



papiNet

**Global Transaction Standards
for the Paper Supply Chain**

Product Quality

Papinet Standard - Version 2.10

April 2003

ProductQuality Documentation - papiNet Standard - Version 2.10

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Message Documentation

The ProductQuality Message

Purpose of the ProductQuality Message

The purpose of the ProductQuality Message is to provide Suppliers with a means to send product quality information to other trading partners, most typically to the end user.

Trading partners will require that the ProductQuality message satisfies different business purposes. It may be used to verify that a product conforms to a contract specification, to provide data for input to a production process that consumes the product, or to provide data to an automated warehouse system that groups similar products together to minimise variation between items consumed in production.

Combining the ProductQuality message with the ProductPerformance message provides a rich source of data for trend and problem analysis.

An Overview of the ProductQuality Message

The ProductQuality message assumes that a previous agreement between buyer and seller has taken place.

Prior to implementing business processes that require a ProductQuality message, it is necessary for the parties involved to have opened a dialogue and reached a collaborative agreement including such items as:

- frequency of messages,
- form of detail, whether by period, purchase order, or shipment.
- content detail, such as
 - ✧ the particular quality properties to be sent,
 - ✧ which statistical values associated with the properties will be sent,
 - ✧ level of aggregation, whether summary and/or detailed information
- rules for arriving at measurement values,
- rules for replacing and cancelling messages, and
- units of measure.

A Supplier sends a ProductQuality message to another trading partner on a frequency or event basis agreed between them, or in response to an electronic request using the papiNet InfoRequest message.

The degree of detail and extent of the information exchanged will vary between Suppliers and their trading partners. The ProductQuality message has been designed to support aggregated information at the period, purchase order, or shipment level, as well as, optionally, details of the items involved.

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It is anticipated there will be increased demand for suppliers to provide individual item quality data as the spread of more sophisticated warehousing, process control and database systems increases. Such systems exist already; some attempting to utilise the paper test information to optimise performance of the product on a press, others to group like products in automated warehouses.

The ProductQuality message fully supports providing quality data for individual items. The agreed properties of the product that are exchanged can include statistical values such as minimum and maximum, standard deviation, sample size, two-sigma (lower-limit, upper-limit).

The Scope of ProductQuality Message

The ProductQuality message must include:

- Sender and at least one Receiver of the message
- Context of the data in the message, i.e. whether for a period, purchase order or shipment.
- the Product for which the data applies.

The ProductQuality message can optionally include:

- The supplier party.
- The buyer party.
- The production facility.
- Product specification as part of the Product definition. (Please refer to the "[Additional Information for ProductQuality Message](#)" section.)
- Multiple periods, purchase orders, shipments, products, ship to parties, end user parties, and production locations by repeating ProductQualityPeriod, ProductQualityPurchaseOrder, or ProductQualityShipment.

ProductQuality Message Types

There is only one type of ProductQuality message in this standard.

ProductQuality Business Rules

The following table lists the general ProductQuality business rules that apply to the ProductQuality message.

Reference	Rule
PQ001	The frequency of ProductQuality messages is determined by agreement between trading partners.
PQ002	The message is sent between a sender and one or more receivers. <ul style="list-style-type: none">• If more than one receiver is required, the Sender issues the same message to each Receiver. The role of each Receiver is indicated in the CommunicationRole attribute

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Reference	Rule
	associated with NameAddress.
PQ003	<p>When sending a replacement message a ProductQualityReference of OriginalProductQualityMessageNumber type must be specified.</p> <ul style="list-style-type: none"> • The replacement message is requesting that all data associated with the original message number be deleted and the data in the replacement message be processed instead. • It is permitted to use the original message number for the replacement message number.
PQ004	<p>When Cancelling a message, only the ProductQualityHeader is required.</p> <ul style="list-style-type: none"> • ProductQualityReference/ OriginalProductQuality-MessageNumber must be specified, and the cancel message is requesting all data associated with that original message number be deleted. • It is permitted to use the original message number for the cancel message number.
PQ005	<p>A ProductQuality message can refer to one or many periods, purchase orders or shipments, and within each of these to one or many products, ship to parties and/or end user parties.</p> <ul style="list-style-type: none"> • Some parties will require that a ProductQuality message refer to only one of these combinations in each message. • This is an implementation decision fully supported by the message structure.
PQ006	<p>Messages with ProductQualityStatusType of "Replaced" or "Cancelled", must include the original message number in ProductQualityReference in the ProductQualityHeader.</p>

Processing the ProductQuality Message

The ProductQuality message has an attribute to indicate if the message is an original, a replacement, or a cancellation.

In the case of the ProductQuality message, the order of processing is not relevant. ProductQuality message types of Original are independent of each other. Further, the transaction rate for this message is expected to be extremely low, hence occurrences of replaced or cancelled messages arriving before the original message are not expected to occur.

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However, should a replacement arrive before an original, it is safe to process the replacement (treating it as the original) provided subsequent messages referring to the same message number are discarded if they have an older ProductQualityIssueDate.

Status Values Used When Processing the ProductQuality Message

Message processing depends on the value in the ProductQualityStatusType field at the message level. The message can be sent with one of three values in the status field.

ProductQuality status types used when processing the ProductQuality Message

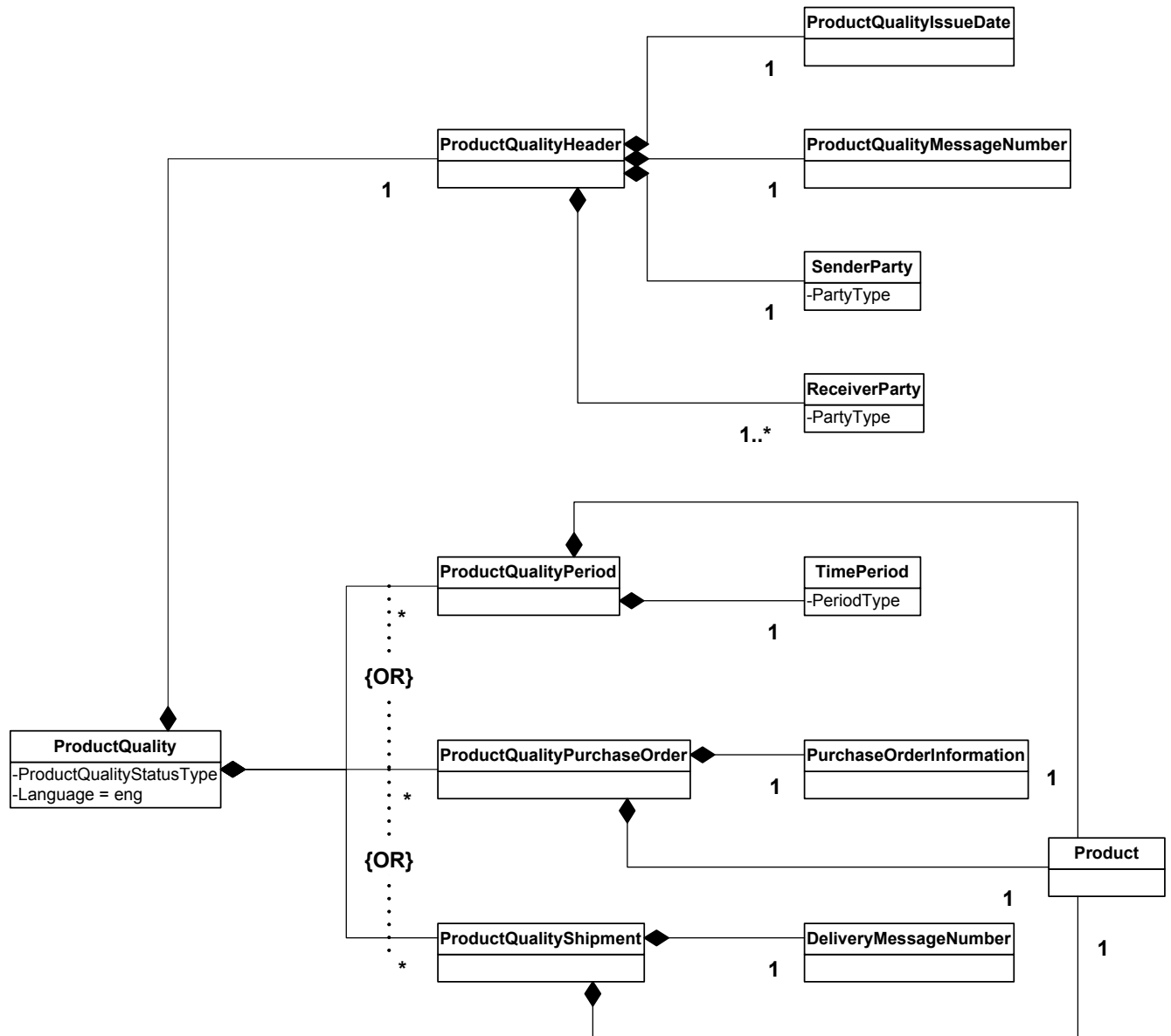
Level	Attribute	Value
Message	ProductQuality-StatusType	Original – Indicates that this is the first transmission of the message. Replaced – Indicates that the sender of the message wishes to replace a previously sent message. The previous message is identified using a ProductQualityReference of OriginalProductQualityMessageNumber. Cancelled – Indicates that the sender of the Original message wishes to cancel a previously sent message. The previous message is identified using a ProductQualityReference of OriginalProductQualityMessageNumber.

No special status values or messages are used to communicate acceptance of the ProductQuality message. This would normally be done using a BusinessAcknowledgement message.

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Overview of ProductQuality Message Structure

This graphic displays the high-level required elements of the ProductQuality message.



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Overview of ProductQuality Schema Structure

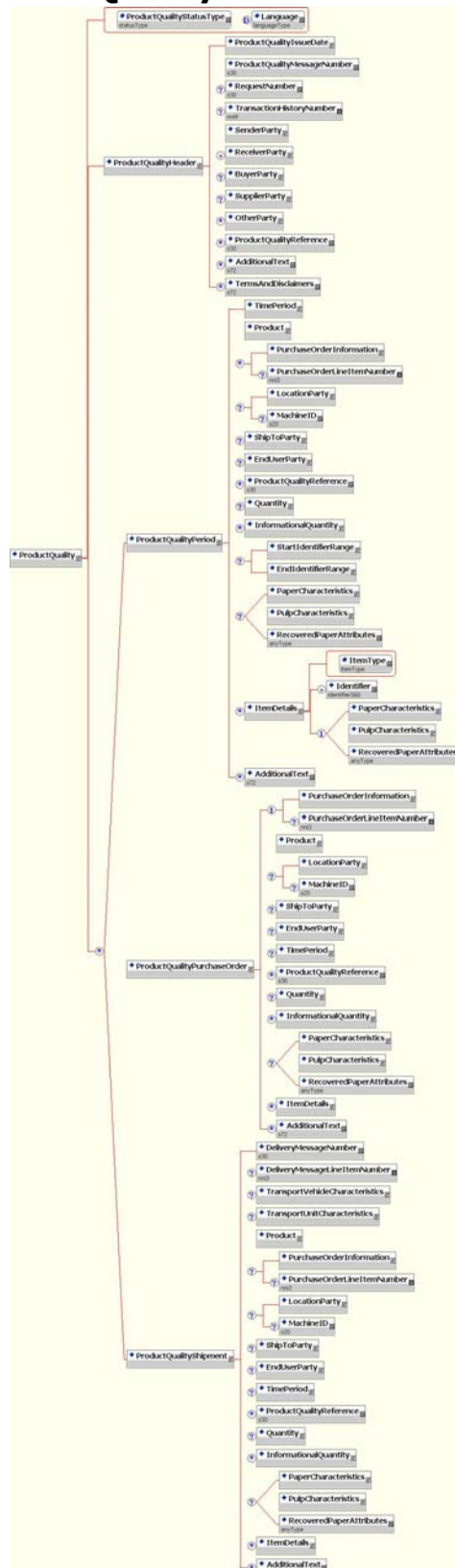
		Type	Required	Occurrence
ProductQuality		Root	Required	Single
	@ProductQualityStatusType	Attribute	Required	Single
	@Language	Attribute	Optional	Single
	ProductQualityHeader	Element	Required	Single
	ProductQualityIssueDate	Element	Required	Single
	ProductQualityMessageNumber	Element	Required	Single
	TransactionHistoryNumber	Element	Required	Single
	RequestNumber	Element	Optional	Single
	SenderParty	Element	Required	Single
	ReceiverParty	Element	Required	Multiple
	BuyerParty	Element	Optional	Single
	SupplierParty	Element	Optional	Single
	OtherParty	Element	Optional	Multiple
	ProductQualityReference	Element	Optional	Multiple
	AdditionalText	Element	Optional	Multiple
	TermsAndDisclaimers	Element	Optional	Multiple
OR	ProductQualityPeriod	Element	Conditional	Multiple
	TimePeriod	Element	Required	Single
	Product	Element	Required	Single
	PurchaseOrderInformation	Element	Optional	Multiple
	PurchaseOrderLineItemNumber	Element	Optional	Multiple
	LocationParty	Element	Optional	Single
	MachineID	Element	Optional	Single
	ShipToParty	Element	Optional	Single
	EndUserParty	Element	Optional	Single
	ProductQualityReference	Element	Optional	Multiple
	Quantity	Element	Optional	Single
	InformationalQuantity	Element	Optional	Single
	StartIdentifierRange	Element	Optional	Single
	EndIdentifierRange	Element	Optional	Single
	PaperCharacteristics	Element	Conditional	Single
OR	PulpCharacteristics	Element	Conditional	Single
	RecoveredPaperProductAttributes	Element	Conditional	Single
	ItemDetails	Element	Optional	Multiple
	AdditionalText	Element	Optional	Multiple
OR	ProductQualityPurchaseOrder	Element	Conditional	Multiple
	PurchaseOrderInformation	Element	Required	Single
	PurchaseOrderLineItemNumber	Element	Optional	Single
	Product	Element	Required	Single
	LocationParty	Element	Optional	Single
	MachineID	Element	Optional	Single
	ShipToParty	Element	Optional	Single
	EndUserParty	Element	Optional	Single

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OR		TimePeriod	Element	Optional	Single	
		ProductQualityReference	Element	Optional	Multiple	
		Quantity	Element	Optional	Single	
		InformationalQuantity	Element	Optional	Multiple	
	OR		PaperCharacteristics	Element	Conditional	Single
			PulpCharacteristics	Element	Conditional	Single
			RecoveredPaperProductAttributes	Element	Conditional	Single
	OR		AdditionalText	Element	Optional	Multiple
			ProductQualityShipment	Element	Conditional	Multiple
			DeliveryMessageNumber	Element	Required	Single
			DeliveryMessageLineItemNumber	Element	Optional	Single
			TransportVehicleCharacteristics	Element	Optional	Single
			TransportUnitCharacteristics	Element	Optional	Single
			Product	Element	Optional	Single
		PurchaseOrderInformation	Element	Optional	Single	
		PurchaseOrderLineItemNumber	Element	Optional	Single	
		LocationParty	Element	Optional	Single	
		MachineID	Element	Optional	Single	
		ShipToParty	Element	Optional	Single	
		EndUserParty	Element	Optional	Single	
OR			TimePeriod	Element	Optional	Single
		ProductQualityReference	Element	Optional	Multiple	
		Quantity	Element	Optional	Single	
		InformationalQuantity	Element	Optional	Multiple	
	OR		PaperCharacteristics	Element	Conditional	Single
			PulpCharacteristics	Element	Conditional	Single
			RecoveredPaperProductAttributes	Element	Conditional	Single
			AdditionalText	Element	Optional	Multiple

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Graphical View of ProductQuality Structure



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ProductQuality Schema – Structure and Processing Logic

This section provides a detailed graphical view of the Schema structure. It also contains a review of the processing logic that is special to the ProductQuality message, and links to the common element and attribute glossary entries.

The graphical display of the schema contains occurrence indicators that are XML standards. These indicators appear to the left of element boxes in the graphics, and they have the following meanings:

- (Blank) Required, single instance
- (+) Required, multiple instances
- (?) Optional, single instance
- (*) Optional, multiple instances

ProductQuality Root

ProductQuality has an optional attribute that determines the

language of text elements such as descriptions. The default language is "eng".

- [Language](#)
 - ✧ See ISO standard 639-2

ProductQuality has a required attribute that determines the status of the message being communicated:

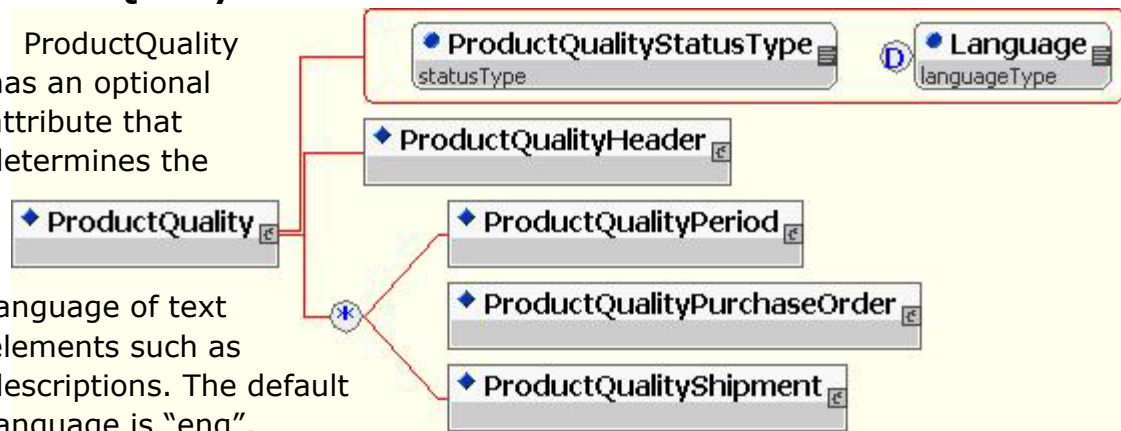
- [ProductQualitySatusType](#)
 - ✧ Replaced
 - ✧ Cancelled
 - ✧ Original

ProductQuality also contains the following elements:

- [ProductQualityHeader](#)

and a choice of:

- [ProductQualityPeriod](#)
- [ProductQualityPurchaseOrder](#)
- [ProductQualityShipment](#)
- The choice may be repeated.



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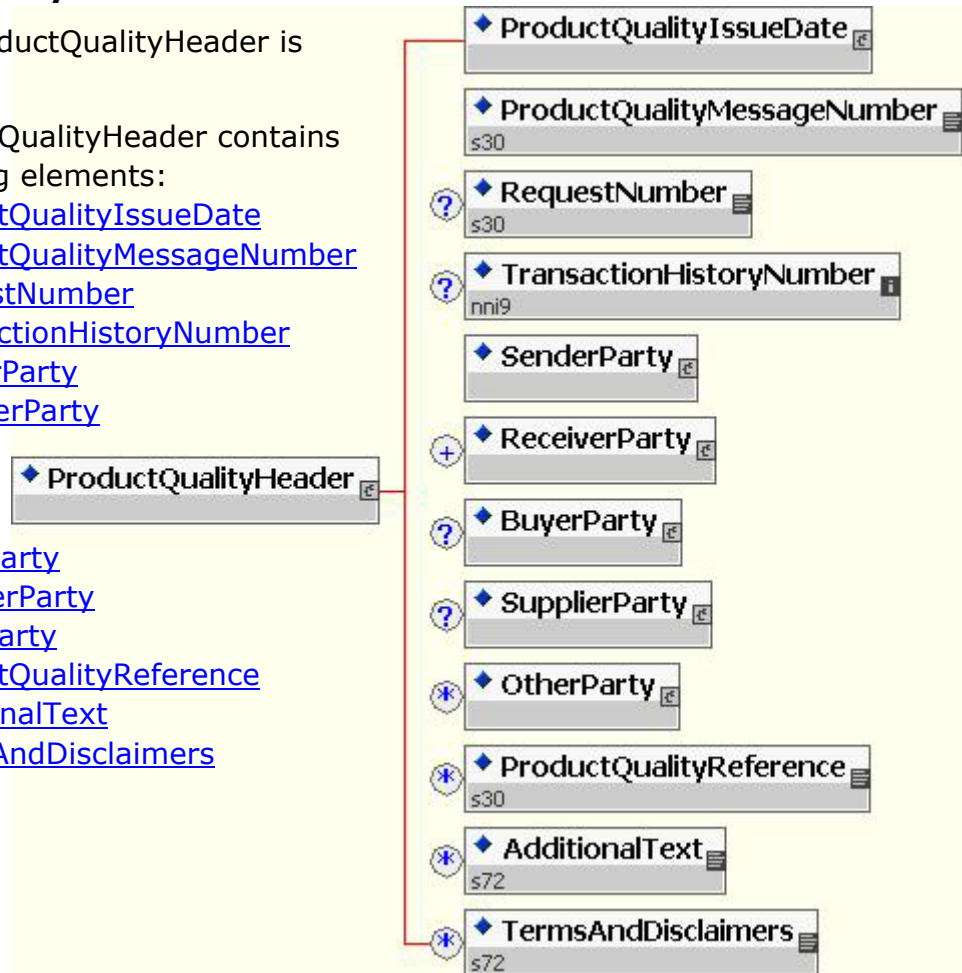
ProductQualityHeader

A single ProductQualityHeader is required.

The ProductQualityHeader contains the following elements:

- [ProductQualityIssueDate](#)
- [ProductQualityMessageNumber](#)
- [RequestNumber](#)
- [TransactionHistoryNumber](#)
- [SenderParty](#)
- [ReceiverParty](#)

- [BuyerParty](#)
- [SupplierParty](#)
- [OtherParty](#)
- [ProductQualityReference](#)
- [AdditionalText](#)
- [TermsAndDisclaimers](#)



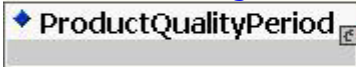
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ProductQualityPeriod

Multiple ProductQualityPeriod instances are allowed.

ProductQualityPeriod contains the following elements:

- [TimePeriod](#)
- [Product](#)
- [PurchaseOrderInformation](#)
- [PurchaseOrder-LineItemNumber](#)
- [LocationParty](#)
- [MachineID](#)
- [ShipToParty](#)
- [EndUserParty](#)
- [ProductQualityReference](#)
- [Quantity](#)
- [InformationalQuantity](#)
- [StartIdentifierRange](#)



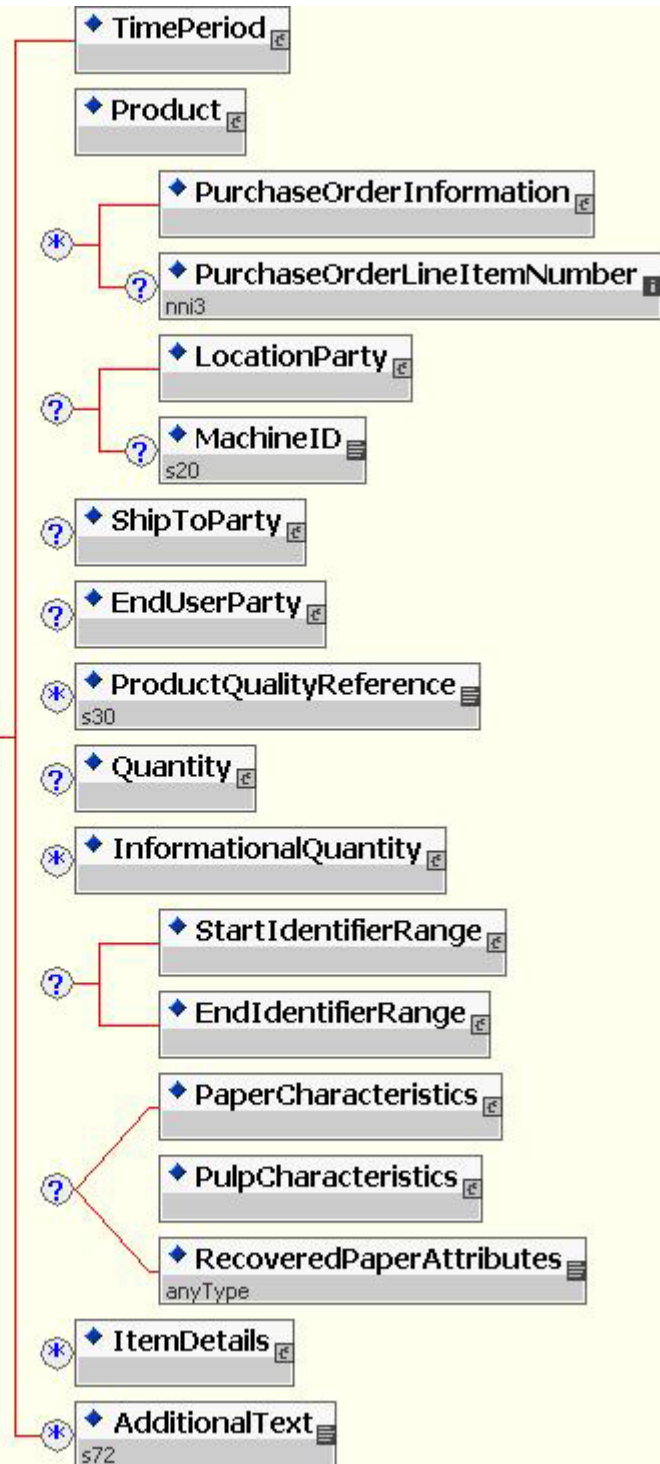
- [EndIdentifierRange](#)

Choice of:

- PaperCharacteristics
- PulpCharacteristics, or
- RecoveredPaper-ProductAttributes

This choice provides summary information for the identified period.

- [ItemDetails](#)
- [AdditionalText](#)



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ProductQualityPurchaseOrder

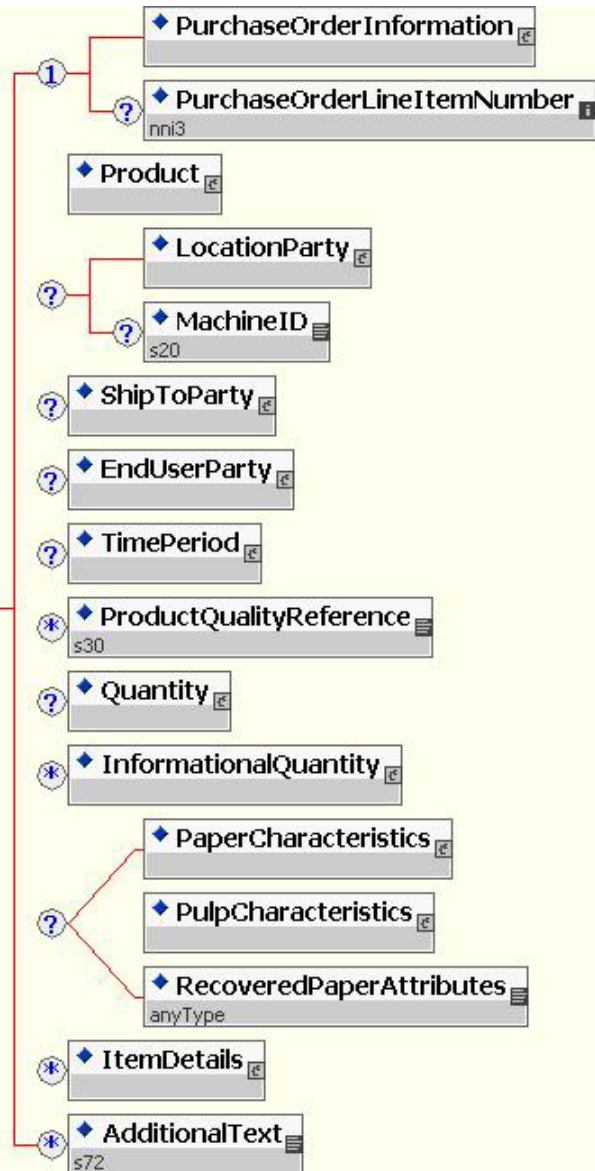
Multiple instances of purchase order information is allowed to support a list of purchase orders manufactured during the indicated period. Alternatively, ProductQualityPeriod may be repeated with the same TimePeriod for each purchase order if the quality data is available at this level of detail.

Multiple ProductQualityPurchaseOrder instances are allowed.



ProductQualityPurchaseOrder contains the following elements:

- [PurchaseOrderInformation](#)
- [PurchaseOrder-LineItemNumber](#)
- [Product](#)
- [LocationParty](#)
- [ShipToParty](#)
- [EndUserParty](#)
- [TimePeriod](#)
- [ProductQualityReference](#)
- [Quantity](#)
- [InformationalQuantity](#)



Choice of:

- PaperCharacteristics
- PulpCharacteristics, or
- RecoveredPaperProductAttributes

This choice provides summary information for the identified purchase order.

- [ItemDetails](#)
- [AdditionalText](#)

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ProductQualityShipment

Multiple ProductQualityShipment instances are allowed; at least one is required.

ProductQualityShipment contains the following elements:

- [DeliveryMessageNumber](#)
- [DeliveryMessage-LineItemNumber](#)
- [Product](#)
- [PurchaseOrderInformation](#)
- [PurchaseOrder-LineItemNumber](#)
- [LocationParty](#)
- [MachineID](#)
- [ShipToParty](#)
- [EndUserParty](#)
- [TimePeriod](#)



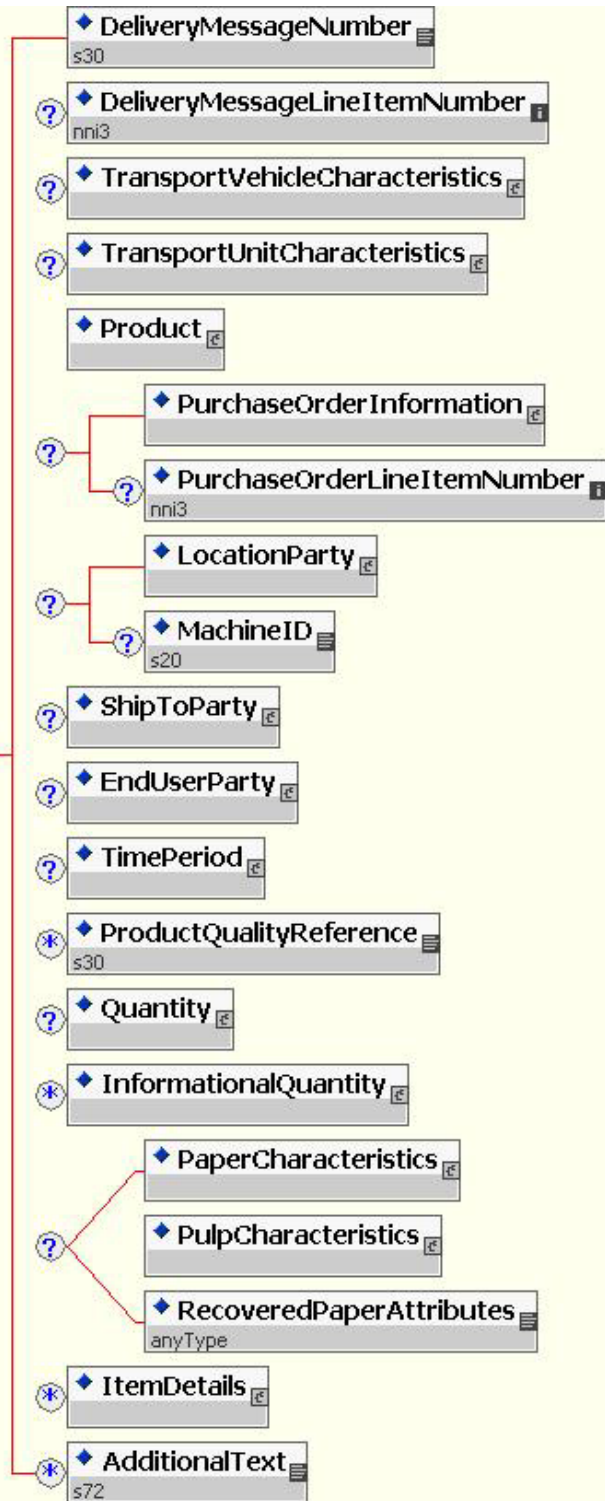
- [ProductQualityReference](#)
- [Quantity](#)
- [InformationalQuantity](#)

Choice of:

- PaperCharacteristics
- PulpCharacteristics, or
- RecoveredPaper-ProductAttributes

This choice provides summary information for the identified delivery.

- [ItemDetails](#)
- [AdditionalText](#)



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Common Definition References - Elements

AdditionalText

A text field that is used to communicate information not previously defined or for special instructions. To be used only for circumstances not covered by specific elements. This element is repeatable and limited to the number of characters that would normally fit across a page.

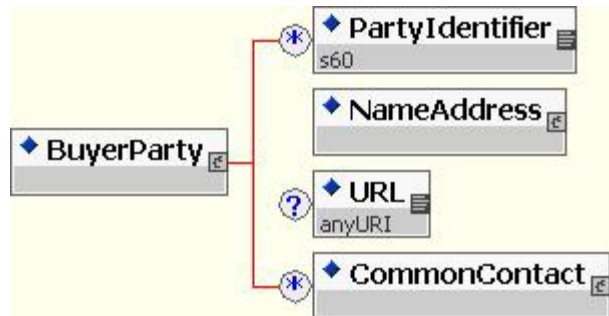


BuyerParty

The organisation or legal entity authorised to issue the purchase order. See [Party](#) for structure.

BuyerParty contains the following elements:

- [PartyIdentifier](#)
- [NameAddress](#)
- [URL](#)
- [CommonContact](#)



Refer to [Party](#) for additional information

DeliveryMessageLineNumber

The sequential number that uniquely identifies the delivery line item.



DeliveryMessageNumber

A unique delivery identifier assigned to each DeliveryMessage message as agreed between the trading partners.



EndIdentifierRange

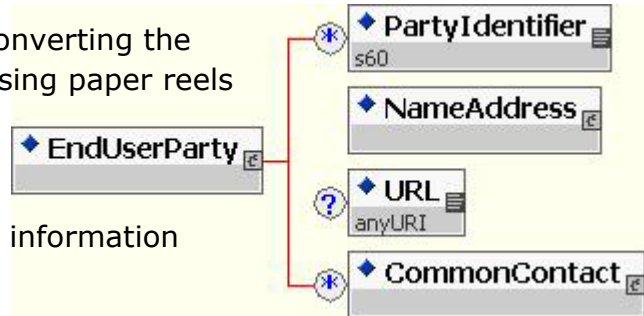
A group element that identifies the ending item identifier in the range of items that contributed to the aggregated measurements for the range.



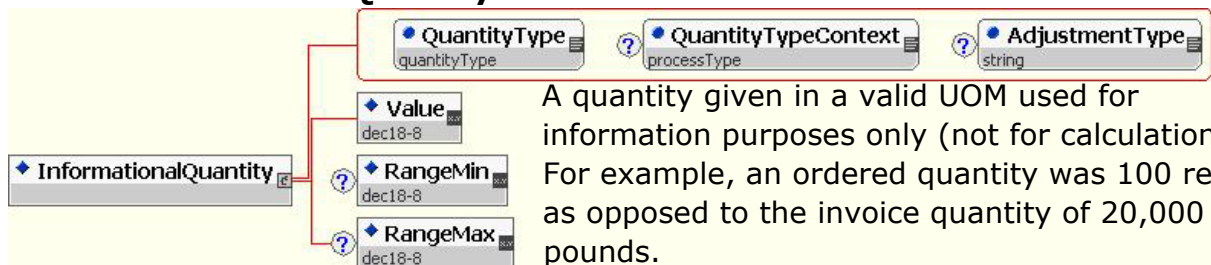
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EndUserParty

The party using, consuming, or converting the product. For example, a printer using paper reels for a print job for a publisher. The final ShipTo destination for a product is normally to the end user's facilities. Refer to [Party](#) for information about the structure.



InformationalQuantity



A quantity given in a valid UOM used for information purposes only (not for calculation). For example, an ordered quantity was 100 reels as opposed to the invoice quantity of 20,000 pounds.

InformationalQuantity contains the following attributes:

- [QuantityType](#)
- [QuantityTypeContext](#)
- [AdjustmentType](#)

And the following elements:

- [Value](#)
- [RangeMin](#)
- [RangeMax](#)

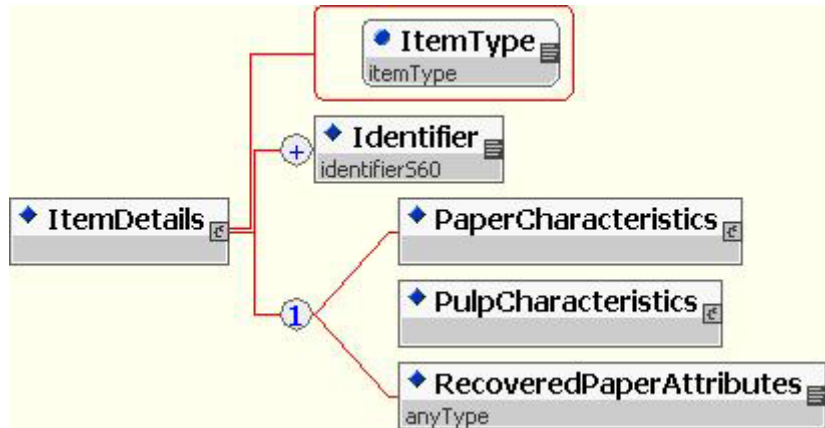
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ItemDetails

A group element that identifies a specific item and measured attribute values for that item.

ItemDetails contains the ItemType attribute and then the following elements:

- Identifier
- PaperCharacteristics
- PulpCharacteristics
- RecoveredPaperAttributes



LocationParty

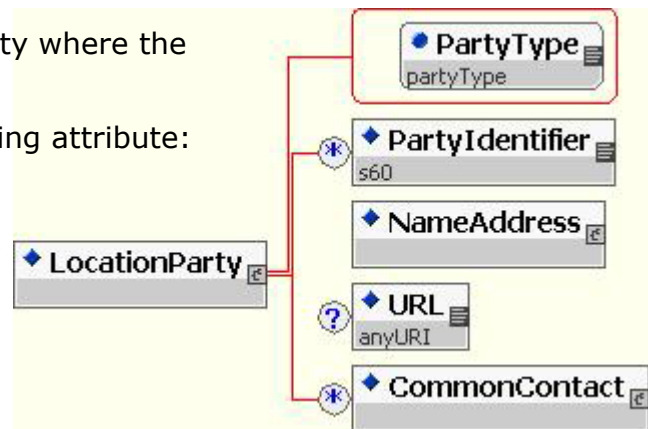
The organization or business entity where the product event take place.

LocationParty contains the following attribute:

- [PartyType](#)

It also contains the following elements:

- [PartyIdentifier](#)
- [NameAddress](#)
- [URL](#)
- [CommonContact](#)



LocationParty is based on the [Party](#) element group.

MachineID

An identifier assigned to the particular machine being referenced. For example, a machine could be a paper machine, an off-line coater, a sheeter, or a printing press. The particular machine being referenced will be determined by the business event being supported.

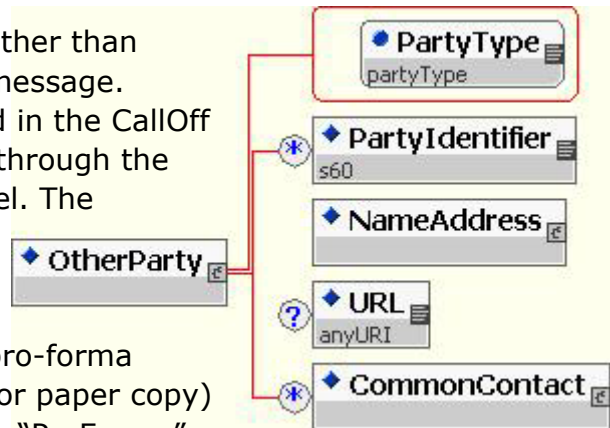


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OtherParty

An organisation or business entity other than those specifically detailed within a message.

- CallOff - If a carrier is specified in the CallOff message, this should be done through the CarrierParty on the header level. The PartyType "Carrier" should not be used.
- Invoice - The seller may generate multiple copies of a pro-forma invoice and a copy (electronic or paper copy) sent to the OtherParty that has "ProForma" assigned to the PartyType attribute.



OtherParty contains the [PartyType](#) attribute.

OtherParty contains the following elements:

- [PartyIdentifier](#)
- [NameAddress](#)
- [URL](#)
- [CommonContact](#)
 - ✧ Refer to [Party](#) for additional information

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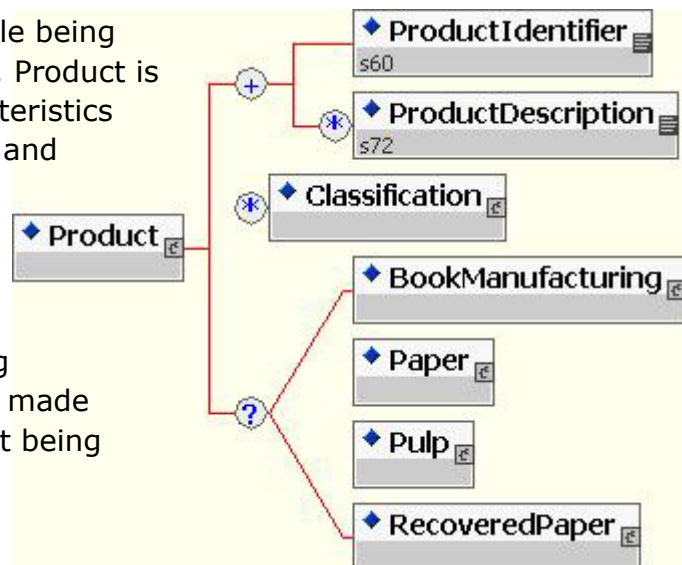
Product

A group item defining the article being ordered and its characteristics. Product is used to specify product characteristics organized by ProductIdentifier and Classification.

- [ProductIdentifier](#)
- [ProductDescription](#)
- [Classification](#)

A choice of one of the following "market-segment" elements is made based upon the type of product being ordered.

- [BookManufacturing](#)
- [Paper](#)
- [Pulp](#)
- [RecoveredPaper](#)



Pulp and Paper are the only products whose characteristics and conversion features have been implemented in papiNet. Recovered Paper and Book Manufacturing are in process and additional product types are under consideration based upon user input.

ProductQualityIssueDate

The date the ProductQuality message was issued.



ProductQualityMessageNumber

A unique identifier assigned to each message for identification purposes.

Subsequent ProductQuality messages with updates or cancellations will use this same ProductQualityMessageNumber.



ProductQualityReference

An element detailing relevant references pertaining to the ProductQuality message.



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PurchaseOrderInformation

A group item containing information unique to this purchase order, which is provided by the buyer.



PurchaseOrderInformation has the following elements:

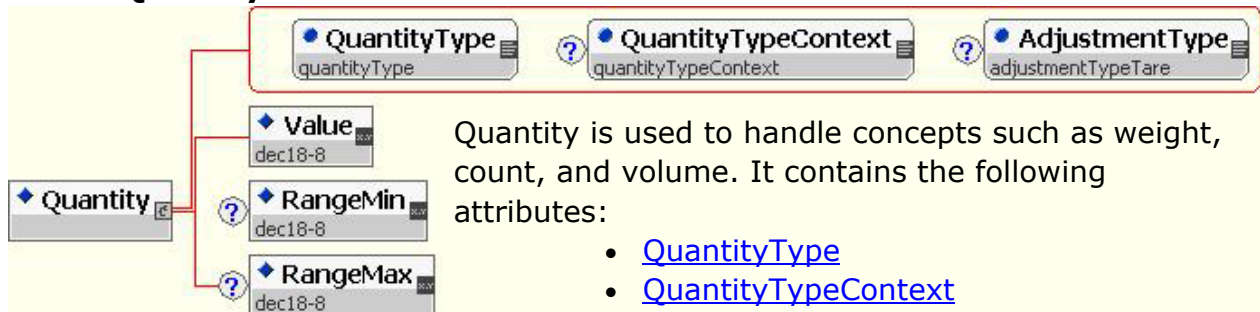
- [PurchaseOrderNumber](#)
- [PurchaseOrderReleaseNumber](#)
- [PurchaseOrderIssuedDate](#)
- [PurchaseOrderReference](#)

PurchaseOrderLineItemNumber

The sequential number that uniquely identifies the purchase order line item.



Quantity



Quantity is used to handle concepts such as weight, count, and volume. It contains the following attributes:

- [QuantityType](#)
- [QuantityTypeContext](#)
- [AdjustmentType](#)

Quantity uses the [Measurement](#) group and has the following elements:

- [Value](#)
- [RangeMin](#)
- [RangeMax](#)

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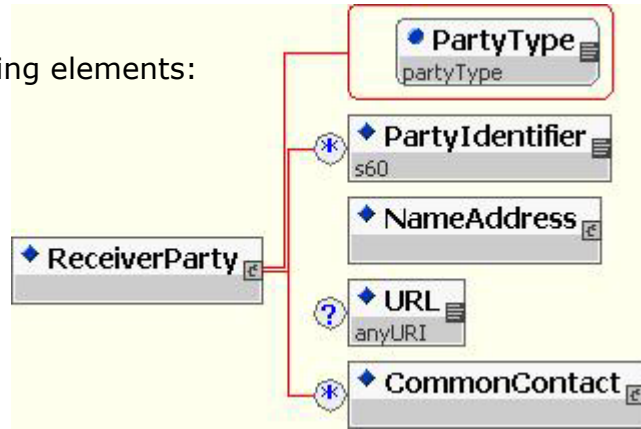
ReceiverParty

The party for whom the information (message) is intended, typed by the attribute [PartyType](#).

ReceiverParty contains the following elements:

- [PartyIdentifier](#)
- [NameAddress](#)
- [URL](#)
- [CommonContact](#)

Refer to [Party](#) (in the Glossary) for additional information.



RequestNumber

A unique tracking number specifically identifying this InfoRequest message to the originator.



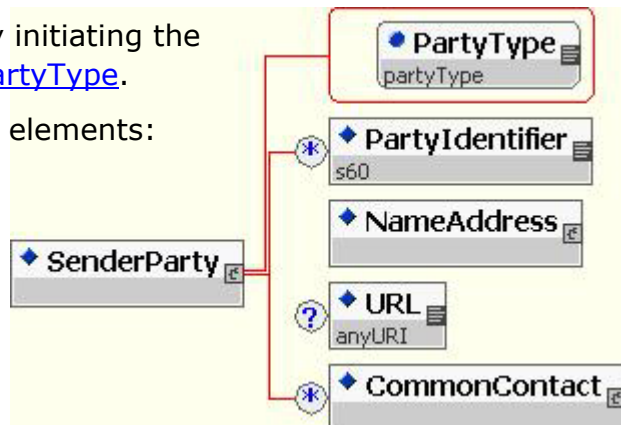
SenderParty

The organisation or business entity initiating the message, typed by the attribute [PartyType](#).

SenderParty contains the following elements:

- [PartyIdentifier](#)
- [NameAddress](#)
- [URL](#)
- [CommonContact](#)

Refer to [Party](#) (in the Glossary) for additional information.



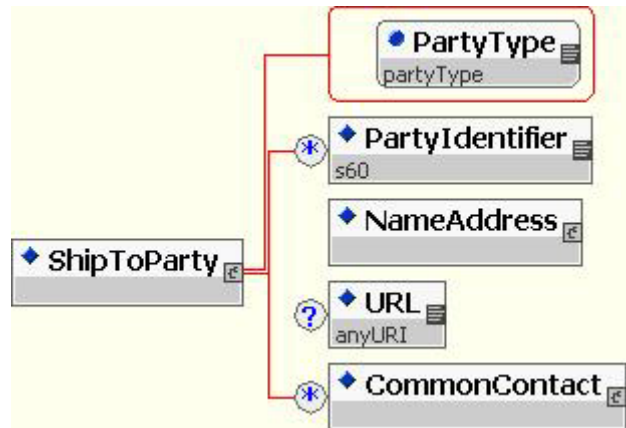
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ShipToParty

The name and/or address to which the goods should be delivered with the party type indicated by the [PartyType](#) attribute.

ShipToParty contains the following elements:

- [PartyIdentifier](#)
- [NameAddress](#)
- [URL](#)
- [CommonContact](#)



StartIdentifierRange

An element that identifies the starting item identifier in the range of items that contributed to the aggregated measurements for the range.

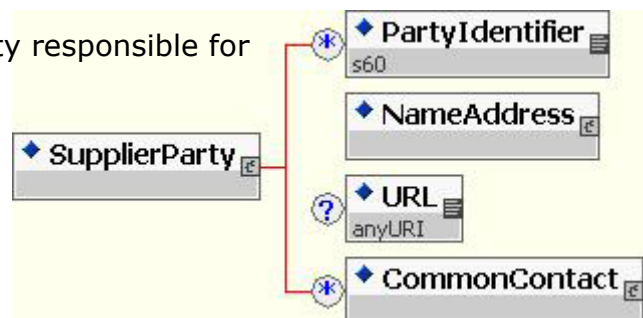


SupplierParty

The organisation or business entity responsible for providing the product.

SupplierParty contains the following elements:

- [PartyIdentifier](#)
- [NameAddress](#)
- [URL](#)
- [CommonContact](#)



Refer to [Party](#) for additional information

TermsAndDisclaimers

A repeatable element that contains legal information with an indication of what the [Language](#) is.



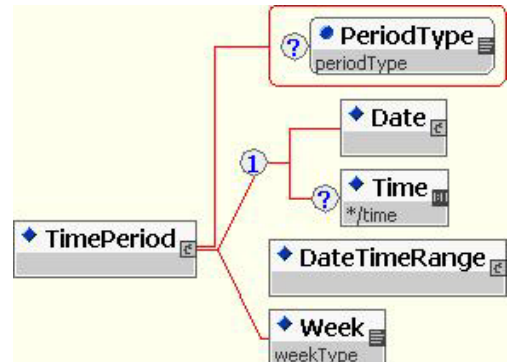
ProductQuality Documentation - papiNet Standard - Version 2.10

TimePeriod

The TimePeriod element is used to communicate a duration period of time as indicated in [PeriodType](#).

TimePeriod contains the following elements:

- [Date](#)
- [Time](#)
- [DateTimeRange](#)
- [Week](#)



TransactionHistoryNumber

A sequential number that keeps track of the version of any document being sent by the message originator.



OrderConfirmation– Used to associate an OrderConfirmation message with a specific PurchaseOrder message. This is the same number that was sent in the original purchase order.

ProductQuality Documentation - papiNet Standard - Version 2.10

Common Definition References – Attributes

Language

XML has embraced 2 and 3 digit language codes through the application of an addendum to the standard. The various references are provided below.

papiNet has set the default value for Language to “eng”. RFC3066 would indicate that it should be set to “en” however, we feel that it is more appropriate to use the content-rich 3-digit codes whenever possible.

Used in:

- Availability
- BusinessAcknowledgement
- CallOff
- Complaint
- ComplaintResponse
- CreditDebitNote
- DeliveryMessage
- DeliveryMessageBook
- EndUses
- GoodsReceipt
- InfoRequest
- InventoryChange
- InventoryStatus
- Invoice
- OrderConfirmation
- OrderStatus
- PackagingDescription
- ProductDescription
- ProductQuality
- PurchaseOrder
- RFQ
- RFQResponse
- ShippingInstructions
- SenderProduct-AttributesDescription
- TermsAndDisclaimers
- Usage

Choices:

- <http://www.loc.gov/standards/iso639-2/>
This is the official site of the ISO 639-2 Registration Authority.
- <http://www.w3.org/International/O-HTML-tags.html>
Provides an explanation of the errata updating XML.
- <http://www.ietf.org/rfc/rfc3066.txt>
is the key document that is referenced in the above errata.

ProductQualityStatusType

Communicates the status of the ProductQuality message

Used in:

- ProductQuality

Choices:

- Cancelled
- Original
- Replaced

ProductQuality Documentation - papiNet Standard - Version 2.10

Additional Information for ProductQuality Message

Product Property Specifications

In addition to communicating the results of tests conducted on the manufactured product, trading partners may also agree to include the specification, or targets that apply to the product, such as may be agreed in a supply contract or agreement. The ProductQuality message accommodates this requirement in the Product structure through the use of PaperCharacteristics or PulpCharacteristics which allows the specification or target values to be included in the message.

The following example indicates such use, where BasisWeight target is 45.0gsm -1.2/+1.5, and Moisture target is 7.5% -0.5/+0.5 .

```
<ProductQualityShipment>
  <DeliveryMessageNumber>AN003476</DeliveryMessageNumber>
  <Product>
    <ProductIdentifier ProductIdentifierType="GradeCode"
      Agency="Vendor">NWH450</ProductIdentifier>
    <Paper>
      <PaperCharacteristics>
        <BasisWeight ProductBasisSizeType="GramsPerSquareMeter" SampleType="Target">
          <DetailValue UOM="GramsPerSquareMeter" >+45.0</DetailValue>
          <DetailRangeMin UOM="GramsPerSquareMeter" >+43.8</DetailRangeMin>
          <DetailRangeMax UOM="GramsPerSquareMeter">+46.5</DetailRangeMax>
        </BasisWeight>
        <Moisture SampleType="Target">
          <DetailValue UOM="Percent" >+7.5</DetailValue>
          <DetailRangeMin UOM="Percent" >+7.0</DetailRangeMin>
          <DetailRangeMax UOM="Percent">+8.0</DetailRangeMax>
        </Moisture>
      </PaperCharacteristics>
    </Paper>
  </Product>
  ...
```

Use of ProductQualityReference for Vessel information

The information supplied in the ProductQuality message can be aggregated at different levels depending on the particular combinations of Product, LocationParty, ShipToParty, EndUserParty and ProductQualityReference. The particular combinations used will be defined by the Trading Partner Agreement.

ProductQuality Documentation - papiNet Standard - Version 2.10

In the case where aggregated data was required for a vessel, recommended use of the message would be to:

- Supply the voyage number in ProductQualityHeader/ProductQualityReference,
- Use the ProductQualityPeriod option with DateTimeRange = sailing date of the vessel, or another similar date, and
- Repeat the ProductQualityPeriod structure with the same DateTimeRange for each combination of Product, LocationParty, ShipToParty, EndUserParty, and ProductQualityReference that is required.

Use of PaperCharacteristics, PulpCharacteristics, and RecoveredPaperProductAttributes

A typical paper attribute is shown below, illustrating the structure used for the majority of attributes.



The four optional attributes associated with of each test gives the context of the value in DetailValue.

- TestMethod and TestAgency specify the test regime from which the data was generated.
- SampleType indicates from where in the product the samples were collected.
- ResultSource indicates the means by which the data was gathered.

Although all attributes are optional, it is strongly recommended that trading partners use all that are appropriate for their operations. These attributes are important for the correct interpretation of the data that is exchanged.

The trading partners will agree which, if any, of the optional statistical measures are included with each test reported.

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Each of the quality attributes (XML elements) in PaperCharacteristics, PulpCharacteristics and RecoveredPaperProductAttributes may be repeated. This provides support for including more than one TestMethod, or ResultSource, or SampleType for an attribute.

Roughness is an example of this. The first occurrence could specify SampleType="Top", the second could specify SampleType="Bottom", and the third occurrence could specify SampleType="Average".

Support for multiple periods, purchase orders, and shipments.

The message structure has been designed to support repeating Period, PurchaseOrder and Shipment instances in the one ProductQuality message.

This has two purposes:

- First, to support the different aggregation levels discussed above, for example, one period broken down by the end users that received the product.
- Second, to support more than one period, purchase order or shipment in the one message. The User is cautioned that the use of the message in this manner may result in very large messages that may cause processing or transmission difficulties. It is strongly recommended that a study be conducted to determine the volume of data that could be sent in order to determine the appropriate basis on which to generate and send the messages.

-

ProductQuality Business Scenarios

ProductQuality Business Scenarios

<u>Scenario A</u>	ProductQuality message sent from a Supplier to an EndUser for paper reels in a single rail car. Data aggregated at the shipment level, and individual reel data required.
<u>Scenario B</u>	ProductQuality message sent from the Supplier to the Buyer for paper reels supplied against a single PurchaseOrder. Data aggregated at the purchase order level for each ShipToParty, no individual reel data required. A Replaced message is sent.
<u>Scenario C</u>	ProductQuality message sent from the Supplier to the ShipToParty for pulp units shipped during one month. Data aggregated at the period level by LotIdentifier, no individual pulp unit data required.
<u>Scenario D</u>	ProductQuality message sent from a Supplier to a Publisher data on a Period basis, for two products, aggregated at the Tambour level, reel item details required.

ProductQuality Business Scenarios

Scenario A

Message	ProductQuality
Business Scenario	<p>ProductQuality message sent from a Supplier to an EndUser for paper reels in a single rail car. Data aggregated at the shipment level, and individual reel data required.</p> <pre> sequenceDiagram participant S as Supplier : SenderParty participant E as EndUser : ReceiverParty S->>E: Receive Original ProductQuality from Supplier() E-->>S: BusinessAcknowledgement </pre>
Use Case Outcome	ProductQuality data for reels in the shipment are updated into the EndUser's system.
Initiator	Supplier
Receiver	EndUser
Preconditions	<p>This Use Case assumes the Customer and Supplier have previously agreed the context and content of the message:</p> <ul style="list-style-type: none"> context of the data is for a single load shipped to the Customer content includes aggregated paper test information for the shipment, detail paper test information for each item shipped, statistical properties of the paper tests (e.g. standard deviation is included or not?), imperial or metric units of measure and so on.
Trigger	A shipment for this EndUser is despatched from the Suppliers mill.
Step 1	Supplier sends a ProductQuality message to the EndUser customer.
	<p>Statuses sent within the message:</p> <ul style="list-style-type: none"> ProductQualityStatusType = "Original"
Step 2	Customer processes the data contained in the message into their information systems.
	<pre> <ProductQuality ProductQualityStatusType="Original" Language="eng" > <ProductQualityHeader> <ProductQualityIssueDate> <Date> <Year>2002</Year> <Month>02</Month> <Day>24</Day> </Date> </ProductQualityIssueDate> </ProductQualityHeader> </ProductQuality> </pre>

ProductQuality Business Scenarios

```
</Date>
</ProductQualityIssueDate>
<ProductQualityMessageNumber>15103/30</ProductQualityMessageNumber>
<SenderParty PartyType="Mill">
  <NameAddress>
    <Name1>SCA Graphic Sundsvall AB</Name1>
    <Name2>Ortviken Paper Mill</Name2>
    <Address1>Box 846</Address1>
    <City>Sundsvall</City>
    <PostalCode>SE-851 23</PostalCode>
    <Country>Sweden</Country>
  </NameAddress>
</SenderParty>
<ReceiverParty PartyType="EndUser">
  <NameAddress>
    <Name1>Imprimerie Torcy Quebecor</Name1>
  </NameAddress>
</ReceiverParty>
<BuyerParty>
  <NameAddress>
    <Name1>Groupe Liaisons</Name1>
  </NameAddress>
</BuyerParty>
<ProductQualityReference ReferenceType="DeliveryMessageNumber">
  020118067/00</ProductQualityReference>
</ProductQualityHeader>
<ProductQualityShipment>
  <DeliveryMessageNumber>020118067/00</DeliveryMessageNumber>
  <Product>
    <ProductIdentifier ProductIdentifierType="GradeCode"
      Agency="Vendor">LWCGRAPHOLUX</ProductIdentifier>
    <Paper>
      <Reel>
        <ReelConversionCharacteristics>
          <ReelWidth>
            <Value UOM="Millimeter">860</Value>
          </ReelWidth>
          <ReelDiameter>
            <Value UOM="Millimeter">1250</Value>
          </ReelDiameter>
          <CoreCharacteristics>
            <CoreDiameterInside>
              <Value UOM="Millimeter" >76</Value>
            </CoreDiameterInside>
          </CoreCharacteristics>
        </ReelConversionCharacteristics>
      </Reel>
    </Paper>
  </Product>
</ProductQualityShipment>
</ProductQualityHeader>
```

ProductQuality Business Scenarios

```
</CoreCharacteristics>
  </ReelConversionCharacteristics>
    </Reel>
  </Paper>
</Product>
<Quantity QuantityType="GrossWeight" QuantityTypeContext="Delivered">
  <Value UOM="Kilogram">18086</Value>
</Quantity>
<InformationalQuantity QuantityType="Count">
  <Value UOM="Reel">15</Value>
</InformationalQuantity>
<PaperCharacteristics>
  <BasisWeight ProductBasisSizeType="GramsPerSquareMeter"
    SampleType="Average">
    <DetailValue UOM="GramsPerSquareMeter">+60.0</DetailValue>
    <StandardDeviation>0.09</StandardDeviation>
  </BasisWeight>
  <Brightness SampleType="Average">
    <DetailValue UOM="Percent">+72.6</DetailValue>
    <StandardDeviation>1.11</StandardDeviation>
  </Brightness>
  <Opacity SampleType="Average">
    <DetailValue UOM="Percent">+94.7</DetailValue>
    <StandardDeviation>0.42</StandardDeviation>
  </Opacity>
  <Gloss SampleType="Average">
    <DetailValue UOM="Percent">+49.8</DetailValue>
    <StandardDeviation>1.45</StandardDeviation>
  </Gloss>
  <Bulk SampleType="Average">
    <DetailValue UOM="CubicCentimeterPerGram">+70.9</DetailValue>
    <StandardDeviation>0.00</StandardDeviation>
  </Bulk>
</PaperCharacteristics>
<ItemDetails ItemType="ReelItem">
  <Identifier IdentifierCodeType="Supplier"
    IdentifierType="Primary">SC9123456</Identifier>
  <PaperCharacteristics>
    <BasisWeight ProductBasisSizeType="GramsPerSquareMeter"
      SampleType="Average">
      <DetailValue
        UOM="GramsPerSquareMeter">+60.0</DetailValue>
      <StandardDeviation>0.09</StandardDeviation>
    </BasisWeight>
```

ProductQuality Business Scenarios

```
<Brightness SampleType="Average">
  <DetailValue UOM="Percent">+72.6</DetailValue>
  <StandardDeviation>1.11</StandardDeviation>
</Brightness>
<Opacity SampleType="Average">
  <DetailValue UOM="Percent">+94.7</DetailValue>
  <StandardDeviation>0.42</StandardDeviation>
</Opacity>
<Gloss SampleType="Average">
  <DetailValue UOM="Percent">+49.8</DetailValue>
  <StandardDeviation>1.45</StandardDeviation>
</Gloss>
<Bulk SampleType="Average">
  <DetailValue
    UOM="CubicCentimeterPerGram">+70.9</DetailValue>
  <StandardDeviation>0.00</StandardDeviation>
</Bulk>
</PaperCharacteristics>
</ItemDetails>
<ItemDetails ItemType="ReelItem">
  <Identifier IdentifierCodeType="Supplier"
    IdentifierType="Primary">SC9123456</Identifier>
  <PaperCharacteristics>
    <BasisWeight ProductBasisSizeType="GramsPerSquareMeter"
      SampleType="Average">
      <DetailValue
        UOM="GramsPerSquareMeter">+60.0</DetailValue>
      <StandardDeviation>0.09</StandardDeviation>
    </BasisWeight>
    <Brightness SampleType="Average">
      <DetailValue UOM="Percent">+72.6</DetailValue>
      <StandardDeviation>1.11</StandardDeviation>
    </Brightness>
    <Opacity SampleType="Average">
      <DetailValue UOM="Percent">+94.7</DetailValue>
      <StandardDeviation>0.42</StandardDeviation>
    </Opacity>
    <Gloss SampleType="Average">
      <DetailValue UOM="Percent">+49.8</DetailValue>
      <StandardDeviation>1.45</StandardDeviation>
    </Gloss>
    <Bulk SampleType="Average">
      <DetailValue
        UOM="CubicCentimeterPerGram">+70.9</DetailValue>
```

-

ProductQuality Business Scenarios

	<pre style="text-align: center;"><StandardDeviation>0.00</StandardDeviation> </Bulk> </PaperCharacteristics> </ItemDetails> and so on for each item..... </ProductQualityShipment> </ProductQuality></pre>
Step 3	The Customer may respond to the Supplier with a BusinessAcknowledgement message informing the Supplier that the ProductQuality message was successfully processed.

ProductQuality Business Scenarios

Scenario B

Message	ProductQuality
Business Scenario	<p>ProductQuality message sent from the Supplier to the Buyer for paper reels supplied against a single PurchaseOrder that was specified in an InfoRequest message. Data aggregated at the purchase order level for each ShipToParty, no individual reel data required.</p> <p>A Replaced message is sent.</p> <pre> sequenceDiagram participant Buyer as : BuyerParty participant Supplier as Supplier : SenderParty Buyer->>Supplier: Receive InfoRequest from Buyer Supplier-->>Buyer: BusinessAcknowledgement Supplier->>Buyer: Receive ProductQuality from Supplier Buyer-->>Supplier: BusinessAcknowledgement Supplier->>Buyer: Receive Replacement ProductQuality from Supplier Buyer-->>Supplier: BusinessAcknowledgement </pre>
Outcome	Product test data averaged at the PurchaseOrder and ShipTo level is processed into the Buyer's system.
Initiator	Supplier
Receiver	Buyer
Preconditions	This Use Case assumes the Buyer and Supplier have previously agreed the context and content of the message. That is, context of the data is for all products shipped against the Buyer's PurchaseOrderNumber, and summarised by each ShipTo. In addition, the Supplier and Buyer will have agreed on which paper test attributes and statistical properties of the paper tests will be exchanged. (That is, StandardDeviation is included or not, imperial or metric UOM(s) and so on.)
Trigger	An InfoRequest message is received by the Supplier from the Buyer that requests a ProductQuality message for the specified PurchaseOrderNumber and all ShipTo(s).
Step 1	Supplier sends a ProductQuality message to the Buyer.
	<p>Statuses sent within the message:</p> <ul style="list-style-type: none"> ProductQualityStatusType = "Original"
Step 2	Buyer processes the data contained in the message into their information systems.
Step 3	The Buyer may respond to the Supplier with a

ProductQuality Business Scenarios

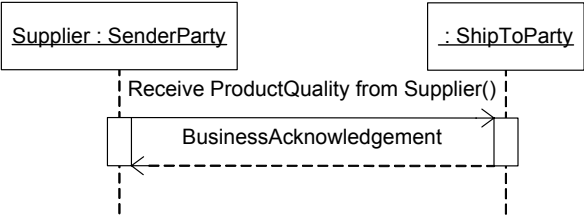
	BusinessAcknowledgement message informing the Supplier that the ProductQuality message was successfully processed.
Trigger	<p>The Supplier discovers an error in the source data for the message.</p> <ul style="list-style-type: none"> The Supplier issues a replacement message with the correct data. The same message number is used in the replacement message.
Step 4	Supplier sends a replacement ProductQuality message to the Buyer.
	<p>Statuses sent within the message: ProductQualityStatusType = "Replaced"</p>
	<pre> <ProductQuality ProductQualityStatusType="Replaced" Language="eng"> <ProductQualityHeader> <ProductQualityIssueDate> <Date> <Year>2002</Year> <Month>02</Month> <Day>27</Day> </Date> </ProductQualityIssueDate> and so on.... </ProductQualityHeader> <ProductQualityPurchaseOrder> <PurchaseOrderInformation> <PurchaseOrderNumber>XH02345K</PurchaseOrderNumber> </PurchaseOrderInformation> <Product> <ProductIdentifier ProductIdentifierType="GradeCode" Agency="Vendor">LWCGRAPHOLUX</ProductIdentifier> </Product> <ShipToParty PartyType="ShipTo"> <NameAddress> <Name1>Imprimerie Torcy Quebecor</Name1> </NameAddress> </ShipToParty> <Quantity QuantityType="GrossWeight" QuantityTypeContext="Delivered"> <Value UOM="Kilogram">18086</Value> </Quantity> <InformationalQuantity QuantityType="Count"> <Value UOM="Reel">15</Value> </InformationalQuantity> </pre>

ProductQuality Business Scenarios

	<pre> <PaperCharacteristics> as per previous example... </PaperCharacteristics> </ProductQualityPurchaseOrder> <ProductQualityPurchaseOrder> <PurchaseOrderInformation> <PurchaseOrderNumber>XH02345K</PurchaseOrderNumber> </PurchaseOrderInformation> <Product> <ProductIdentifier ProductIdentifierType="GradeCode" Agency="Vendor">LWCGRAPHOLUX</ProductIdentifier> ...and so on for size and diameter.... </Product> <ShipToParty PartyType="Warehouse"> <NameAddress> <Name1>Another ship to for Quebecor</Name1> </NameAddress> </ShipToParty> <Quantity QuantityType="GrossWeight" QuantityTypeContext="Delivered"> <Value UOM="Kilogram">15000</Value> </Quantity> <InformationalQuantity QuantityType="Count"> <Value UOM="Reel" >12</Value> </InformationalQuantity> <PaperCharacteristics> and so on as per previous example... </PaperCharacteristics> </ProductQualityPurchaseOrder> </ProductQuality> </pre>
Step 5	Buyer deletes the data associated with the OriginalProductQualityMessageNumber. processes the data contained in the message into their information systems.
Step 6	The Buyer processes the new data into their information system.
Step 7	Supplier responds to Customer with a BusinessAcknowledgement message informing the Customer that the ProductQuality Message was successfully processed.

ProductQuality Business Scenarios

Scenario C

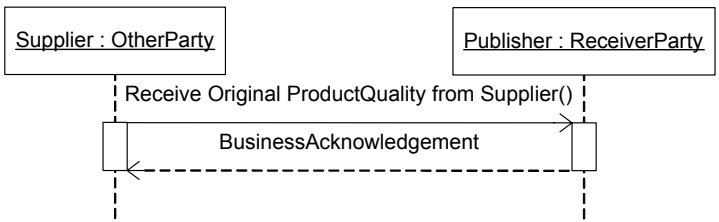
Message	ProductQuality
Business Scenario	<p>A ProductQuality message is sent from the Supplier to the ShipToParty for pulp units shipped during one month. Data aggregated at the period level by LotIdentifier, no individual pulp unit data required.</p>  <pre> sequenceDiagram participant Supplier as Supplier : SenderParty participant ShipToParty as : ShipToParty Supplier->>ShipToParty: Receive ProductQuality from Supplier() ShipToParty-->>Supplier: BusinessAcknowledgement </pre>
Use Case Outcome	Product test data averaged at the PurchaseOrder and ShipTo level is processed into the Buyers system.
Initiator	Supplier
Receiver	Ship To
Preconditions	<p>This Use Case assumes the ShipTo and Supplier have previously agreed the context and content of the message:</p> <ul style="list-style-type: none"> context of the data is for all product shipped in periods of 1 month and summarised by each LotIdentifier In addition, the Supplier and Buyer will have agreed on which pulp test attributes and statistical properties of the pulp tests will be exchanged. (That is, StandardDeviation is included or not, imperial or metric UOM and so on.)
Trigger	Either an automatic or a manual timer causes a ProductQuality message to be sent to the Ship To.
Step 1	Supplier sends a ProductQuality message to the Ship To.
	<p>Statuses sent within the message:</p> <ul style="list-style-type: none"> ProductQualityStatusType = "Original" <p>Significant data:</p> <ul style="list-style-type: none"> ProductQualityReference for LotIdentifier(s).
Step 2	Ship To processes the data contained in the message into their information systems.
	<pre> <ProductQuality ProductQualityStatusType="Original" Language="eng"> <ProductQualityHeader> </ProductQualityHeader> <ProductQualityPeriod> <TimePeriod PeriodType="MonthBeginning"> </pre>

ProductQuality Business Scenarios

	<pre> <Date> <Year>2002</Year> <Month>06</Month><Day>01</Day> </Date> </TimePeriod> <Product> <ProductIdentifier ProductIdentifierType="GradeCode" Agency="Vendor"> Special NBSK </ProductIdentifier> </Product> <ProductQualityReference ReferenceType="LotIdentifier"> FG020612- B</ProductQualityReference> <PulpCharacteristics FibreSource="Radiata"> <pH SampleType="Average"> <DetailValue UOM="pH">+7.2</DetailValue> </pH> <Chlorine SampleType="Average"> <DetailValue UOM="PartsPerMillion">947</DetailValue> <StandardDeviation>44.2</StandardDeviation> </Chlorine> </PulpCharacteristics> </ProductQualityPeriod> <ProductQualityPeriod> <TimePeriod PeriodType="MonthBeginning"> <Date> <Year>2002</Year> <Month>06</Month><Day>01</Day> </Date> </TimePeriod> <Product> <ProductIdentifier ProductIdentifierType="GradeCode" Agency="Vendor"> Special NBSK </ProductIdentifier> </Product> <ProductQualityReference ReferenceType="LotIdentifier"> FG020616-B</ProductQualityReference> <PulpCharacteristics FibreSource="Radiata"> <pH SampleType="Average"> <DetailValue UOM="pH">7.8</DetailValue> </pH> <Chlorine SampleType="Average"> <DetailValue UOM="PartsPerMillion">1005</DetailValue> <StandardDeviation>44.8</StandardDeviation> </Chlorine> </PulpCharacteristics> </ProductQualityPeriod> </ProductQuality> </pre>
Step 3	<p>The ShipTo may respond to the Supplier with a BusinessAcknowledgement message informing the Supplier that the ProductQuality message was successfully processed.</p>

ProductQuality Business Scenarios

Scenario D

Message	ProductQuality
Business Scenario	<p>ProductQuality message sent from a Supplier to a Publisher with data on a Period basis, for two products, aggregated at the Tambour level.</p>  <pre> sequenceDiagram participant Supplier as Supplier : OtherParty participant Publisher as Publisher : ReceiverParty Supplier->>Publisher: Receive Original ProductQuality from Supplier() activate Publisher Publisher-->>Supplier: BusinessAcknowledgement deactivate Publisher </pre>
Outcome	Product test data at the Tambour level is processed into the Publishers system for the period concerned..
Initiator	Supplier
Receiver	Publisher
Preconditions	<p>This Use Case assumes the Publisher and Supplier have previously agreed the context and content of the message:</p> <ul style="list-style-type: none"> context of the data is for all products shipped in periods of 1 week and reported at the Tambour level. In addition, the Supplier and Publisher will have agreed on which paper test attributes and statistical properties of the paper tests will be exchanged. (That is, StandardDeviation is included or not, imperial or metric UOM(s) and so on.)
Trigger	Either an automatic or a manual timer causes a ProductQuality message to be sent to the Publisher.
Step 1	Supplier sends a ProductQuality message to the Publisher.
	<p>Statuses sent within the message:</p> <ul style="list-style-type: none"> ProductQualityStatusType = "Original" <p>Significant data:</p> <ul style="list-style-type: none"> TimePeriod Product Definition ItemType="Tambour".
Step 2	Publisher processes the data contained in the message into their information systems.
	<pre> <ProductQuality ProductQualityStatusType="Original" Language="eng"> <ProductQualityHeader> </ProductQualityHeader> <ProductQualityPeriod> </pre>

ProductQuality Business Scenarios

```
<TimePeriod PeriodType="MonthBeginning">
  <Date> <Year>2002</Year> <Month>06</Month><Day>01</Day> </Date>
</TimePeriod>
<Product>
  <ProductIdentifier ProductIdentifierType="GradeCode" Agency="Vendor">
    NWH488</ProductIdentifier>
  </Product>
<ItemDetails ItemType="Tambour">
  <Identifier IdentifierCodeType="Supplier" IdentifierType="Primary">
    AN412F1202 </Identifier>
  <PaperCharacteristics>
    <BasisWeight ProductBasisSizeType="GramsPerSquareMeter"
      SampleType="Average">
      <DetailValue UOM="GramsPerSquareMeter">+48.9</DetailValue>
      <StandardDeviation>0.09</StandardDeviation>
    </BasisWeight>
    <Brightness SampleType="Average">
      <DetailValue UOM="Percent">+72.6</DetailValue>
      <StandardDeviation>1.11</StandardDeviation>
    </Brightness>
  </PaperCharacteristics>
</ItemDetails>
<ItemDetails ItemType="Tambour">
  <Identifier IdentifierCodeType="Supplier" IdentifierType="Primary">
    AN412F1208 </Identifier>
  <PaperCharacteristics>
    <BasisWeight ProductBasisSizeType="GramsPerSquareMeter"
      SampleType="Average">
      <DetailValue UOM="GramsPerSquareMeter">+48.7</DetailValue>
      <StandardDeviation>0.02</StandardDeviation>
    </BasisWeight>
    <Brightness SampleType="Average">
      <DetailValue UOM="Percent">+72.6</DetailValue>
      <StandardDeviation>1.11</StandardDeviation>
    </Brightness>
  </PaperCharacteristics>
</ItemDetails>
</ProductQualityPeriod>
<ProductQualityPeriod>
  <TimePeriod PeriodType="MonthBeginning">
    <Date> <Year>2002</Year> <Month>06</Month><Day>01</Day> </Date>
  </TimePeriod>
  <Product>
    <ProductIdentifier ProductIdentifierType="GradeCode" Agency="Vendor">
      NYE488 </ProductIdentifier>
```

ProductQuality Business Scenarios

	<pre> </Product> <ItemDetails ItemType="Tambour"> <Identifier IdentifierCodeType="Supplier" IdentifierType="Primary"> AN412F2011 </Identifier> <PaperCharacteristics> <BasisWeight ProductBasisSizeType="GramsPerSquareMeter" SampleType="Average"> <DetailValue UOM="GramsPerSquareMeter">+48.4</DetailValue> <StandardDeviation>0.02</StandardDeviation> </BasisWeight> <Brightness SampleType="Average"> <DetailValue UOM="Percent">+60.0</DetailValue> <StandardDeviation>1.11</StandardDeviation> </Brightness> </PaperCharacteristics> </ItemDetails> <ItemDetails ItemType="Tambour"> <Identifier IdentifierCodeType="Supplier" IdentifierType="Primary"> AN412F2012 </Identifier> <PaperCharacteristics> <BasisWeight ProductBasisSizeType="GramsPerSquareMeter" SampleType="Average"> <DetailValue UOM="GramsPerSquareMeter">+48.6</DetailValue> <StandardDeviation>0.03</StandardDeviation> </BasisWeight> <Brightness SampleType="Average"> <DetailValue UOM="Percent">+61.2</DetailValue> <StandardDeviation>1.11</StandardDeviation> </Brightness> </PaperCharacteristics> </ItemDetails> </ProductQualityPeriod> </ProductQuality> </pre>
Step 3	<p>The Publisher may respond to the Supplier with a BusinessAcknowledgement message informing the Supplier that the ProductQuality message was successfully processed.</p>