

RosettaNet Automated Enablement (RAE)

Material Composition Workshop

Aug 30, 2004

John Cartwright, Program Director



RosettaNet Automated Enablement

Business Problems To Be Solved

- Companies are not able to utilize their RosettaNet infrastructure investments across all tiers of their trading partner base. Maximum ROI is driven by broad utilization.
- Length of time to bring up a trading partner on current RosettaNet gateway solutions is too extended.
- Existing solutions have a high cost of entry and require significant IT resources to implement.
- Small sized companies must deal with multiple applications and data formats from their trading partners and have to date, been unable to take advantage of RosettaNet standards.

As a result of these business issues, companies are having to develop redundant B2B solutions for connecting with their trading partners.



RosettaNet Automated Enablement *Program Structure*

- ***The RAE investigation phase identified the need to create new foundational components***
- ***RAE will be managed as two dependent programs with a shared validation activity***

Foundational Deliverables

- Define Trading Partner Implementation Requirements allowing multiple scenarios per PIP® (TPIR-PIP™)
- Define TPIR-PIP default presentation format to enable manual data input (TPIR-PF™)
- Define requirements for posting and retrieving the TPIR-PIP and TPIR-PF

Milestone Deliverable

- Provide domain expertise to migrate existing Forecast-to-Cash PIPs® into XML Schema format

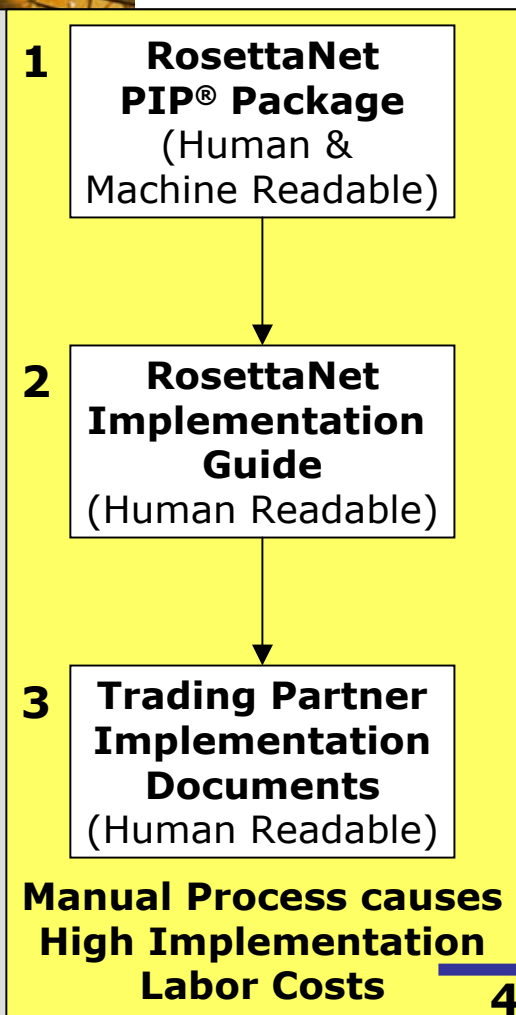
Validation Effort

- Trading Partners to define TPIR for selected PIPs
- Solution Providers to develop TPIR-PIP & TPIR-PF utilizing schema PIPs
- Validation team to test schema PIPs, TPIR-PIP and TPIR-PF to prove interoperability



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Labor Flow of Implementation Activities



Current Situation

1. Current RosettaNet PIP® specifications requires the use of both human and machine-readable components
2. Milestone Program teams document a RosettaNet Implementation Guide (RIG) to describe the sum of implementation requirements for all validating partners *But the 'community' RIG does not exactly fit any trading partner's implementation requirements!*
3. Each MNCs **develops similar documentation** to describe the specific implementation requirements to their Trading Partners. These are 'legal' and appropriate PIP-level constraints such as:
 - Change cardinality from Optional to Mandatory
 - Specify appropriate subset of the PIP elements used
4. Both Trading Partners must **assign project teams** to manually interpret the implementation requirements and manually make the changes to systems and packaged applications. Requires many meetings and tests between each of the project teams.

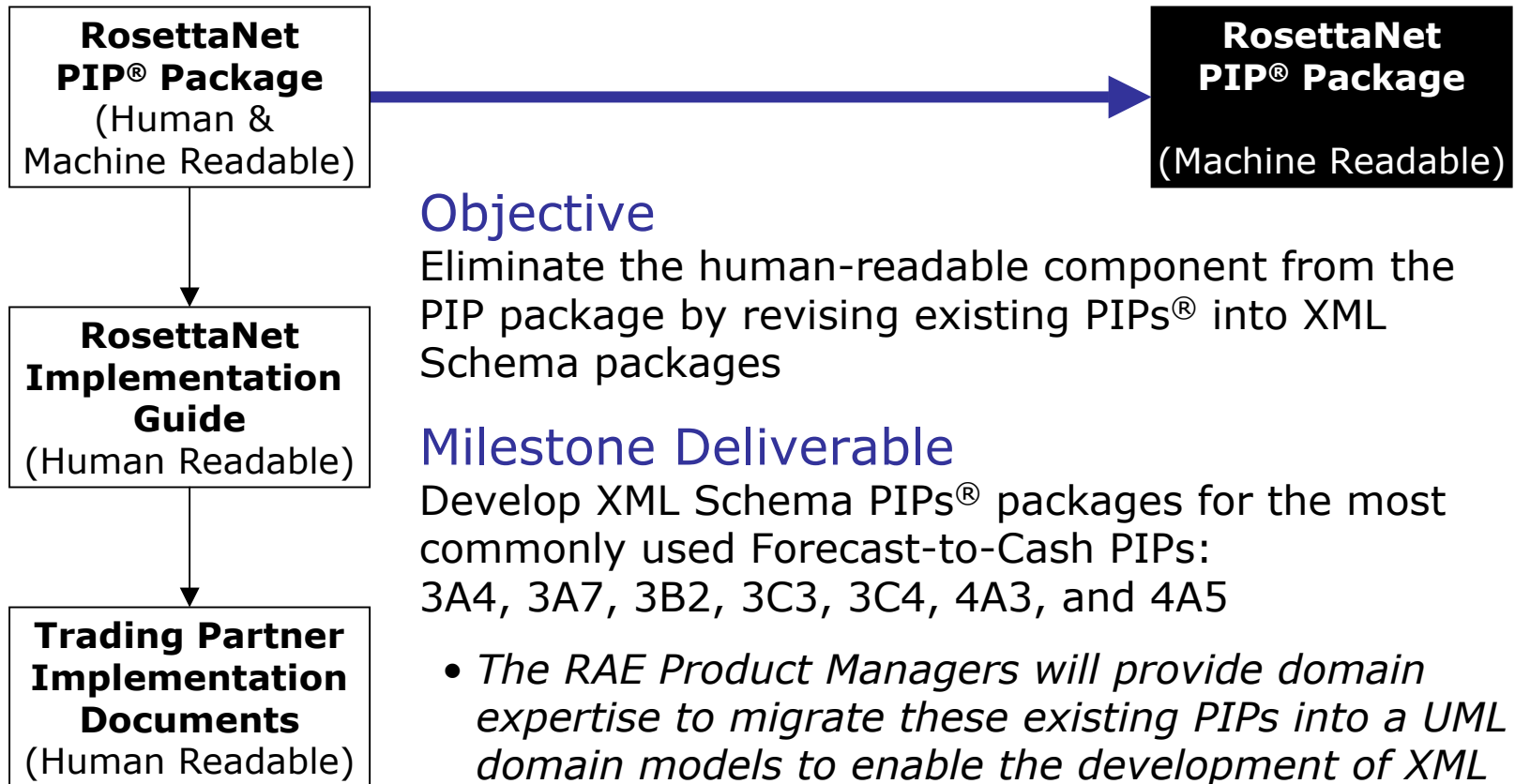


The current situation is a show stopper for scalability and trading with SMEs!



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XML Schema PIP[®] Packages



Objective

Eliminate the human-readable component from the PIP package by revising existing PIPs[®] into XML Schema packages

Milestone Deliverable

Develop XML Schema PIPs[®] packages for the most commonly used Forecast-to-Cash PIPs:
3A4, 3A7, 3B2, 3C3, 3C4, 4A3, and 4A5

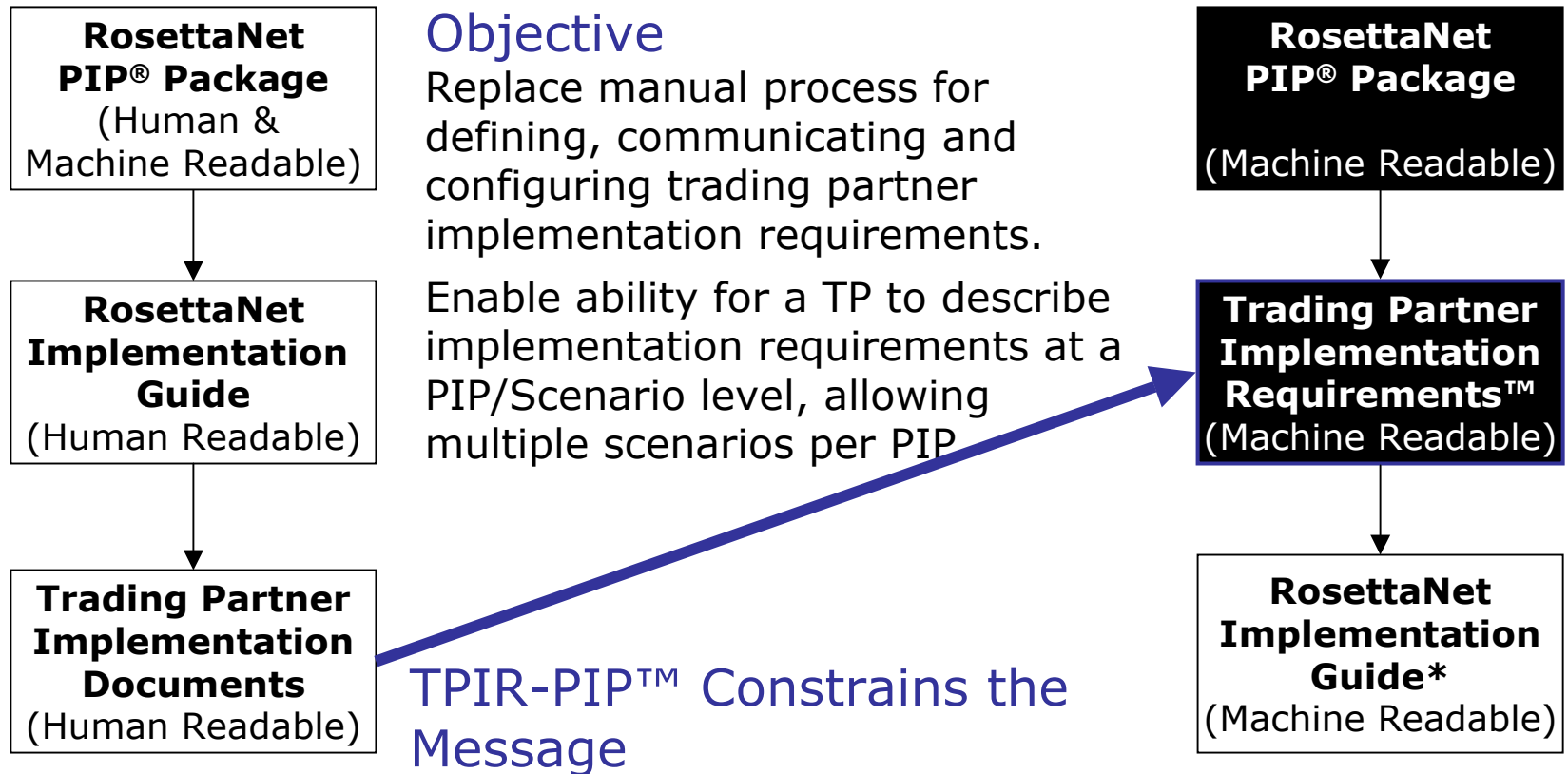
- *The RAE Product Managers will provide domain expertise to migrate these existing PIPs into a UML domain models to enable the development of XML Schema formatted messages*
- *Although the message content will be refined, RAE will not define any new process capabilities*

Note: Human readable prose still available but not required for configuration of gateway



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Trading Partner Implementation Requirements™



* Note: Community RIGs are not in program scope



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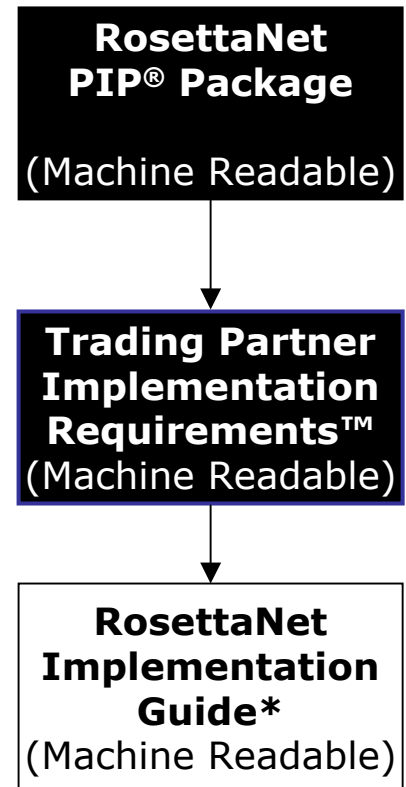
Trading Partner Implementation Requirements™

Examples of TPIR-PIP Constraints

- Change the information requirement (cardinality) from 'optional' to 'mandatory' **Note: Can not change from 'mandatory' to 'optional'**
- Require partners to use only a subset of a standard code list
- Define a code list to use in place of a free-form text field

Foundational Deliverable #1

Define the **structure, format and method** for describing the Trading Partner Implementation Requirements (TPIR-PIP™) in a **machine-readable standard** allowing multiple scenarios per PIP and supported by the RosettaNet Integration Architecture



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Human-to-Machine Implementation Requirements

**RosettaNet
PIP® Package**
(Human &
Machine Readable)

**RosettaNet
Implementation
Guide**
(Human Readable)

**Trading Partner
Implementation
Documents**
(Human Readable)

Current SME Situation

Some SMEs do not have the ability for back-end integration and require a human-to-machine interface for connectivity.

Two common solutions:

- MNC build own Web/app interface
- SMEs connect to MNC through ASP

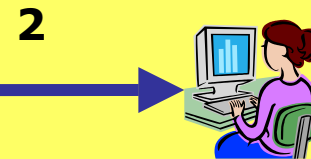
1. ASP solutions must **manually interpret and process** the unique implementation requirements for each MNC
2. ASP solutions include a **unique presentation format** for the graphical interface to support the implementation requirements of each MNC

Standard *Proprietary*

1



View 1



View 2



View 3

**ASP Implementation Labor Costs multiplied by
unique implementation requirements for each MNC
with costs passed on to the SMEs**



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Default Presentation Format

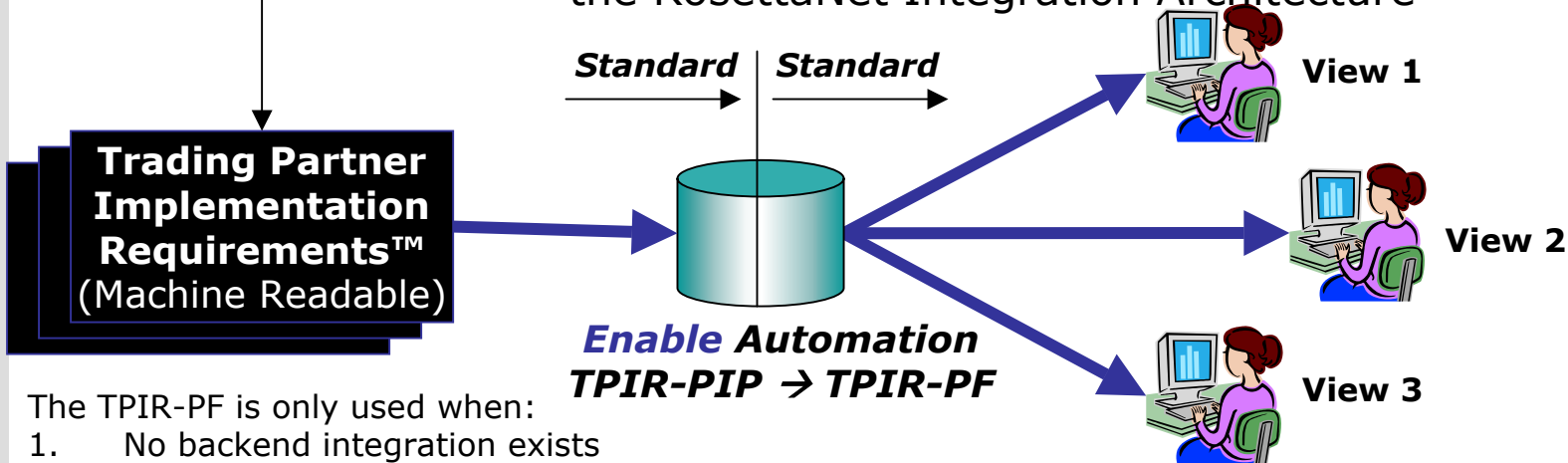
**RosettaNet
PIP® Package**
(Machine Readable)

Objective for SME Connectivity

Provide capability to automatically create a presentation format that will reflect the TPIR™ processing and presentation constraints

Foundational Deliverable #2

Define the **structure, format and method** for creating a default Web-based Presentation Format (TPIR-PF™) that reflects the TPIR-PIP™ in a **machine-readable standard** that is supported by the RosettaNet Integration Architecture



The TPIR-PF is only used when:

1. No backend integration exists
2. No pre-existing SP/SME presentation definitions exist
3. SP and SME can define own TPIR-PF

This is not the end state but a migration path to full integration.



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Enable Automatic Gateway Configuration

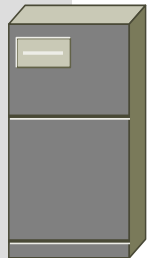
Objective for Automated Enablement

Enable the capability to automatically configure gateways and possibly some aspects of packaged applications to implement a new PIP® by eliminating nearly all of the manual labor gateway configuration activities

Foundational Deliverable #3

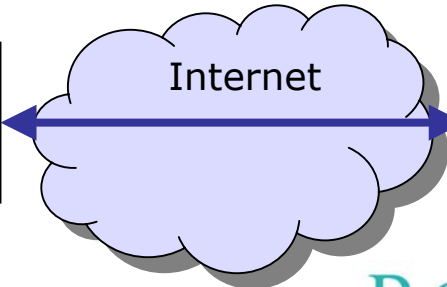
Define **structure, format and method** for posting and retrieving a TPIR-PIP™ and TPIR-PF™ from a service

- Ability to store TPIR-PIP in secure location with authorized subscription access
- Ability to automatically configure gateways to implement a new PIP based on TPIR™

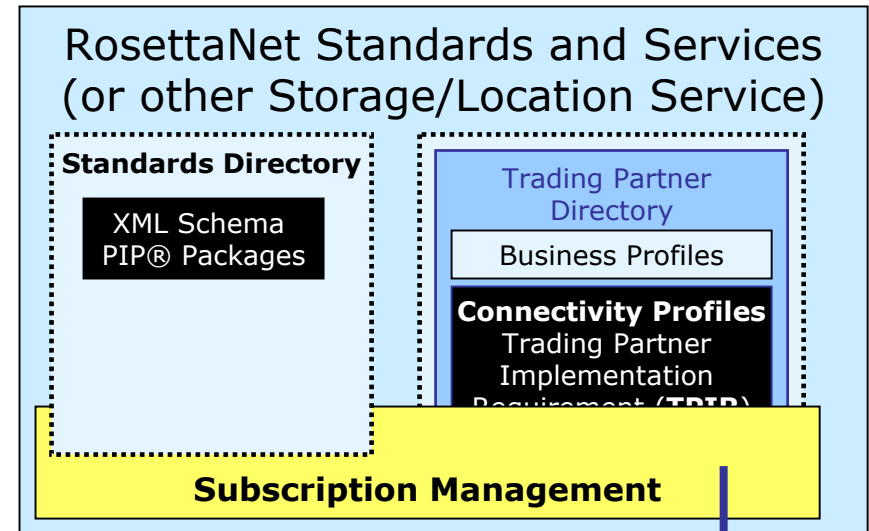


Automatically Configure

**TPIR-PIP
PIP/Scenario**



**Authorized
Subscription
Access to TPIR**



* Note: Implementation is optional for the Milestone program

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RosettaNet Automated Enablement

Milestone Program

Summary

- RAE is an active RosettaNet program that will reduce the time and implementation labor costs required to begin trading with a new (SME) trading partner and maintain your deployed exchanges.
- This program has widespread support from both Solution Providers and Supply Chain partners. All the lead roles within the RAE sub-teams have been staffed and teams are proceeding into design/development.
- This is an important RosettaNet program that for the first time combines Foundational and Milestone activities under a single program to ensure program deliverables are met on schedule.
- Interested in benefiting from this program?

Please contact John Cartwright

(john.cartwright@rosettanel.org)

Benefits of RAE

- Eliminates supplier management of multiple customer web interfaces
 - Enables standardization of transactions formats
 - Allows integration over time,
 - Thereby increasing data quality
 - Reduces overhead – printing costs and resources to key in data
 - Allows the trading partner to have a synchronized image of their Intel exchanges
 - Resulting in higher customer satisfaction scores
- Real time data and transactions available
- Enable machine to human RosettaNet
- Eliminates application time out issues faced with hosted web portals
- Eliminates the need for 24x7 connectivity by our SME Partners (through MMS)
- Enables the capability to automatically configure gateways and to implement new PIPs by eliminating over 80% of the manual implementation activities compared to a fully integrated RosettaNet
- Initial set up cost \$1000 - \$2500
- Capabilities are sustained by third party vendors working directly with Suppliers
- Dramatically increases the global reach of XML by making RN available to the masses
- Broad functionality possible with Intel at lower development cost
- Is XML agnostic, meaning non RN compliant messages can be routed through the RAE software

Using RAE for MatComp

- Most of Intel's suppliers do not maintain a database of MatComp information
- These suppliers are not capable of system to system B2Bi
- Through the use of RAE, Intel can use a 2A13 TPIR-PIP along with the TPIR-PF that will allow our suppliers to manually enter their MatComp information, validated at the partner's site and then sent to Intel's B2Bi gateway



RosettaNet Automated Enablement (RAE)

Program Update (backup slides)

Aug 2004

RosettaNet Automated Enablement-RAE

Deliverables

ACCOMPLISHMENTS

- ✓ RAE proposal submitted to RosettaNet Boards (May '03) - program proposal approved to move forward to formal investigation phase
- ✓ RAE Investigation Phase completed (Q3 '03), presented to Boards (Oct '03) and moved program into design/development
- ✓ RAE Whitepaper created and released to program team (Jan '04)
- ✓ RAE EO created and released to program team (Jan '04)
- ✓ Staffed all four Product Management Roles
 - Order (3A) – Arrow
 - Logistics (3B) – Menlo Worldwide
 - Finance (3C) – Intel
 - Forecasting (4A) – Nokia
- ✓ Staffed all three Foundational Management Roles
 - TPIR-PIP – GXS
 - Registry/Repository Interface – InSync
 - TPIR-PF – e2open
- ✓ Created draft specifications for TPIR-PIP and TPIR-PF
- ✓ Created drafts of the refactored 3A4 and 4A3 PIPs.

RosettaNet Automated Enablement-RAE

Program Sponsors/Participants

SC Sponsors – Milestone

| | |
|-------------------------|--------------------------|
| Arrow* | EC Member |
| Intel* | IT, EC, SM Member |
| HP | EC Member |
| Menlo Worldwide* | EC Member |
| Micron | SM, EC Member |
| Nokia* | EC Member |
| TI | SM, EC Member |

SP Sponsors – Foundation

| | |
|----------------|------------------|
| E2open* | SP Member |
| GXS* | SP Member |

| Partner Company | Partner Type |
|---|-------------------------|
| Adobe | SP Partner |
| ADOS | SP Partner |
| Cast Iron Systems | SP Partner |
| Cisco | IT, EC Member |
| ConnectedMinds | Alliance Partner |
| Digital Foundry | SP Partner |
| Drake Certivo | SP Member |
| ePromostandards Alliance (ePSA)* | EC Partner |

MILESTONE:

Begin validation in 07.2004 of XML Schema PIPs(r) with supporting Trading Partner Implementation Requirements (TPIRs) optionally using a Connectivity Profile Service to enable automated gateway configuration with production connections by 3.2005

| Partner Company | Partner Type |
|-------------------------------|-------------------------|
| Formfill | SP Partner |
| Fujitsu | SP Member |
| GridNode | SP Partner |
| IBM | SP Member |
| InSync* | SP Partner |
| Motorola | SM, EC Member |
| National Semiconductor | SM, EC Member |
| NIST | Alliance Partner |
| Otsuka Shokai | SP Partner |
| Sterling | SP Member |
| TIBCO | SP Member |
| UC Berkley | Alliance Partner |

BOLD = EO Returned (current program members) / * = Contributing On-loan Resources

RosettaNet Automated Enablement

Program Benefits

- From the Multi National Companies (MNC) perspective, they can enjoy a simplified B2Bi architecture with all of their trading partners
- Solution providers can enjoy a much wider customer base though an increased scope in RosettaNet
- SMEs can quickly deploy RosettaNet based exchanges with their trading partners at a fraction of the cost of today's RosettaNet solution
- The SMEs & MNC can enjoy a much quicker deployment timeframe than today
- SMEs can enjoy a standards based exchange with their partners, no longer reliant on proprietary manual or semi-automated exchanges
- Solution providers can enjoy reduce development and maintenance costs through the new machine readable RosettaNet architecture
- The SME can, over time, integrate the PIPs with their backend systems (completely transparent to their partners)
- RosettaNet becomes a viable B2Bi architecture for trading partners outside of the high tech community

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RAE Program Expected Output

RAE MILESTONE PROGRAM

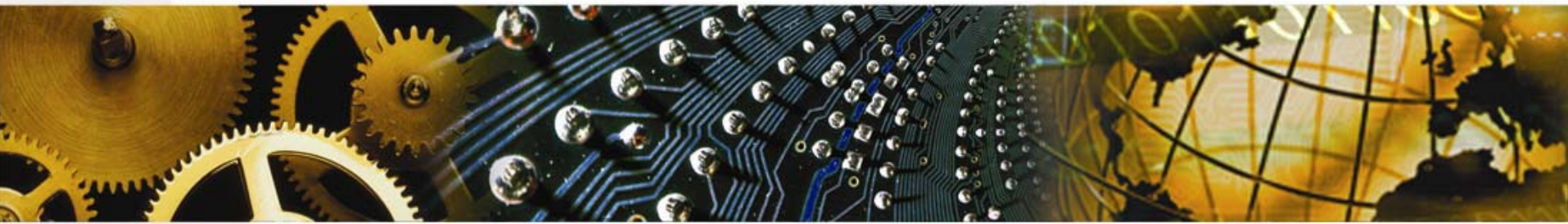
- Develop & Validate XML Schema PIPs (7 common Forecast To Cash PIPs)
- Validating Partners to utilize the TPIR-PIP format/methods to create Trading Partner Implementation Requirements (TPIRs) for their target PIPs/scenarios
- SP Validation partners to utilize the TPIR-PF formats and methods to create required presentation views for SME connectivity (optional for each Milestone participant)
- Validate TPIR-PIP and TPIR-PF standards and prove interoperability with XML Schemas

RAE FOUNDATIONAL PROGRAM

- Define the structure, format and method for describing [Trading Partner Implementation Requirements](#) (TPIR-PIP) in a machine-readable standard that is supported by the RosettaNet Integration Architecture, allowing multiple scenarios per PIP - will use same format as the new machine readable PIPs & RIGs
- Define the structure, format and method for creating a default [Presentation Format](#) (TPIR-PF) that reflects the TPIR constraints in a machine-readable standard that is supported by the RosettaNet Integration Architecture
- Engage with [Solution Providers](#) to integrate XML Schema and TPIR into their solutions
- Dependant on a [Connectivity Profile Service](#) for widespread deployment (optional for each Milestone participant)
- RAE program will collaborate with other RosettaNet Foundational programs to ensure any interdependencies are addressed

RAE Pgm Status Overview

| Topic | FPT | TPIR-PIP | TPIR-PF | Registry Repository |
|------------------------|--|---|--|--|
| Major Deliverable | XML Schema PIPs: 3A4, 3A7, 3B2, 3C3, 3C4, 4A3, 4A5 (committed deployment); 3A2, 4A2, 4B2, 4C1 (pending deployment commitment) | Define structure and RosettaNet compliant format for describing TPIR-PIP (derived from the respective PIP) in a machine-readable standard allowing multiple scenarios per PIP and supported by the RosettaNet Integration Architecture. | Define structure, format and method for creating a default TPIR-PF that reflects the TPIR-PIP constraints in a machine-readable standard that is supported by the RosettaNet Integration Architecture. | Define structure, format and method for posting and retrieving the Trading Partner Implementation Requirements specifications (TPIR-PIP and TPIR-PF) from a registry/repository service. |
| Final Due Date | All PIPs converted into XML Schema packages by May 2004 | TPIR-PIP ready May 2004 | TPIR-PF ready July 2004 | Registry/Repository interface specification ready in May 2004 |
| Schedule of Activities | Form PIP Development Team (Feb 1st) | Form Design/Development Team (Feb 1st) | Design TPIR-PF format: | Design Posting and Retrieving Format |
| | Refactor PIPs (listed above) into XML Schema (May 2004) | Design TPIR-PIP format (Feb 2004) | Architecture Checkpoint: May 04 | Architecture Checkpoint: May 04 |
| | Team Feedback: Apr - Aug 04 | Architecture Checkpoint (End Feb 2004) | Define Methods: Mar - Aug 04 | Define Post/Retrieve Methods: May 04 |
| | Form validation teams: Sep - Oct 04 | Define Methods: Mar - Aug 04 | Feedback: Sept 04 | Feedback: Oct 04 |
| | Validation: Nov - Mar 05 | Feedback: Sept 04 | Vote: Oct 04 | Vote: Nov 04 |
| | | Vote: Oct 04 | Tool Training: Jul - Oct 04 | Tool Training: Sep - Nov 04 |
| | | Tool Training: May - Oct 04 | Validation: Dec - Mar 05 | Validation: Dec - Mar 05 |
| | | Validation: Dec - Mar 05 | | |



RosettaNet Automated Enablement TPIR-PF

August 2004



B2B Integration Challenges

MNC

Multi-National Corporation

- **After 25 years, have only reached 15-20% of trading partners**
 - Maximum return on investment comes from broad adoption
- **The smaller the trading partner the higher the cost of integration that is borne by the MNC**
 - It can cost 2x-5x more to integrate a small trading partner

SME

Small & Medium Sized Enterprises

- **No backend integration capabilities, sometimes the backend is a set of spreadsheets**
- **B2B has a high cost of entry and requires significant IT resources to implement**
- **Intermittent Internet service and connectivity**
- **Requires significant domain expertise**
 - Multiple standards for B2B protocols and formats



TPIR-PF Objectives

The RAE team, TPIR-PF, has a primary goal of delivering a specification for a presentation format or a TPIR-PF.

The TPIR-PF will provide instructions on how to interpret PIP data that conforms to a TPIR-PIP schema.

The TPIR-PF will provide a means of visually rendering the TPIR-PIP in a human-readable form that approximates a paper representation of the business document.

The process must conform to the existing RosettaNet



TPIR-PF Design Requirements

- Presentation Format Requirements
 - The TPIR-PF team must select a presentation format that has already been defined
 - The selected format must be free of any intellectual property constraints and must be royalty free
 - Ideally, the selected format should be one that is in use by other standards bodies or organizations
- Software Tool Requirements
 - The presentation format should be low-cost and easy to obtain, ideally, it should be pervasive
 - Platform independent
 - TPIR-PF tools should be available as commercial-off-the-shelf software. There should be a robust ISV community around the presentation format



Adobe PDF and XDP Forms Language

The TPIR-PF has selected the Adobe PDF and XDP specifications.

- TPIR-PF leverages the Adobe Template 2.0 Specification
 - An XML description language of how to visually render the PIP
- The template has all of the standard form controls
 - labels, text boxes, drop-downs, list box, radio buttons, checkboxes
- The TPIR-PF form template can be enabled
 - (turn on the secret sauce) so that a user can “Edit” the PDF form in the free Acrobat Reader
- Software tools are required
 - To merge a PIP instance with a TPIR-PF form template and create a PDF.
 - Also, software tools are required to extract the PIP instance from the PDF



Presentation Format Requirements

- Presentation Format Defined
 - The Adobe Portable Document Format (PDF) has been in use for 14 years and is on it's 3rd generation
- Intellectual property, royalty free
 - Adobe provides the PDF specification to the public free of IP constraints except the copyrights
 - PDF and XDP are provided royalty free
- Other standards bodies
 - ISO has selected PDF for use in the exchange of pre-press digital files, called PDF/X
 - AIIM has selected PDF for use in the defining the file format for the long term archival of records, called PDF/A



Software Tool Requirements

- Low-cost, Pervasive
 - There are an estimated 400 million Adobe readers deployed
 - The Adobe PDF reader is free to trading partners
- Platform independent
 - PDF provides accurate visual representation to virtually any imaginable platform – monitors, printers, PDAs, ...
 - Supports virtually every operating system
- ISV community
 - There are a large number of ISVs supporting PDF and the more recent Adobe XML Forms Architecture (XFA)



Terms and Tools

- PIP
 - The form data
- TPIR-PF
 - The form template
- Electronic Document
 - Merged form template with data
- PDF
 - Binary package
- XDP
 - XML packaging
- Forms Designer
 - Creates the template for displaying the PIP (TPIR-PF)
- Forms Merge
 - The PIP data is merged with the TPIR-PF to create the electronic document
- Forms Extract
 - Extract the PIP from the electronic document
- Forms Viewer / Editor
 - View, enter data, and create a response



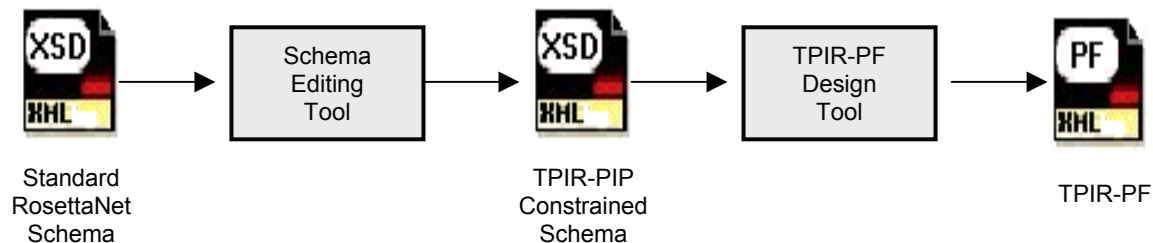
TPIR-PF Design

STEP 1. TPIR-PIP

A company customizes the standard RosettaNet Schema so that it meets their implementation requirements. The output of this is an XML Schema called TPIR-PIP. The schema is used to create the form

STEP 2. TPIR-PF

A form is created using the TPIR-PF form template that represents the PIP. The TPIR-PF form template contains only the fields defined by TPIR-PIP as well as the validation. The TPIR-PF form template includes field labels, tables, lines, graphics, etc. The form also include text entry boxes, radio buttons, checkboxes





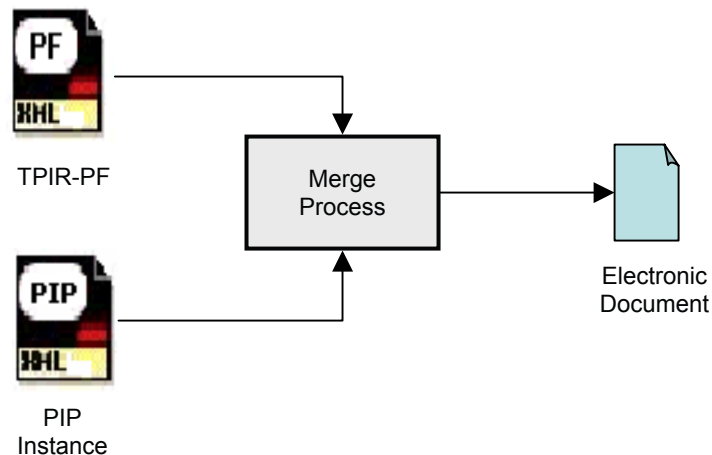
Creating an Electronic Document

STEP 3. PIP

The originator creates a PIP that conforms to the TPIR-PIP schema.

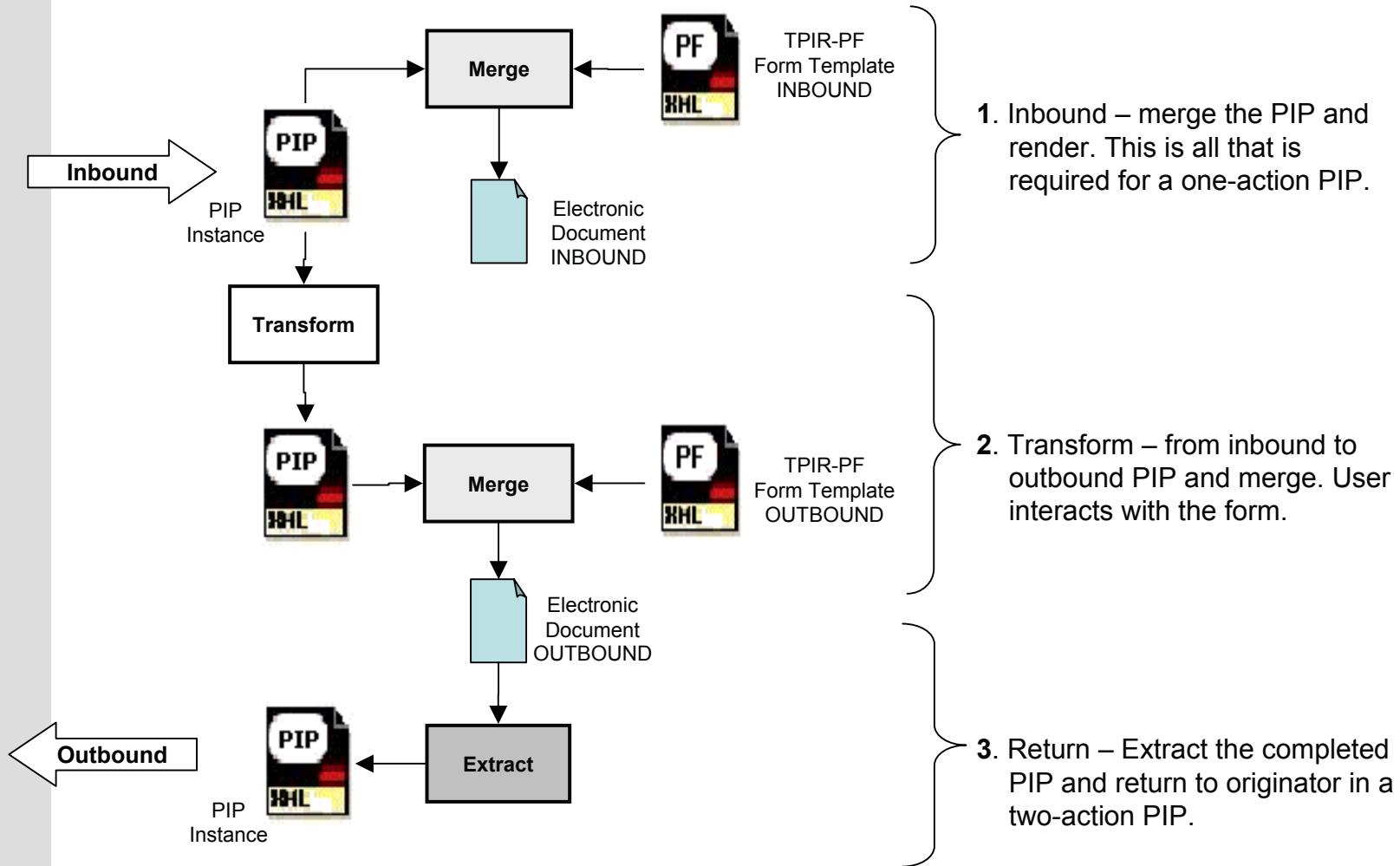
STEP 4. MERGE

The PIP instance is merged with the TPIR-PF form template to create an electronic document





Two Action Partner Interface Process





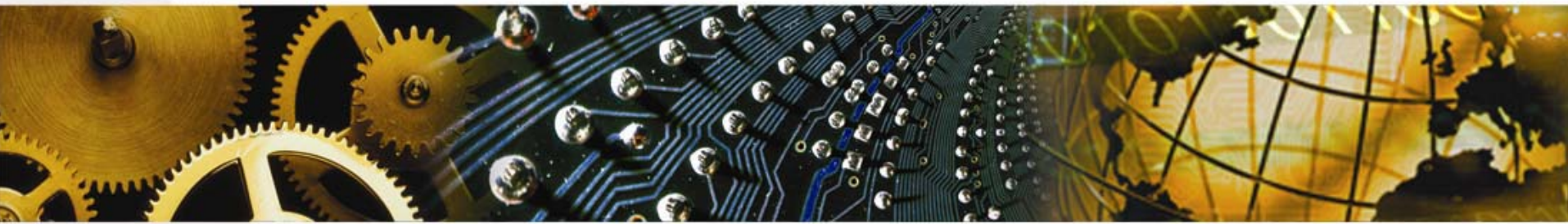
Sample Use Models

- Purchase Order
 - The receiver would merge and view the PIP instance using a 3A4r TPIR-PF form template
 - The receiver would transform the 3A4r into a 3A4c using XSLT
 - The receiver would merge, view and edit the 3A4c using a 3A4c TPIR-PF form template
- Forecast and Commit
 - The receiver would merge the 4A2 and view the forecast
 - The receiver would transform the 4A2 into a 4A5 and fill out the commit fields then send the 4A5 back to the originator
- Materials Control
 - Realistically, there are no backend integration options for a 2A13
 - The originator (component supplier) fills out the form and sends
 - The receiver (OEM) processes the standard XML



Summary

- At the Gartner Conference, it was stated that portals account for the majority of B2B 'communications', EDI was second and XML third
- TPIR-PF eliminates the need for multiple portals and user interfaces
- TPIR-PF can provide B2B 'communications' to the entire supply chain – particularly SMEs
 - The price point should be remarkably low
 - The upgrade path to system-to-system integration is straightforward
- TPIR-PF is ideal for PIPs that just don't have a path to a backend system
 - A good example is materials composition
- The view from the originator in the use models is pure RNIF compliant messaging and PIPs
 - Supports the uniform acquisition of data into an application with high-quality data



End