B2B Standards

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On loan from Hewlett-Packard

Agenda

- RosettaNet
- Why Standardize XML?
- RosettaNet PIP™s
- RosettaNet B2B Architecture

About RosettaNet

- **Vision:** The Leader in global e-business standards
- **Mission:** RosettaNet drives collaborative development and rapid deployment of internet-based business standards, creating a common language and open e-business processes that provide measurable benefits and are vital to the evolution of the global, high-technology trading network.
RosettaNet Governing Process

RosettaNet Executive Board
- Provide overall guidance
- Address prioritization and integration across boards

Individual Supply Chain Boards
- Address SM supply chain-specific issues
- Prioritization
- Resources
- Implementation and adoption

RosettaNet Partners
- Vote on standards
- Participate in workshops
- Implement

X 3

Information Technology (IT) Supply Chain Board

3Com
Arrow Electronics
Avnet
Cisco Systems
Compaq
CompUSA
Dell
Federal Express
GSA
Hewlett-Packard
IBM
Ingram
Insight
Intel
Lucent Technologies
NEC
Netscape
Office Depot
Pioneer
Quantum
SAP
Siemens
Solectron
Tech Data
Trilogy
UPS

Electronic Components (EC) Supply Chain Board

Agilent
Altera
Arrow Electronics
Avnet
AVX
Bourns
Cisco Systems
FCI
Future Electronics
Hitachi
IBM
Intel
Kemet
Lucent Technologies
Memec
Micron Technology
Molex
Motorola
National
Nokia
NEC
Pioneer
Philips
Samsung
Solectron
Sony
STMicroelectronics
Texas Instruments
Toshiba
Tyco Electronics
Xilinx

Semiconductor Manufacturing (SM) Supply Chain Board

Air Products & Chemicals
Agilent Technologies
Amkor Technology
Applied Materials
ASE
Chartered Semiconductor
Intel
JSR
LSI
Micron Technology
Motorola
National Semiconductor
NEC
Philips Semiconductors
Samsung Electronics
Shin-Etsu Handotai
Shinko Electronics
SPIEL
Sumitomo Bakelite
Sumitomo Metal
Texas Instruments
TOK
Tokyo Electron
Toppan
Toshiba
TSMC
UMC
Winbond
Xilinx

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What RosettaNet standardizes

- RosettaNet does not define how trading partners do business together.
- RosettaNet does, however, define how trading partners exchange information.
- RosettaNet does not build or sell software but instead works with industry thought leaders to develop business process specifications.

Industry Recognition

In a special year-end issue of tomorrow’s LEADERS, RosettaNet is named a TOP 10 WINNER OF 2000 by InternetWeek.

12.18.00

“RosettaNet is arguably the MOTHER OF ALL industry-specific XML EFFORTS.”
eWEEK
2.26.01

RosettaNet is "one of the MOST AMBITIOUS inter-enterprise content and process integration efforts currently underway.”
Patricia Seybold Group
4.3.01

Why XML?

- Simple to represent richly structured data in an unambiguous, extensible, non-proprietary way.
- Readily available, easy-to-integrate parsing and validation technology.
- Ideally suited for data exchange over the Internet using well-established transfer protocols.
Why Standardize?

- Competitive pressure to achieve extreme operational efficiency
- Competitive pressure to create additional business value
- Makes integration efforts efficient and repeatable
- Promotes loose coupling of trading partners, allowing for rapid reconfiguration of supply webs
- Leverages expertise and experience of those that have come before you

Transition from linear supply chain ...

...to dynamic supply web

RosettaNet PIPs™

Partner Interface Processes™ (PIPs™)

Figure provided by Vitria Systems
It is conceptually very simple.

Trading Partner
Create content
Wrap it
Send it
Initiating trading partner prepares business document payload.

Trading Partner
Create content
Wrap it
Send it
Payload is placed inside XML- and MIME-based transport envelope …

Trading Partner
Create content
Wrap it
Send it
… and sent to trading partner URI using an agreed-upon transport: HTTP(S), SMTP, others in the future.

Trading Partner
Receive it
Unwrap it
Process content
Trading partner receives incoming envelope.
Envelope is "opened" to validate and expose processing information and business document payload.

Payload is validated and processed according to RosettaNet specifications ...

… and a response is wrapped and returned to the initiating trading partner.

Conversation (exchange protocol or choreography) between trading partners continues according to RosettaNet specifications and may require several iterations.
Implementation Today

Partner Connections with at least one PIP™

![Graph showing partner connections increase]

Represents a 500% increase


Note: A percentage increase of partner connections is the best quantitative indicator of speed and traction of implementation activity. Actual numbers should not be used out of context. Because actual connections are calculated differently company-by-company and partners may report connections inconsistently, these numbers are estimates based on data gathered. Numbers do not reflect additional volume of multi-PIP activities.

Implementation Successes

<table>
<thead>
<tr>
<th>Partners</th>
<th>Implementation</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrow &amp; Carrier</td>
<td>Up and running in six weeks</td>
<td>Reduced a 5-day batched delivery cycle to overnight; results in inventory reduction, improved customer satisfaction</td>
</tr>
<tr>
<td>Bourns &amp; TTI</td>
<td>Implemented PIP™ 3A2 in two weeks</td>
<td>New process converted access to inventory information from a week’s delay to real-time data; improved customer service</td>
</tr>
<tr>
<td>Compaq &amp; Delta (Taiwan)</td>
<td>Implemented PIP 3A4 and PIP 3A7</td>
<td>Reduced the order processing lead time to several minutes; enabled Compaq to receive the P.O. acknowledgement immediately and allowed departments involved in the process to receive related information in real time</td>
</tr>
<tr>
<td>Intel &amp; WPI (Taiwan)</td>
<td>Implemented PIP 3A4 and PIP 3A7</td>
<td>Automated process reduced the cycle time for order processing between the companies</td>
</tr>
<tr>
<td>Samsung &amp; Sony</td>
<td>First implementation between Korea- and Japan-based partners</td>
<td>Moved into production this month; expected to shorten lead time</td>
</tr>
</tbody>
</table>

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First implementation between Korea- and Japan-based partners

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B2B Conceptual Architecture

| Business Conceptual Model (Definitions, formats, structures, and choreography) |
|---------------------------------|---------------------------------|
| Technical Conceptual Model (Standards, protocols and tools) |
| Universal Business Dictionary Content | Vertical Technical Dictionary Content | Vertical (Supply Chain) Business Processes | Business Model-Specific Processes |
| Business Document Definition | Process Description Language | Process Coordination Framework | Messaging |
| Core XML Format Standards | Universal Business Processes | Service-oriented Architectures | Backend Integration |
Execution Component Stack

Binding Components

Backend Integration

Service-oriented Architecture
Messaging

Definition: This layer addresses the need for session and communication coordination between parties in a business transaction, including Reliable Messaging, Secured Messaging, etc.

Examples:
- BizTalk/SOA
dbXML TRP
- RNSP

Notes:
- Session management and transaction coordination in a loosely-coupled environment will be necessary for multi-organizational business operations where the e-Business solutions may not be ready accessible at all times.
- Current: RN 2.0
- Future:
  - dbXML Messaging Service.

Core XML Format Standards

Business Document Definition

Definition: Standardized document structure and layout definitions, which have specific business purposes.

Examples:
- RosettaNet PIP Service Content
- OAGI Business Object Documents

Notes:
- Dictionary terms are bound together to create these documents.
- Current:
  - RosettaNet-defined Documents.
- Future:
  - Possible Third-Party Document Substitutions.
  - Further development of PIP-specific documents.

Core XML Format Standards

Service-oriented Architectures

Backend Integration

Core XML

Definition: Building blocks of XML content, used to specify the representation of business (and any other) documents.

Examples:
- XML DTD
- XML Schema
- Xforms
- XSL/XSLT

Notes:
- Core XML Standards from W3C
- Current:
  - XML DTD
- Future:

Business Document Definition

Definition: Structure for storing Business Dictionary terms, including their definitions, data structures, data types, constraints and code lists.

Current:
- RosettaNet Business Dictionary Structure

Future:
- Structure changes based on RosettaNet Core Components analysis and development.

Business Dictionary Structure
Directory Service

**Definition:** Specifies the structure and access protocol of registries and repositories that trading entities can access to discover each other’s capabilities and services.

**Examples:**
- UDDI
- ebXML msg/rep
- SI2 Registry Service

**Notes:**
- Enables electronic discovery and configuration of business processes, or web services, between trading partners.
- Current: SI2 Registry, UDDI (in progress).
- Future: UDDI, other technologies based on research.

Process Description Language

**Definition:** Specifies the way in which any business process (whether universal or specific in nature) is recorded, such that it is understandable and executable in a repeatable fashion by a wide array of humans and/or applications.

**Examples:**
- ebXML BPSS
- SAML

**Current:**
- UML Models, but no machine-readable format published.

**Future:**
- ebXML BPSS.

Universal Business Processes

**Definition:** Specifies business processes that are applicable to all businesses, regardless of the vertical industry within which the business operates or of the specific characteristics of the business.

**Examples:**
- Invoicing process
- Purchasing process
- Base level Purchase Order

**Current:**
- ??

**Future:**
- Improved modeling and composition capabilities.

Business Model Business Processes

**Definition:** Specifies business processes that are not universally applicable, but instead specific to a business with specific characteristics such as non-profit; small; huge, etc. where the universal process cannot be used. These processes can be:
- simple processes that are unique to a business model (e.g., non-profit, profit), or
- higher-level composites or sequences of specified Universal Business Processes that are unique to a business model.

**Examples:**
- Purchase Order tax modules added to a (universal) Base Purchase Order

**Current:**
- ??

**Future:**
- Improved modeling; ability to inherit from Universal Business Processes.
**Vertical Business Processes**

**Definition:** 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) where the universal process cannot be used. These processes can be:

- Simple processes that are unique to a supply chain, or
- Higher-level composites or sequences of specified Universal Business Processes that are unique to a supply chain

**Examples:**
- Purchase Order extensions to a (universal) Base Purchase Order for capital equipment in the Semiconductor Manufacturing industry
- Improved modeling; ability to inherit from Universal Business Processes.

**Current:**
- No formal specification; individually developed agreements.

**Future:**
- Improved modeling; ability to inherit from Universal Business Processes.

**Business Model- (Definitions, format, structure, and choreography)**

**Definition:**

**Examples:**
- ebXML CPPA
- No formal specification; individually developed agreements.

**Future:**
- Standard TPA and Collaboration Profile specification, possibly ebXML CPPA.

**Trading Partner Agreement**

**Conceptual Architecture**
Convergence Opportunities

- Not all standards efforts are created equal!
- We need to better utilize existing standards not create new ones
- Of the various standards components most standards efforts focus on **business content**
- Creating **business process** standards is very difficult
- RosettaNet has created and published a **production-ready framework based on XML**

RosettaNet Position on Standards Convergence

- RosettaNet will continue to track new horizontal standards efforts...
- RosettaNet is committed to adopting elements of the architecture when they become broadly accepted horizontal standards...
- RosettaNet will provide smooth transition to new horizontal standards as adopted...

Standards Transition

Announced
- Future releases of RNIF will include support for the ebXML’s TRP (Messaging Service Specification). May 2001.
- 83 RosettaNet PIPs registered within the UDDI Universal Business Registry, April 2001.

Ongoing
- RosettaNet contributing to ebXML’s BPSS (Business Process Specification Schema) for documenting PIPs in XML.
- RosettaNet contributing to UN/CEFACT BL (core components)
Acknowledgements

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  - Steve Agritelley
- Business Internet Consortium

Appendix: Glossary

Glossary of Terms

- authXML: Authentication and Authorization Information in XML
- BIC: Business Internet Consortium
- BPML: Business Process Modeling Language
- BPMI: Business Process Management Initiative
- BTP: Business Transaction Protocol
- cXML: Commercial Extensible Mark-up Language
- ebXML: E-business XML Initiative
- ECIX: Electronic Component Information Exchange
- IEC: International Electrotechnical Commission
- JETIA: Japan Electronics and Information Technology Industries Association
- NEMI: National Electronic Manufacturing Initiative

Glossary of Terms

- OAG: Open Applications Group
- OASIS: Organization for Advancement of Structured Information Standards
- OBI: Open Buying on the Internet
- S2ML: Security Services Mark-up Language
- SI2: Silicon Integrated Initiative
- SOAP: Simple Object Access Protocol
- tpaML: Trading Partner Agreement Mark-up Language
- UDDI: Universal Description Discovery and Integration
- UCC: Uniform Code Council
- UN: United Nations
- VFIIP: Virtual Factory Information Interchange Project
- W3C: World Wide Web Consortium
- XAML: Transaction Authority Mark-up Language
- xCBL: XML Common Business Library