



CSC-750 ASSIGNMENT-1

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Workflow description:

In the provided Work Flow every transaction was assumed as successful there is no need for sending acknowledgement messages (*e.g., order received, payment submitted etc.*), **but** delays of some messages (change of order) are possible.

Buyer's role:

Transaction starts once Buyer places an order and makes a payment, eBay will not process the order if both placing the order and payment are not done. Buyer can write a review anytime after order and payment are made.

eBay's role:

After receiving the order and payment eBay sends messages to PayPal (hold request) and to Merchant with order details. The order of these messages may change but constrained to happened after orders has been received. Then it will wait for tracking information from Shipper and status of order from Merchant to notify PayPal to release the funds.

PayPal's role:

Once it gets payment hold request from eBay, it notifies Merchant about the payment and waits message from the eBay to release the funds.

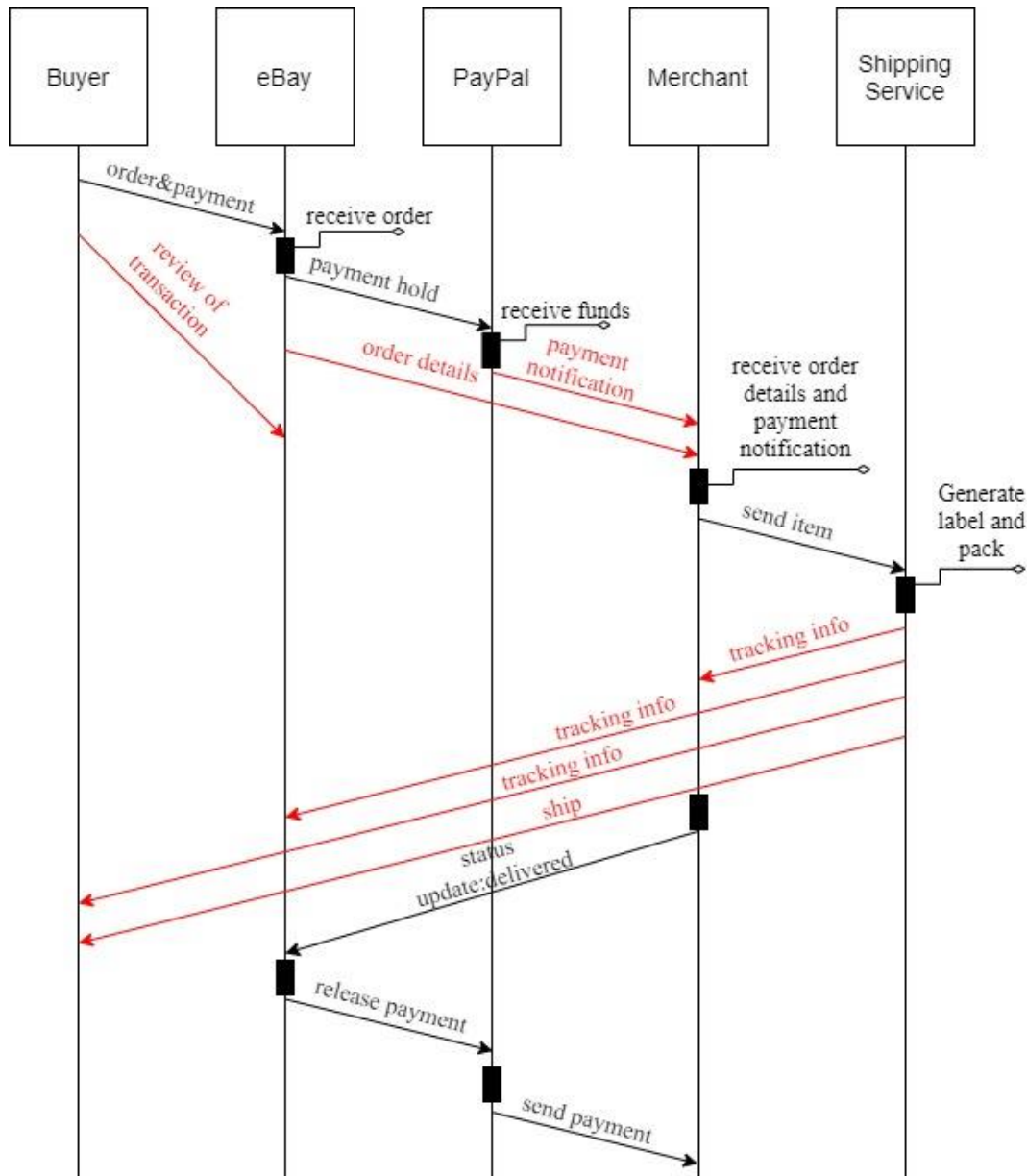
Merchant's role:

Merchant doesn't take any actions before it gets both order details from eBay and payment notification from PayPal. Only after that it can send an item to the Shipper and waits for tracking information from Shipper to update the status of the order. Through tracking information, it can update the status and tell eBay about delivery.

Shipping Service:

As Shipping Service receives the item it starts generating the label and packing. Then provides tracking information to both buyer and seller.

Sequence Diagram:



Legend:

→ Messages with red arrow are allowed for order change within the constrained **black** arrows in the enactments as they don't affect the workflow

→ Messages with black arrow have to follow the order provided in the Workflow description.

■ The black rectangle is used to simulate internal processes of nodes (e.g., receiving messages as there are no acknowledgments, generating labels, packing, processing funds etc.)

Enactments

The order of messages was preserved as it was described in both Workflow description and Sequence Diagram. (The **same coloring** pattern was used for clarity and convenience)

#1

```
9/19/2021, 2:08:07 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]
"Buyer->eBay: order&payment"
9/19/2021, 2:08:07 PMnode: EBAY:holdhold : msg.payload : string[35]
"eBay->Paypal: payment, hold request"
9/19/2021, 2:08:08 PMnode: PaymentNotificationmsg.payload : string[38]
"PayPal->Merchant: payment notification"
9/19/2021, 2:08:08 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]
"eBay->Merchant: Order Details "
9/19/2021, 2:08:08 PMnode: send item for shippingmsg.payload : string[31]
"Merchant->Shipper:item was sent"
9/19/2021, 2:08:08 PMnode: item statusmsg.payload : string[42]
"Shipper->Buyer:item was packed and shipped"
9/19/2021, 2:08:08 PMnode: trackInfo sentmsg.payload : string[33]
"Tracking info was sent to parties"
9/19/2021, 2:08:09 PMnode: trackInfomsg.payload : string[27]
"Merchant:trackInfo received"
9/19/2021, 2:08:09 PMnode: item status updatemerchant : msg.payload : string[37]
"Merchant:item status update:delivered"
9/19/2021, 2:08:09 PMnode: buyer received trackInfomsg.payload : string[24]
"Buyer:trackInfo received"
9/19/2021, 2:08:10 PMnode: releasemsg.payload : string[51]
"eBay->PayPal: item was delivered, release the funds"
9/19/2021, 2:08:10 PMnode: releaserelease : msg.payload : string[30]
"PayPal->Merchant: payment sent"
9/19/2021, 2:08:10 PMnode: from Shippermsg.payload : string[23]
"eBay:trackInfo received"
9/19/2021, 2:08:13 PMnode: Transaction revieworder : msg.payload : string[33]
"Buyer: review of the transaction "
9/19/2021, 2:08:14 PMnode: payment received by merchantmsg.payload : string[38]
"Merchant:received payment from PayPal"
```

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#2

9/19/2021, 2:03:08 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]
"Buyer->eBay: order&payment"
9/19/2021, 2:03:08 PMnode: EBAY:holdhold : msg.payload : string[35]
"eBay->Paypal: payment, hold request"
9/19/2021, 2:03:10 PMnode: PaymentNotificationmsg.payload : string[38]
"PayPal->Merchant: payment notification"
9/19/2021, 2:03:11 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]
"eBay->Merchant: Order Details "
9/19/2021, 2:03:11 PMnode: send item for shippingmsg.payload : string[31]
"Merchant->Shipper:item was sent"
9/19/2021, 2:03:11 PMnode: item statusmsg.payload : string[42]
"Shipper->Buyer:item was packed and shipped"
9/19/2021, 2:03:11 PMnode: trackInfo sentmsg.payload : string[33]
"Tracking info was sent to parties"
9/19/2021, 2:03:11 PMnode: buyer received trackInfomsg.payload : string[24]
"Buyer:trackInfo received"
9/19/2021, 2:03:11 PMnode: Transaction revieworder : msg.payload : string[33]
"Buyer: review of the transaction "
9/19/2021, 2:03:12 PMnode: trackInfomsg.payload : string[27]
"Merchant:trackInfo received"
9/19/2021, 2:03:12 PMnode: item status updatemerchant : msg.payload : string[37]
"Merchant:item status update:delivered"
9/19/2021, 2:03:12 PMnode: from Shippermsg.payload : string[23]
"eBay:trackInfo received"
9/19/2021, 2:03:14 PMnode: releasemsg.payload : string[51]
"eBay->PayPal: item was delivered, release the funds"
9/19/2021, 2:03:14 PMnode: releaserrelease : msg.payload : string[30]
"PayPal->Merchant: payment sent"
9/19/2021, 2:03:14 PMnode: payment received by merchantmsg.payload : string[38]
"Merchant:received payment from PayPal"

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#3

9/19/2021, 1:18:01 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]
"Buyer->eBay: order&payment"
9/19/2021, 1:18:01 PMnode: EBAY:holdhold : msg.payload : string[35]
"eBay->Paypal: payment, hold request"
9/19/2021, 1:18:02 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]
"eBay->Merchant: Order Details "
9/19/2021, 1:18:02 PMnode: PaymentNotificationmsg.payload : string[38]
"PayPal->Merchant: payment notification"
9/19/2021, 1:18:02 PMnode: send item for shippingmsg.payload : string[31]
"Merchant->Shipper:item was sent"
9/19/2021, 1:18:02 PMnode: item statusmsg.payload : string[42]
"Shipper->Buyer:item was packed and shipped"
9/19/2021, 1:18:02 PMnode: trackInfo sentmsg.payload : string[33]
"Tracking info was sent to parties"
9/19/2021, 1:18:03 PMnode: trackInfomsg.payload : string[27]
"Merchant:trackInfo received"
9/19/2021, 1:18:03 PMnode: item status updatemsg.payload : string[37]
"Merchant:item status update:delivered"
9/19/2021, 1:18:03 PMnode: from Shippermsg.payload : string[23]
"eBay:trackInfo received"
9/19/2021, 1:18:03 PMnode: releasemsg.payload : string[51]
"eBay->PayPal: item was delivered, release the funds"
9/19/2021, 1:18:04 PMnode: Transaction revieworder : msg.payload : string[26]
"Buyer: review of the transaction "
9/19/2021, 1:18:04 PMnode: buyer received trackInfomsg.payload : string[24]
"Buyer:trackInfo received"
9/19/2021, 1:18:05 PMnode: releaserelease : msg.payload : string[30]
"PayPal->Merchant: payment sent"
9/19/2021, 1:18:05 PMnode: payment received by merchantmsg.payload : string[38]
"Merchaint:received payment from PayPal"

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#4

9/19/2021, 1:31:22 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]
"Buyer->eBay: order&payment"
9/19/2021, 1:31:22 PMnode: EBAY:holdhold : msg.payload : string[35]
"eBay->Paypal: payment, hold request"
9/19/2021, 1:31:23 PMnode: Transaction revieworder : msg.payload : string[26]
"Buyer: review of the transaction "
9/19/2021, 1:31:24 PMnode: PaymentNotificationmsg.payload : string[38]
"PayPal->Merchant: payment notification"
9/19/2021, 1:31:24 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]
"eBay->Merchant: Order Details "
9/19/2021, 1:31:24 PMnode: send item for shippingmsg.payload : string[31]
"Merchant->Shipper:item was sent"
9/19/2021, 1:31:24 PMnode: item statusmsg.payload : string[42]
"Shipper->Buyer:item was packed and shipped"
9/19/2021, 1:31:24 PMnode: trackInfo sentmsg.payload : string[33]
"Tracking info was sent to parties"
9/19/2021, 1:31:25 PMnode: buyer received trackInfomsg.payload : string[24]
"Buyer:trackInfo received"
9/19/2021, 1:31:26 PMnode: trackInfomsg.payload : string[27]
"Merchant:trackInfo received"
9/19/2021, 1:31:26 PMnode: item status updatemerchant : msg.payload : string[37]
"Merchant:item status update:delivered"
9/19/2021, 1:31:26 PMnode: releasemsg.payload : string[51]
"eBay->PayPal: item was delivered, release the funds"
9/19/2021, 1:31:26 PMnode: releaserelease : msg.payload : string[30]
"PayPal->Merchant: payment sent"
9/19/2021, 1:31:27 PMnode: from Shippermsg.payload : string[23]
"eBay:trackInfo received"
9/19/2021, 1:31:27 PMnode: payment received by merchantmsg.payload : string[38]
"Merchaint:received payment from PayPal"

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#5

9/19/2021, 1:35:29 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]

"Buyer->eBay: order&payment"

9/19/2021, 1:35:29 PMnode: EBAY:holdhold : msg.payload : string[35]

"eBay->Paypal: payment, hold request"

9/19/2021, 1:35:30 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]

"eBay->Merchant: Order Details "

9/19/2021, 1:35:31 PMnode: PaymentNotificationmsg.payload : string[38]

"PayPal->Merchant: payment notification"

9/19/2021, 1:35:31 PMnode: send item for shippingmsg.payload : string[31]

"Merchant->Shipper:item was sent"

9/19/2021, 1:35:31 PMnode: item statusmsg.payload : string[42]

"Shipper->Buyer:item was packed and shipped"

9/19/2021, 1:35:31 PMnode: trackInfo sentmsg.payload : string[33]

"Tracking info was sent to parties"

9/19/2021, 1:35:32 PMnode: Transaction revieworder : msg.payload : string[26]

"Buyer: review of the transaction "

9/19/2021, 1:35:32 PMnode: from Shippermsg.payload : string[23]

"eBay:trackInfo received"

9/19/2021, 1:35:32 PMnode: buyer received trackInfomsg.payload : string[24]

"Buyer:trackInfo received"

9/19/2021, 1:35:33 PMnode: trackInfomsg.payload : string[27]

"Merchant:trackInfo received"

9/19/2021, 1:35:33 PMnode: item status updatemerchant : msg.payload : string[37]

"Merchant:item status update:delivered"

9/19/2021, 1:35:33 PMnode: releasemsg.payload : string[51]

"eBay->PayPal: item was delivered, release the funds"

9/19/2021, 1:35:35 PMnode: releaserelease : msg.payload : string[30]

"PayPal->Merchant: payment sent"

9/19/2021, 1:35:35 PMnode: payment received by merchantmsg.payload : string[38]

"Merchant:received payment from PayPal"

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#6

9/19/2021, 1:38:41 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]
"Buyer->eBay: order&payment"
9/19/2021, 1:38:41 PMnode: EBAY:holdhold : msg.payload : string[35]
"eBay->Paypal: payment, hold request"
9/19/2021, 1:38:43 PMnode: PaymentNotificationmsg.payload : string[38]
"PayPal->Merchant: payment notification"
9/19/2021, 1:38:43 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]
"eBay->Merchant: Order Details "
9/19/2021, 1:38:43 PMnode: send item for shippingmsg.payload : string[31]
"Merchant->Shipper:item was sent"
9/19/2021, 1:38:43 PMnode: item statusmsg.payload : string[42]
"Shipper->Buyer:item was packed and shipped"
9/19/2021, 1:38:43 PMnode: trackInfo sentmsg.payload : string[33]
"Tracking info was sent to parties"
9/19/2021, 1:38:44 PMnode: buyer received trackInfomsg.payload : string[24]
"Buyer:trackInfo received"
9/19/2021, 1:38:44 PMnode: from Shippermsg.payload : string[23]
"eBay:trackInfo received"
9/19/2021, 1:38:45 PMnode: trackInfomsg.payload : string[27]
"Merchant:trackInfo received"
9/19/2021, 1:38:45 PMnode: item status updatemerchant : msg.payload : string[37]
"Merchant:item status update:delivered"
9/19/2021, 1:38:45 PMnode: releasemsg.payload : string[51]
"eBay->PayPal: item was delivered, release the funds"
9/19/2021, 1:38:45 PMnode: releaserelease : msg.payload : string[30]
"PayPal->Merchant: payment sent"
9/19/2021, 1:38:45 PMnode: payment received by merchantmsg.payload : string[38]
"Merchaint:received payment from PayPal"
9/19/2021, 1:38:47 PMnode: Transaction revieworder : msg.payload : string[26]
"Buyer: review of the transaction "

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#7

9/19/2021, 1:41:33 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]

"Buyer->eBay: order&payment"

9/19/2021, 1:41:33 PMnode: EBAY:holdhold : msg.payload : string[35]

"eBay->Paypal: payment, hold request"

9/19/2021, 1:41:33 PMnode: PaymentNotificationmsg.payload : string[38]

"PayPal->Merchant: payment notification"

9/19/2021, 1:41:35 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]

"eBay->Merchant: Order Details "

9/19/2021, 1:41:35 PMnode: send item for shippingmsg.payload : string[31]

"Merchant->Shipper:item was sent"

9/19/2021, 1:41:35 PMnode: item statusmsg.payload : string[42]

"Shipper->Buyer:item was packed and shipped"

9/19/2021, 1:41:35 PMnode: trackInfo sentmsg.payload : string[33]

"Tracking info was sent to parties"

9/19/2021, 1:41:36 PMnode: trackInfomsg.payload : string[27]

"Merchant:trackInfo received"

9/19/2021, 1:41:36 PMnode: item status updatemerchant : msg.payload : string[37]

"Merchant:item status update:delivered"

9/19/2021, 1:41:36 PMnode: releasemsg.payload : string[51]

"eBay->PayPal: item was delivered, release the funds"

9/19/2021, 1:41:36 PMnode: from Shippermsg.payload : string[23]

"eBay:trackInfo received"

9/19/2021, 1:41:36 PMnode: buyer received trackInfomsg.payload : string[24]

"Buyer:trackInfo received"

9/19/2021, 1:41:37 PMnode: Transaction revieworder : msg.payload : string[33]

"Buyer: review of the transaction "

9/19/2021, 1:41:38 PMnode: releaserelease : msg.payload : string[30]

"PayPal->Merchant: payment sent"

9/19/2021, 1:41:38 PMnode: payment received by merchantmsg.payload : string[38]

"Merchant:received payment from PayPal"

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#8

9/19/2021, 1:45:14 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]

"Buyer->eBay: order&payment"

9/19/2021, 1:45:14 PMnode: EBAY:holdhold : msg.payload : string[35]

"eBay->Paypal: payment, hold request"

9/19/2021, 1:45:16 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]

"eBay->Merchant: Order Details "

9/19/2021, 1:45:16 PMnode: PaymentNotificationmsg.payload : string[38]

"PayPal->Merchant: payment notification"

9/19/2021, 1:45:16 PMnode: send item for shippingmsg.payload : string[31]

"Merchant->Shipper:item was sent"

9/19/2021, 1:45:16 PMnode: item statusmsg.payload : string[42]

"Shipper->Buyer:item was packed and shipped"

9/19/2021, 1:45:16 PMnode: trackInfo sentmsg.payload : string[33]

"Tracking info was sent to parties"

9/19/2021, 1:45:16 PMnode: from Shippermsg.payload : string[23]

"eBay:trackInfo received"

9/19/2021, 1:45:18 PMnode: trackInfomsg.payload : string[27]

"Merchant:trackInfo received"

9/19/2021, 1:45:18 PMnode: item status updatemerchant : msg.payload : string[37]

"Merchant:item status update:delivered"

9/19/2021, 1:45:18 PMnode: releasemsg.payload : string[51]

"eBay->PayPal: item was delivered, release the funds"

9/19/2021, 1:45:18 PMnode: releaserelease : msg.payload : string[30]

"PayPal->Merchant: payment sent"

9/19/2021, 1:45:20 PMnode: buyer received trackInfomsg.payload : string[24]

"Buyer:trackInfo received"

9/19/2021, 1:45:20 PMnode: Transaction revieworder : msg.payload : string[33]

"Buyer: review of the transaction "

9/19/2021, 1:45:20 PMnode: payment received by merchantmsg.payload : string[38]

"Merchant:received payment from PayPal"

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#9

9/19/2021, 1:49:11 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]

"Buyer->eBay: order&payment"

9/19/2021, 1:49:11 PMnode: EBAY:holdhold : msg.payload : string[35]

"eBay->Paypal: payment, hold request"

9/19/2021, 1:49:11 PMnode: PaymentNotificationmsg.payload : string[38]

"PayPal->Merchant: payment notification"

9/19/2021, 1:49:12 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]

"eBay->Merchant: Order Details "

9/19/2021, 1:49:12 PMnode: send item for shippingmsg.payload : string[31]

"Merchant->Shipper:item was sent"

9/19/2021, 1:49:12 PMnode: item statusmsg.payload : string[42]

"Shipper->Buyer:item was packed and shipped"

9/19/2021, 1:49:12 PMnode: trackInfo sentmsg.payload : string[33]

"Tracking info was sent to parties"

9/19/2021, 1:49:13 PMnode: from Shippermsg.payload : string[23]

"eBay:trackInfo received"

9/19/2021, 1:49:14 PMnode: trackInfomsg.payload : string[27]

"Merchant:trackInfo received"

9/19/2021, 1:49:14 PMnode: item status updatemerchant : msg.payload : string[37]

"Merchant:item status update:delivered"

9/19/2021, 1:49:14 PMnode: releasemsg.payload : string[51]

"eBay->PayPal: item was delivered, release the funds"

9/19/2021, 1:49:14 PMnode: buyer received trackInfomsg.payload : string[24]

"Buyer:trackInfo received"

9/19/2021, 1:49:16 PMnode: releaserelease : msg.payload : string[30]

"PayPal->Merchant: payment sent"

9/19/2021, 1:49:16 PMnode: payment received by merchantmsg.payload : string[38]

"Merchaint:received payment from PayPal"

9/19/2021, 1:49:17 PMnode: Transaction revieworder : msg.payload : string[33]

"Buyer: review of the transaction "

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#10

9/19/2021, 1:13:02 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]

"Buyer->eBay: order&payment"

9/19/2021, 1:13:02 PMnode: EBAY:holdhold : msg.payload : string[35]

"eBay->Paypal: payment, hold request"

9/19/2021, 1:13:02 PMnode: Transaction revieworder : msg.payload : string[26]

"Buyer: review of the transaction "

9/19/2021, 1:13:02 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]

"eBay->Merchant: Order Details "

9/19/2021, 1:13:02 PMnode: PaymentNotificationmsg.payload : string[38]

"PayPal->Merchant: payment notification"

9/19/2021, 1:13:02 PMnode: send item for shippingmsg.payload : string[31]

"Merchant->Shipper:item was sent"

9/19/2021, 1:13:03 PMnode: item statusmsg.payload : string[42]

"Shipper->Buyer:item was packed and shipped"

9/19/2021, 1:13:03 PMnode: trackInfo sentmsg.payload : string[33]

"Tracking info was sent to parties"

9/19/2021, 1:13:03 PMnode: trackInfomsg.payload : string[27]

"Merchant:trackInfo received"

9/19/2021, 1:13:03 PMnode: item status updatemsg.payload : string[37]

"Merchant:item status update:delivered"

9/19/2021, 1:13:03 PMnode: from Shippermsg.payload : string[23]

"eBay:trackInfo received"

9/19/2021, 1:13:03 PMnode: releasemsg.payload : string[51]

"eBay->PayPal: item was delivered, release the funds"

9/19/2021, 1:13:04 PMnode: buyer received trackInfomsg.payload : string[24]

"Buyer:trackInfo received"

9/19/2021, 1:13:05 PMnode: releaserelease : msg.payload : string[30]

"PayPal->Merchant: payment sent"

9/19/2021, 1:13:05 PMnode: payment received by merchantmsg.payload : string[38]

"Merchaint:received payment from PayPal"

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#11

9/19/2021, 1:09:33 PMnode: BUYER:orderDetailsorder : msg.confirm : string[26]
"Buyer->eBay: order&payment"
9/19/2021, 1:09:33 PMnode: EBAY:holdhold : msg.payload : string[35]
"eBay->Paypal: payment, hold request"
9/19/2021, 1:09:33 PMnode: Transaction revieworder : msg.payload : string[26]
"Buyer: review of the transaction "
9/19/2021, 1:09:33 PMnode: orderDetails for Merchantmsg.payload.merchant : string[30]
"eBay->Merchant: Order Details "
9/19/2021, 1:09:36 PMnode: PaymentNotificationmsg.payload : string[38]
"PayPal->Merchant: payment notification"
9/19/2021, 1:09:36 PMnode: send item for shippingmsg.payload : string[31]
"Merchant->Shipper:item was sent"
9/19/2021, 1:09:36 PMnode: item statusmsg.payload : string[42]
"Shipper->Buyer:item was packed and shipped"
9/19/2021, 1:09:36 PMnode: trackInfo sentmsg.payload : string[33]
"Tracking info was sent to parties"
9/19/2021, 1:09:36 PMnode: trackInfomsg.payload : string[27]
"Merchant:trackInfo received"
9/19/2021, 1:09:36 PMnode: item status updatemsg.payload : string[37]
"Merchant:item status update:delivered"
9/19/2021, 1:09:37 PMnode: buyer received trackInfomsg.payload : string[24]
"Buyer:trackInfo received"
9/19/2021, 1:09:37 PMnode: from Shippermsg.payload : string[23]
"eBay:trackInfo received"
9/19/2021, 1:09:37 PMnode: releasemsg.payload : string[51]
"eBay->PayPal: item was delivered, release the funds"
9/19/2021, 1:09:39 PMnode: releaserelease : msg.payload : string[30]
"PayPal->Merchant: payment sent"
9/19/2021, 1:09:39 PMnode: payment received by merchantmsg.payload : string[38]
"Merchaint:received payment from PayPal"

P.S. Other Enactments are possible and the number of possibilities can be approximately calculated through provided sequence diagram. Due to randomness of the Node-Red's **node** I stopped at 11.