# Driving XML Standards Convergence and Interoperability

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Chair of BIC XML Convergence WG
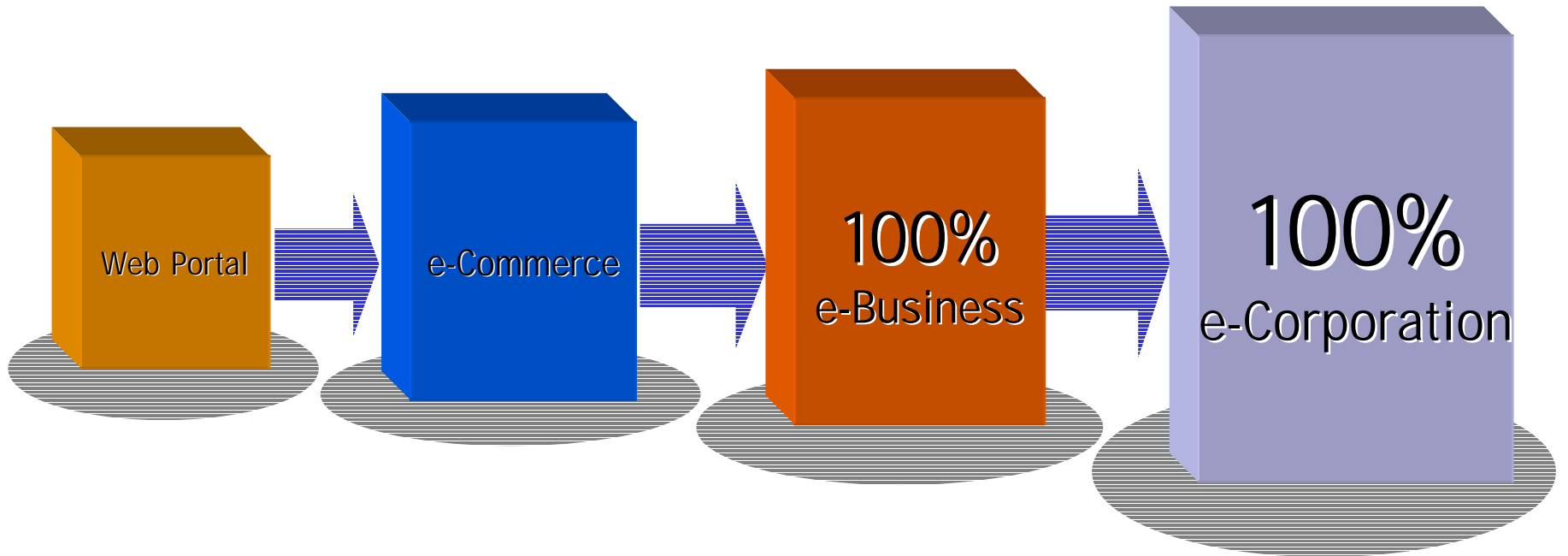
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# Agenda

- Why convergence and interoperability?

- What role does Business Internet Consortium (BIC) play?

- Standards Convergence @ BIC – B2B Conceptual Model

- Convergence and interoperability strategy discussions

# Why Convergence and Interoperability?
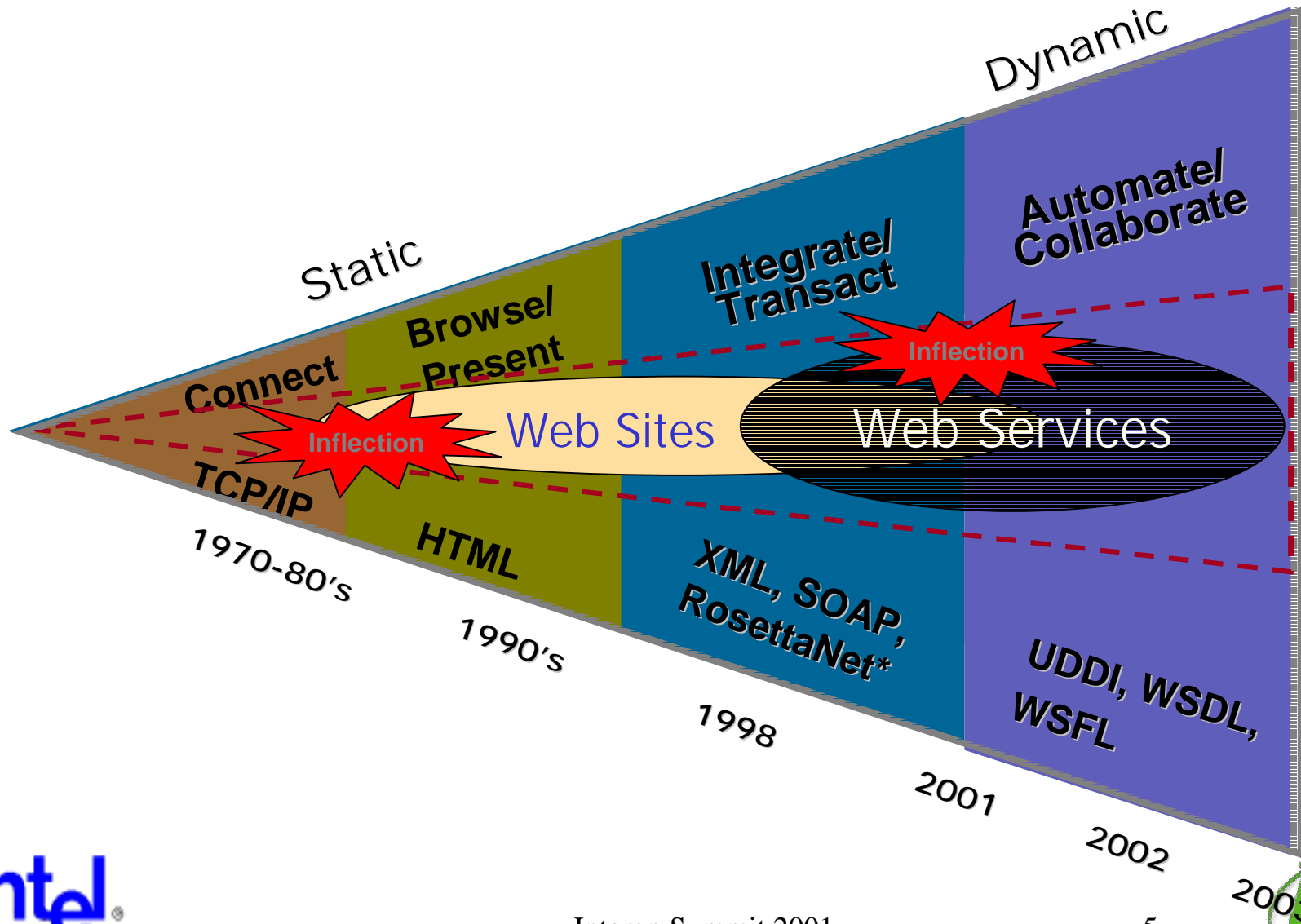
# Evolution of Business Needs

# Evolution of Web Technologies

# XML Standards: Current State of the Union



- **Confusing mass of competing standards**
  - protocols, working groups, consortia
  - Vertical stovepipes, lack of interoperability
- **Slow adoption of e-Business standards**
  - Fear, uncertainty and doubt
  - Confused, frustrated customers opt for "safe" solutions
  - Difficult to integrate, high barrier of entry for small medium size businesses

**It is a mess! – needs to be simpler, needs convergence**

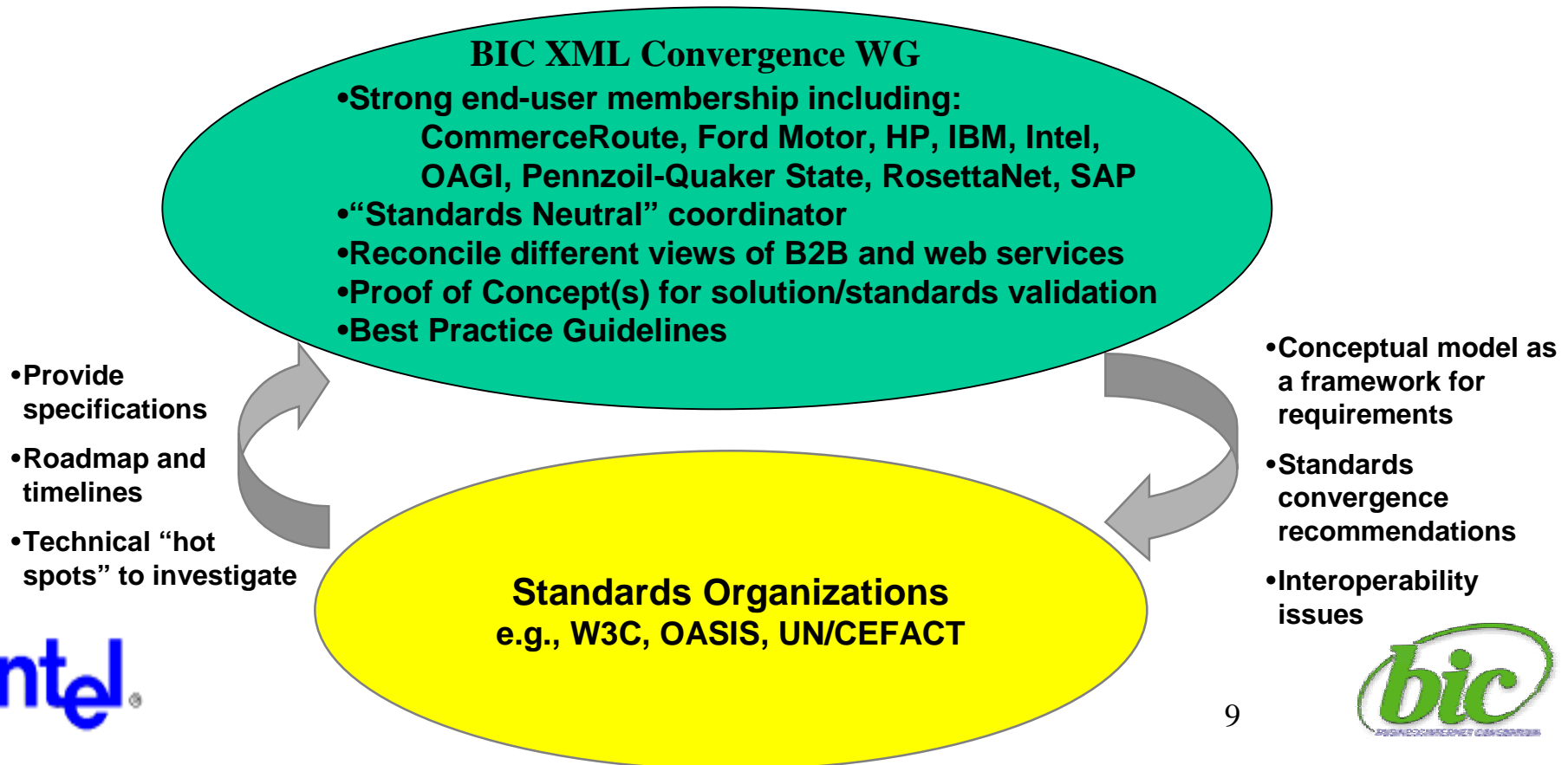# What is Business Internet Consortium?

# Business Internet Consortium (BIC)

- Mission: A consortium of internet <u>technology leaders</u> and leading <u>end-user companies</u> aimed at promoting the <u>advancement of the industry</u> toward the next generation of Internet Business

- Unique features of BIC: Not a standard body, but rather a forum for customers to engage with technology providers and standards producers
  - address customer requirements of emerging technology
  - accelerate the adoption and deployment

- Major activities:
  - Started: November, 2000
  - Current members: ~40 companies from different industries

# BIC XML-Convergence WG

Focus on *customer requirements* to *coordinate* the development of a generic standard-based XML solution stack and *best practice guidelines* for B2B automation, as well as *migration roadmap*

**BIC XML Convergence WG**
- **Strong end-user membership including:**
    - **CommerceRoute, Ford Motor, HP, IBM, Intel, OAGI, Pennzoil-Quaker State, RosettaNet, SAP**
- **"Standards Neutral" coordinator**
- **Reconcile different views of B2B and web services**
- **Proof of Concept(s) for solution/standards validation**
- **Best Practice Guidelines**

- **Provide specifications**
- **Roadmap and timelines**
- **Technical "hot spots" to investigate**

- **Conceptual model as a framework for requirements**
- **Standards convergence recommendations**
- **Interoperability issues**

**Standards Organizations**
**e.g., W3C, OASIS, UN/CEFACT**

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# B2B Conceptual Model

# Need a Common Framework
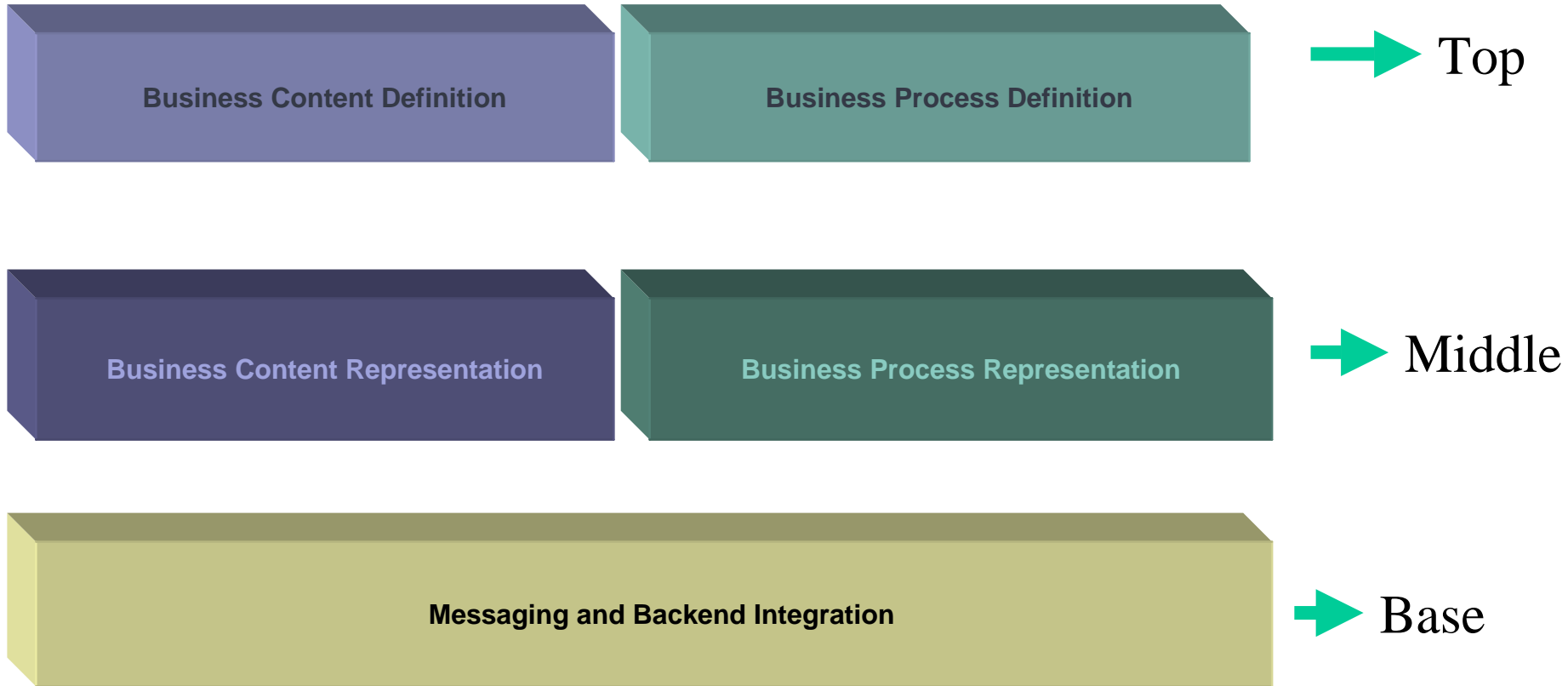
- To facilitate <u>communications</u>
- To see the <u>big picture</u> of B2B Automation
- To collect <u>customer requirements</u>
- To drive <u>convergence and interoperability</u>
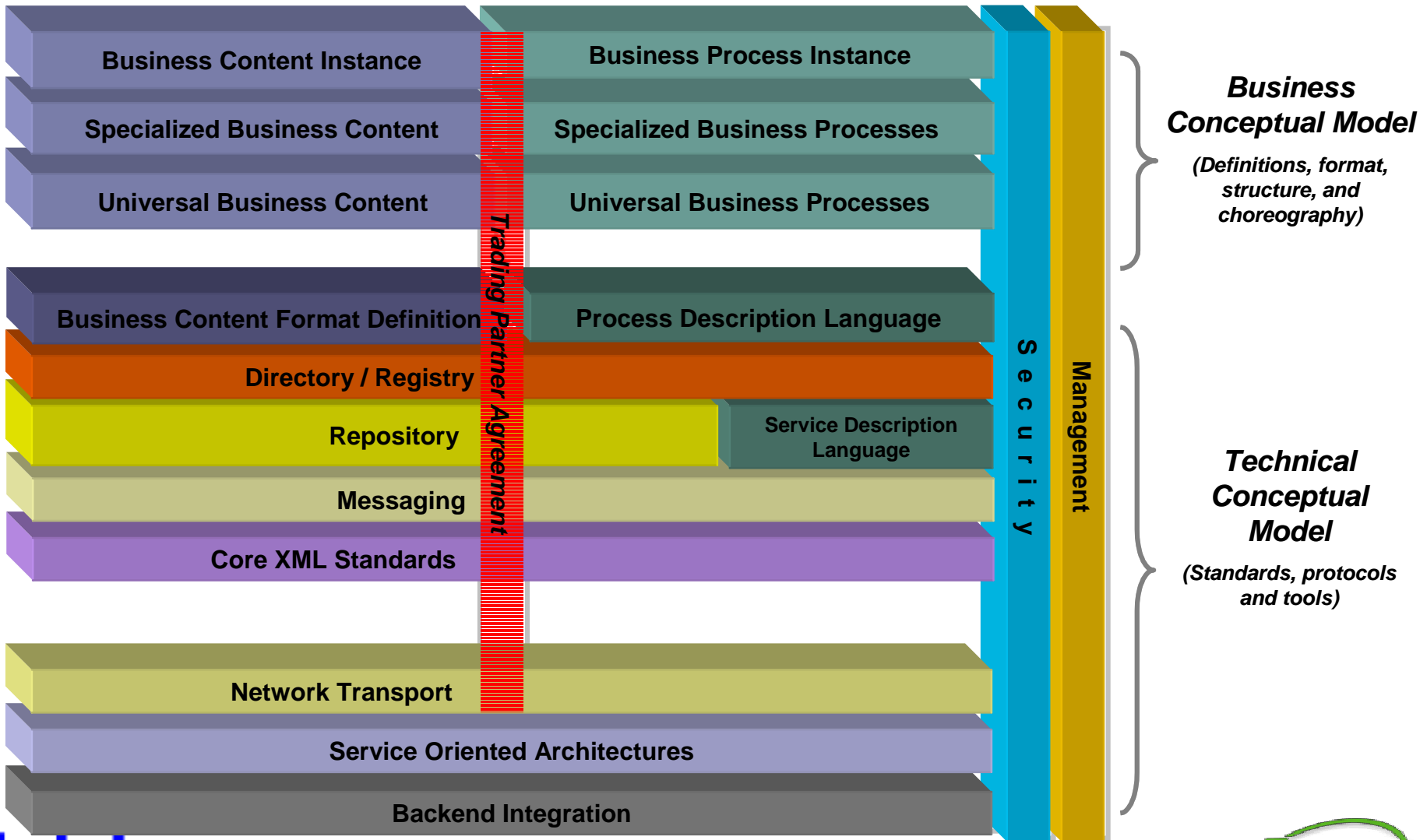
# Gartner Model of Systems Integration

- Agreements required for effective integration:
  - Meaning of Information $\Big\}$ → Top
  - Process Definitions
  - Syntax → Middle
  - Communication Layer → Base

# Functional Blocks of Conceptual Model

**Business Content Definition**

**Business Process Definition**

→ Top

**Business Content Representation**

**Business Process Representation**

→ Middle

**Messaging and Backend Integration**

→ Base

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# B2B Conceptual Model

**Business Content Instance**

**Business Process Instance**

**Specialized Business Content**

**Specialized Business Processes**

**Universal Business Content**

**Universal Business Processes**

**Business Content Format Definition**

**Process Description Language**

**Directory / Registry**

**Repository**

**Service Description Language**

**Messaging**

**Core XML Standards**

**Network Transport**

**Service Oriented Architectures**

**Backend Integration**

**Trading Partner Agreement**

**Security**

**Management**

***Business Conceptual Model***

*(Definitions, format, structure, and choreography)*

***Technical Conceptual Model***

*(Standards, protocols and tools)*

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# Example: Map of Standards Activities to the Model
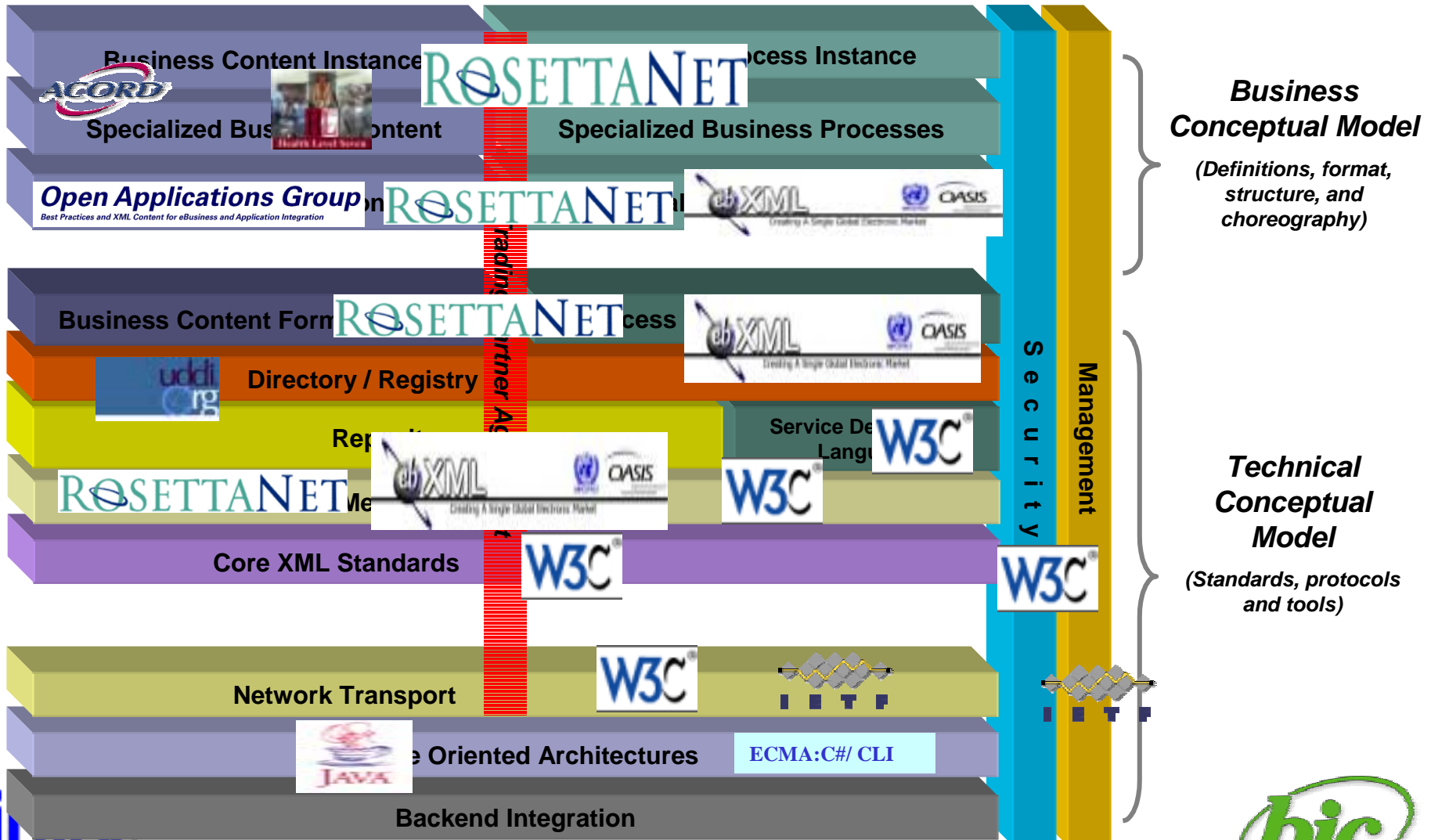
# Example: A Current View

| | | | |
|---|---|---|---|
| **Backend Integration** | Vendor specific solutions, no "standard" way to address this layer yet. | **Business Content Instance** | Business specific – no standards |
| **Service-oriented Architecture** | Java, JDBC, C++ | **Service Description Language** | Not implemented today |
| **Network Transport** | HTTP, HTTPS, SMTP | **Process Description Language** | Proprietary today: PIP interaction diagram, UML model, etc. |
| **Core XML Standards** | XML DTD, XML Schema | **Universal Business Process** | Consortium specifications: OAGI, RosettaNet processes |
| **Messaging** | RNIF, SOAP | **Specialized Business Process** | Consortium specifications: OAGI, RosettaNet processes |
| **Repository** | Implementation specific using relational database | **Business Process instance** | Business specific – no standards |
| **Registry Services** | Mostly not implemented in production. UDDI pilot nodes are available from several providers | **Trading Partner Agreement** | Only at the business contractual level |
| **Business Content Format Definition** | Consortium specifications: RNet Business and Technical Dictionary Structure, OAGI BOD | **Security** | SSL, PKCS#7, S/MIME, Digital Signature |
| **Universal Business Content** | Proprietary definition (RN Business Dictionary Content) | **Management** | Many solutions available, but ad hoc and partial |
| **Specialized Business Content** | Proprietary definition (RN Technical Dictionary Content, Business Model-Specific Content) | | |

# We Have A Lot More To Do

Reconciled Conceptual Model

Case studies (Current)

Use cases & Requirements (Short-term)

Use cases & Requirements (Long-term)

Current View → *Migration* → Tactical View → *Migration* → Strategic View

Customers, vendors, system integrators

Standard Bodies
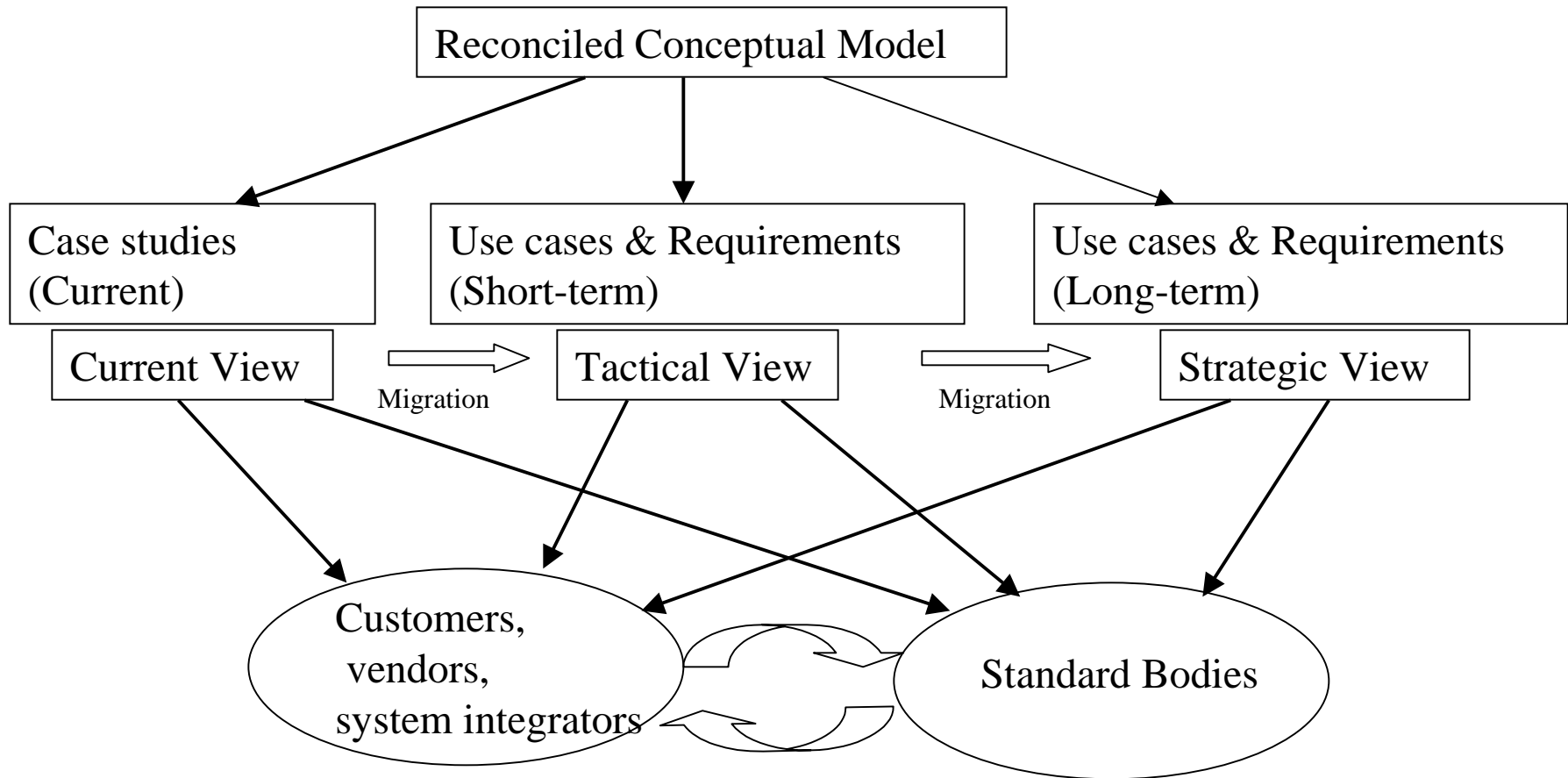
**A model is only as good as the people who use it**

# How to proceed with convergence?

# Convergence Goals

- Grow e-Business to small and medium size businesses, lower the barriers of entry
  - by making trading partner connections <u>Easier</u>
  - by making overall solution <u>Cheaper</u>
  - by making solution integration / implementation <u>Faster</u>

# Convergence Principles

- The lower the layer, the bigger the impact of deviation and duplication – converge from the bottom up

- Divide and conquer, each layer supports all those above it – identify common functionalities converge layer by layer

- Not all layers are converge-able, however, broad agreement at lower layers allows effective diversity at the top layer

- If cannot converge, make them interoperable

- End-to-end solution is the key – interoperability between multiple standards is needed

- Continue looking for convergence opportunities, driving toward more converged horizontal standards, while allowing flexibilities to meet diverged business needs

# Convergence Strategies

- Business requirement-driven, rather than technology driven
  - End-to-end customer requirements
  - Focus on what is good for customer, good for e-business, good for small and medium size businesses

- Coordination / Collaboration amongst standard bodies
  - Division of labor based on a common framework / taxonomy definition – e.g. Interop Summit, Collaboration MOU
  - Building on-going coordination and collaboration mechanisms (e.g. Interop Summit, Common Taxonomy Registry, etc.)
  - Build joint compliance programs to insure interoperability at all layers

**Together, we can make it happen!**

# Call for Actions

- XML-standards need convergence & interoperability
  - a common framework and people using it
  - a business driven focus
  - collaborations amongst standards bodies
- Join BIC XML Convergence WG efforts on the standards convergence

# Q&A

# Thanks!

**For more information please visit: HTTP://www.BusinessInternetConsortium.org**

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# Backup

# Definition of Terms (1)

- **Backend Integration**
  - Provides hooks into the backend enterprise systems through API or shared messaging bus. This is an important part of an end-to-end B2B solution, that relies on the backend ERP to execute business transactions.

- **Service-oriented Architecture**
  - Development platform for web-based services. This layer is also critical for customers to integration a B2B solution that specify the tools and methods to connect with backend private processes

- **Network Transport**
  - This layer addresses the basic messaging transport protocols needed to communicate on the Internet, messaging services that provide for asynchronous publish/subscribe, asynchronous message queuing, and synchronous request/reply, and how messages are placed on the transport bus and taken off the bus.  These standards specify mechanisms for transporting messages in a secure and reliable way

- **Core XML Standards**
  - XML 1.0 is the World Wide Web Consortium (W3C) standard for document syntax.  There are associated W3C standards for defining document types and for accessing the data within the documents.  This syntax is used to express specifications in the layers above "Core XML Standards" in the Conceptual Model.

- **Messaging**
  - Standardized message and envelope structure and layout definitions, which have specific technical purposes.  This layer addresses the need to record session and communication settings for message transport in order to enable coordination between parties in a business transaction, including parameters that control Reliable Messaging, Secured Messaging, etc.

# Definition of Terms (2)

- **Repository**
  - ➢ Standardized dictionary and repository services that specifies the structure and access protocol and schemas for business content storage and retrieval, which includes the term, its constraints, its representations, etc.

- **Directory and Registry Service**
  - ➢ Specifies the structure and access protocol of registries and repositories that trading entities can access to discover each other's capabilities and services. Covers naming, directory, registry, privacy, authorization and identification services.

- **Business Content Format Definition**
  - ➢ Business Content includes everything that composes the payload of business transactions, which dictionary entries, composition of dictionary entries, special business documents, and attachments. Business Content Format Definition is the specification of the data structures, data types, constraints and code lists of all the items necessary to compose valid business content.

- **Universal Business Content**
  - ➢ Specifies business terminology and accepted values that may be universally used in business messages that support a broad range of industries, business models and locales; the vocabulary used to construct the business content of a message. This content covers many domains of discourse, such as product, materials management, finance, quality.
    - ❑ Note: The distinction between "universal" and "specialized" is relative and could change over time and situation. The purpose of this distinction to drive reuse and achieve manageability and economies of scales.

- **Specialized Business Content**
  - ➢ Industry- or supply chain-specific technical lexicon (terms, properties, values, taxonomic structures) to be used to extend and specialize the Universal content to construct the content of an industry-specific business document.

# Definition of Terms (3)

- **Business Content Instance**
  - ➤ Describes the particular business content exchanged during a particular business transaction. An instance could contain recursive and complex combinations of universal and specialized business content defined in the lower layers

- **Service Description Language**
  - ➤ This layer describes the tools and languages for service implementation and service interface, which is key to achieving loosely coupled architecture and reducing the amount of custom programming and the effort of integration between service requester and service provider.

- **Business Process Description Language**
  - ➤ Specifies the way in which any business process (whether Universal or specific in nature) is recorded, such that is understood and executable in a repeatable fashion by a wide array of humans and/or applications.

- **Universal Business Process**
  - ➤ Specifies business processes that are applicable to a broad range of businesses, regardless of the vertical industry or locale within which the business operates or of the specific characteristics of the business. These processes cover many domains of activity that businesses engage in, such as collaborative product development, request for quote, supply chain execution, purchasing, and manufacturing.
    - ❑ Note: The distinction between "universal" and "specialized" is relative and could change over time and situation. The purpose of this distinction to drive reuse and achieve manageability and economies of scales.

- **Specialized Business Process**
  - ➤ Specifies business processes that are not Universally applicable but instead are specific to a business operating within a specific industry or supply chain (such as Electronic Components, Pharmaceuticals, Automotive), and locales or business models.

# Definition of Terms (4)

- ## Business Process Instance
  - ➤ Particular instance of business processes for business transactions that could be a recursive and complex combination of Specialized and Universal Business Processes.

- ## Business Transactions
  - ➤ Represents the binding of Business Content Instance and Business Process Instance. It includes complex business transactions that compose of several sub-business transactions – represented as recursive Business Content and Business Process Instances

- ## Trading Partner Agreement
  - ➤ Dynamic creation and management of trading partner agreements between partners. Profiles of trading partner's B2B infrastructure, protocols, contractual agreement for transactions. This layer also defines binding of business processes and business content to complete particular business transactions.

- ## Security
  - ➤ This layer spans a wide range of abstractions from basic encryption, authentication and authorization on the core XML layer to non-repudiation and security policies in the business process layer.

- ## Management
  - ➤ This layer specifies system management tools and standards that can be used to discover the existence,availability and health of a B2B solution. Furthermore, the management tools should also be able to control and configure the components.

# Glossary

- OAGI: Open Applications Group Inc.

- W3C: World Wide Web Consortium

- OASIS: Organization for the Advancement of Structured Information Standards

- UN/CEFACT: United Nations body for Trade Facilitation and Electronic Business