papiNet

QR – Version 1.0

The papiNet Standard

Documentation

Global Standard for the Paper and Forest Products Supply Chain

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Quick Response

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QR Documentation

QR Overview

QR (Quick Response) is a light weight papiNet e-Document that is designed to be carried by Quick Response Codes. Multiple document types can be defined in the QR e-Document supporting different contents of QR Codes.

The use of a QR Code is a simple and easy way to exchange B2B information without direct computer to computer connection. A QR Code can be sent to a mobile device and can be presented to a receiver by a human being. A typical usage is for identifying a delivery. A QR Code is sent to the mobile phone of a truck driver. Upon arrival to the destination the truck driver can present the QR Code to a web camera that reads the QR Code. The ID of the delivery and other important information are then updated in the receiver's ERP system.

Scope of the QR

The scope of QR is to provide key information in a simple and easy way to parties involved in the supply chain or the business.

The QR can be used to:

- Speed up the registration process by scanning one code containing information that normally is separated into many different bar codes or keyed in manually.
- Provide information to parties that do not support exchange of e-Documents.
- Secure that correct references are provided for parties involved in the supply chain without being part of the business transaction. One example is to provide information to the measuring party about the delivery so correct references are included in their reporting.
- The content of the QR is normally based on key information from other papiNet e-Documents.
- Type codes and identifiers in the QR as well as how to process the QR are defined by an agency supplied in the QR.
- The QR can be sent as a picture to a mobile device, printed on transport documents etc. as well as sent as a papiNet e-Document system to system.
- The URL can be used to provide a link to the full papiNet e-Document. The e-Document can then be downloaded and read when needed instead of sending it in all cases.

QR Types

There is no attribute in QR that is specifying various document types of QR. Instead the elements in the choice on the QR root level specify document types of QR and their specific contents. These element names are prefixed by "QR_" when document types of QR are referred to in other papiNet e-Documents and in the papiNetEnvelope.

QR_DMM

Contains information needed by a measuring party to be able to start measurement of products for a delivery. It is condensed information from information normally found in a papiNet DeliveryMessage.

Business Rules for the QR

General Business Rules

Identifier	Business Rule
QR001	QR Codes must be processed in ascending date time order using DT to ensure the correct processing of replacements.
QR002	QR types are defined by the elements in the choice on the QR root level. These element names are prefixed by "QR_" when document types of QR are referred to in other papiNet e-Documents and in the papiNetEnvelope.
QR003	The agency Ag supplied in the QR defines the type of codes and identifiers and other content details used in the QR as well as how to process the QR.
QR004	The ID of the QR should be unique by agency, issuer and QR type.

Processing the QR

There is no status field in the QR e-Document. QR e-Documents must be processed in ascending issue date order using DT to ensure the correct processing of replacements.

A QR e-Document received with a later issue date having the same agency, ID, issuer and QR type as an earlier processed QR e-Document will completely replace the earlier processed QR e-Document. If the issue date for a new QR e-Document is earlier then an already processed QR e-Document, then the new QR e-Document must not be processed.

Basic rules for defining a QR Code from a papiNet e-document.

Even though the QR Code can contain up to 4296 alphanumeric characters, the content should be kept as small as possible to increase the readability of QR Codes provided on electronic devices, for example on mobile phones. Best practice is to limit the size to 300 - 500 characters.

Only required elements from the source e-document are included in the QR version.

The content of the QR Code is in XML-style using tags, but all declarations

found in a standard XML document are skipped. The application reading the QR Code has to know how to interpret and process the content of the QR Code. It should all be defined by the agency found in the root attribute of the QR Code. Comments and other unnecessary characters should also be removed.

An example of a QR Code

papiNet e-Document	QR Code content
<?xml version="1.0" encoding="UTF-8"?> <QR Ag="SD" xsi:schemaLocation="http://www.papinet.org/QR/v1r00 QR_V1R00.xsd" xmlns="http://www.papinet.org/QR/v1r00" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <ID>DM2013-10-21-001</ID> <DT>2013-10-21T09:30:47+02:00</DT> <Iss>12345</Iss> <DMM> <Buy>22345</Buy> ³²³⁴⁵ <Origin>123</Origin> <Dest>223</Dest> <MIN>MIN1234</MIN> <ON>ON2234</ON> <URL>www.sd.no</URL> <L> <Prod>1020</Prod> <Qty UM="m3">45.5</Qty> </L> </DMM> </QR>	<QR Ag="SD"> <ID>DM2013-10-21-001</ID> <DT>2013-10-21T09:30:47+02:00</DT> <Iss>12345</Iss> <DMM> <Buy>22345</Buy> ³²³⁴⁵ <Origin>123</Origin> <Dest>223</Dest> <MIN>MIN1234</MIN> <ON>ON2234</ON> <URL>www.sd.no</URL> <L> <Prod>1020</Prod> <Qty UM="m3">45.5</Qty> </L> </DMM> </QR>

Understanding the Diagrams and Content

This section provides a graphical view of the schema structures, a discussion of the item's children. You can find additional information about papiNet and the standard at www.papiNet.org.

The graphics contain content model indicators, cardinality indicators, and data type information.

Associated with each graphic are the definitions for the parent item and any associated child items. All attributes are listed first, followed by the elements.

The following information should help you interpret and understand this standard. Please note the following:

- Content Model and Cardinality operate together to determine if the

element or attribute are required in the instance document.
- The same attribute can never appear multiple times in the same element so, you will never see a multiple cardinality indicator.

Content model indicators:

There are three possible types of content: “sequence”, “choice”, and “all”. The papiNet standard currently does not use the “all” construct.

- (sequence)
  The sequence of the items to the right of the graphic (or below the text) is required.
- (choice)
  A choice of the items to the right of the graphic (or below the text) is permitted.
- (all)
  All the items to the right of the graphic are required.

Cardinality indicators:

- Dotted line around element or attribute.
  A single instance of the item can optionally exist.
- Dotted line around item with range indicated below.
  Multiple instances of the item can optionally exist.
- Solid line around item.
  A single instance of the item must exist.
- Solid line around item with range indicated below
  At least one instance must exist; multiple instances can optionally exist.

Datatype indication:

When a data type is assigned to an element (either a simple type or complex type the name of the data type is presented beneath the item name in the graphic.

- In some cases additional information about the data type is presented (the default value).

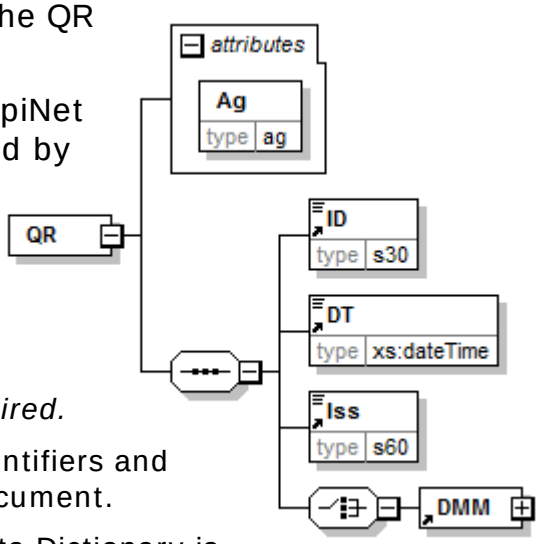
Elements can either have content that is textual/numeric in nature or content that is made up of additional elements and/or attributes.

- When the content is textual/numeric in nature “three straight horizontal lines” will appear in the upper left-hand corner of the graphic. Pay attention to these elements because they are where you will be entering your information.
- When the content is made up of additional elements and/or attributes a “gray-box” will appear on the right-hand side of the graphic.
- If the graphic shows both the horizontal lines and the gray-box then, in the papiNet standard, the content below the element are attributes.

QR Root Element

QR

The QR element is the root element for the QR e-Document.



QR (Quick Response) is a light weight papiNet e-Document that is designed to be carried by Quick Response Codes. Multiple document types can be defined in the QR e-Document supporting different contents of QR Codes.

Ag [attribute]

Ag is mandatory. A single instance is required.

The agency defining type of codes and identifiers and other content details used in the QR e-Document.

The corresponding item in the papiNet Data Dictionary is the Agency.

Refer to Ag definition for any enumerations.

(sequence)

The sequence of items below is mandatory. A single instance is required.

ID

ID is mandatory. A single instance is required.

The unique identifier for the QR e-Document.

When QR is created as a short form of a papiNet e-Document, then the corresponding item in the papiNet Data Dictionary is the identifier for the papiNet e-Document. For example, when the QR content is specified by element DMM, then the corresponding item in the papiNet Data Dictionary is the DeliveryMessageNumber.

DT

DT is mandatory. A single instance is required.

The Date and time when the QR e-document was issued.

When QR is created as a short form of a papiNet e-Document, then the corresponding item in the papiNet Data Dictionary is the issue date for the papiNet e-Document. For example, when the QR content is specified by element DMM, then the corresponding item in the papiNet Data Dictionary is the DeliveryMessageDate.

Iss

Iss is mandatory. A single instance is required.

The party identifier for the issuer of the QR e-Document.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the SenderParty.

(choice)

[choice] is mandatory. A single instance is required.

DMM

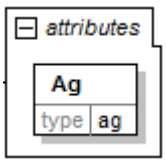
DMM is mandatory. A single instance is required.

Contains information needed by a measuring party to be able to start measurement of products for a delivery. It is condensed information from information normally found in a papiNet DeliveryMessage.

QR Primary Elements

Ag [attribute]

The agency defining type of codes and identifiers and other content details used in the QR e-Document.



The corresponding item in the papiNet Data Dictionary is the attribute Agency.

This item is restricted to the following list.

SD

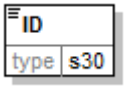
Agency maintaining codes for the Norwegian wood supply segment (www.skogdata.no).

SDC

Agency maintaining codes for the Swedish wood supply segment (www.sdc.se).

ID

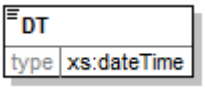
The unique identifier for the QR e-Document.



When QR is created as a short form of a papiNet e-Document, then the corresponding item in the papiNet Data Dictionary is the identifier for the papiNet e-Document. For example, when the QR content is specified by element DMM, then the corresponding item in the papiNet Data Dictionary is the DeliveryMessageNumber.

DT

The Date and time when the QR e-document was issued.



When QR is created as a short form of a papiNet e-Document, then the corresponding item in the papiNet Data Dictionary is the issue date for the papiNet e-Document. For example, when the QR content is specified by element DMM, then the corresponding item in the papiNet Data Dictionary is the DeliveryMessageDate.

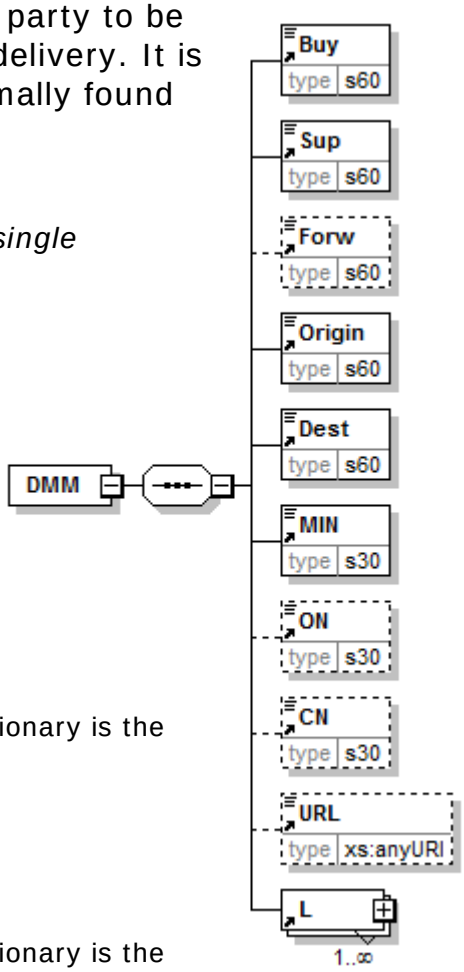
Iss

The party identifier for the issuer of the QR e-Document.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the SenderParty.

QR Type DMM

Contains information needed by a measuring party to be able to start measurement of products for a delivery. It is condensed information from information normally found in a papiNet DeliveryMessage.



(sequence)

The sequence of items below is mandatory. A single instance is required.

Buy

Buy is mandatory. A single instance is required.

The party identifier for the buyer.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the BuyerParty.

Sup

Sup is mandatory. A single instance is required.

The party identifier for the supplier.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the SupplierParty.

Forw

Forw is optional. A single instance might exist.

The party identifier for the forwarder.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the ForwarderParty.

Origin

Origin is mandatory. A single instance is required.

The party identifier for the origin of a delivery.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the LocationParty in the DeliveryOrigin.

Dest

Dest is mandatory. A single instance is required.

The party identifier for the destination of a delivery.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the LocationParty in the DeliveryDestination.

MIN

MIN is mandatory. A single instance is required.

The measuring instruction number.

The corresponding item in the papiNet Data Dictionary is the MeasuringInstructionNumber.

ON

ON is optional. A single instance might exist.

The order number.

The corresponding item in the papiNet Data Dictionary is the OrderConfirmationNumber. It can also be referred to as a reference of type OrderNumber.

CN

CN is optional. A single instance might exist.

The contract number.

The corresponding item in the papiNet Data Dictionary is the ContractNumber.

URL

URL is optional. A single instance might exist.

Universal Resource Locator. While typically a web address you could use this field to hold an email address

The corresponding item in the papiNet Data Dictionary is the URL.

L

L is mandatory. One instance is required, multiple instances might exist.

A group element that specifies product and quantity.

When QR is created as a short form of a papiNet e-Document, then the corresponding item in the papiNet Data Dictionary is the line item for the papiNet e-Document. For example, when the QR content is specified by element DMM, then the corresponding item in the papiNet Data Dictionary is the DeliveryMessageLineItem.

QR DMM Scenario Listing

Scenario A	A QR Code is used to provide key information to a measuring party about a delivery so that correct references are included in their reporting of the measurement of products on the truck load.
Scenario B	A QR e-Document is sent from a mill gate reception system to the ERP system of a measuring party.

Scenario A

E-document	QR
Type	QR_DMM
Scenario	A QR Code is used to provide key information to a measuring party about a delivery so that correct references are included in their reporting of the measurement of the products on the truck load.
Outcome	Key information is recorded about the delivery so that the measuring party can start measurement of the delivered products

Initiator	Transport company
Receiver	Measuring party
Precondi-tions	After loading of the truck transport the delivery is recorded in the ERP system of transport company.
Trigger	The delivery is recorded in the ERP system of transport company.
Step 1.	The transport system sends an MMS with a picture of the QR Code of type DMM to the mobile phone of the truck driver. Content of the QR Code  <QR Ag="SD"> <ID>DM2013-10-21-001</ID> <DT>2013-10-21T09:30:47+02:00</DT> <Iss>12345</Iss> <DMM> <Buy>22345</Buy> ³²³⁴⁵ <Origin>123</Origin> <Dest>223</Dest> <MIN>MIN1234</MIN> <ON>ON2234</ON> <URL>www.sd.no</URL> <L> <Prod>1020</Prod> <Qty UM="m3">45.5</Qty> </L> </DMM> </QR>
Step 2.	The truck arrives to the destination. The truck driver displays the QR Code on his mobile phone and shows it to a QR reader at the gate of the destination. The QR Code is read by the QR reader and transmitted to the reception system at the gate.
Result	The information in the QR Code is recorded in the ERP system of the measuring party. The measuring party has now enough information to start measurement of the delivered products.

Scenario B

E-document	QR
Type	QR_DMM
Scenario	A QR e-Document is sent from a mill gate reception system to the ERP system of a measuring party.

Outcome	Information in the QR e-Document is stored in the ERP system of the measuring party
Initiator	Mill gate reception system
Receiver	Measuring party ERP system
Precondi-tions	A QR Code has been displayed to and read by the QR reader attached to the mill gate reception system
Trigger	The mill gate reception system has received a QR Code.

Step 1.	The mill gate reception system sends a QR e-Document to the ERP system of the measuring party.
	
	Content of the QR e-Document
	
	`<?xml version="1.0" encoding="UTF-8"?>`
	`<QR Ag="SD" xsi:schemaLocation="http://www.papinet.org/QR/v1r00 QR_V1R00.xsd"`
	`xmlns="http://www.papinet.org/QR/v1r00"`
	`xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">`
	`<ID>DM2013-10-21-001</ID>`
	`<DT>2013-10-21T09:30:47+02:00</DT>`
	`<Iss>12345</Iss>`
	`<DMM>`
	`<Buy>22345</Buy>`
	`<Sup>32345</Sup>`
	`<Origin>123</Origin>`
	`<Dest>223</Dest>`
	`<MIN>MIN1234</MIN>`
	`<ON>ON2234</ON>`
	`<URL>www.sd.no</URL>`
	`<L>`
	`<Prod>1020</Prod>`
	`<Qty UM="m3">45.5</Qty>`
	`</L>`
	`</DMM>`
	`</QR>`

Step 2.	The ERP system of the measuring party receives the QR e-Document.
Result	Information in the QR e-Document is stored in the ERP system of the measuring party and can be processed.

QR Supporting Elements

Buy

The party identifier for the buyer.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the BuyerParty.

CN

The contract number.

The corresponding item in the papiNet Data Dictionary is the ContractNumber.

Dest

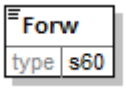
The party identifier for the destination of a delivery.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the LocationParty in the DeliveryDestination.

Forw

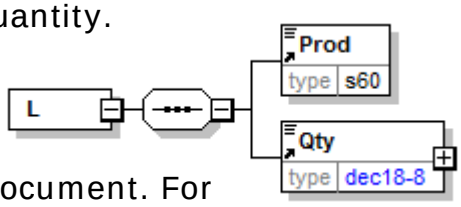
The party identifier for the forwarder.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the ForwarderParty.



L

A group element that specifies product and quantity.



When QR is created as a short form of a papiNet e-Document, then the corresponding item in the papiNet Data Dictionary is the line item for the papiNet e-Document. For example, when the QR content is specified by element DMM, then the corresponding item in the papiNet Data Dictionary is the DeliveryMessageLineItem.

(sequence)

The sequence of items below is mandatory. A single instance is required.

Prod

Prod is mandatory. A single instance is required.

The product identifier for the product.

The corresponding item in the papiNet Data Dictionary is the ProductIdentifier in the Product construct.

Qty

Qty is mandatory. A single instance is required.

Contains a quantity value .

The corresponding item in the papiNet Data Dictionary is the Value in the Quantity construct.

MIN

The measuring instruction number.

The corresponding item in the papiNet Data Dictionary is the MeasuringInstructionNumber.

ON

The order number.

The corresponding item in the papiNet Data Dictionary is the OrderConfirmationNumber. It can also be referred to as a reference of type OrderNumber.

Origin

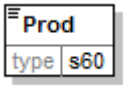
The party identifier for the origin of a delivery.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the LocationParty in the DeliveryOrigin.

Prod

The product identifier for the product .

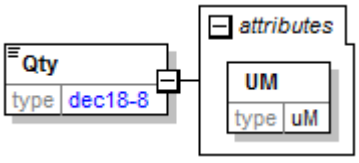
The corresponding item in the papiNet Data Dictionary is the ProductIdentifier in the Product construct.



Qty

Contains a quantity value .

The corresponding item in the papiNet Data Dictionary is the Value in the Quantity construct.



UM [attribute]

UM is mandatory. A single instance is required.

Defines the unit of measure for the value. SI units are used.

The corresponding item in the papiNet Data Dictionary is the attribute UOM.

Refer to UM definition for any enumerations.

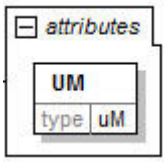
Sup

The party identifier for the supplier.

The corresponding item in the papiNet Data Dictionary is the PartyIdentifier of the SupplierParty.

UM [attribute]

Defines the unit of measure for the value. SI units are used.



The corresponding item in the papiNet Data Dictionary is the attribute UOM.

This item is restricted to the following list.

kg

The measurement value is expressed in kilograms.

m

The measurement value is expressed in meters.

m3

The measurement value is expressed in cubic meter.

MWh

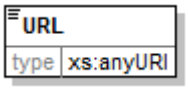
The measurement value is expressed in mega watt hours.

t

The measurement value is expressed in metric tons (in other words, in 1000-kilogram units).

URL

Universal Resource Locator. While typically a web address you could use this field to hold an email address



The corresponding item in the papiNet Data Dictionary is the URL.