

# Why XML is Important to Revenue Departments



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- Brief XML Technology Overview
- XML Utilization Trends
- The Importance of Open Standards
- XML Business Impacts and Outlook....  
It's not just about XML. Now it's about business.



# Brief Overview of Base XML Technology

# XML is....



- A text-based structured tag language
  - ▶ Similar in style to HTML but with user-definable tags
  - ▶ XML says nothing about presentation
- Can be a standard way of sharing structured data
  - ▶ A key technology to enable e-business
- A language for defining languages
  - ▶ Markup languages (grammars, vocabularies)
  - ▶ Interchange formats
  - ▶ Message sets
- A simplified subset of SGML
- A standard
  - ▶ W3C Recommendation
  - ▶ <http://www.w3.org/TR/1998/REC-xml-19980210>
- HTML is about structured data, XML is about structured information

# What does XML look like ?



- Tags (markup)
  - ▶ A grammar (vocabulary) is defined by a Document Type Definition (DTD) or a Schema.
  - ▶ People & organizations can define their own vocabularies.
  - ▶ XML documents must be well formed.
  - ▶ XML documents can be automatically validated (by an XML parser)
- Readable by both humans and machines

# Sample XML file - personnel data



```
<?xml version="1.0" ?>

<!DOCTYPE personnelRec SYSTEM "prml.dtd">

<personnelRec>
  <person salary="26350.00" band="D">
    <name>
      <family>Wallace</family>
      <given>Bob</given>
    </name>
    <email>bwallace@megacorp.com</email>
  </person>
</personnelRec>
```



# Doc Type Definition



```
<?xml encoding="UTF-8"?>
<!ELEMENT personnelRec (person)+>
<!ELEMENT person (name,email*)>

<!ATTLIST person salary CDATA #REQUIRED >
<!ATTLIST person band (A|B|C|D|E|F) #REQUIRED>
<!ATTLIST person active (true|false) "true"
#IMPLIED >

<!ELEMENT name (family, given)>
<!ELEMENT family (#PCDATA)>
<!ELEMENT given (#PCDATA)>
<!ELEMENT email (#PCDATA)>
```

# HTML vs. XML



```
<HTML>
<BODY>
<TABLE>
  <TR>
    <TD><b>Course</b></TD>
    <TD><b>Department</b></TD>
    <TD><b>Instructor</b></TD>
    <TD><b>Students</b></TD>
  </TR>
  <TR>
    <TD>Java Programming</TD>
    <TD>EECS</TD>
    <TD>Paul Thompson</TD>
    <TD>Ron Jones<BR>
      Uma Abingdon<BR>
      Lindsay Garmon</TD>
  </TR>
</TABLE>
</BODY>
</HTML>
```

```
<?xml version="1.0"?>
<Course>
  <Name>Java Programming</Name>
  <Department>EECS</Department>
  <Teacher>
    <Name>Paul Thompson</Name>
  </Teacher>
  <Student>
    <Name>Ron Jones</Name>
  </Student>
  <Student>
    <Name>Uma Abingdon</Name>
  </Student>
  <Student>
    <Name>Lindsay Garmon</Name>
  </Student>
</Course>
```



# HTML vs. XML



- HTML
  - ▶ predefined vocabulary
  - ▶ its type cannot be determined
  - ▶ tied to presentation: it can only be displayed in one form, the one it is coded for (some variation via CSS)
- XML
  - ▶ its meaning is described in the tags which can be accessed by a program
  - ▶ its type can be specified (via XML Schema)
  - ▶ it can be translated to any other form
  - ▶ it can be presented in many different ways
  - ▶ it is simple to use and extensible
  - ▶ it is mature
  - ▶ it is international
  - ▶ it is an open standard
  - ▶ it is portable and vendor neutral

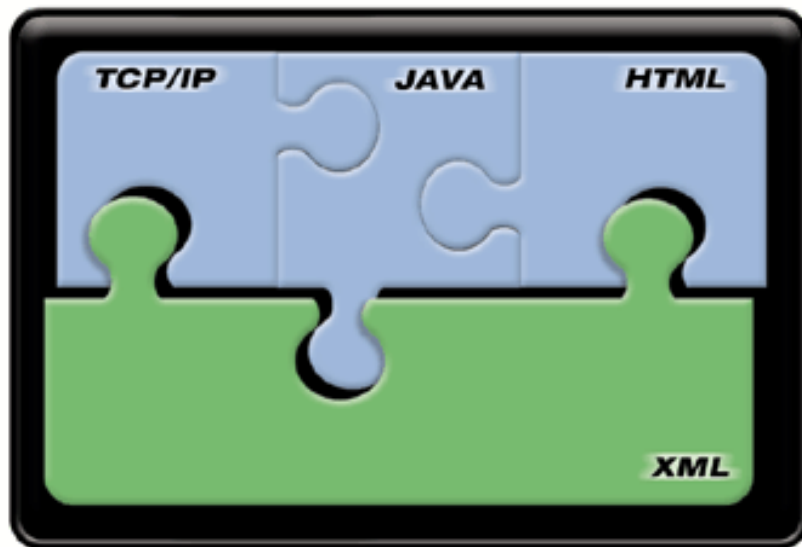
# Summary: XML Foundation Benefits



- Data re-use with the neutrality of standards
  - ▶ Non-proprietary format
  - ▶ Not application specific
- Separation of Data and Presentation
  - ▶ Enables the re-use of data
  - ▶ Enables the rise of "pervasive" computing. Common everyday devices have different display technology. Example: A catalog search result should be viewable on many devices.
  - ▶ XML Transcoding used here, such as IBM Transcoding Services for WebSphere.
- Extensibility
- Semantic Information
  - ▶ Build your own vocabularies -define the meaning of the data
- Momentum
  - ▶ Both technology companies and business involvement

# XML Trends

# XML Completes the Puzzle



*XML brings data to the web, completing the necessary components for 90% of e-business applications.*

The web has been built on technologies such as TCP/IP, HTTP, HTML and Java, most of them open standards.

- XML Message Sets < - Further Discussion in this area
  - ▶ Many companies are now using XML to encode messages and data that flows between parts of their organization and between suppliers and other companies they deal with.
  - ▶ Industry specific XML DTD's and Schemas are ever increasing.
- XML for Data Extraction
  - ▶ Existing non XML data is being extracted and converted into XML. Example: IBM/Louisiana Department of Revenue joint effort with conversion from proprietary UDF to standard XML.
    - Using extensions to existing software (like databases)
    - Using on the fly translation tools
    - Using special software
  - ▶ Normalized XML data can be more easily shared with others.
    - Using agreed upon DTD's or vocabularies.
    - Greatly enhances "who you can talk to".



- Open Standards
  - ▶ We are seeing wide adoption of open standards like XML, HTML, TCP/IP.
  - ▶ Open Standards are one of the keys to building systems that can interoperate.
  - ▶ Many companies are now using XML to encode messages and data that flows between parts of their organization and between suppliers and other companies they deal with.
- Hand Held Devices
  - ▶ People are more connected than ever before
  - ▶ Hand helds already out number PC's.
  - ▶ Capacity of these devices is increasing (but not size)
  - ▶ Increased Data will need to flow to these devices.
  - ▶ Increases in wireless bandwidth are coming.
  - ▶ Is likely to be a key part of delivering that data to and from these devices.

# XML Trends...



- Open Source
  - ▶ Many good open source projects exists
  - ▶ Good quality software is being produced and used - people are getting comfortable with the idea that an open source approach can generate good software.
  - ▶ Open Standards and Open Source are not the same thing but they complement each other.
- Web Services
  - ▶ We are moving from a web full of documents to a web that also contains "Services" that can be accessed via XML based messaging using technologies like SOAP.
  - ▶ Tightly coupled applications may be replaced by loosely coupled ones accessed via XML interfaces that remove dependencies on specific programming languages.

# IBM/Apache XML Standards



- IBM contributed key XML technologies in 1999
  - ▶ IBM XML Parsers for Java & C++ and LotusXSL processor code base
  - ▶ Formation of Apache open source project - <http://xml.apache.org/>
  - ▶ XML Parser - Xerces
  - ▶ XSL implementation - Xalan
- Openness of the Internet supported by public standards
  - ▶ Nonproprietary implementation of W3C recommendations
  - ▶ Public participation through code contribution
  - ▶ Strong leadership: Apache, IBM, Lotus, DataChannel, ExOffice, Sun, Textuality



# So Is EDI Dying ?



- Large companies don't believe so.
- However
  - ▶ Outside the Fortune 1000, only about 5% of the small- and medium-sized enterprises have signed up.
- "EDI" standards vary geographically.
- The rigidity of the message sets, expensive transactions, and slow standardization processes make a bad or incomplete fit for the fast-changing Internet business world.

# Is XML the salvation ?



- Companies such as Ariba are using XML to create new e-commerce solutions and marketplaces.
- Companies such as IBM are using XML to tackle business integration.
- XML specifications are being developed in many industries.
- Some industries are “reinventing the wheel” when it comes to B2B XML infrastructure, rather than concentrating on what they understand best.



# IBM's XML Principals



Deliver XML based solutions which will help our customers and business partners build, deploy and manage e-business applications.

IBM will cooperate on the standards and compete on implementation.

- Do this by:
  - ▶ Ensuring strong, open standards
  - ▶ Enabling entire product line for XML exploitation
  - ▶ Building end-to-end e-business solutions

## Open Standards

**The Web works because of open standards.**

**We have moved from leveraging the power of the operating system to leveraging the power of open and shared standards.**

# Why Open Standards ?



- "Market control is no longer a sensible or an achievable business goal. No technology company can any longer dream of coming up with the magic bullet that will establish it ...as a sole owner of a key platform."  
- Lou Gerstner, 1999 IBM Annual Report
- "The worst in our industry - the elements we must leave behind - is the mentality that seeks to own standards, and establish choke holds based on proprietary technology. Let's remind ourselves that the spark that ignited the Internet revolution was not technology. It was an agreement to industry open standards. We have to make sure the underlying information technologies are free of closed, proprietary standards." - Lou Gerstner, TeleCom '99
- It is in the customer's interest to insure choice of vendors.

# Types of Standards Activity



- Conceptually three classes of standards activities.
  - ▶ Base technology ("plumbing")
    - Typically provided by bodies like the W3C and the IETF
  - ▶ Core specifications like XML, HTML and DOM.  
Cross Industry standards activities
    - General industry specific efforts
  - ▶ ebXML, OASIS, xml.org  
Specific industry efforts
    - rosettanet.org, hl7.org , government, travel (OTA), etc.

# Key Emerging Plumbing

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- XML SCHEMA
  - ▶ Alternative to DTD's
  - ▶ Supports data typing
  - ▶ Uses XML to define other XML grammars
- DOM Level 2
  - ▶ Enhancements to the existing DOM API
- SOAP
- ebXML



- Lightweight messaging
  - ▶ SOAP is an XML-based lightweight protocol for exchange of information in a decentralized, distributed environment.
  - ▶ Co-authors are Microsoft, IBM, Lotus, UserLand, and DevelopMentor.
  - ▶ The specification has been submitted to the W3C for standardization.
  - ▶ IBM placed the Java-based SOAP4J toolkit with source code on the alphaWorks site 2 days after the announcement (April 26).
  - ▶ SOAP4J had over 6000 downloads during its first month

- What is Oasis ?
  - ▶ OASIS is a nonprofit, vendor-neutral, international consortium dedicated to accelerating industry adoption of application- and platform-independent formats based on public standards such as XML.
- What does it do ?
  - ▶ The consortium's work complements that of standards bodies such as the World Wide Web Consortium with a focus on making these standards easy to adopt and practical to use in real-world, open system applications.
- Who are members ?
  - ▶ OASIS members include Adobe, Boeing, Compaq, Commerce One, Dunn & Bradstreet, IBM, Microsoft, NIST, Novell, Oracle, Reuters, SABRE, Software AG, Sun Microsystems, Xerox, plus approximately 95 other companies, consortiums, and organizations.

- An OASIS initiative to develop a clearinghouse for XML specifications independent of any single company's business model.
- XML.org is initially sponsored by **IBM**, Sun, Oracle, SAP, Commerce One, DataChannel, Documentum, GCA, and SoftQuad.



**XML.ORG** *The XML Industry Portal*

OASIS XML Cover Pages CGM Open

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New & News  
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Submit Schemas Now!

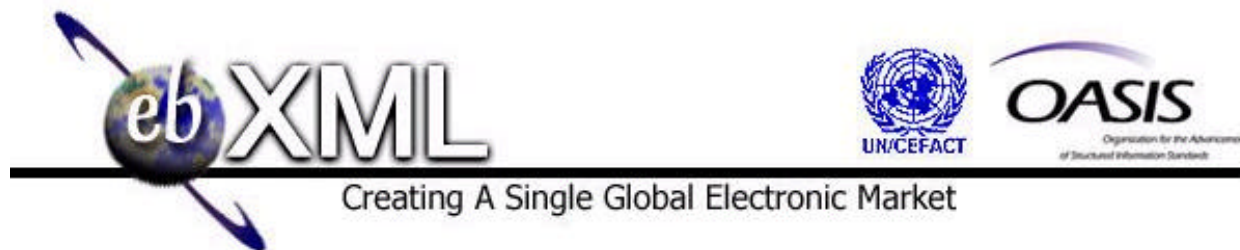
**First Phase of XML.ORG Registry Goes Live**

On June 20, 2000, the [XML.ORG Registry](#) began accepting submissions for XML specifications, schemas and vocabularies. Industry groups and others that have developed XML specifications are invited to freely register their work at the OASIS-hosted XML.ORG Registry.

The XML.ORG Registry is a community resource for accessing the fast-growing body of XML specifications, schemas and vocabularies being developed for vertical industries and horizontal applications. It is designed to foster collaboration and enhance communication within industries adopting XML, preventing unnecessary overlap, duplication and confusion. It's a place where developers can promote their XML work to the community at large and where users can locate up-to-date versions of the schemas and vocabularies they need.

Interested in Being on Our Mailing List?





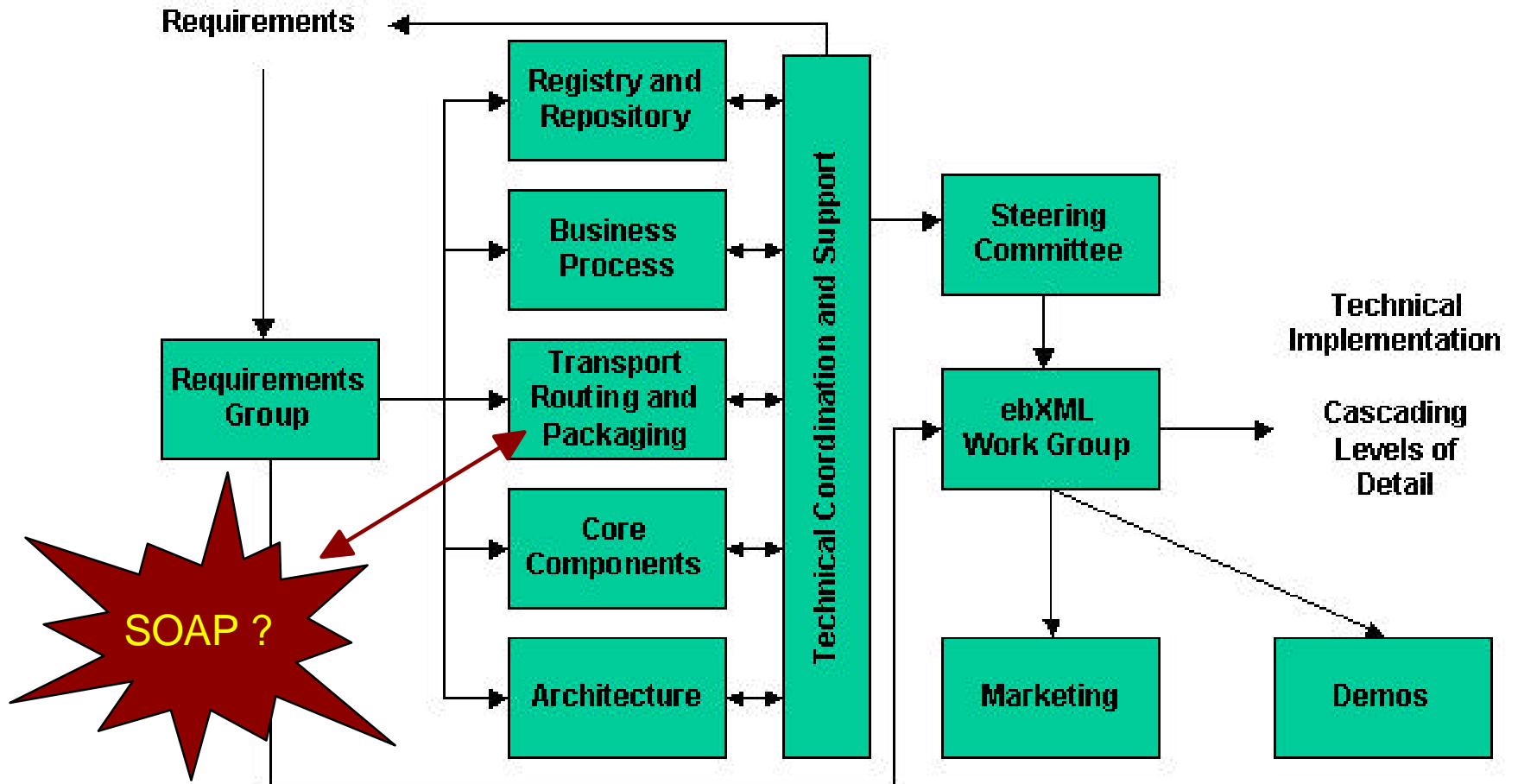
- Mission [www.ebxml.org](http://www.ebxml.org)
  - ▶ ebXML is the joint OASIS - United Nations/ CEFACT “Electronic Business XML initiative.”
  - ▶ A primary objective of ebXML is to lower the barrier of entry to electronic business in order to facilitate trade, particularly with respect to small- and medium-sized enterprises (SMEs) and developing nations.
- Key Points
  - ▶ The project was planned to last 15 to 18 months, starting in November, 1999.
  - ▶ A key aspect for the success of the ebXML initiative is adherence to the use of the W3C suite of XML and related Web technical specifications to the maximum extent practical.
  - ▶ Technologies will also be borrowed from other consortiums, as appropriate.
  - ▶ New specifications will be submitted to an appropriate internationally recognized standards body for accreditation as an international standard.

# ebXML Organization



User Community  
Business and Technical  
Requirements

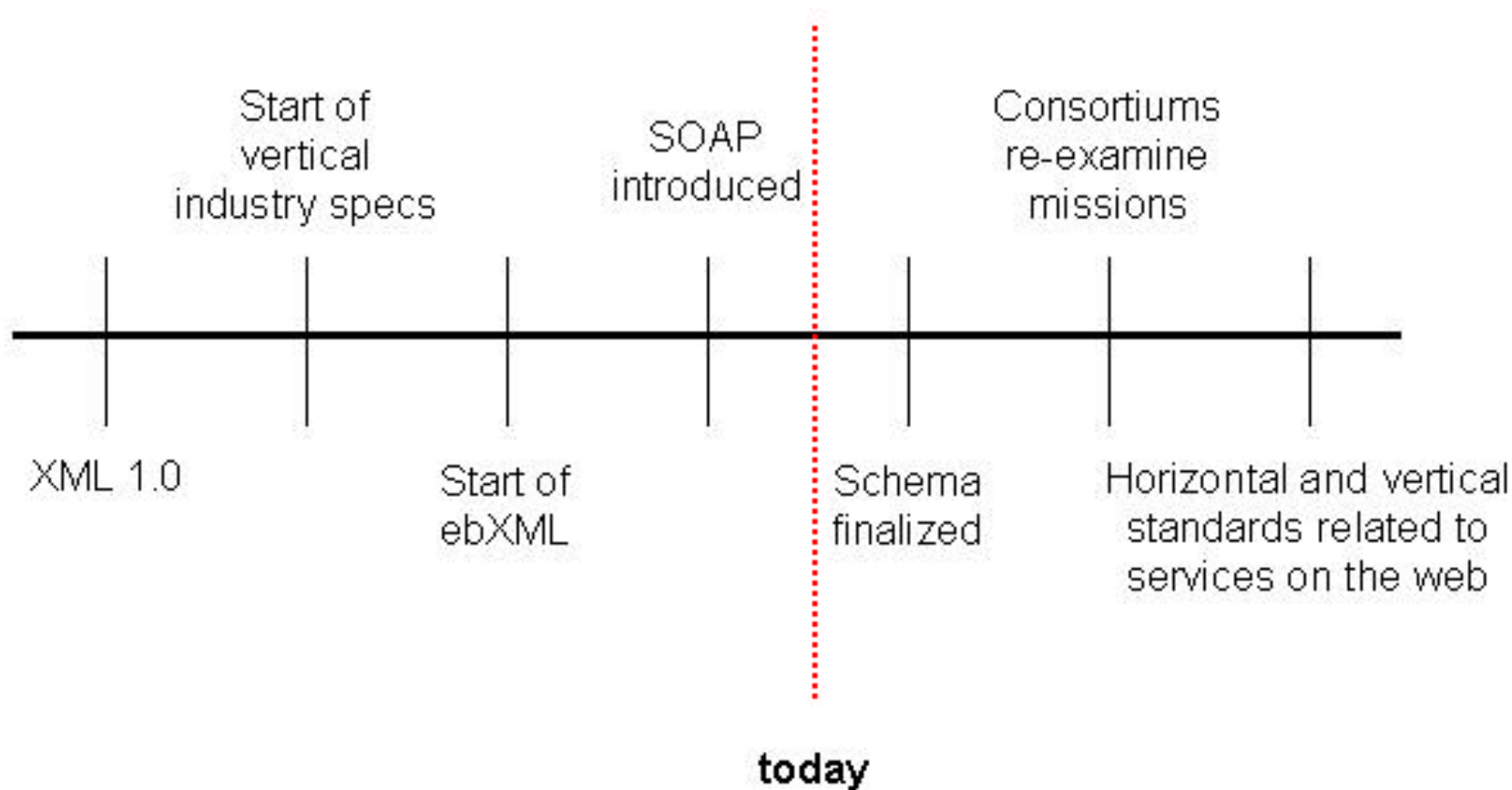
The Automotive industry (AIAG) and the Travel Industry (OTA) are active participants in ebXML. Come Join !



[Open Standards]



# An XML Timeline



With many other activities

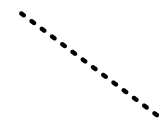
# A global XML and EDI initiative



**Accelerating the adoption of industry standards**  
100+ member companies including IBM, Sun, Microsoft, Corel, Software AG, and Oracle.



**The XML Industry Portal**  
Sponsored by IBM, Sun, Oracle, SAP, ...  
A vendor-neutral XML schema clearinghouse.  
Info on how to apply XML in industrial and commercial settings.



**United Nations Centre for the Facilitation of Procedures and Practices for Administration, Commerce and Transport**



# **B2B Business Visions**

## **Now its about Business.**

- **Impacts of a standard infrastructure**
- **Impacts of standard content**

# Impacts of a Standard Infrastructure



## ■ Technology Impacts

- Inexpensive and ubiquitous connections
  - HTTP, TCP/IP
- Infrastructure spread is global
- Commoditization of Infrastructure I/T components
  - The infrastructure continues to absorb upper content over time.
- Lowest common denominator technology triumphs
  - "good-enough" technology becomes the pivot point for critical mass adoption

## ■ Business Impacts

- Eliminates traditional businesses tradeoffs between product richness and product reach. Infinite richness and infinite reach become the norm.
- Decouples business content information from physical embodiments
  - Frees the business content from physical-world packaging
- Enables increased content richness
  - amount of it
  - interactivity of it
  - personalization of it
- Enables unobstructed path for ever increasing Standard Content. Proprietary access channel businesses (EDI-VANs, etc) erode as a standard infrastructure is increasingly desirable.
- Reduced I/T decisions due to known architectural infrastructure patterns
- Provides supplier businesses a vehicle for direct consumer contact

[Business Visions]

# Impacts of Standard Business Content



## ■ Technology Impacts

- Increased interaction between domain experts to technologists
  - It is imperative to involve business domain experts in order to get the industry vocabulary right.
  - Technology companies doing this alone fail. XML bridges the gap between I/T and Business.
- Increased emphasis on business modeling
  - UML usage is ever increasing. Again, an Open Standard (at OMG).
- Increased importance of standardized and open messaging models.
  - SOAP/ ebXML Transport Routing and Packaging

## ■ Business Impacts

- Increases commercial competition, business opportunity, consumer choice, and economic growth
- Proprietary content formats give way to standard content.
  - Once connectivity is established incentives rise for standards from transport up into business content. XML is providing the common syntax for those standards.
- Truly allows mass rich business content to get to the masses.
  - Any party to any service
  - The need for increased "navigation" and eMarket Exchanges for discovery
  - Increase "Compare and Switch" behavior results in
    - proliferation and more evenly distributed customer preferences
    - increased cross-selling difficulty for suppliers

[Business Visions]



# Impacts of Standard Business Content...

- Business Impacts...
  - New Business Models emerge
    - Navigation
      - Mass connectivity and mass business reach produces mass clutter.
      - eMarketplaces, Registry and Repository, product and services discovery.
    - Service Orientation
      - Mass movement to Services on the Internet
      - Trading Partners provide Services within eMarketplaces
      - Dynamic discovery of "Services" and binding to loose "Services" to conduct business
  - Old business Models Decompose
    - Middleman companies based on facilitating reach and connection to Suppliers must reinvent.
    - Tightly coupled supply chains give way to loosely coupled dynamic Trading Partner Agreements

# In Closing...



- Open Standards at both the infrastructure and business content are key enablers of e-business.
- Open Infrastructure Standards provide the highway to freeing business content from physical packaging.
- Open Business Content Standards in XML provide rich content to the masses.
- Open Standards and Open Source are not the same thing but they complement each other.
- We are moving towards a "Web of Services". We will be seeing more and more B2B activities based around the notion of "Services" -- ebXML, etc
- Look to ebXML to provide a coherent view of the XML infrastructure and the XML content frameworks needed for global e-business.
- SOAP will have a big effect on server-to-server and server-to-device communication



# For Early Access



- alphaWorks
  - ▶ Place to go to get the latest technology.
    - Free emerging technology previews
    - Lots of great downloads
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[JdbcMe for DB2](#)

A Palm (Java Micro-Edition) JDBC driver for DB2 UDB for AS/400 Databases.

[Web Services Toolkit](#)

IBM Web Services Toolkit v.1.0 is a runtime environment as well as demo/examples to design and execute web-service applications to

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No expiration date for IRC, they have been removed.

[WBI Development Kit for Java](#)

Updated v 4.5 features significantly better performance, many API enhancements and new programming examples. Applications (plugins) written with v 4.5 will run on [IBM WebSphere Transcoding Publisher](#).

[P3P Policy Editor](#)

IBM P3P Editor now includes a "quick start" feature to help get you up and running quickly. Also includes numerous bug fixes.



# For Developers and Users



- developerWorks
  - ▶ Portal for users and developers
    - Sample code
    - Articles
    - Tailored search engines
    - Links and much more...
  - ▶ [www.ibm.com/xml](http://www.ibm.com/xml)
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developerWorks™ need it? get it.

**XML zone**

**Transforming XML documents**  
**Updated!** In part 2 of Doug Tidwell's tutorial, our resident magician shows you how to [transform XML documents into Scalable Vector Graphics \(SVG\)](#).

**dW Poll**

→ **New!** Database development is becoming a key part of XML development. What database tool do you use -- or plan to use -- for your XML-related database work?

Thanks!

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Thanks goes to several organizations and individuals for some of this content!

