Using RosettaNet in the Shipping Industry

National Industrial Transportation League - Information Technology Advancement Committee Meeting
September 20, 2005
Using RosettaNet in the Shipping Industry

Agenda:
• Introduction to RosettaNet
• Benefits of using RosettaNet
• How do you use RosettaNet
  – Classic (DTD based S2S using RNIF)
  – RAE (Schema, TPIR-PIP, TPIR-PF)
  – MMS (AS2, WS-I, ebXML)
• Transportation/Logistics milestone pgms
  – SN
  – eCustoms
  – SBS
• Future Programs – Freight Billing & Payment
• Q & A
RosettaNet is a non-profit consortium focused on the collaborative development and rapid deployment of e-business processes to align supply chain partners within global trading networks.

RosettaNet derives its name from the ancient Rosetta stone, a black basalt slab discovered in Egypt in 1799 near the town of Rosette.
RosettaNet is the global leader in developing standardized XML business process solutions to create supply chain efficiencies

– Lower transaction costs
– Reduced inventories
– Faster “time to market”
– New business opportunities
– Easier, faster, cheaper linkage to international trade
Adoption By World Leaders

Agere Systems
Agilent Technologies
Air Products & Chemicals
Amkor Technology
APL
Applied Materials
Arrow Electronics
ASE
Avnet
BT
Cisco Systems
Deutsche Telekom
DHL
Elcoteq Network
HP
IBM
Infineon Technologies
Intel
Jabil Circuit
Menlo Logistics
Molex
Motorola / Freescale
National Semiconductor
NEC
Nextel
Nokia
Philips Semiconductors
Portnet.com
Renesas Technology
Samsung Electronics
Siemens
Singapore Airlines Cargo
Sony Electronics
SPIL
ST Microelectronics
Sun Microsystems
TeliaSonera
Texas Instruments
Tokyo Electron Limited
Toshiba
TSMC
Tyco Electronics
UPS Supply Chain Solutions
Vodafone
RosettaNet
Proven Implementation Success

![Bar chart showing Total Partner Connections from Dec'01 to Dec'04]
RosettaNet
Global Reach

- Americas
- Europe
- China
- Korea
- Japan
- Taiwan
- Philippines
- Malaysia
- Singapore
- Australia
RosettaNet

*Core Business Process Areas*

RosettaNet initiatives focus on e-business process scenarios that are designed to meet core business needs and solve existing challenges in the supply chain.
Why RosettaNet?

An Intel Perspective
Intel Objectives for using RosettaNet

- Reduce time and cost to integrate with our value chain partners
- Reduce our transaction error rate
- Reduce our ongoing B2Bi support costs
- Improve/streamline our internal and public processes
Intel’s needs for Worldwide Logistics and Transportation Services
Defining the Challenge

Supply-Chains were getting increasingly complex Understanding, communicating and partnering with trading partners, the need to invest and act now!

Circa 1996

Original Equipment Manufacturer

Supplier

Intel

Distributor

Customer

Circa 1999 - 2003

Eng.

Mfg.

Dist.

Eng.

Cust.

Svc.

Cust.

Svc.

Final Assembly

Ship.

Cust.

Sub.

Dist.

Cust.

Svc.

Mfg.

Dist.

Cust.

Svc.

Mfg.

Dist.

Cust.

Svc.

Final Assembly

Eng.

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Eng.

Sub.

Mfg.

Dist.

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Svc.

Final Assembly

Circa 2004-2005+

Source: Forrester Research Inc.
Summary: What value has Intel received from using RosettaNet?

- Over $38 Million in Business Value in 2004
- Over $11 Billion transacted on RosettaNet POs (inbound & outbound)
- Streamlined business transactions on Forecast to Cash and Order to Cash
- Error rates down to < 2%
- Deployment time down from 120 to 35 hours per deployment
How do you use RosettaNet?
## Classic RosettaNet

**For B2B Process & System Integration**

### Scope of RosettaNet

<table>
<thead>
<tr>
<th>Company Specific Processing</th>
<th>Transform messages based on combination of ERP system and partner requirements</th>
<th>Exchange RosettaNet business messages over the Internet using XML &amp; RNIF</th>
<th>Translate from RosettaNet standards to Company B system data set.</th>
<th>Company Specific Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERP A</td>
<td></td>
<td>Internet</td>
<td></td>
<td>ERP B</td>
</tr>
</tbody>
</table>

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B2B Integration Challenges – From the SME Perspective:

- RosettaNet and the required infrastructure is expensive
- Has required integration to a back-end system (mapping of processes and data)
- Requires a 7x24x365 presence on the web
- External web presence requires a DMZ – firewalls, routers, security programming
- A stable Internet connection is required – high quality of service

The cost and complexity of B2B integration is preventing most SMEs from implementing a RosettaNet (or any other B2B) solution
RAE Overview

- **Mission Statement**
  - Provide a **low-cost solution** for trading partners to take advantage of RosettaNet standards
  - **Accelerate** the time required to become RosettaNet-enabled and significantly reduce the resources required
  - Primarily targeted at **smaller trading partners** that cannot afford the time and expense of a B2B gateway
  - Make it **economically and technically viable** for even the smallest trading partner

- **Primary Features**
  - Reduced cost (~$1k)
  - Machine-readable process definition and payload description
  - A standard human interface for automation via RosettaNet standards
  - Allows for integration over time when it makes sense for the Trading Partner
Traditional RosettaNet Deployment vs. RAE

A Traditional RosettaNet implementation requires the deployment of a RosettaNet gateway at the trading partner’s site.

RAE combines the functionality of a RosettaNet gateway with a visual interface similar to a supply chain portal (web application).
RAE – Program Scope

• Foundational
  - TPIR-PIP
    • Use the new PIP schemas to define Trading Partner Implementation Requirements in a machine-readable form
  - TPIR-PF
    • Define a structure for a presentation format to enable trading partners to participate in a B2B integration with a form
  - Registry
    • Define the requirements for posting and retrieving the TPIR-PIP and TPIR-PF from a shared registry

• Milestone
  - PO
    • migrate existing Forecast-to-Cash PIPs® to XML Schema

Note: RAE works with any business process that can be represented by an XML Schema
**TPIR-PIP Implementation**

*Only Define the Elements You Use from a PIP*

The trading partners use common XML tools to edit the original RosettaNet Community PIP of over 1000 fields to just the fields and the constraints they require. The TPIR-PIP is a precise definition of the message structure required for their supply chain.

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**Community PIP**

A PO (3A4) with over 1000 fields

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**Trading Partner Implementation**

Selects just the fields and constraints they require for their business process.

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**Community Schema**

The trading partners use common XML tools to edit the original RosettaNet Community PIP of over 1000 fields to just the fields and the constraints they require.
The form validates data as entered – required in an RNIF deployment.

**TPIR-PF Form**

- Name
- Address
- City
- Country

**PIP Data**

Data entered on the form is reflected in the PIP XML instance.
Binding a RosettaNet Schema to a Form

Load the RosettaNet PIP Schema

Data entered into this field will be put in the PIP instance as defined by the schema

Bind the field in the schema to the form
RosettaNet Automated Enablement

**Registry**

**Objective**
Publish the TPIRs to a repository that your trading partners can subscribe to.

**Registry - Enables automated provisioning of your partner’s Gateway**
The registry will distribute the TPIRs to your entitled trading partners. The registry can even provide automated testing scenarios and remove the need for your trading partners to know which PIP to use or even know that they are using RosettaNet for their exchanges.
Small-Medium Businesses E-Commerce Solutions

Multiple Messaging Services (MMS)
Multiple Messaging Services

Program Objectives

GOALS OF MULTIPLE MESSAGING

• Provide flexible options to allow partners to choose a messaging protocol that best meets business needs and technical capabilities

• Allow partners to consolidate messaging protocol investments across RosettaNet and other e-business processes

• Improve effort for new partners to implement RosettaNet PIPs®

• Focus on broadly accepted standards to encourage further convergence over time

EXPECTED BENEFITS OVER TIME

• Lower the cost of B2B with a variety of protocols best suited to the type of integration

• Enable RosettaNet to focus more resources on business process-specific development and less on maintaining RNIF capabilities

• Achieve transport independence for the PIPs

• Generalize the B2B capability of RosettaNet beyond the sharp vertical focus of high-technology electronics manufacturing
The RosettaNet Payload Container

- The objective is to transfer the PIP payload as it is defined in the RNIF 2.0 specification
- The PIP content could be sent via multiple protocols
- Leverage existing protocols
- Leverage specific features of the protocol to provide more options for integrating with more partners – particularly small and midsized enterprises (SMEs)

PIP

- MIME multipart/signed
- MIME multipart/related
- PIP Service Content
- Attachment 1
- Attachment N
- Digital Signature
One Message / Many Protocols

Partner Interface Processes (PIPs) can be implemented across multiple message handling systems.

Different partners
Different markets
Different business requirements drive different B2B message protocols
Web Services

- The implementation models for Web services provide a way to allow intermittent connectivity in a pull model, this has a much lower cost to implement.

RNIF is a push model, the trading partner must be ready to receive a message at any time.

Web services support a pull model, the trading partner can ‘get’ as required.
Using RosettaNet in the Shipping Industry

Transportation & Logistics
Using RosettaNet in the Shipping Industry

Transportation & Logistics Specific PIPs:
• 3B1: Distribute Transportation Projection
• 3B2: Notify of Advance Shipment
• 3B3: Distribute Shipment Status
• 3B4: Query Shipment Status
• 3B5: Request Shipment Change
• 3B6: Notify of Shipments Tendered
• 3B11: Notify Of Shipping Order
• 3B12: Request Shipping Order
• 3B13: Notify of Shipping Order Confirmation
• 3B14: Request Shipping Order Cancellation
• 3B18: Notify of Shipment Documentation
Using RosettaNet in the Shipping Industry

Active Transportation & Logistics Programs
OVERVIEW

Create a Shipment Notification (SN) that supports both Logistics and Procurement requirements, which include multiple transaction parties and support for multi-leg, multi-stop shipments.

VALUE PROPOSITION

- Add Logistics requirements to provide common message use by both Logistics and Procurement for complete end-to-end Supply Chain processes.
- Shippers and Receivers - duplication of messaging effort by both Logistics and Procurement will be eliminated.
- Transportation Service Providers - will save substantial implementation time, message processing time, costs and maintenance by providing a single instance of a message for both Procurement and Logistics.
Shipment Notification Management

Movement and Transaction Business Parties

Multi-leg shipment view
eCustoms Declaration

OVERVIEW

Improve cycle time to generate and process shipping information required to move high-tech products thru Customs export & import clearance process by using an automated Shipping Documentation PIP 3B18.

VALUE PROPOSITION

• Easier to do business through port of entry and port of exits at each country with a standard declaration form

• Savings by freight forwarding companies thru maximization of human, and material resource utilizations and lower service cost

• Operational cost savings through improved productivity due to on-line approvals, reduced manual filing and collation of forms, reduced errors, and on-line availability of data for Government Statistics and Audit Departments
eCustoms Declaration

Cross border Export-Import Exchange

Originating Country

Shipper

3B18 – Export (1)

ASN – 3B2

3B18 – cc

Destination Country

Shipper

3B18 – Import (1)

Forwarding Agent (FA)

3B18 – Export (2)

Customs

3B18 – Import (2)

Customs
eCustoms Declaration

Program Scope

PHASE 1
• Focus on increasing domestic adoption for Asia, US and Europe

PHASE 2
• Focus on cross-border in Asia Pacific (APAC)
• Bilateral pilots among APAC Countries

PHASE 3
• Focus on global cross-border
• Bilateral pilot between APAC-US, APAC-Europe, US-Europe
Shipment Booking and Status

OVERVIEW

• Enable bi-directional communication between shipper and logistics provider in order to send initial pre-booking, acknowledgement, and confirmation of actual booking of shipments
• Allow for shipment cancellation notification prior to shipment pick up
• Send shipment status information once shipment has been picked up

DELIVERABLES

• Refine the documentation for 3B12 and 3B13s
  ✓ Remove inconsistencies between the PIPs and RIGs for 3B12 and 3B13
  ✓ Add business use cases to 3B12 and 3B13 to include pre-booking and booking of shipment orders
• Assist RosettaNet in refactoring the 3B PIPs (scope expected to include 3B3, 3B12, 3B13 and 3B14) into Schema
• Validate the new version of the 3B PIPs in production
Shipment Booking and Status

*Business Problems To Be Solved*

- Scheduling lane capacity is a non standard manual process
  - Transportation Service Providers (TSP) require negotiation on how to communicate pre-booking and booking freight
  - Much of today’s communication is manual entry
  - Results in poor data quality
- No systematic visibility of carrier pick up of shipments
  - Shipment Status has not been validated (3B3)
Shipment Booking and Status

Business Problems To Be Solved (cont.)

- The assignment of House bill numbers to shipments is performed manually by distribution centers.
- The process encompasses multiple manual steps to give transportation providers visibility to outbound shipments and record House bill numbers onto internal systems.
- The process requires headcount to manage daily House bill assignments and transportation provider communication.
- The manual entry of House bill numbers also creates data quality risks.
Shipment Booking and Status

Business Process Choreography

Shipper → Transportation Service Provider → Shipper

- Send initial shipment info to logistics provider (pre-booking order request)
- Return tracking information (pre-booking order confirmation)
- Pick, pack, complete booking order
- Send tracking status of shipment
- Cancel Order

Shipper → Transportation Service Provider

- Yes: Cancel/Reject shipment
- No: Shipment picked up
Freight Invoicing

Current State

• Companies today use a variety of means to perform freight invoicing including EDI 859, FAX, Mail, web, etc.

• These methods of freight invoicing do not tie back to the RosettaNet logistics PIPs of Shipping Order (3B11-14), ASN (3B2), Shipping Documentation (3B18) or Good Receipt (4B2)

• As a result, Freight Invoicing reconciliation is costly, labor intensive and difficult, if not an impossible task, for most companies
Freight Invoicing

Sample Business Process Choreography

Shipper ➔ Transportation Service Provider ➔ Shipper ➔ Transportation Service Provider

- Send initial shipment info to logistics provider (pre-booking order request)
- Return tracking information (pre-booking order confirmation)
- Pick, pack, complete booking order

Shipper ➔ Transportation Service Provider ➔ Send tracking status of shipment & Proof of Delivery

- Send Invoice (missing today)
- Cancel Order

Transportation Service Provider ➔ Alternative - Self Invoice (Missing today)

- Shipment picked up

Shipper/ TSP

Cancel/Reject shipment

yes

no
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Summary & Questions