PIDX/RN Revision Project
Business Process Flow: Handling Failures

Failures can occur at any point during the execution of a PIDX business process. Two methods of handling failure are provided in RNIF 2.0: sending an exception signal or initiating a Notification of Failure (NOF). The two failure messages are used for communicating distinct exception conditions. To determine whether an exception signal should be sent or whether to initiate a NOF, the following guidance may be useful. Send an exception signal if the trading partner has not marked the transaction as complete; initiate a NOF if it is possible that your trading partner could have marked the transaction as complete.

Communicating errors in a standard format is essential to the scalability and cost of any automated solution. PIDX leverages the RosettaNet 2.0 standard to enable partners to communicate business messages as well as any exceptions that may arise during the processing of the documents. All PIDX implementations must be able to generate/receive the appropriate failure message when that condition exists.

Section 2.6 of the RosettaNet 2.0 specification described the flow of business message within the RNIF framework. In the diagrams below, the choreography of the business messages and the associated response documents (positive and negative) are depicted.
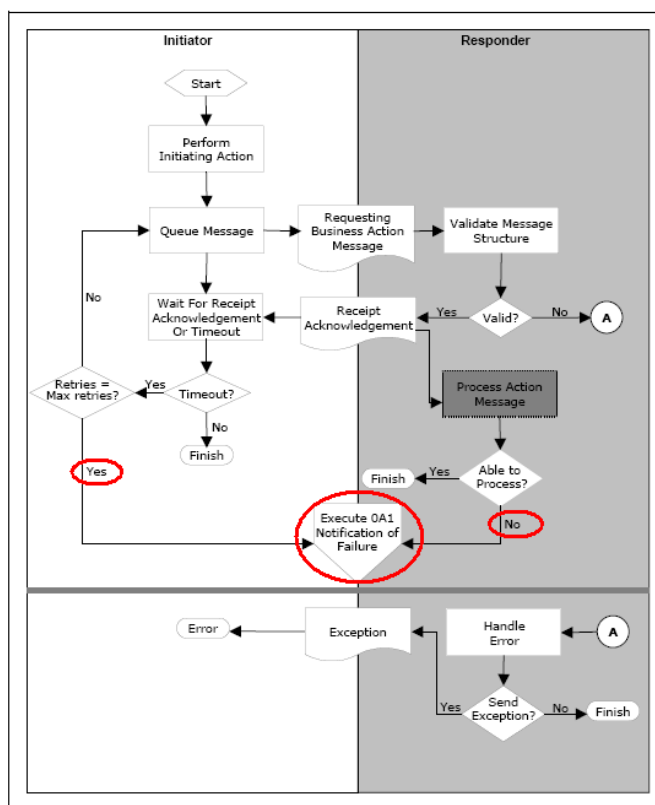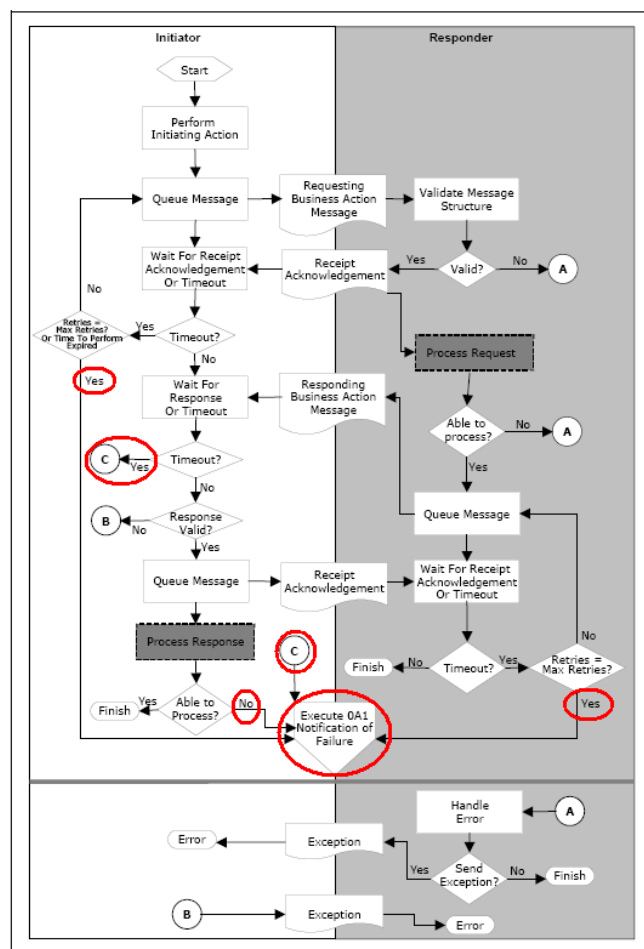

Figure 20.   Single-Action Activity (Asynchronous)

Figure 21.   Two-Action Activity (Asynchronous)

Single Action PIP Example (see Figure 20 above)
Partner A will send Partner B a business message that has no associated response document (i.e. ASN). On receipt of the business message, Partner B will validate the structure and return either a positive (Receipt Acknowledgement) or negative (Exception) signal to Partner A. On receipt of the positive or negative signal, Partner A will mark the transaction as complete.

Notification Of Failure (NOF) Usage Guidelines (highlighted in red on Figure 20)

1) If Partner B does not send either a positive (Receipt Acknowledgement) or negative (Exception) signal within a specified period of time (i.e. 2 hours). Partner A will resend the business message to Partner B. This cycle will continue until positive or negative signal message is received or until the maximum number of retries is exceeded (i.e. 4 reties). Once the number retries is exceeded, Partner A should submit a NOF to Partner B to communicate the exception. *Note: The transaction with Partner A's system will be in limbo until a positive or negative signal is received and the purpose of the NOF document in the scenario is to resolve the status of open transactions.*

2) After sending the positive (Receipt Acknowledgement), Partner B will attempt to process the business message. In the event of a failure to process the transaction, a NOF message should be submitted to Partner A. *Note: An Exception document at this point would not be applicable because Partner A will have marked the transaction as complete after receiving the Receipt Acknowledgement.*

*Note: In some cases, a single action business PIP could have a related single action response PIP (i.e. invoice PIP P21 is loosely coupled with invoice response P22). Under this specific the scenario, Partner B could generate either a NOF or a response document to reject the transaction.

Two Action PIP Example (see Figure 21 above)

Partner A will send Partner B a business message that has a business response document explicitly defined within the business process PIP (i.e. Field Ticket and Field Ticket Response). On receipt of the business message, Partner B will validate the structure and return either a positive (Receipt Acknowledgement) or negative (Exception) signal. On receipt of the positive or negative signal, Partner A will start a timer (Time to Respond) to wait for the business response document. Partner B will generate the response document and send it to Partner A. On receipt of the business response message, Partner A will validate the structure and return either a positive (Receipt Acknowledgement) or negative (Exception) signal to Partner B. On receipt of the positive or negative signal, Partner B will mark the transaction as complete.

Notification Of Failure (NOF) Usage Guidelines (highlighted in red on Figure 21)

1) If Partner B does not send either a positive (Receipt Acknowledgement) or negative (Exception) signal in reference to the business message within a specified period of time (i.e. 2 hours). Partner A will resend the business message to Partner B. This cycle will continue until positive or negative signal message is received or until the maximum number of retries is exceeded (i.e. 4 reties). Once the number retries is exceeded, Partner A submits a NOF to Partner B to communicate the exception. *Note: The transaction with Partner A's system will be in limbo until a positive or negative signal is received in reference to the business message and the purpose of the NOF document in the scenario is to resolve the status of open transactions.*

2) If Partner B does not send the business response document within the within a specified period of time (i.e. 24 hours), Partner A submits a NOF to Partner B to communicate the exception. *Note: The time to perform a given business transaction must be defined between the trading partners.*

3) If Partner A does not send either a positive (Receipt Acknowledgement) or negative (Exception) signal in reference to the business response message within a specified period of time (i.e. 2 hours). Partner B will resend the business response message to Partner A. This cycle will continue until positive or negative signal message is received or until the maximum number of retries is exceeded (i.e. 4 reties). Once the number retries is exceeded, Partner B submits a NOF to Partner A to communicate the exception. *Note: The transaction with Partner B's system will be in limbo until a positive or negative signal is received in reference to the business response message and the purpose of the NOF document in the scenario is to resolve the status of open transactions.*

4) After sending the positive (Receipt Acknowledgement), Partner A will attempt to process the business response message. In the event of a failure to process the transaction, a NOF message should be submitted to Partner B. *Note: An Exception document at this point would not be applicable because Partner B will have marked the transaction as complete after receiving the Receipt Acknowledgement.*

Notification of Failure (PIP 0A1)

The NOF specification (0A1_Spec_V02_00_00.pdf) is available on the RosettaNet website. In summary, the NOF document is an xml based on a DTD which contains information regarding the reason for failure and transaction identifier. The document is sent within a RNIF envelope and the receiving partner will send a Receipt Acknowledgement upon receipt. The RNIF envelope containing the NOF can be sent via an alternate delivery method (i.e. secondary HTTPS or SMTP). A sample NOF transmission is attached.

RNIF 2.0 Message correlation

The RosettaNet 2.0 specification defines how message correlation occurs across multiple asynchronous messages for a single transaction. In diagram below summarizes the how message correlation process. The first PO transaction is received and acknowledged, the second PO transaction is received and an exception document is sent back, the third PO transaction is sent several time with no response signal (positive or negative) so a NOF is created. The NOF document is tracked as an independent transaction from the original PO transaction and the receiving partner will generate a receipt acknowledgement for the NOF transmission. Within the NOF xml document, the original tracking identifiers for the failed PO transaction indicate which specific transaction will need dealt within the receiver backend system.

Business Message	Delivery-MsgTackingID	InReplyTo-MsgTrackingID	ServHeader-PIPInstanceID	NOF-MsgTrackingID	NOF-ProcessInstanceID	NOF-thisDocIdentifier
PO	0af840f3f70d118c000003a3		0af840f3f70d118b0000039e			
Acknowledgement	936ce0f9f70d11940000361c	0af840f3f70d118c000003a3	0af840f3f70d118b0000039e			
PO	0af840f3f70d10dd00000280		0af840f3f70d10da0000027b			
Exception	936ce0f9f70d10e3000034c1	0af840f3f70d10dd00000280	0af840f3f70d10da0000027b			
PO	0af840f3f70d141f0000055e		0af840f3f70d141e0000055a			
PO	0af840f3f70d141f0000055e		0af840f3f70d141e0000055a			
PO	0af840f3f70d141f0000055e		0af840f3f70d141e0000055a			
PO	0af840f3f70d141f0000055e		0af840f3f70d141e0000055a			
Notification Of Failure	0af840f3f70d145600000593		0af840f3f70d14550000058d	0af840f3f70d141f0000055e	0af840f3f70d141e0000055a	0af840f3f70d145500000590
Acknowledgement	936ce0f9f70d11940000899d	0af840f3f70d145600000593	0af840f3f70d14550000058d			