



## **USER'S GUIDE**

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### **UNDERSTANDING A PIP BLUEPRINT**

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# 1 DOCUMENT MANAGEMENT

## 1.1 COPYRIGHT

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## 1.2 RELATED DOCUMENTS

- RosettaNet Business Dictionary and RosettaNet Business Document Repository  
<http://www.commercedesk.com/RosettaNet/Repository>

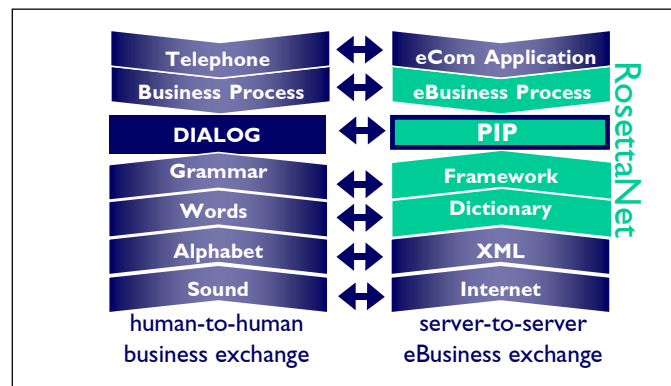
## 1.3 VERSION HISTORY

Release 1.0	12 Nov 1999	RosettaNet: Helen Eglett: edited and added info per suggestions from EConcert Meeting held in Sept 1999
Release 1.1	30 Nov 1999	RosettaNet: added definition of QFBDE to Glossary
Release 1.2	16 Dec 1999	RosettaNet: added Business Document example to section
Release 1.3	4 Jan 2000	RosettaNet: clarified definition of “retry count”

## 2 ROSETTANET OVERVIEW

RosettaNet is creating e-Business Partner Interface Process (PIP) Specifications to align electronic business interfaces between partners. RosettaNet specifies these as Partner Interface Processes (PIPs). PIP Specifications are collated from the results of the RosettaNet development methodology into a document for e-Business architects, implementers and solution providers to create RosettaNet-compliant interoperable software solutions. An important component of the PIP Specifications are the networked computer applications that collaboratively execute e-Business processes, which span partner organizations in the supply chain. These application components interoperate by adhering to the open and common RosettaNet networked-application architecture.

Figure 2-1 illustrates the parallel between a human-to-human business exchange and a server-to-server e-Business exchange. Starting with the basic element on the left side of the figure, in order to communicate in a human-to-human business exchange, humans interact or produce and hear sound. In building a transaction, they must agree on a common alphabet, used to create individual words. Grammatical rules are then applied to the words to create a dialog. That dialog forms the business process, which is conducted (or transmitted) through an instrument such as a telephone.



**Figure 2-1. Interface Comparisons**

The fundamental system of interacting in a human-to-human business exchange can be compared to the Internet, the basic element illustrated on the right side of the figure. The Internet enables a server-to-server electronic business exchange. In building a transaction, XML functions as the "alphabet" of this electronic exchange. The process then jumps to the many eCommerce applications that currently serve as the instrument by which an electronic business process is transmitted. The bridge that includes the dictionary, framework, PIP and e-Business Process that RosettaNet is building will fill in the gap that has occurred as a result of the speed at which we are conducting eCommerce.

As shown in Figure 2-1, RosettaNet's focus is building the bridge that will enable a uniform method for information exchange via e-Business processes, PIPs, dictionaries and a framework. RosettaNet fills this existing gap by focusing on building a master dictionary to define properties for products, partners, and business transactions. This master dictionary, coupled with an established implementation framework (exchange protocols) is used to support the e-Business dialog known as the PIP. RosettaNet PIPs create new areas of alignment within the overall IT supply chain e-Business processes,

allowing IT supply chain partners to scale e-Business, and to fully leverage eCommerce applications and the Internet as a business-to-business commerce tool.

### 3 PIP SPECIFICATION DEVELOPMENT

PIP Specifications include three major sections. A PIP Blueprint is developed at a Segment Workshop and evolves into the Business Operational View (BOV) section when merged into a PIP Specification. The transaction dialogs in PIP Protocols are developed for the PIP Blueprint and are included in a PIP Specification as the Functional Service View (FSV) section. PIP Specifications also include message guidelines and protocols for communications between software components and are included as the Implementation Framework View (IFV) section, in adherence to the RosettaNet Implementation Framework. PIP Specifications are developed using the methodology shown in Figure 3-1.

1. An "as-is" business model is created to understand how partner types interface today. Partner types may include component manufacturers, component distributors, computer product manufacturers, software publisher distributors, resellers, carriers, financiers and end users.
2. A "to-be" business model is re-engineered from the "as-is" model to specify how partner types will do e-Business tomorrow. The "to-be" business process is primarily used to create business improvement metrics that show the benefits of implementing RosettaNet PIPs.

	Process Model	Domain	Interaction	Exchange	
<b>1</b>	"as-is" Business process	Organization with Partners	Employee Role Interaction / External Process Interaction	Business Information in any format	
<b>2</b>	"to-be" Business Process	Partner Type in Supply Chain	Employee Role Interaction / Partner Type Interaction	Business Properties	
<b>3</b>	Partner Interface Process	Partner Roles in Supply Chain	Partner Role Interaction	Business Properties	▶ PIP Blueprints/BOV
<b>4</b>	Networked Application Execution Process	Software Agents and Services in Communications Network	Service/Agent Interaction	Actions	▶ PIP Protocols/FSV
<b>5</b>	Networked Application Communication Process	Network Protocols	Peer-to-Peer Protocols	Messages	▶ Network Protocols/IFV

**Figure 3-1. RosettaNet PIP Development Methodology**

3. A PIP Blueprint is created from this to-be process that specifies how Partner Roles (Buyer, Seller, Assembler, Catalog Publisher, etc.) interactively perform activities that collaboratively achieve a business objective. Business Properties are exchanged between Partner Role interactions. RosettaNet members vote on the PIP Blueprint and the approved Blueprint is included in the PIP Specification as the Business Operational View section.

*Note: Voting on the PIP Blueprints involves business people approving or not approving the business process developed from the “to-be” model. The vote does not include technical individuals approving an implementation design.*

4. PIP Protocols are created for the PIP Blueprint. Transaction dialogs in PIP Protocols are exchanged between software agents and services in a communications network. PIP Protocols specify how networked applications exchange business information in sequences specified by the PIP Blueprint. PIP Protocols are read and used by systems architects and software engineers.
5. Message Guidelines and Network Protocols. Messages are exchanged when software programs execute a PIP using Network Protocols specified and are supported by network components in the RosettaNet Implementation Framework. These specifications are read and used by systems architects and software engineers.

### **3.1 PARTNER INTERFACE PROCESSES**

A PIP depicts the activities, decisions and Partner Role interactions that fulfill a business transaction between two partners in the supply chain. Each partner participating in the Partner Interface Process must fulfill the obligations specified in a PIP. If any partner fails to perform a service as specified in the PIP implementation guide then the business transaction is null and void.

A sub-process, a subset of a sub-process, or combination of sub-processes is identified by Cluster or Segment Workshop participants as containing key interactions between Partner Types. A PIP contains interactions that, if standardized, would improve supply chain efficiencies. There can be sub-processes that are not identified to become PIPs because they do not meet the PIP criteria below. A PIP must:

- have a measurable business outcome or output;
- not contain proprietary business processes;
- preferably contain more than one role interaction; and
- be a discrete unit of work that can be attached and built into other PIPs to achieve a larger business outcome.

## **4 CLUSTERS AND SEGMENTS**

### **CLUSTER 1: Partner, Product and Service Review**

Segment A: Partner Review

Segment B: Product and Service Review

### **CLUSTER 2: Product Introduction**

Segment A: Preparation for Distribution

Segment B: Product Change Notification

**CLUSTER 3: Order Management**

- Segment A: Quote and Order Entry
- Segment B: Transportation and Distribution
- Segment C: Returns and Finance
- Segment D: Product Configuration

**CLUSTER 4: Inventory Management**

- Segment A: Collaborative Forecasting
- Segment B: Inventory Allocation
- Segment C: Inventory Reporting
- Segment D: Inventory Replenishment
- Segment E: Sales Reporting
- Segment F: Price Protection
- Segment G: Ship from Stock and Debit/Credit (Electronic Components)

**CLUSTER 5: Marketing Information Management**

- Segment A: Lead/Opportunity Management
- Segment B: Marketing Campaign Management
- Segment C: Design Win Management (Electronic Components)

**CLUSTER 6: Service and Support**

- Segment A: Warranty Management
- Segment B: Asset Management
- Segment C: Technical Support and Service

## 5 HOW TO UNDERSTAND A PIP BLUEPRINT

### ***5.1 PIP BLUEPRINT COMPONENTS***

The components listed below correlate to sections 2 and 3 in the PIP Blueprint.

PIP Blueprint

<u>Subsection</u>	<u>Component</u>
2.1	Business Process Definition
2.2	PIP Purpose
2.3	Figure 2-1: PIP Business Process Flow Diagram
2.4	PIP Start State
2.5	PIP End States



- 2.6 Partner Role Descriptions (Table 2-1)
- 2.7 Business Activity Descriptions (Table 2-2)
- 2.7 Business Activity Performance Controls (Table 2-3)
- 3.1 PIP Business Documents Diagrams (Table 3-1)
- 3.2 Business Data Entities
  - 3.2.1 Business Data Entity Security

## **5.2 DEFINING THE COMPONENTS AND HOW THEY INTERRELATE**

- The Business Process Definition lays the foundation for describing how PIP components relate to the process.
- The Purpose for the PIP explains why this process is being developed.
- The Flow Diagram of the PIP Blueprint is used to illustrate the Business Process.
- The Start and End States defined in the PIP Blueprint describe what conditions exist to begin and complete the Business Process.
- The Partner Roles illustrated in the Flow Diagram are described in Table 2-1.
- The Business Activities initiated by the Partner Role illustrated in the Flow Diagram are described in Table 2-2.
- The security, audit and process Performance Controls are detailed in Table 2-3. These functions are not specifically illustrated in the Flow Diagram, but are part of the Business Activity that is shown in the Diagram.
- The Business Documents that are exchanged, as illustrated in the Flow Diagram in rounded rectangles, are listed in Table 3-1. Business Documents are containers for structured information that is exchanged between Partners performing a PIP. Business Data Entities, also described in Section 2.8 of the PIP Blueprint, are used to define a Business Document.

### **5.2.1 BUSINESS PROCESS DEFINITION (SECTION 2.1)**

This section defines the business process as well as some of the supply chain issues surrounding this process. The purpose of this section is to provide PIP context for the RosettaNet member who evaluates a PIP Blueprint but is not familiar with the associated business processes within the supply chain. The business process is illustrated in Figure 1-1, Section 2.3, “PIP Business Process Flow Diagram” in the relative PIP Blueprint.

### **5.2.2 PIP PURPOSE (SECTION 2.2)**

The business reason for the Partner Interface Process is described in this section.

### 5.2.3 FIGURE 1-1: PIP BUSINESS PROCESS FLOW DIAGRAM (SECTION 2.3)

This flow diagram is unlike a traditional flow chart currently used in many businesses. The PIP Business Flow Diagram illustrates the e-Business activities and Business Documents that are exchanged; it does not illustrate the Acknowledgement of Receipt (if applicable). Table 2-3 in the PIP Blueprint provides information pertaining to whether or not an Acknowledgement of Receipt is required as well as other performance issues related to the flow of Business Documents (see section 5.2.7 in this User's Guide).

Start and End states reside in both the initiating Partner Role and the recipient Partner Role activities. The recipient Partner Role does not perform an activity to produce an End State.

A PIP begins as the Start State is confirmed and a Business Document is sent to a Partner. The Partner confirms receipt and sends a confirmation Business Document to the Partner who originated the transaction. The transaction either succeeds, must be retried (detailed in Table 2-3 in the relative PIP Blueprint), or fails. A Success State is achieved when the transaction is processed. Retrying a process would be required when, for example, a non-receipt of confirmation, system failure, or other problematic event occurs. An example of a Failure is an incomplete transaction even after retrying. The Start, End and Failed States are described in Sections 2.4 and 2.5 of the relative PIP Blueprint.

The components and symbols typically used on a diagram are listed and described in this section. Examples of the components and symbols are provided in items a) through i).

- Notation for the diagram is the Unified Modeling Language (UML), which is a modeling standard maintained by the Object Management Group. (<http://www.omg.org>)
- Solid vertical lines define regions of the diagram called "swimlanes". Within a single swimlane are the activities performed by a trading partner role. The name of the role is indicated at the top of each swimlane.
- A rectangle with rounded sides represents either a Business Activity or a Receiving Activity.
- A rectangle with straight sides represents a Business Document.
- The circles marked START, END, and FAILED indicate the start and successful or unsuccessful end of a Business Process Flow Diagram.
- The arrows between the activities are called "triggers" because they trigger the next activity in the process.
- Bracketed text on an arrow is called a "guard" and indicates a condition of the Activity. For example, [FAILED] means that the Activity connected to an arrow has failed.
- A diamond with multiple arrows extending from it is called a "decision box." The arrows direct the process along different paths based on the answer to a question.

#### a.) Swimlane



A swimlane is a vertical zone on an activity diagram that illustrates Business Document processes. The swimlane divides the diagram to illustrate what Role performs certain Business Activities. In general, the left lane represents the role initiating most of the Activities, and the right lane will represent the role receiving most of the Activities. Although two lanes will be the most common, some diagrams will have three or more lanes representing a process that involves three or more trading partner roles (e.g., a Buyer, Seller, and Financier).

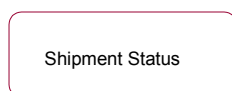
### b.) Start State, End State and Failed State



A black dot represents a Start State and a black dot with a circle around it represents an End State (or a Failed State which is considered an End State).

- Start and End States will be attached to Activities by arrows.
- A diagram will always have exactly one Start State labeled with **START** and precedes a business process.
- A diagram can have many End States but each one will be labeled with either **END** or **FAILED**.
- **END** is the End State reached if the attached Activity finishes successfully and **FAILED** is the End State reached if the attached Activity fails.
- END States are connected to the original business activities and define the outcome of a PIP.
- Both Start States and End States have conditions that need to be met before and after the process executes. These are defined in sections 2.4 and 2.5 of a PIP Blueprint and explained in sections 5.2.4 and 5.2.5 in this User's Guide.

### c.) Business Document



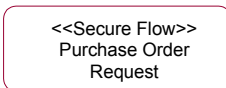
A rectangle with straight sides represents a Business Document, and is labeled with the Business Document Name. Examples of Business Documents include Shipment Status, Purchase Order Request, and Return Product Request.

- A Business Document is a container for Business Data Entities and defines the information transferred from Activity to Activity. Business Data Entities are transferred as structured business data.
- A Business Document is shown on a diagram connected by arrows between two Activities. The Activity with an arrow pointed at a Business Document is called the Initiating Activity,

which sends the Business Document. The Activity with an arrow pointed away from the Business Document is called the Receiving Activity, which receives the Business Document. A Receiving Activity that returns a Business Document is called a Responding Activity.

- Business Documents and Business Data Entities are explained in detail in sections 5.2.9 and 5.2.10 of this User's Guide.

#### d.) **Secure Flow Business Document**



A Business Document always connects the Activities of two different partner roles across two swimlanes. (Sending a Business Document to oneself is an internal process and is not part of a PIP Blueprint.) A Business Document is a partner-role interaction demonstrating the communication between two trading partners in different roles.

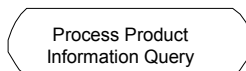
A Business Document labeled with <<Secure Flow>> indicates that point-to-point security for the partner role interaction is used. The content is protected against unauthorized disclosure or modification and the role activities are protected against unauthorized access.

RosettaNet uses digital certificates and Secure Sockets Layer (SSL) technology to provide Secure Flow.

- The identities of both the sender and receiver are verified (similar to checking a driver's license); this is called authentication.
- The integrity of the content exchanged is verified to make sure it has not been altered by a third party.
- For confidentiality purposes, all information is encrypted when sending and decrypted upon receiving.

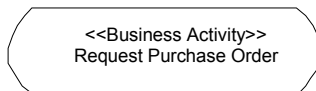
A Secure Flow is implemented for security of a communication event between two roles and is not used to secure specific information within a Business Document (such as a credit card number). This form of security is called Business Data Entity Security (listed in section 3.2.1 of the PIP Blueprint). See section 5.2.11 of this User's Guide for more information on Business Data Entity Security.

#### e.) **Activity**



An Activity is shown as a rounded rectangle containing the name of the Activity. It is not necessary to specify "success" or "fail" End States on these activities, as they either succeed and the process continues, or they fail, which passes control directly back to the initiating Business Activity.

## f.) Business Activity



A Business Activity is shown as a rectangle with rounded sides, containing an Activity name with an Activity type in angle brackets (i.e., <<Business Activity>>). Four possible types of Business Activities are described below.

### <<BusinessTransactionActivity>>

- A Business Transaction Activity has an output Business Document as well as an input Business Document.
- The receipt or transmission of business data within a Business Transaction Activity triggers business processes within the organization. Examples are invoices, purchase orders and delivery notes.
- The interactions during these activities are usually audited for legal purposes.

### <<QueryResponseActivity>>

- A Query Response Activity has an output Business Document as well as an input Business Document.
- A Query Response Activity involves the use of interactive systems, such as catalog and inventory services, where an immediate response is required.
- The interactions during these activities are not usually audited for legal purposes.
- This Business Activity has a performance timeout for the responding Business Document, meaning the response must be received by the initiating Business Activity within a certain time frame.

### <<InformationDistributionActivity>>

- An Information Distribution Activity has a sending Business Document but no responding Business Document.
- This Business Activity is for distribution of information (e.g., price catalogs or technical data), which will be read and may be updated as well as retained by the recipient company.
- This Business Activity does not have a performance timeout because a responding Business Document is not utilized in the Information Distribution Activity.

### <<NotificationActivity>>

- A Notification Activity has an output Business Document but does not have an input Business Document.
- This Business Activity is used for notification only, such as canceling a Purchase Order.

### g.) Decision Box



Type of Service Package?

The Decision Box is diamond-shaped and a question is stated next to the box that requires a decision to be made. The process flows in different directions based on the answer to the question.

The decision box will be often used on a diagram that contains different Business Activities based on an initial question. The possible answers to this question will shown as Guards (bracketed words) on arrows pointed away from the decision box. “What is the type of Purchase Order transaction?” is one example of a question that might be asked. The possible answers could be shown as two arrows labeled with [TRANSACTION=CREATE] and [TRANSACTION=CANCEL] connecting two Business Activities called “Create Purchase Order” and “Cancel Purchase Order.”

### h.) Synchronization Bar



The Synchronization Bar illustrates that a certain state or status has been achieved. This bar is used when activities can be performed in parallel, to “synchronize” the activities at a certain point. It may also be used for clarification of the “state of affairs” before continuing to other activities.

### i) Notations



Boxes that contain narrative represent notations. Notations are included on some of the diagrams to add clarity or as placeholders for topics that need additional clarification or consideration during the Segment Workshops, but will not be shown as part of the diagrams for the final PIP Blueprints.

## 5.2.4 PIP START STATE (SECTION 2.4)

This section of the PIP Blueprint specifies the conditions that need to be in place before executing a PIP. For example, if a PIP requires a prepared, valid Purchase Order, the PIP will have a start condition of:

- Purchase Order Exists.

When a PIP starts with a decision box, the start state condition would be one of the answers to the question asked (a question always belongs to a decision box). The following Start State condition is an example.

- The transaction property (TRANSACTION) must be set to one of Create, Change, or Cancel.

This Start State means that one of the Create, Change, or Cancel Business Transactions must be selected before executing the PIP.

### 5.2.5 PIP END STATES (SECTION 2.5)

This section of the PIP Blueprint specifies the conditions that will be in place after executing the PIP. For example, if a PIP changes a purchase order, then an End condition might be:

- Purchase Order Changed.

This section will list conditions for both END and FAILED types of End States.

It is a RosettaNet convention to send a notification of failure if a PIP goes to a FAILED End State and will have a condition such as:

- The “Notification of Failure” PIP has been executed.

### 5.2.6 TABLE 2-1: PARTNER ROLE DESCRIPTIONS (SECTION 2.6)

Table 2-1 in the PIP Blueprint lists and describes the Partner Roles that perform activities in a PIP Blueprint. The Partner Roles are the participants in this PIP as shown in Figure 3-1. The Role Types, which perform the PIP interactions, are indicated for these Partner Roles. The column headings are listed (in bold type) and described below.

**Role Name.** The name of a role that participates in the business process and performs activities.

**Role Description.** A general description of the role in terms of what type of activities it does.

**Role Type.** A role type can be an employee role, an organizational role or a functional role.

- An organizational role means that an organization performs the activities in an e-Business process. An employee does not perform the activities.
- For either business or legal reasons, an employee role is used only when an employee can perform these activities. Any business definitions pertaining to the employee role must be stored and transmitted to a partner for auditing or liability purposes when the two partner roles are not in the same organization.
- A functional role can either be an employee role or an organizational role.

### 5.2.7 TABLE 2-2: BUSINESS ACTIVITY DESCRIPTIONS (SECTION 2.7)

Table 2-2 in the PIP Blueprint lists information about the Business Activities performed by the Partner Role listed in Figure 3-1 and the conditions related to the activities in the PIP. The table column headings are listed (in bold type) and described below.

**Role Name.** The name of the role that performs the Business Activity.

**Activity Name.** The name of a Business Activity performed by the associated role.

**Activity Description.** A description of the Business Activity and what it does.

**Pre-Conditions.** The pre-conditions are constraints that must be satisfied before the Business Activity can be performed.

**Post-Conditions.** The post-conditions are constraints that must be satisfied after the performance of the Business Activity.

### 5.2.8 TABLE 2-3: BUSINESS ACTIVITY PERFORMANCE CONTROLS (SECTION 2.7)

Table 2-3 in the PIP Blueprint details the security, audit and process controls that are required to protect content against unauthorized disclosure or modification, and to protect role activities against unauthorized access. The audit controls are required to check the integrity of the business process.

Refer to Figure 5-1 following the descriptions outlined below for more information.

**Role Name.** The name of the role performing the Business Activity.

**Activity Name.** The name of the Business Activity to which the security controls are to be applied.

**Non-Repudiation of Receipt Required?** If required, then the Business Activity must store the receipt for a mutually agreed to period of time, typically three to seven years. This control prevents a responding partner role from later denying that they received a Business Document.

**Time to Acknowledge Receipt.** The time within which a partner role that initiates a role interaction must receive acknowledgement that a Business Document is received by a responding partner role. A receipt business signal can only be returned if the Business Document is syntactically and structurally valid.

**Time to Acknowledge Acceptance.** The time within which a partner role that initiates a role interaction must receive acknowledgement that a Business Document is accepted by a responding partner role. A non-substantive acceptance business signal or substantive acknowledgement business document must only be returned if the Business Document is valid with respect to the receiving partner role's business rules.

**Time to Perform.** The time within which the initiating Activity must be successfully performed.

**Retry Count.** The total number of times that the listed Activity is retried in addition to the initial attempt to perform (i.e., one initial attempt plus three retries equals a total of four attempts to perform). An Activity is retried when the Activity times out based on the longest timeout specified. Only when the timeout parameter has expired does the entire process roll back to the originating business activity. If an error occurs then the activity ends.

**Is Authorization Required?** Partner roles performing activities that interact with this Business Activity require authorization to be performed. An authorization exception is signaled if a role is not authorized to initiate this Business Activity. Authorization for a Business Activity can be specified at an Employee or Organizational level.

**Non-Repudiation of Origin and Content?** If non-repudiation of origin and content is required then the responding Business Activity must store Business Data Entities in the original form as mutually agreed upon by the trading partners for an agreed upon period of time. This control prevents an initiating partner from later denying that they originated the contents of a Business Document.



**EXAMPLE TABLE 2-3: BUSINESS ACTIVITY PERFORMANCE CONTROLS**  
 (Extracted from PIPBI Specification: Manage Product Information Subscriptions)

Role Name	Activity Name	Acknowledgment of Receipt		Time to Acknowledge Acceptance	Time to Perform	Retry Count	Is Authorization Required?	Non-Repudiation of Origin and Content?
		Non-Repudiation Required?	Time to Acknowledge					
Product Information Subscriber	Create Subscription	Y	2hr	24hr	24hr	3	Y	Y

- After a Subscription Request is created and sent, the receiving Role is required to send an Acknowledgment of Receipt within 2 hours. If this Acknowledgment of Receipt is not sent within 2 hours, the partner will resend the Subscription Request (up to 3 retries).
- If the Acknowledgment of Receipt is successfully sent, the receiving Role has 24 hours to send the Subscription Confirmation (acknowledges acceptance). If this Subscription Confirmation is not received within 24 hours, the Subscription Request is sent again and the process starts over from the beginning.

**Figure 5-1. Example Performance Controls Scenario**

**5.2.9 PIP BUSINESS DOCUMENTS (SECTION 3.1)**

A Business Document is a container for structured business information that is made up of:

- Business Data Entities (BDE),
- Fundamental Business Data Entities (FBDE),
- Quantitative Fundamental Business Data Entities (QFBDE), and
- Business Properties.

All Business Documents contain a unique document identifier as well as the date and time that the document was generated. The Business Document design pattern includes the following information set in a hierarchical structure.

- Role identity, partner identity, business identity; similar to the information contained in the letterhead of a business document.
- Contact information of the initiating role (in case of errors).
- Partner type, role type and supply chain code; conditional composition constraints are predicated upon this information.

- Document identifier; each responding document must include the identifier of a requesting document. This allows documents to be tracked and reconciled.
- Date and time stamp; used for auditing and legal control purposes.

The underlying file format of a Business Document, when it is physically transferred, is not important to the PIP Blueprint and can be one of many formats, such as MIME format or an XML file. The RosettaNet implementation framework specifies the physical format of a Business Document.

Figure 5-2 is a portion of a Business Document and is shown in a hierarchical structure with the cardinality designated for each business entity and business property. The cardinality designations are defined in Appendix A, "Glossary."

Technical Information Query			
1		Component Technical Specification Query	
1			-- Query Constraint
1			-- Component Technical Specification
0..n			-- Sub Component
1			
			-- Global Sub Component Relationship Code
0..1			-- External Component Specification. Universal Resource Name
1			
			-- At Least. Cardinality
0..n			-- Sub Component Specification. Component Technical Specification
1			
			-- At Most. Cardinality
0..n			-- Specification
0..n			-- Quantity
0..1			
			-- Global Physical Unit Of Measure Code
1			
			-- Magnitude
1			
			-- Specification Name Code
0..n			-- Quality
0..1			
			-- Specification Value Code
0..1			
			-- Free Form Text
0..1			-- Textual Description
0..1			
			-- Global Language Code
1			
			-- Primary. Free Form Text
0..1			
			-- Detail. Free Form Text
0..1			
			-- Summary. Free Form Text

**Figure 5-2. Example Business Document Contents with Cardinality Designations**

```

42 1  fromRole.PartnerRoleDescription
43 1      |-- ContactInformation
44 1      |      |-- contactName.FreeFormText Joe Smith
45 1      |      |-- telephoneNumber.CommunicationsNumber 8005551212
46 1      |      |-- EmailAddress joesmith@mysupplier.com
47 1      |-- GlobalPartnerRoleClassificationCode Seller
48 1      |-- PartnerDescription
49 1      |      |-- GlobalPartnerClassificationCode Manufacturer
50 1      |      |-- BusinessDescription
51 1      |      |      |-- GlobalBusinessIdentifier (D-U-N-S® Number of Company Sending Status)
52 1      |      |      |-- GlobalSupplyChainCode Information Technology
53 1  toRole.PartnerRoleDescription
54 1      |-- GlobalPartnerRoleClassificationCode Buyer
55 1      |-- PartnerDescription
56 1      |      |-- GlobalPartnerClassificationCode Retailer
57 1      |      |-- BusinessDescription
58 1      |      |      |-- GlobalBusinessIdentifier (D-U-N-S® Number of Company Receiving Status)
59 1      |      |      |-- GlobalSupplyChainCode Information Technology
60 1  thisDocumentGenerationDateTime.DateTimeStamp 20000108130054
61 1  thisDocumentIdentifier.ProprietaryDocumentIdentifier 00000000032
62 1  requestingDocumentIdentifier.ProprietaryDocumentIdentifier 1111111110
63 1  GlobalDocumentFunctionCode Response
64 1  requestingDocumentDateTime.DateTimeStamp 20000108123201

```

**Figure 5-3. Example Business Document - Business Properties Data**

## 5.2.10 BUSINESS DATA ENTITIES

- Business Data Entities are used to define a Business Document.
- Business Data Entities represent structured business information and are made up of other Business Data Entities and Fundamental Business Data Entities; for example, a Physical Address made up of address lines, a postal code, and a country code.
- A Fundamental Business Data Entity is a Business Data Entity that cannot be separated into components, such as a Postal Code or Free Form Text.
- Business Properties are associations between Business Data Entities and are generally not named (i.e., they do not have role names). Business Properties are only named if there is more than one Business Property with the same target class, or when they provide context without attributes to a more general class. An example of a named Business Property might be a Ship-To Address that associates a Physical Address Business Data Entity with a Purchase Order Line Item.

### 5.2.11 BUSINESS DATA ENTITY SECURITY

Security controls are specified for this type of Business Data Entity. Secure Business Data Entities only need to be specified if the point-to-point security (shown as a secure flow on the Business Process Flow Diagram in a PIP Blueprint) is insufficient to provide all of the required security controls.

The table in this section will show any secure Business Data Entities by listing the Business Data Entity, the Activity for which it needs to be secured, and one or more of the following three possible security controls.

- **IsConfidential:** When this is specified the Business Data Entity is encrypted so that unauthorized parties cannot view the data.
- **IsTamperProof:** When this is specified the Business Data Entity has an encrypted message digest that can be used to check if the message has been altered. This will have a digital signature associated with the Business Data Entity to provide proof of the sender's identity.
- **IsAuthenticated:** When this is specified the Business Data Entity will have a digital signature associated with it to provide proof of the sender's identity.

## 6 HOW TO EVALUATE A PIP BLUEPRINT

### 6.1 EVALUATING THE COMPONENTS

The subsections listed below correlate to sections 2 and 3 in the PIP Blueprint.

#### 6.1.1 BUSINESS PROCESS DEFINITION (SECTION 2.1)

Review the section to obtain a preliminary understanding of the nature for which the PIP was created. Evaluate the PIP based on both the upstream and downstream channel activities.

#### 6.1.2 PIP PURPOSE (SECTION 2.2)

Does the PIP purpose follow the criteria that establish RosettaNet PIPs?

1. The PIP purpose provides value to the supply chain by creating a meaningful data exchange between partners.
2. The PIP provides significant value to the supply chain's efficiency and effectiveness.

#### 6.1.3 FIGURE 1-1: PIP BUSINESS PROCESS FLOW DIAGRAM (SECTION 2.3)

Does the flow clearly and accurately represent the interactions and exchange of business documents between trading partners?

#### **6.1.4 PIP START STATE (SECTION 2.4)**

Evaluate the Start State for applicability to the entire process.

1. Are the conditions listed in the Start State reasonable?
2. Are there conditions missing that are required to be in place before executing this PIP?

#### **6.1.5 PIP END STATES (SECTION 2.5)**

Evaluate the End State for applicability to the entire process.

1. Are the conditions listed in the End States reasonable?
2. If the process is completed successfully do the conditions in the End State correctly reflect the outcome of this PIP?
3. What about the conditions in the FAILED state? Are conditions missing from any of the End Status?

#### **6.1.6 TABLE 2-1: PARTNER ROLE DESCRIPTIONS (SECTION 2.6)**

An employee, organization or function can perform roles. The role descriptions will provide additional detail on the function that each role performs. It is not necessary for a partner role name to precisely match the title of an individual who performs this activity in your organization.

- Do the role types describe the correct level at which the PIP is performed?

#### **6.1.7 TABLE 2-2: BUSINESS ACTIVITY DESCRIPTIONS (SECTION 2.7)**

1. Do the pre-conditions accurately show the events that occur before the PIP is initiated?
2. Do the post-conditions accurately describe the outcome of the PIP at completion?

#### **6.1.8 TABLE 2-3: BUSINESS ACTIVITY PERFORMANCE CONTROLS (SECTION 2.7)**

Per the definitions of the column headers described in section 5.2.8 of this document, evaluate this table for completion and accuracy.

Non-repudiation of Receipt and Non-repudiation of Origin and Content add a lot of overhead to the systems implementing such a PIP. Is it reasonable to require that all partners store all the information for every applicable Business Document transferred for many years into the future?

Is the Time to Acknowledge Receipt too long or too short to wait for an acknowledgment of receipt for this Business Activity? Consider that the receiving partner only needs to verify that the Business Document is syntactically and structurally valid before sending an Acknowledgment of Receipt.

Is the Time to Acknowledge Acceptance too long or too short a time to wait for an acceptance response to this Business Activity? Consider that the receiving partner will need to process the Business Document through some business rules before making the decision as to acceptance or not.

N/A means that a value is not applicable, while zero hours (0hrs) means that the control used is performed instantaneously and will time out if it takes more than one hour (1hr) to complete. Do entries with N/A and 0hrs reflect the correct requirement?

If a retry count is specified then it is retried when the longest timeout value has passed. Is the time required for an Activity to retry reasonable, and is the number of times the Activity retries reasonable?

### **6.1.9 PIP BUSINESS DOCUMENTS (SECTION 3.1)**

In reviewing a business document downloaded from the repository, evaluate the Business Properties, BDEs, FBDEs and QFBDEs that are included for completion and accuracy.

1. Is the structure of the business information correct?
2. Is all the business information that is required to process this Business Document present in the Business Document?
3. A mandatory Business Data Entity is indicated by a "1" in the left column. This means that the Business Data Entity must be provided every time that this Business Document is used. Will it be possible to provide a value for this Business Data Entity every time the Business Document is used?
4. An optional Business Data Entity is indicated by a "0..1" in the left column. This means that the Business Data Entity does not have to be provided each time the Business Document is used. If this Business Document is sent or received without this Business Data Entity will trading partners still be able to process it properly?
5. Optional Business Data Entities make processing more difficult, so would it be possible to require all partners to provide this Business Data Entity every time - making it mandatory?
6. A conditionally mandatory Business Data Entity is shown in the list of constraints attached to the Business Document. This means the Business Data Entity is mandatory, except as defined by the constraint.
7. If the constraints list are applied and these Business Data Entities are not present in the Business Document, can it still be processed properly?
8. If the constraints are applied and these Business Data Entities are mandatory, can a value always be provided for each Business Document?
9. Can any of the optional Business Data Entities be expressed as conditionally mandatory?

### **6.1.10 BUSINESS DATA ENTITY SECURITY (SECTION 3.2.1)**

If security controls are applicable, evaluate the activity based on the role names. The input Business Data Entity (BDE) requires the role to have a certain degree of security over and above the security provided at the Business Document level and Secure Sockets Layer.

1. To perform the activity name shown on the table, does the role require that the input BDE be confidential, tamper-proof, or authenticated?
2. What is the business reason for these particular BDEs to have dedicated security controls beyond the security provided by a Secure Flow Business Document?

3. If the BDEs listed in the table are not part of a Secure Flow then can the same level of security be provided by making the entire role interaction secure?

## APPENDIX 1: GLOSSARY

Activity	The work performed in a Business Process.
Business Data Entity (BDE)	Used to define a Business Document; represent structured business information and are made up of other BDEs and Fundamental BDEs, i.e., a Physical Address made up of address lines and a postal code.
Business Document	Container for structured business information that is made up of Business Data Entities, Fundamental Business Data Entities and Business Properties.
Business Property	Association between BDEs and generally do not have Role Names.
Business Process	A set of activities that represent all the alternative methods of performing the work needed to achieve a business objective. It is comprised of Activities.

**Cardinality**                      Cardinality specifies how many instances of one class may be associated with a single instance of another class. Cardinality values defined below apply to both classes and relationships.

(1) Application of a cardinality adornment to a class indicates the number of instances allowed for that class.

(2) Application of a cardinality adornment to a relationship indicates the number of links allowed between one instance of a class and the instances of another class.

### Valid Values

The expression “<literal>” depicts any number and must be entered using the appropriate specification.

Value	Description
0..0	Zero
0..1	Zero or one
0..n	Zero or more
1..1	One
1..n	One or more
n	Unlimited Number
<literal>	Exact number (Example: 21)
<literal>..n	Exact number or more (Example: 21..n indicating 21 or more)
<literal>..<literal>	Specified range (Example: 21..45)
<literal>..<literal>, <literal>	Specified range or exact number



	(Example: 21..45, 50 indicating 21 through 45 and 50)
	<literal>..<literal>, <literal>..<literal> Multiple specified ranges (Example: 21..45, 50..60)
Constraint	The conditional constraints that specify the mandatory composition of the business document in certain contexts.
Data Type	The primitive data type of the information element.
Decision	A Decision is the question that is asked to determine the exact set of activities during the execution of a Process. For example, a question might be “What type of order?” or “How will the order be shipped?” A Decision Object (a diamond-shaped box) in an Activity Decision Flow Diagram represents a Decision.
Definition	A definition of the information element.
Employee (Role Type)	For either business or legal reasons, an employee role is used only when an employee can perform these activities. The details of the employee must be stored and transmitted to a partner for auditing or liability purposes when the two partner roles are not in the same organization.
Functional (Role Type)	Either an employee role or an organizational role.
Fundamental Business Data Entity	A BDE that cannot be separated into components, such as a Postal Code or free-form text. See also Quantitative Fundamental Business Data Entities.
Name	The full name of an information element.
Non-Repudiation of Origin and Content	Prevents the originator from denying the origin and content of a message. <ul style="list-style-type: none"> <li>• Origin: (1) protects against any attempt by a message originator to deny sending a message and (2) irrevocable proof that the originator sent the message.</li> <li>• Content: protects against any attempt by a message originator to deny the actual content of the sent message; irrevocable proof of what exact content was sent and that it did not get modified in any way from the original.</li> </ul>
Non-Repudiation of Receipt	Prevents the responder from denying the fact that they received what the originator has sent. Protects against any attempt by a message recipient to deny receiving a message.
Organization (Role Type)	A group organized for some specific purpose or function. An organization can be an enterprise, a company, or a factory, to name just a few examples.
Partner Role Interaction	The one-way exchange of business properties between partner roles. Partner Role Interactions are executed by networked service and agent applications that interact by transmitting and receiving messages. These services interact via service transactions and the agents with services. Both interact by transmitting and

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	receiving messages.
Partner Roles	The activities performed at the organizational, departmental or individual employee level. The activities may include Catalog Publisher, Catalog Distributor, Order Manager, Requisition Manager and the structured properties they exchange when they interact.
Partner Type	Partner Type describes a high-level business function of a trading partner in the supply chain. A function may be a Manufacturer, Distributor, Retailer, Financier or Carrier. End User may also be a partner type; however it is defined as an organization, not individual consumer.
PIP Blueprint	Created from the “to-be” business model that specifies how partner roles (buyer, seller, assembler, catalog publisher, etc.) interactively perform interface activities that collaboratively achieve a business objective. The PIP Blueprint document includes narrative and diagrams.
PIP Implementation Guideline	Collates the results of the RosettaNet development methodology into a document for e-Business architects, implementers and solution providers to create RosettaNet compliant implementations of interoperable software solutions.
PIP Protocol	Diagrams that visually describe and define the PIP Blueprint process.
PIP Specification	Partner Interface Process “detailed formulation, in document form, which provides a definitive description of a system for the purpose of developing or validating the system” [ISO/IEC 2382, Information technology – Vocabulary, 1997]
Quantitative Fundamental Business Data Entities	QFBDEs should have: a) unit of measure (such as "inches"); b) dimension (such as “length”); c) system of units (such as USA or the International System of Units [SI]).
SI	International System of Units
Source Business Data Entity	The source of the business data entity compositional association.