

# ebXML Web Services & EDI

**XML Europe 2003**

London

7 May 2003

**Dale Waldt**

President, aXtive Minds, Inc.

Program Development, OASIS

# Who Am I?

## Currently

- Director, aXtive Minds  
XML Training & Consulting  
dale@aXtiveminds.com

The logo for aXtive minds, featuring the word "aXtive" in a blue, sans-serif font with a stylized 'X', followed by "minds" in a black, sans-serif font.

- Program Development Consultant, OASIS  
XML Standards Consortium  
dale.waldt@oasis-open.org

The logo for OASIS, consisting of the word "OASIS" in a stylized, outlined, sans-serif font.

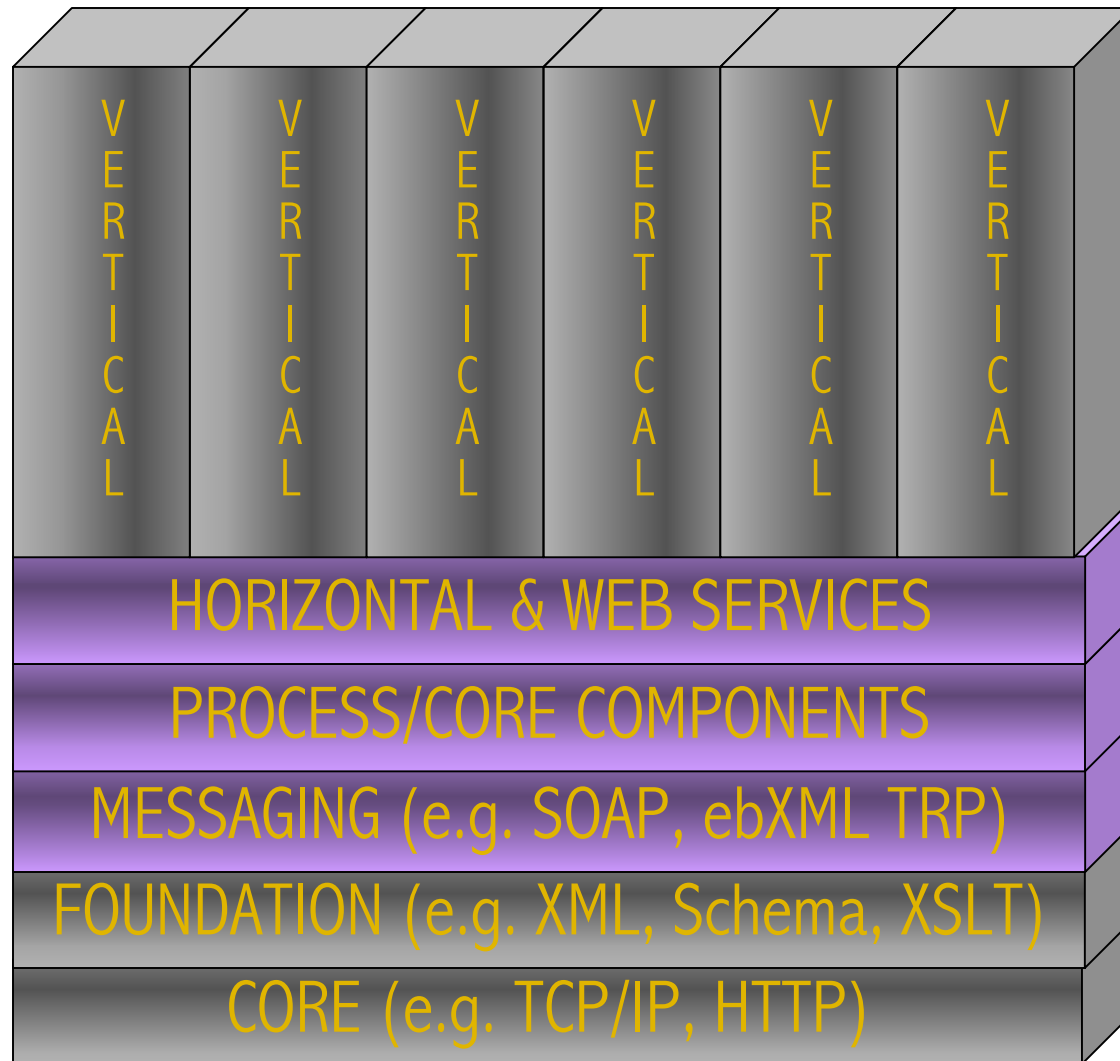
## Previously

- VP Technology, RIA Tax Publishing Group  
The Thomson Corporation

# XML Enables Robust e-Business Platforms

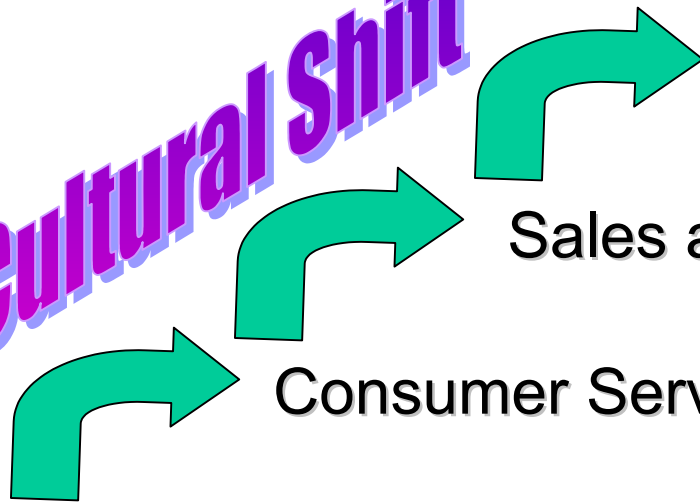
- Enables industry data interchange standards
  - platform-independent data exchange
  - electronic commerce
  - user agents for automatic processing after receipt
- Enables software to handle specialized information distributed over the Web
- Enables use of metadata
  - data about information
  - help people & systems find information
  - help information producers & consumers find each other

# The Complete XML Picture



# The eBusiness Tidal Wave

**Cultural Shift**

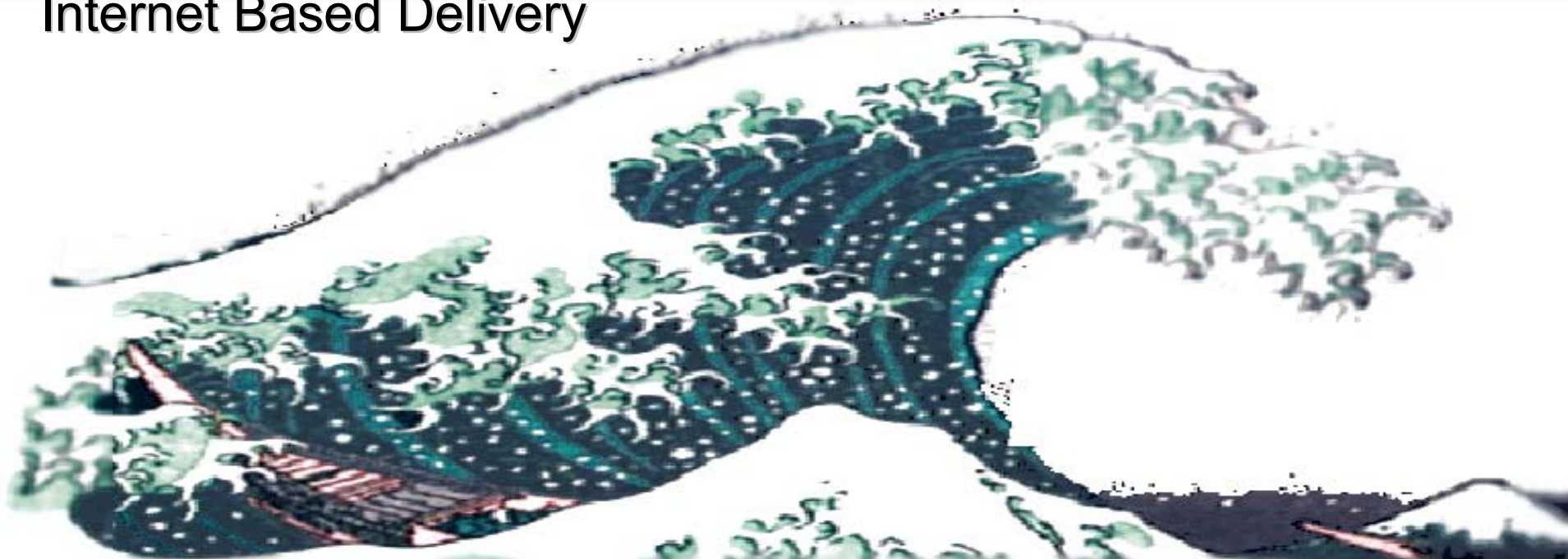


Business-to-Business  
Processes

Sales and Distribution

Consumer Services

Internet Based Delivery



# The eBusiness Technologies

**XML**

Sales and Distribution

B2B iMarketPlaces / Hubs

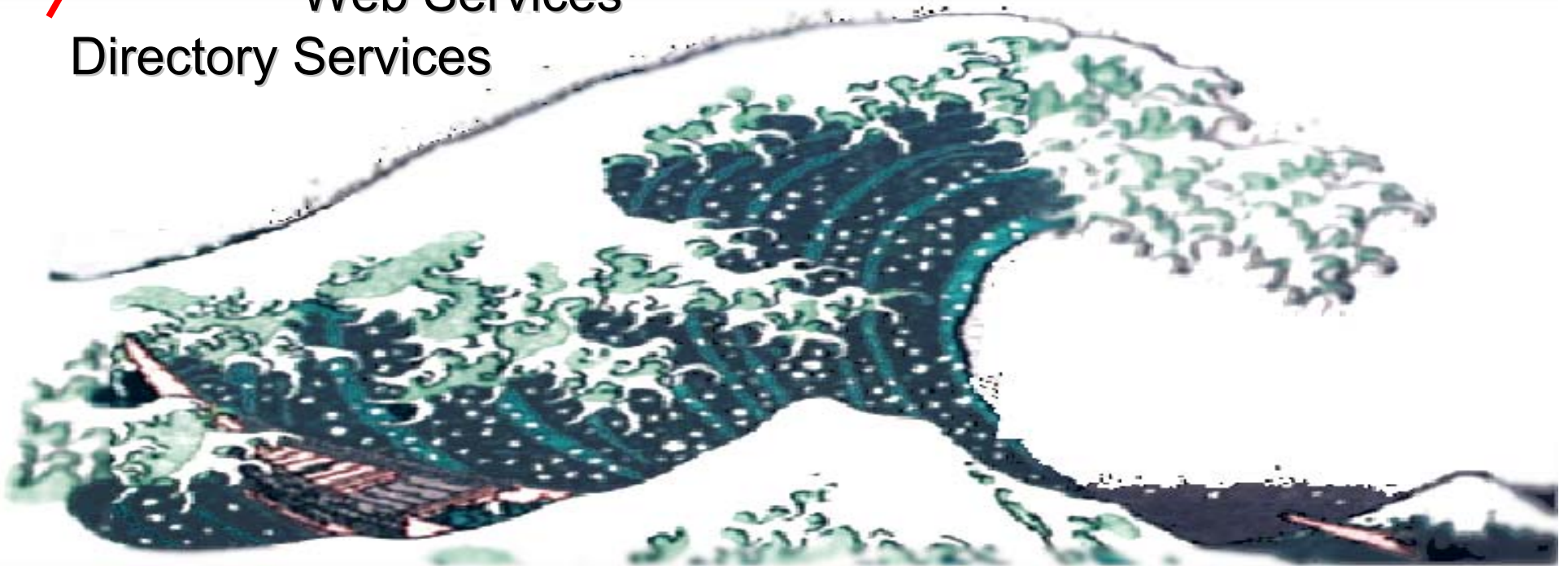
ASP's (App' Srvc Provider)

B2C Integration

Information Mining

Web Services

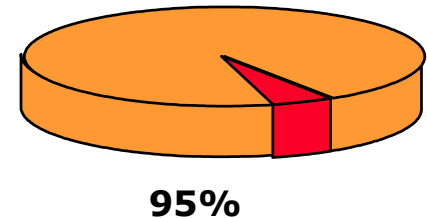
Directory Services



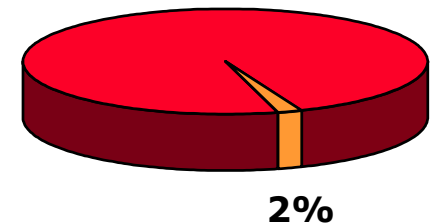
# First There Was EDI

- **Electronic data Interchange (EDI)**
  - Facilitates global electronic trade
  - ANSI X12 standards used in North America
  - UN EDIFACT (EDI for Administration, Commerce & Transport) used in Europe and elsewhere outside North America
  - Purchase orders, invoices, wire transfers, receipts, etc.
  - Usually long-term, high volume trade between established partners
  - Expensive technology with high cost-of-entry
  - Inconsistent formats
  - Limited to large organizations

**Fortune  
1000**

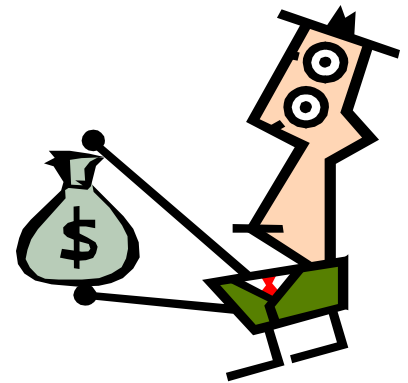


**Small to Medium  
Enterprises (SMEs)**



# Problems with EDI

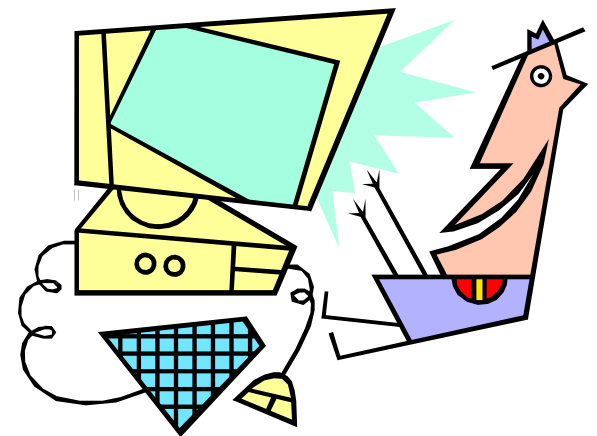
- Expensive, proprietary networks
- Lack of agreed upon data types
- Different forms of product information with no common taxonomy
- Each manufacturer has their own order/return procedures & system interfaces
- No mechanism enabling procurement through consistent interface
- Changed the way things were done, but not the underlying processes





# Then Came Basic Web e-Business

- Some Aspects of Effective Basic Web e-business
  - Secure Socket Layer
  - Encrypted Data
  - Standard Web protocols
  - Custom or proprietary application platforms



# What Basic Web e-Biz Will & Won't Do

Won't	Will
Won't support common robust business requirements	Will support many basic business transactions
Will not secure data "end-to-end" throughout the entire process	Will secure data transaction between firewalls
Will not address business process & requirements	Will enable custom applications for business process support
Will not enable procurement through consistent interface	Will provide channel for developing interfaces
Will not support consistent interconnectivity in heterogeneous environments	Will provide channel for fairly secure messaging

# Vision of a Service-Oriented Architecture

- A place where services are ubiquitous and organically integrated into the way we think and work.
- A place where both users and providers of information interact through a common focus on services.
- A world where technology is implemented within industry frameworks that operate on a global scale, enabled by open, interoperable standards.

# What Makes Web Services Possible?

- **Reliable & Transparent Interconnectivity**
  - Web Protocols
- **Structured Information**
  - XML Schemas & validation
- **Application Interface Standards**
  - UDDI, WSDL, SOAP
- **Consistent Definitions**
  - Profiles, Test Suites & Scenarios
- **Business Process Interface Standards**
  - ebXML, etc.
- **Infrastructure Standards**
  - Security, etc.

The fundamental characteristics of Web Services is interoperability & consistency across platforms, applications & programming languages.

# Web Services Issues

- Fundamental Issues that Must be Addressed
  - A common framework for Web service interactions based on open standards must occur
  - An agreed set of vocabularies and interactions for specific industries or common functions must be adopted

# Why Open Standards?

- Common framework for Web services
- Agreed upon business vocabularies
- Industry business interactions

# A Common WS Framework is Essential

- To provide a sustainable foundation,
- That will allow end-user companies to achieve the payback they require,
- To invest widely in the service-oriented architecture.

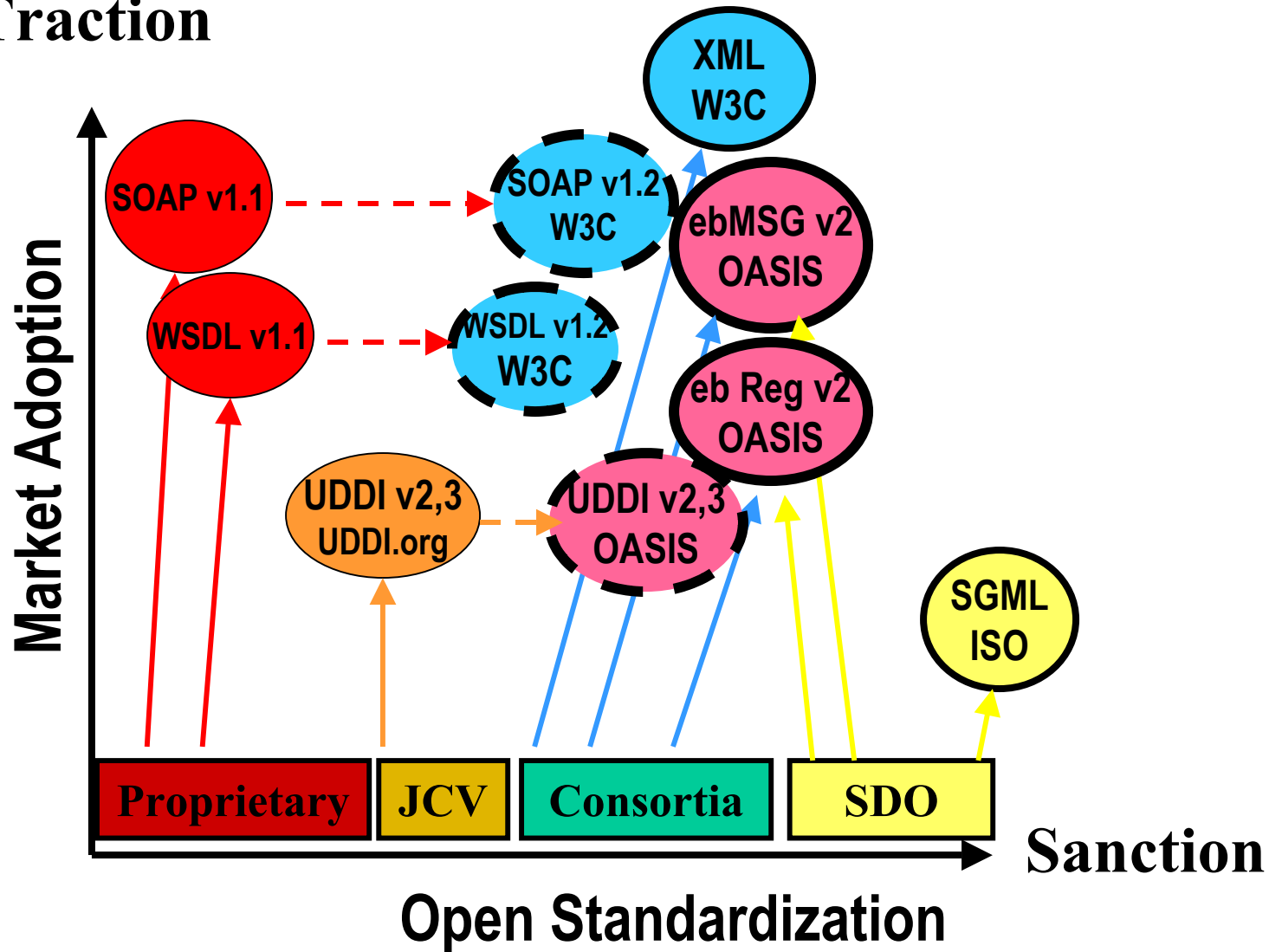
# Issues Impacting Web Services

- Issues Impacting Web Services for the Global Business Market
  - Moving proprietary WS specifications through an open standards process
    - Core specifications (SOAP, WSDL at W3C)
    - Infrastructure specifications (security, management, business process, etc.)
  - Coordinating and demonstrating related infrastructure standards
- Adapting industry business vocabularies and business scenarios to WS framework



# OASIS Standards: Open & Adopted

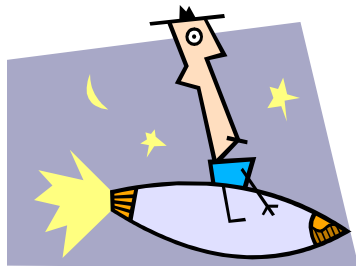
Traction



# Complexity of Robust Web Services

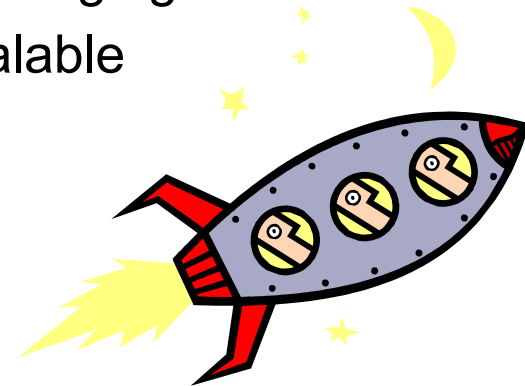
## Simple

- RPC-based
- No side effects
- Non-transactional
- Context free
- Session-less, no roles
- Minimal security
- Call-response model
- Point-to-point
- Not developmentally scalable



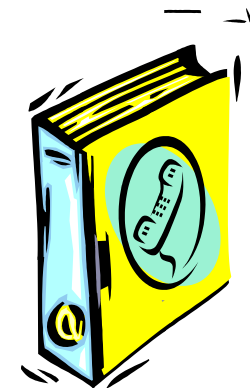
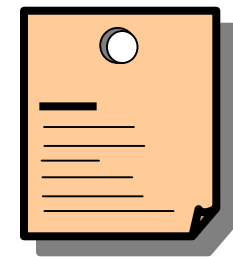
## Complex

- Conversation-based
- Impacts other steps
- Transactional
- Context sensitive conversions, ordering of steps
- Session based, personalized
- Exactly once semantics
- Sophisticated security
- Messaging based
- Scalable



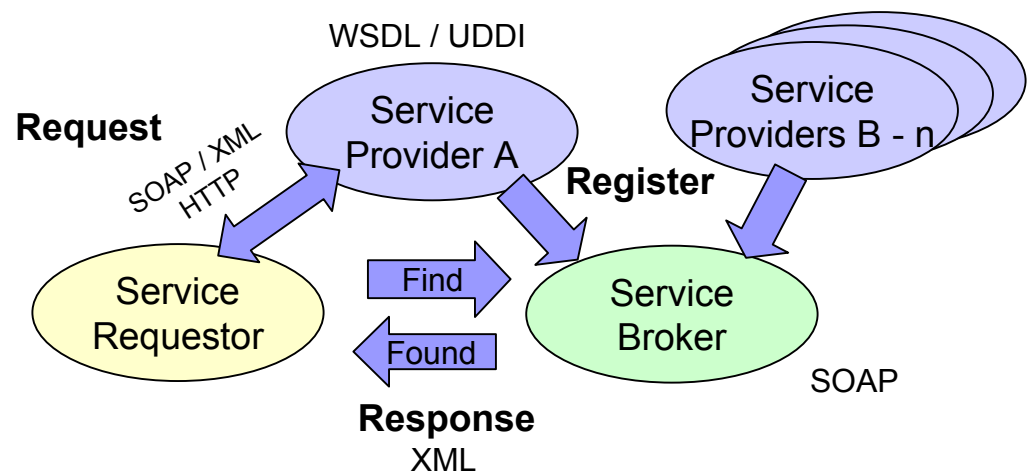
# Simple Web Services Standards

- **XML**
- **Small Object Access Protocol (SOAP)**
  - XML-base lightweight protocol for information exchange
  - W3C XML Protocol WG – SOAP v1.2
  - Still in process
- **Web Services Description Language (WSDL)**
  - XML Format for describing Web Services as end points acting on messages containing either documents or procedural calls (Port Types)
  - WSDL v1.1 (IBM & MS) W3C Note Mar. 2001
  - W3C WS Description WG started Jan. 2002
- **Universal Description, Discovery & Integration (UDDI)**
  - Facilitates Describing/Discovering Services & Business
  - Registration of Business Identity Information
  - UDDI.org v2.0 specification June 2001
  - OASIS Member Section August 2002
- **HTTP, DNS & MIME**



# Simple Web Services

- Components that provide a service to a user
  - Human or computer based users
  - Can be located anywhere
  - Appears as a remote object to the client application
  - Tightly coupled and resemble traditional distributed object paradigms, such as RMI or DCOM
  - Can be implemented in many programming languages
  - Interaction uses a service-specific interface
  - Access is done through Internet-based protocols
  - Synchronous
    - Waits for a response
  - Does not address business processes



# What Simple Web Services Will & Won't Do

Won't	Will
Link business indiscriminately	Ease partner to partner interaction
Cure all integration issues	Make application integration easier
Transform business on their own	Create new business opportunities
Eliminate need for decision makers	Give businesses more and better choices
Give software vendors long-term competitive advantage	Give enterprises competitive advantages over rivals through year-end 2004
Be stopped by lack of native security features – but will require secure thinking	Improve efficiency in trusted environments

# Complex Web Services

- Message-based Conversational Web Services
  - Loosely coupled & document-driven
  - Client invokes a message-based Web Service by sending it an entire document, such as a purchase order, rather than a discrete set of parameters
  - The Web Service accepts the entire document, processes it, & may or may not return a result message
  - Promotes a looser coupling between client & server & provides additional benefits beyond simple RPC-based Web Services

# What's the Difference?

- Meet more complex & robust business requirements
  - Non-repudiation
  - Guaranteed message processing by the receiving application
  - Guaranteed message delivery
  - Transactional protocol

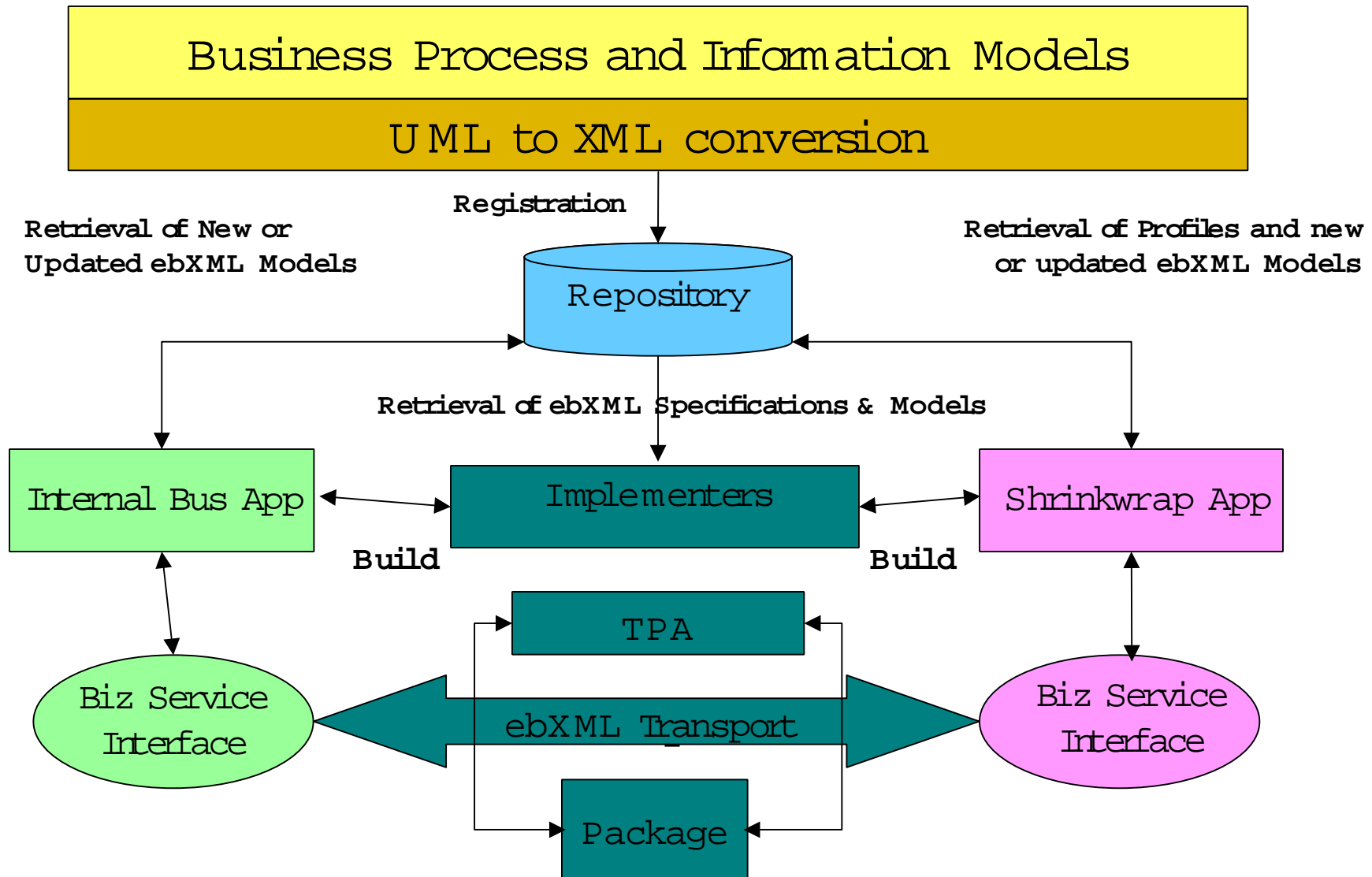
# What is ebXML?

- **ebXML (electronic business XML)**
  - Open framework for global e-commerce
    - Replaces (but is compatible with) EDI
  - Based on XML and other open standards
  - Specifications:
    - Business Process
    - Registry Model and Services
    - Trading Partner Collaboration (CPPA)
    - Messaging Services
  - Ratified May 2001 in Vienna after 18 months of development
  - Proof of Concept Demonstration conducted with more than 20 participating organizations
  - Eventually will become a formal Standard





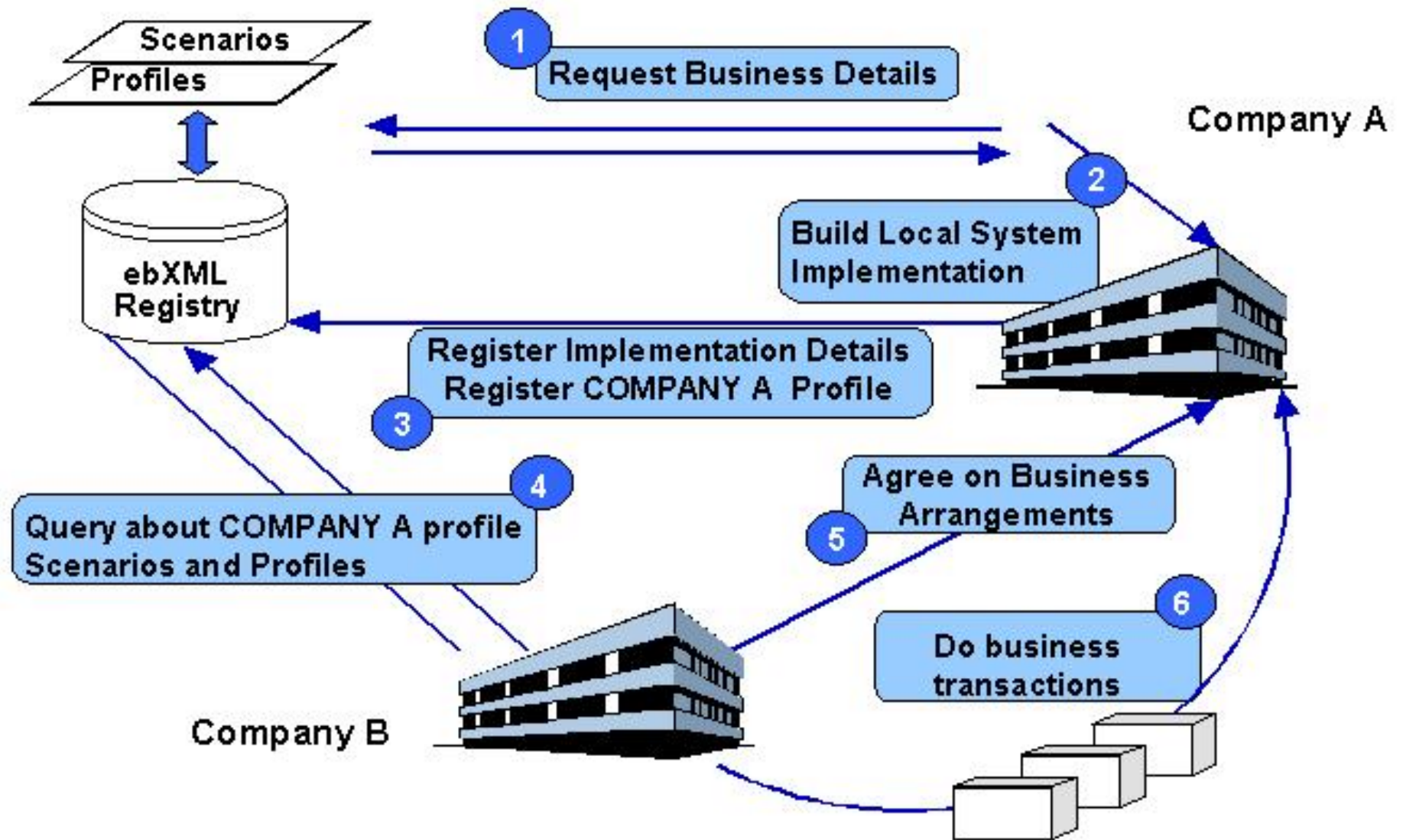
# ebXML Architecture



# ebXML: Built on Existing Standards

- HTTP
- TCP/IP
- MIME
- SMTP
- FTP
- UML
- SOAP
- XML

# Example Scenario



# E-Business Platforms Compared

Requirement	EDI	HTTPS & SSL	Web Services	ebXML	Proprietary
Global Electronic e-Commerce Framework	●	●	●	●	●
Global Interoperability Framework	●	●	●	●	●
Extensible Data Type Formats	●	●	●	●	●
Extensible Interconnectivity	●	●	●	●	●
Reliable Messaging	●	●	●	●	●
Security Services	●	●	●	●	●
Flexible Payload	●	●	●	●	●
Authentication / Authorization Services	●		●	●	●
Company Collaboration Profiles	●		●	●	
Business Process Model	●		●	●	●
Registered Trade Agreements	●		●	●	●
Incremental Implementation		●	●	●	●
Platform Independence (Heterogeneous)		●	●	●	
Separation of Transport, Messaging, Data		●	●	●	●
XML Data Structures		●	●	●	●
Web Enabled		●	●	●	●
Open Standards	●	●	●	●	
Open Registries	●		●	●	
Affordable / Accessible to SMEs	●	●	●	●	●
Widespread Adoption	●	●	●	●	●
Tools Available	●	●	●	●	●

# Comprehensive Messaging Delivery

	<b>Web Services</b>	+	<b>ebXML</b>
<b>Type</b>	Request/response		Collaboration
<b>Communication</b>	RPC-style synchronous communication between tightly coupled services, Document-style asynchronous communication between loosely coupled services		Synchronous, asynchronous communication
<b>Business Service Interface description</b>	WSDL		CPP, CPA (WSDL within CPP, with CPA also)
<b>Protocol and Formats</b>	SOAP, XML		ebXML Message Service (over SOAP), XML, BPSS (as "business" protocol)
<b>Content Standards</b>	None		Recommended Standards (e.g. OAGI BODs, EDIFACT, UBL)
<b>How to find business partners</b>	UDDI Registry		ebXML Registry (UDDI Registry may point to an ebXML Registry or Registry objects (e.g. CPA))

With thanks to Alan Kotok  
from his recent article : <http://www.webservices.org/index.php/article/articleview/451/1/22/>

# UDDI and ebXML Registry Spec

## UDDI

- ✓ Publish and discover web services
- ✓ Basic identification
- ✓ Industry classification
- ✓ Technical capabilities

## ebXML Registry Spec

- ✓ Publish and discover web services
- ✓ Basic identification
- ✓ Industry classification
- ✓ Technical capabilities
- ✓ Search capability
- ✓ Retrieval of business process, business document, and business profile objects in repositories

# WSDL and ebXML CPP/CPA Spec

## WSDL

- ✓ Describe the web service
- ✓ Information about service name and parameters, and how to invoke

## ebXML CPP/CPA Spec

- ✓ Describe the web service
- ✓ Information about service name and parameters, and how to invoke
- ✓ Information about organization's role in service context
- ✓ Error handling and failure scenarios

# So, what doesn't ebXML include?

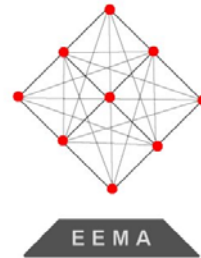
- DTDs or schemas for specific business documents (e.g. invoices, POs)
- Company-specific or industry-specific implementations



# Who is implementing ebXML?



# Industry Groups Support ebXML



OPEN INTERCHANGE  
CONSORTIUM



The Open Healthcare Group



# Continuing ebXML Work

- Infrastructure work continuing at OASIS  
[www.oasis-open.org](http://www.oasis-open.org)
  - Messaging
  - Collaborative Partner
  - Registry & Repository
  - Interoperability, Implementation, Conformance
- Content-related work continuing at UN/CEFACT
  - Business Process
  - Core Components

# References

- <http://oasis-open.org>
- <http://xml.org>
- <http://ebxml.org>