

Business Message Standard (BMS)

for

Replenishment Request

**BRG: Plan
IRT: Upstream Standards**

BMS Release: 2.1

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Date : 13.10.2005



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CR Submitter(s):	Regenald Kramer
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BRAD Date:	01.11.2004
BRAD Version:	0.1.0

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BRAD Date:	30/03/2004
BRAD Version:	1.0.0

Document Summary

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Document Change History

Note: During development include revisions in history. Upon Approval, eliminate revisions and include only delta from previous version.

Date of Change	Version	Changed By	Reason for Change	Summary of Change	Model Build #
31.12.2004	1.0.0	Eric Kauz	Initial Version in BMS/BSD template	Migration of BRD to standard BMS/BSD format	N/A
12.01.2005	1.1.0	Coen Janssen	UIM project	Draft version	N/A
20.01.2005	1.1.1	Coen Janssen	review		N/A
14.02.2005	1.1.2	Coen Janssen	Motion to public review	Some corrections	
07.04.2005	1.2.0	Coen Janssen	Plan BRG February 21 – March 1 2005	Typo in paragraph 6.1.2. Functionality changes, see chapter 12.	
20.05.2005	1.2.1	Coen Janssen	XML development	Chapter 7 still contained a class diagram with anticipated changes to the inventory status line, this has been removed.	
30.05.2005	1.2.2	Coen Janssen	Peer review comments	Added example to chapter 8. Fixed errors in GDD report. Corrected Use Case description. Corrected Context. Updated footer text.	
09.06.2005	1.2.3	Coen Janssen	Updated GDD official names		
14.06.2005	1.2.4	Coen Janssen	XML development	Moved GoodsRequirementsLineItem to Common Library.	
21.07.2005	1.2.5	Coen Janssen	Technical Design Public Review	Several cosmetic changes. Functional change (see paragraph 1.10)	
13.10.2005	1.2.6	John Ryu	Build Master Update	Change depicted in section 1.10	BSD P4CL: 7574 MDL P4CL: 7570
25.04.2007	1.2.7	Giovanni Biffi	Editorial Changes	Minor Editorial Changes to the Document	N/A

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1 Business Solution

1.1 Business Domain View

1.1.1 Problem Statement / Business Need

(States the business need, establishing the context for the business transactions and information requirements.)

The replenishment process in broader sense addresses the business practice to exchange data between a buying party (e.g. buyer) and a supplying party (e.g. seller/supplier) related to the future demand of finished or semi-finished products, ingredients, packaging and raw materials. In fact a replenishment request and a replenishment proposal.

Between retailer and manufacturer (the downstream supply chain) the data is basically based on future demand based on finished products and time series but it can also be restricted to actual sales date for a certain period of time. Feed-back from the manufacturer on his availability to deliver is required, where available inventories (of both sides) are taken in account.

Between manufacturer and material supplier (the upstream supply chain) the data is basically based on material requirements for production and the timing for it. And also the feedback from the material supplier on his availability to deliver and the schedule for delivery. Inventories (on both sides) are taken in account for the actual delivery schedule. Based on the delivery schedule (replenishment proposal), a transport and shipping planning can be derived.

1.1.2 Objective

To supply the detail design of the (specific) business transaction needed to meet the requirements of the referenced BRAD(s).

(Above is standards text for the objective.)

1.1.3 Audience

Anyone involved in the replenishment process with another party in the (extended) supply chain process. These parties basically are retailers, manufactures and suppliers of ingredients, packaging and raw materials. But can also be parties in between like wholesalers or logistic service providers managing warehouses.

1.1.4 Artefacts

(List of the artefacts that are used as either an input to the process or an output from the process, also indicating the different states that the artefact takes during the process.)

Artefact name	State	Artefact / State description

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1.1.5 References

	Reference Name	Description
[Ref1]	BMS Common Library	The documented design of components that are used in multiple messages.
[Ref2]	BRAD Upstream Standards - Demand & Supply Signals 0.1.0	
[Ref3]	Replenishment – Business Requirement Document 1.0.0	

1.1.6 Acknowledgements

(List of the individuals—and their companies—who participated in the creation, review and approval of this BMS.)

1.1.6.1 IRT Members

Function	Name	Company / organisation
IRT Chair	Fred Kempkes	Unilever
IRT Participant	Kevin Zeng	Procter & Gamble
IRT Participant	Stephen Bell	CPG Market
IRT Participant	Roland Dachs, Olivier Grienenberger, Don Reed	Crown Cork
IRT Participant	Arthur Doldersum	SCA
IRT Participant	James Kimber	General Mills, Inc.
IRT Participant	Kristen Halwachs	UCCnet
IRT Participant	Nicola Comiotto, Menno Smit	Nestlé
IRT Participant	Pawel Solowinski	Kappa Packaging
IRT Participant	Peter Broend, Johannes Lundgren	Novozymes
IRT Participant	Paul Moodey	Johnson & Johnson
IRT Participant	Wouter Crul	Nspyre
IRT Participant	Thierry Baillif, Gabriel Galeazzi	Firmenich
IRT Participant	Jan Peter Klijn	Royal Sens
IRT Participant	Yasushi Kiyama	Ajinomoto Co.
IRT Participant	Georges Socquet	Givaudan

1.1.6.2 BRG Members

Function	Name	Company / organisation
BRG Manager	Tom Heist	GS1 Head Office
BRG Chair	Fred Kempkes	Unilever Bestfoods Europe
BRG Member	Mutsuo Fukada	GS1 Japan
BRG Member	Roman Strand	GS Germany
BRG Member	Ricardo Toshio Yugue	GS1 Brazil
BRG Member	David Ferrell	Wal-Mart Stores

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BRG Member	Victoria M. Kendzierski	Thomson
BRG Member	Murray Pratt	Kraft Foods
BRG Member	Larry Roth	Kimberly-Clark
BRG Member	Robert Rzepka	Worldwide Retail Exchange
BRG Member	Thomas Stenftenagel	Procter & Gamble

1.1.6.3 ITRG Members

Function	Name	Company / organisation
ITRG Chair		
ITRG Member	Stef Spaan	GS1 Netherlands

1.1.6.4 Design Team Members

Function	Name	Organisation
Modeller	Coen Janssen	GS1 Netherlands
XML Technical Designer		
EANCOM Technical Designer	Marco Schuyt	GS1 Netherlands
Peer Reviewer	Eric Kauz	GS1 Head Office

1.2 Business Context

(Note: The context of the business)

Context Category	Value(s)
Industry	All, Consumer Packaged Goods All
Geopolitical	All, Global, Europe, Unites States, Japan, UK All
Product	All, Direct Materials, Food, Non-Food, Hard lines, Apparel All
Process	All, Order (Direct To Consumer), Order (Direct Store Delivery), Order, Pay (Self Billing), Deliver (Direct Store Delivery) Plan
Official Constraints	None, Value Added Tax, Sales Tax None
Roles	Buyer, Seller, Ship From, Ship To, Payer Payee, Data Source, Data Recipient Buyer, Seller
System Capabilities	All, EANCOM, XML, AIDC, EPC-network EANCOM, XML

If no value use, the default of "All" except for Official Constraints where default is "None".

(Process, Geopolitical, Industry, User Role (Retailer, Supplier, etc.))

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If context cannot be specified, select from the context classification code list in the GDD.).

1.3 Additional Technical Requirements Analysis

1.3.1 Technical Requirements (optional)

(User Interface, Security, Performance, Quality, etc.)

Number	Statement	Rationale
1.	A bulk data message format of the replenishment request and the replenishment proposal is necessary.	

1.4 Business Transaction View

1.4.1 Business Transaction REPLENISHMENT FORECAST

1.4.2 Business Transaction Use Case Diagram

Detailed Use Case for generic use of the message. Focuses on commands associated with business solution.

Note: Each Use Case shall be given a consecutive paragraph number (e.g., 2.4.1) and heading.)

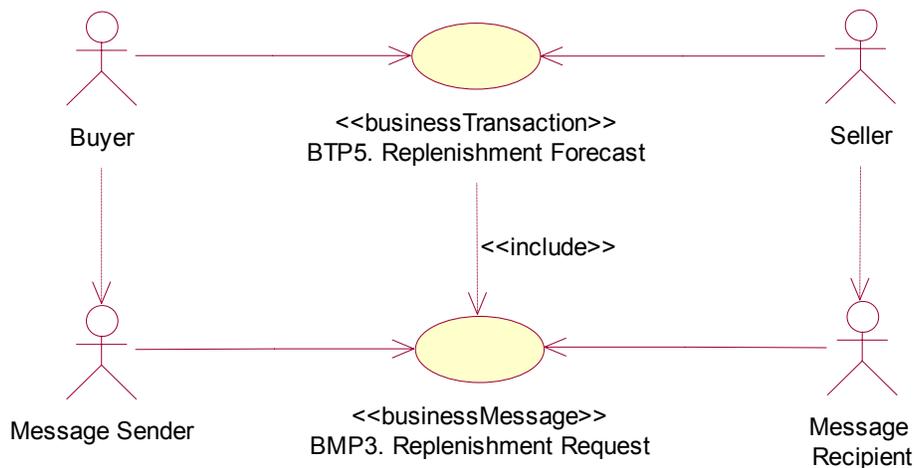


Figure 1 – Use Case Diagram: Business Transaction

1.4.3 Use Case Description

Use Case ID	BTP5
Use Case Name	Replenishment Forecast
Use Case Description	The Replenishment Forecast is sent by the manufacturer to the supplier and communicates at prescribed intervals the forecast for material consumption for given

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	location(s) and/or material(s) for a specific interval as well as the inventory levels of items in these locations to enable production and replenishment planning through the supplier. The forecast figures communicated represent the gross requirements of the manufacturer.									
Actors (Goal)										
Performance Goals										
Preconditions	Gross Requirements: CALCULATED Inventory Status: CALCULATED									
Post conditions	Gross Requirements: COMMUNICATED Inventory Status: COMMUNICATED									
Scenario	<p>Begins when: Buyer has calculated his replenishment forecast.</p> <p>Continues with:</p> <table border="1"> <thead> <tr> <th>Step #</th> <th>Actor</th> <th>Activity Step</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Buyer</td> <td>Sends Replenishment Request message to the Seller.</td> </tr> <tr> <td>2.</td> <td>Seller</td> <td>Receives Replenishment Request message</td> </tr> </tbody> </table> <p>Ends when: seller receives Replenishment Request message</p>	Step #	Actor	Activity Step	1.	Buyer	Sends Replenishment Request message to the Seller.	2.	Seller	Receives Replenishment Request message
Step #	Actor	Activity Step								
1.	Buyer	Sends Replenishment Request message to the Seller.								
2.	Seller	Receives Replenishment Request message								
Alternative Scenario	<p><i>(any alternatives to the above scenario)</i></p> <table border="1"> <thead> <tr> <th>Step #</th> <th>Actor</th> <th>Activity Step</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td></td> <td></td> </tr> <tr> <td>2.</td> <td></td> <td></td> </tr> </tbody> </table>	Step #	Actor	Activity Step	1.			2.		
Step #	Actor	Activity Step								
1.										
2.										
Guidelines	<table border="1"> <tbody> <tr> <td>1.</td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	1.								
1.										

1.4.4 Business Transaction Activity Diagram(s)

(Note: Activity diagrams are optional. The business process modeller shall determine the use and number of activity diagrams included in the BMS. Each activity diagram shall be given a consecutive paragraph number (e.g., 2.4.1) and heading.)

1.4.5 Business Transaction Sequence Diagram(s) (optional)

(Note: Sequence diagrams are optional. The business process modeller shall determine the use and number of sequence diagrams included. Each sequence diagram shall be given a consecutive paragraph number (e.g., 2.5.1) and heading.)

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1.5 Information Model (including GDD Report)

1.5.1 Data Description

Class (ABIE)	Attribute (BBIE)	Association (ASBIE)	Secondary Class	Related Requirement
ReplenishmentRequest				
	replenishmentRequestDocumentType			[ref3]
	structureType			[ref2] {7.7.1-4}
		<<is a>>	Document	[ref2] {7.7.1-2 +3}
		ReplenishmentRequestIdentification	EntityIdentification	[ref2] {7.7.1-1}
		Buyer	PartyIdentification	[ref2] {7.7.1-4}, [ref3]
		Seller	PartyIdentification	[ref2] {7.7.1-4}, [ref3]
		materialRequirementsPlanner	Contact	[ref2] {7.7.1-4}
			ReplenishmentRequestItemLocationInformation	
ReplenishmentRequestItemLocationInformation				
			TradeItemIdentification	[ref2] {7.7.1-4}, [ref3]
		shipTo	PartyIdentification	[ref2] {7.7.1-4}
		shipFrom	PartyIdentification	[ref2] {7.7.1-4}
		inventoryLocation	PartyIdentification	[ref2] {7.7.1-4}
			ReplenishmentRequestRequirementLineItem	
			ReplenishmentRequestInventoryStatusLineItem	
ReplenishmentRequestRequirementsLineItem				
		<<is a>>	GoodsRequirementsLineItem	[ref2] {7.7.1-4}
			ReplenishmentCondition	
ReplenishmentRequestInventoryStatusLineItem				
		<<is a>>	InventoryStatusLineItem	[ref2] {7.7.1-4}

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Class (ABIE)	Attribute (BBIE)	Association (ASBIE)	Secondary Class	Related Requirement
Replenishment-Condition				
	replenishmentRequestStatus			[ref3]
	replenishmentRequestType			[ref3]

1.5.2 GDD Report

(Output from GDD should be pasted in this section.)

Class (ABIE)	Attribute (BBIE)	Association (ASBIE)	Secondary Class	Official Dictionary Entry Name	Definition	Multiplicity
ReplenishmentRequest				Replenishment Request. Details	Contains the material requirements and inventory status information from the buyer to the seller for given trade items and locations for specific time periods.	
	replenishmentRequestDocumentType			Replenishment Request. Replenishment Request Document Type. Replenishment Request Document Type List_ Code	Contains the type of material requirements, gross or net.	1..1
	structureType			Replenishment Request. Structure Type. Structure Type List_ Code	Contains the type of grouping and sequence of the business document.	1..1
		<<is a>>	Document	Replenishment Request. Generalization. Document	Definition not required	1..1
		replenishmentRequestIdentification	EntityIdentification	Replenishment Request. Replenishment Request Identification. Entity Identification	Contains the unique identifier of the business document.	1..1
		buyer	PartyIdentification	Replenishment Request. Buyer. Party Identification	Contains the identification of the party that is buying the goods.	1..1
		seller	PartyIdentification	Replenishment Request. Seller. Party Identification	Contains the identification of the party that is selling the goods.	1..1
		materialRequirementsPlanner	Contact	Replenishment Request. Material Requirements Planner. Contact	Contains the name or ID of the person or department responsible for the planning	0..1

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Class (ABIE)	Attribute (BBIE)	Association (ASBIE)	Secondary Class	Official Dictionary Entry Name	Definition	Multiplicity
					at the buyer side.	
			ReplenishmentRequestItemLocationInformation	Replenishment Request. Association. Replenishment Request Item Location Information	Definition not required	1..*
ReplenishmentRequestItemLocationInformation				Replenishment Request Item Location Information. Details	Contains the material requirements for given trade items and locations for specific time periods.	
			TradeItemIdentification	Replenishment Request Item Location Information. Association. Trade Item Identification	Contains the identification of the item for which the replenishment request is specified.	1..1
		shipTo	PartyIdentification	Replenishment Request Item Location Information. Ship To. Party Identification	Contains the identification of the location whereto the required goods will be delivered.	1..1
		shipFrom	PartyIdentification	Replenishment Request Item Location Information. Ship From. Party Identification	Contains the identification of the location wherefrom the required goods will be delivered.	0..1
		inventoryLocation	PartyIdentification	Replenishment Request Item Location Information. Inventory Location. Party Identification	Identification of the physical place at the receiving side where the items are to be stored.	1..1
			ReplenishmentRequestRequirementsLineItem	Replenishment Request Item Location Information. Association. Replenishment Request Requirements Line Item	Definition not required	1..*
			ReplenishmentRequestInventoryStatusLineItem	Replenishment Request Item Location Information. Association. Replenishment Request Inventory Status Line Item	Definition not required	1..*
ReplenishmentRequestRequirementsLineItem				Replenishment Request Requirements Line Item. Details	Contains the required quantities per time bucket.	
		<<is a>>	GoodsRequirementsLineItem	Replenishment Request Requirements Line Item. Generalization. Goods	Definition not required	

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Class (ABIE)	Attribute (BBIE)	Association (ASBIE)	Secondary Class	Official Dictionary Entry Name	Definition	Multi- plicity
				Requirements Line Item		
			Replenishment-Condition	Replenishment Request Requirements Line Item. Association. Replenishment Condition	Definition not required	0..1
ReplenishmentRequestInventoryStatusLineItem				Replenishment Request Inventory Status Line Item. Details	Contains the inventory quantities.	
		<<is a>>	InventoryStatus-LineItem	Replenishment Request Inventory Status Line Item. Generalization. Inventory Status Line Item	Definition not required	
Replenishment-Condition				Replenishment Condition. Details	Specification of type of request per period, firm committed (committed) by the buyer or just a proposal (planned).	
	replenishmentRequestStatus			Replenishment Condition. Replenishment Request Status. Replenishment Request Status List_ Code	Contains the status of the commitment: committed or planned.	1..1
	replenishmentRequestType			Replenishment Condition. Replenishment Request Type. String_ Text	Not available	1..1

1.5.3 Class Diagrams

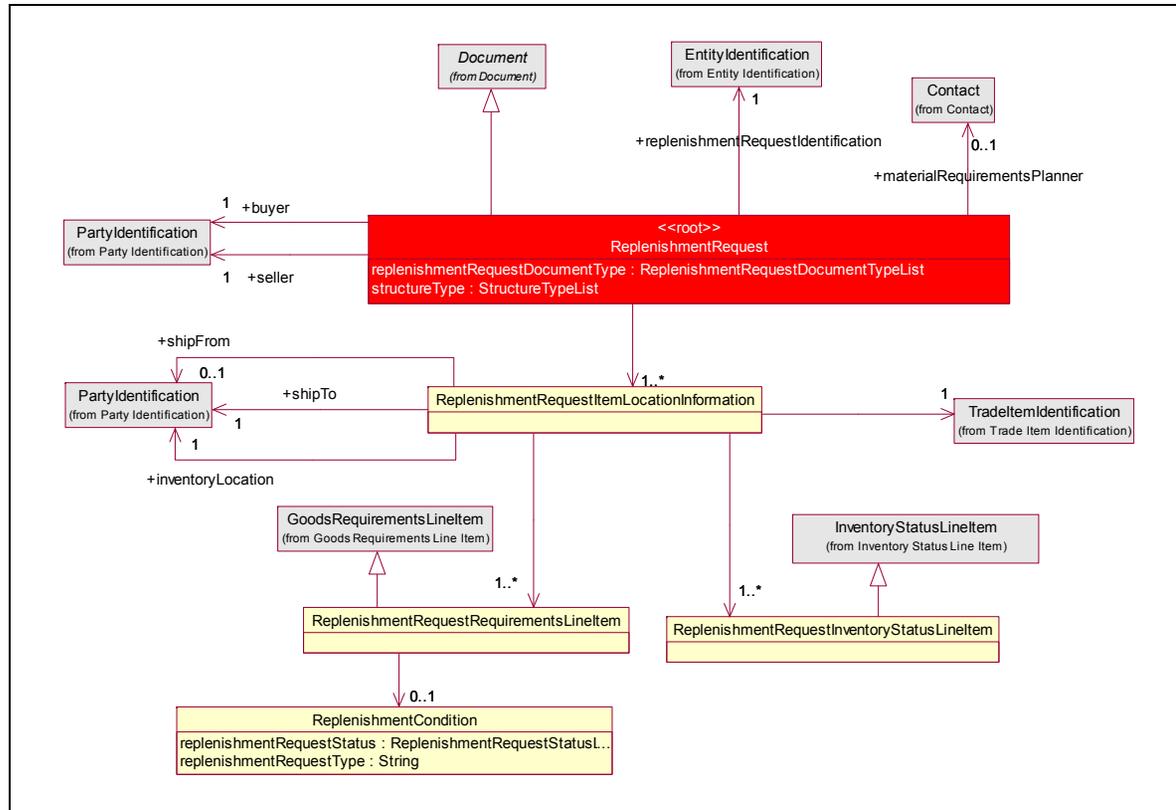


Figure 2 – Class Diagram: Business Document

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1.5.4 Code Lists

(Output from GDD should be pasted in this section.)

Code List Name	Code List Description
ReplenishmentRequestDocumentTypeList	not available
Code Name	Code Description
ACTUAL_SALES_AND_INVENTORY	not available
FORECAST_AND_INVENTORY	not available
GROSS_REQUIREMENTS_AND_INVENTORY	not available

Code List Name	Code List Description
ReplenishmentRequestStatusList	not available
Code Name	Code Description
COMMITTED	not available
PLANNED	not available

1.6 Business Document Example

The following is an example of a gross requirements and inventory message. The message is sent out on February 9th at 11 AM. The message is identified with the unique identifier 2005001. The content owner is the sending party, in this case the manufacturer (Buyer 8712345678913).

The gross requirements are sent by the manufacturer (Buyer 8712345678913) to the material supplier (Seller 8812345678903).

For informational purposes the manufacturer includes the name of his material requirements planner (Mr. Kramer).

The gross requirements are for two delivery sites, X (Ship To 8712345670009) and Y (Ship To 8712345678951).

The gross requirements are for one item, A (GTIN 08712345678906).

For item A and delivery site X the gross requirements are:

- Week February 11-17: 1000 units, of which 500 units have already been received.
- Week February 18-25: 200 units.

The inventory for item A on site X is 100 units (available for sale) and 15 (expired).

The contract to be used for the requirements in week February 11-17 (2004000012) was issued by the business unit of the material supplier (content owner 8712345678999).

Within the contract line 23 refers to this item.

For the requirements in week February 18-25 no contract has been specified.

For item A and delivery site Y the gross requirements are:

- Week February 11-17: 300 units.
- Week February 18-25: 1200 units.

The inventory for item A on site Y is 50 units (available for sale).

The contract used for the requirements in week February 11-17 (2004000012) is the same as for delivery site X.

For the requirements in week February 18-25 no contract has been specified.

ReplenishmentRequest	
- creationDateTime	2005-02-09T11.00.00
- documentStatus	ORIGINAL
- replenishmentRequestType	GROSS_REQUIREMENTS_AND_INVENTORY
- structureType	ITEM_BY_LOCATION
EntityIdentification (+replenishmentRequestIdentification)	
- uniqueCreatorIdentification	2005001
PartyIdentification (+contentOwner)	
- gLN	8712345678913
PartyIdentification (+seller)	
- gLN	8812345678903
PartyIdentification (+buyer)	
- gLN	8712345678913
Contact (+materialRequirementsPlanner)	

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MultiDescription (+personOrDepartmentName)	
- description (language, text)	EN, Kramer
ReplenishmentRequestItemLocationInformation *1	
PartyIdentification (+shipTo)	
- gLN	8712345670009
TradeItemIdentification	
- gTIN	08712345678906
ReplenishmentRequestRequirementsLineItem *1.1	
- lineItemNumber	1
- timeBucketSize	WEEK
- requiredQuantity (value, unitOfMeasure)	1000
TimeOrDateTimePeriod (+requirementsPeriod)	
TimePeriod	
- startDate	2005-02-11
- endDate	2005-02-17
DocumentOrDocumentLineReference (+purchaseConditions)	
DocumentLineReference	
- lineItemNumber	23
DocumentReference	
TypedEntityIdentification	
- entityType	PURCHASE_CONDITIONS
EntityIdentification	
- uniqueCreatorIdentification	2004000012
PartyIdentification (+contentOwner)	
- gLN	8712345678999
RequiredQuantitySpecification	
- quantitySpecificationType	CUMULATIVE_QUANTITY_RECEIVED
- specificQuantity (value, unitOfMeasure)	500
ReplenishmentRequestRequirementsLineItem *1.2	
- lineItemNumber	2
- timeBucketSize	WEEK
- requiredQuantity (value, unitOfMeasure)	1200
TimeOrDateTimePeriod (+requirementsPeriod)	
TimePeriod	
- startDate	2005-02-18
- endDate	2005-02-25
ReplenishmentRequestInventoryStatusLineItem *1.3	
- lineItemNumber	3

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InventoryStatusQuantitySpecification	
- inventoryStatusType	AVAILABLE_FOR_SALE
- quantityOfUnits (value, unitOfMeasure)	100
InventoryStatusQuantitySpecification	
- inventoryStatusType	EXPIRED
- quantityOfUnits (value, unitOfMeasure)	10
GoodsRequirementsItemLocationInformation *2	
PartyIdentification (+shipTo)	
- gLN	8712345678951
TradeItemIdentification	
- gTIN	08712345678906
ReplenishmentRequestRequirementsLineItem *2.1	
- lineItemNumber	4
- timeBucketSize	WEEK
- requiredQuantity (value, unitOfMeasure)	300
TimeOrDateTimePeriod (+requirementsPeriod)	
TimePeriod	
- startDate	2005-02-11
- endDate	2005-02-17
DocumentOrDocumentLineReference (+purchaseConditions)	
DocumentLineReference	
- lineItemNumber	23
DocumentReference	
TypedEntityIdentification	
- entityType	PURCHASE_CONDITIONS
EntityIdentification	
- uniqueCreatorIdentification	2004000012
PartyIdentification (+contentOwner)	
- gLN	8712345678999
ReplenishmentRequestRequirementsLineItem *2.2	
- lineItemNumber	5
- timeBucketSize	WEEK
- requiredQuantity (value, unitOfMeasure)	1200
TimeOrDateTimePeriod (+requirementsPeriod)	
TimePeriod	
- startDate	2005-02-18
- endDate	2005-02-25
ReplenishmentRequestInventoryStatusLineItem *2.1	
- lineItemNumber	6

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InventoryStatusQuantitySpecification	
- inventoryStatusType	AVAILABLE_FOR_SALE
- quantityOfUnits (value, unitOfMeasure)	50

1.7 Implementation Considerations

1.8 Testing

1.8.1 Pass / Fail Criteria

Unit testing criteria for business solution.

Number	Test Criteria	Related Requirement	Design Element	Pass Criteria	Fail Criteria
1	Reflects a specific business requirement from a related BRAD. For example: When goods are ordered, the buyer requires an answer from the suppliers that the order has been received.	BRAD Name.Version. Req #	Message, role, attribute	Result which determines that requirement has been satisfied: For example: Seller is able to create and send an Order Receipt Acknowledgement.	Result which shows that requirement has not been satisfied: For example: Buyer does not receive the Order Receipt Acknowledgement.

1.8.2 Test Data

Attribute	Value
Attribute Name. For example "orderQuantity"	Valid value associated with the attribute. For example "5".

1.9 Appendices

1.10 Summary of Changes

(Details changes to BMS for each version by BMS Section)

Change	BMS Version	Associated CR Number
<ul style="list-style-type: none"> Section 7.3 Changed code value MATERIAL_REQUIREMENTS_AND_INVENTORY into 'GROSS_REQUIREMENTS_AND_INVENTORY'	1.2.0	Not applicable

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GoodsRequirementsLineItem (Common Library): Association to DocumentReference (+purchaseConditions) was changed into DocumentOrDocumentLineReference (+purchaseConditions).	1.2.5	
Updated class diagram to be compliant to Modelling Best Practice. Generalized classes are above the child class. Unique ID number (P4CL: 7574) included for Configuration Management	1.2.6	

Technical Solution Design

2 Technical Solution Design

This section provides the specifications for the standards content ITRG approves. It is called the Technical Solution Design (TSD).

The Technical Solution Design contains:

- TSD Zip file Table of Contents
- Business Message Standard Section Technical Level GDD Report
- XSD (XML Schema Documents)
- XML Instance File and HTML Form View (XML and HTML files containing sample data specified in Section 1.6)

In the process of approving the Technical Solution Design, the ITRG will be provided the following artefacts:

- Any relevant Business Requirements Analysis Document (BRAD)
- Any relevant Business Requirements Document (BRD)
- Section 1 of Business Message Standard (Business Solution Design)
- Comment Resolution Template from Technical Public Review
- XML Test Report
- Change Request
- Other informative or reference documents