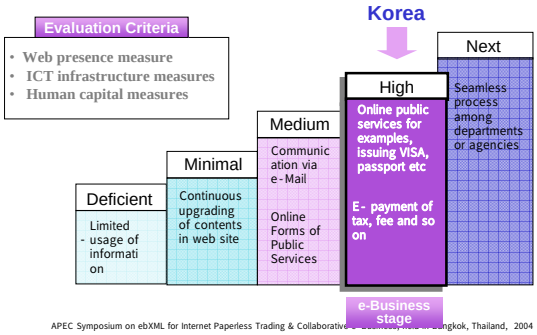
South Korea, the world's most densely penetrated broadband market at 27% of the population,

Country	Score (2004)	e-Readiness Ranking		
		2004	2003	2002
Denmark	8.28	1	2	7
Britain	8.27	2	3	3
Sweden	8.25	3	1	4
Norway	8.11	4	7	11
Finland	8.08	5	6	10
USA	8.04	6	3	1
Singapore	8.02	7	12	11
Netherlands	8.00	8	3	2
Hong Kong	7.97	9	10	14
Switzerland	7.96	10	8	4
Canada	7.92	11	10	9
Australia	7.88	12	9	6
Germany	7.83	13	13	8
Korea	**7.73**	**14**	**16**	**21**
Austria	7.68	15	14	13

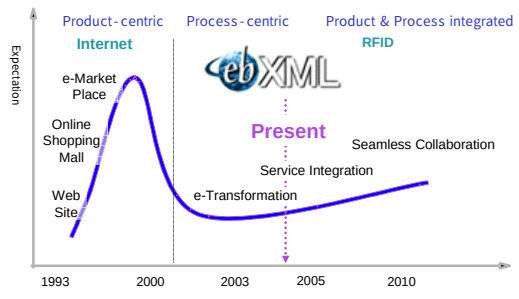
(Source: Economist Intelligence Unit 2004)

e-Government Capacity of Korea

(UN, Benchmarking e Government, 2002.6)



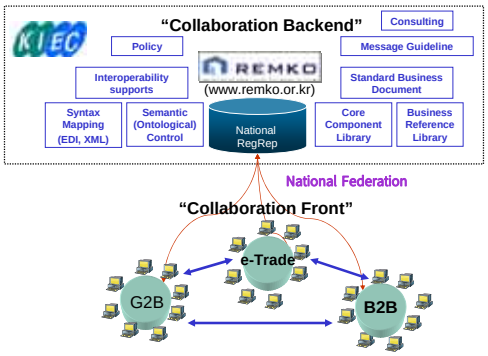
e-Business Trends in Korea



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

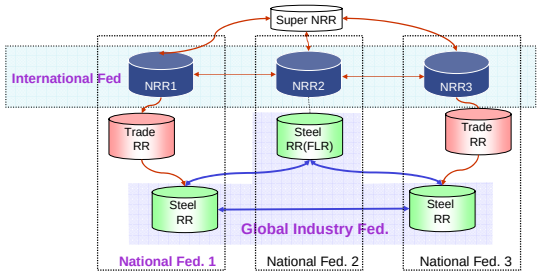
ebXML e-Business Collaboration Model



(Source : NRR in e-Business, J. Jang, 2004 Open Forum for e-Business and Metadata Technology Standardization)

Global Industry Federation & Collaboration Model

Each global industry, one federation !



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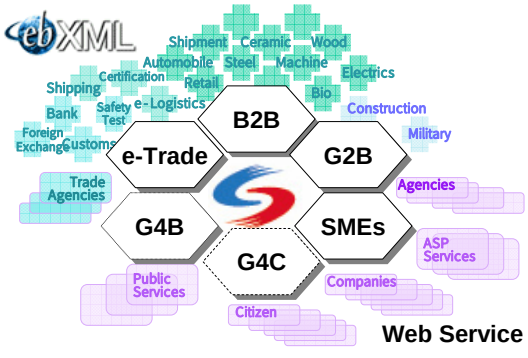
Business Collaboration Infrastructure in Korea



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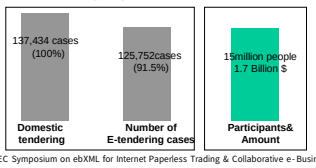
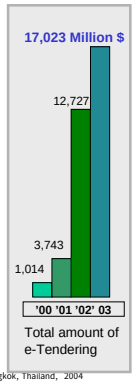
ebXML Successful Integration Case in Korea

GePS (Government e-Procurement System)

EDI	XML/EDI	ebXML
Procurement EDI system	Procurement EC system	Government e-Procurement System
1997-1999	1999 -2002	2002.9 ~

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





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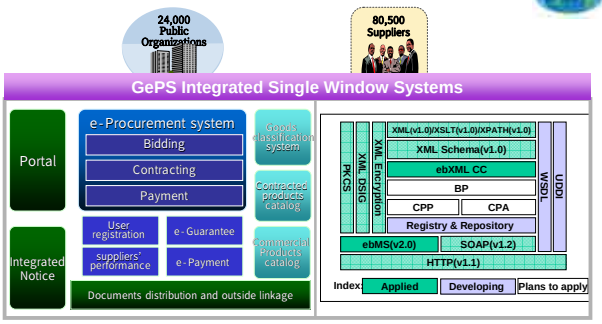
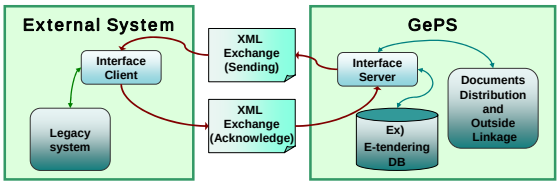
GePS Integrated Single Window Systems



53 external system linkage

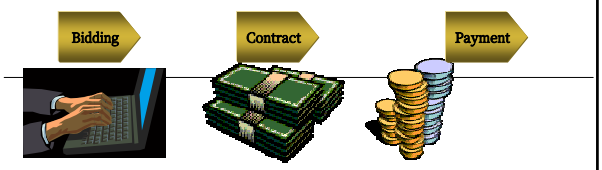
External Linkage System

☐ Adopting XML exchange between GePS and external systems



- o 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.
- o It was important to make joint efforts for collaboration.

GePS Performance in 2003



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

- 10,425 cases
- $8.3 billion
- ➢ E-shopping mall : 21,000 products of frequently transacted items

- ➢Transfer payment via Internet Banking
- E-Payment of 99,000
- $2.9 billion

Korea GePS Documents

ebXML documents & transactions in 2003

Description of documents	No. of documents	No. of transactions
Purchasing request	20	643,760
Contracts	28	875,735
Bidding documents	9	10,238,455
Guarantee	8	39,568
Payment	33	1,010,548
Communication	21	52,569
General Doc., etc.	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

	New	Revised
ABIE	17	3
BBIE	109	10

Effects of GePS

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

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

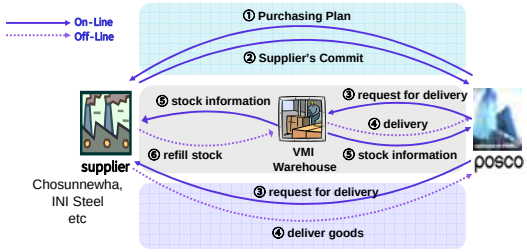
☐ **Improves responsiveness**
- On line payment within 4 hours

☐ **Enhances business transparency**
- Bid information is publicized in online real time
- Reduces room for arbitrary decision of contracting officers

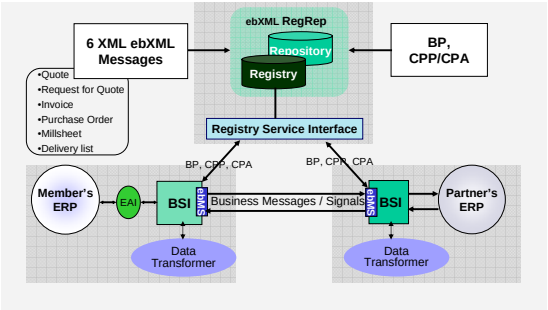
The winner of the first UN Public Service Award (PSA) 2003

ebXML Successful Collaboration Case in Korea

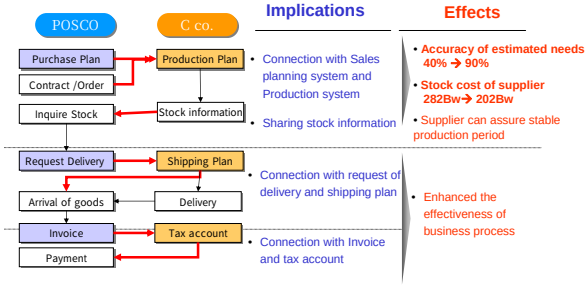
SRM (Supplier Management System) B2Bi in Steel Industry



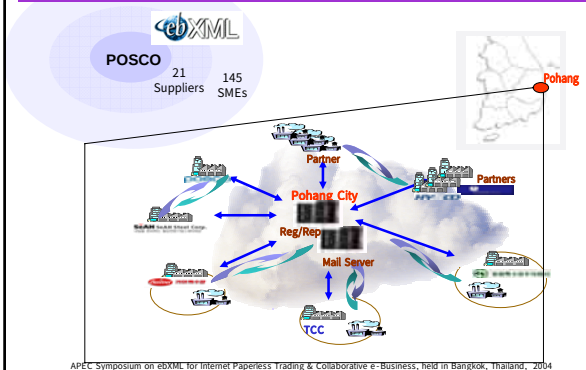
SRM B2Bi System deployed full ebXML



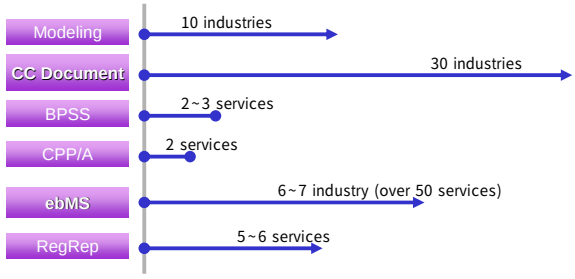
Seamless Process Collaboration in Steel Supply Chain



Expanded Digital Pohang 2004 ebXML Project



ebXML Adoptions in Korea

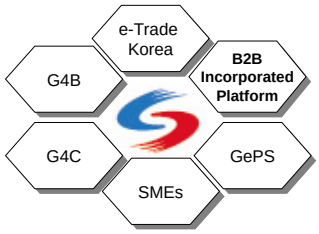


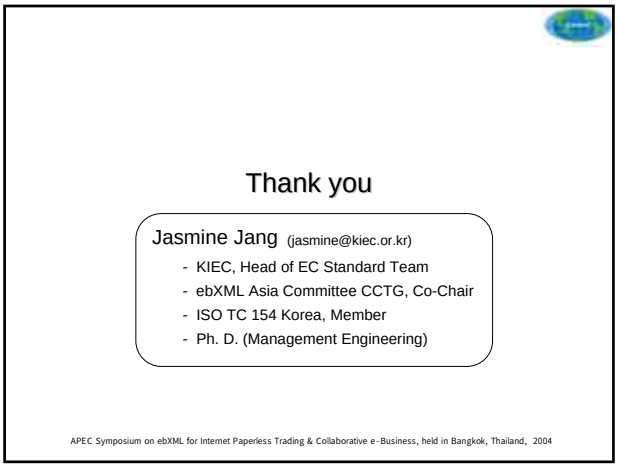
ebXML Lessoned Experiences in Korea

- ☐ 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)
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