Business Message Standard (BMS) Replenishment Request

BMS Release: 3.0.0, BRG Name: eCom

Issue 1.0.0, 6-Jan-2012

Document Summary

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Date of CR Submission to GSMP:	CR Submitter(s):	Refer to Change Request (CR) Number(s):
20-Aug-2008	John Ryu, GS1	08-000209
27-Jul-2007	Eric Maree, Accenture	07-000309
05-Nov-2004	GS1	04-000211

Business Requirements Document (BRAD) Reference

BRAD Title:	BRD Date:	BRAD Version
BRAD Upstream Standards – Demand & Supply Signals	01-Nov-2004	0.1.0
Replenishment – Business Requirement Document	30-Mar-2004	1.0.0
BMS eCom Domain Common Library		BMS Release 3.0.0
BMS Shared Common Library		BMS Release 3.0.0

Document Change History

Date of Change	Version	Changed By	Reason for Change	Summary of Change	Model Build #
21-Nov-2011	Issue 1.0.0	Coen Janssen	Public Review	Noted in summary of change section	Not Applicable
28-Nov-2011	Issue 1.0.0	Coen Janssen	XML Development of increment 1.	Noted in summary of change section	Not Applicable
6-Jan-2012	Issue 1.0.0	John Ryu	Publication updates	Noted in summary of change section	Not Applicable

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1. Business Domain View

1.1. Problem Statement / Business Need

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.

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 de-livery. 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.

1.2. Objective

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

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.

1.4. References

Reference Name	Description
BMS eCom Domain Common Library Release 3.0.0	The documented design of components that are used in multiple messages within the eCom Domain.
BMS Shared Common Library Release 3.0.0	The documented design of components that are used in multiple messages within both the eCom Domain and GDSN
BRAD Upstream Standards - Demand & Supply Signals 0.1.0	
Replenishment – Business Requirement Document 1.0.0	

1.5. Acknowledgements

1.5.1. Work Group

Function	Name	Company / organisation
Chair eCom BRG	Edison, Carol	General Mills, Inc.
Chair MR3 sub team	Spaan, Stef	GS1 Netherlands
Member	Backert, Veronique	Dilicom
Member	Blankenstein, Kyra	GS1 Netherlands
Member	Bradley, Ardetha	Georgia Pacific
Member	Burke, Miriam	Procter & Gamble Co.
Member	Chatagnier, Isabelle	GS1 France
Member	Childs, Justin	GS1 Global Office
Member	Chresta, Richard	GS1 Switzerland
Member	Cox, Marc	Philips Electronics N.V.
Member	De Flou, Nele	GS1 Belgium & Luxembourg
Member	Denyer, Troy	GS1 Australia
Member	Dicks, Arne	GS1 Germany
Member	Dodd, Marilyn	3M Company
Member	Duvinger, Karina	GS1 Sweden
Member	Earleywine, Sarah	IDEA (US)
Member	Fedoseev, Sergey	GS1 Russia
Member	Foerderer, Klaus	GS1 Germany
Member	Foxvog, Douglas	DERI, National Univ. of Ireland
Member	Fransen, Wim	EskoArtwork
Member	Gathmann, Stefan	GS1 Ireland
Member	Gilbert, Jean-Christophe	GS1 France
Member	Grangard, Anders	GS1 Global Office
Member	Herrick, Lisa	GS1 Global Office
Member	Hill, Douglas	GS1 Denmark
Member	Hoberg, Peter	Consafe Lodistics
Member	Iwicka, Ewa	GS1 Global Office
Member	Jin Soon, Tan	GS1 Singapore
Member	Joest, Holger	SA2 Worldsync GmbH
Member	Kempkes, Fred	Unilever N.V.
Member	Kidd, Robin	Nestle
Member	Kille, Grant	SA2 Worldsync GmbH
Member	Kozovic, Vladimir	GS1 Serbia
Member	Krid, Anne-Claire	GS1 France

Function	Name	Company / organisation
Member	Lai, Keith	GS1 Australia
Member	Laur, Rita	GS1 Canada
Member	Lazarkova, Galya	GS1 Austria
Member	Lenman, Mia	GS1 Sweden
Member	Lockhead, Sean	GS1 Global Office
Member	Maniero, Ana Paula	GS1 Brasil
Member	Maree, Eric	Accenture Supply Chain Services
Member	Martinko, Michal	Hewlett-Packard
Member	McLeod, Ed	Procter & Gamble Co.
Member	Melcher, Jeff	The Exchange (AAFES)
Member	Montes de Oca, Alejandra	GS1 Mexico
Member	Moritz, Marcus	GS1 Germany
Member	Mugnier, Norbert	Dilicom
Member	Narbaïts-Jauréguy, Corinne	GS1 France
Member	Noyes, Debra	Johnsonville Sausage, Inc
Member	Picoito, Joao	GS1 Portugal
Member	Plaksin, Leon	GS1 Australia
Member	Popper, Bret	Kraft Foods
Member	Post, Valerie	Link Snacks Inc, Jack Links Beef Jerky
Member	Pottier, Natascha	GS1 France
Member	Pujol, Xavier	GS1 Spain
Member	Repetto, Mirko	GS1 Italy
Member	Robba, Steven	SA2 Worldsync GmbH
Member	Rosell, Pere	GS1 Spain
Member	Rosenberg, Steven	GS1 US
Member	Ryu, John	GS1 Global Office
Member	Schmidt, Tom Eric	August Storck KG
Member	Schneider, Christian	GS1 Switzerland
Member	Sedano Acosta, Federico	GS1 Argentina
Member	Sharma, Vishal	General Mills, Inc.
Member	Sharratt, Jon	Target Corporation
Member	Shimazaki, Ayako	GS1 Japan
Member	SION, Emilie	GS1 France
Member	Smith, Matthew	Bunnings Group Limited
Member	Sobrino, Gabriel	GS1 Netherlands
Member	Strand, Roman	GS1 Germany
Member	Takahashi, Akira	Data Applications Co, Ltd

Function	Name	Company / organisation
Member	Tomassi, Gina	PepsiCo, Inc.
Member	Trelle, Ute	SA2 Worldsync GmbH
Member	Voorspuij, Jaco	DHL
Member	Welch, Shan	GS1 UK
Member	Westerkamp, Jan	GS1 Netherlands
Member	Windsperger, Bekki	Best Buy Co., Inc.

1.5.2. Design Team Members

Function	Name	Organisation
Modeller	Eric Kauz / Coen Janssen / Mark van Eeghem	GS1 Global Office
XML Technical Designer	Dipan Anarkat	GS1 Global Office
Peer Reviewer	John Ryu / Eric Kauz	GS1 Global Office

2. Business Context

Context Category	Value(s)
Industry	All
Geopolitical	All
Product	All
Process	Plan
System Capabilities	GS1 System
Official Constraints	None

3. Additional Technical Requirements Analysis

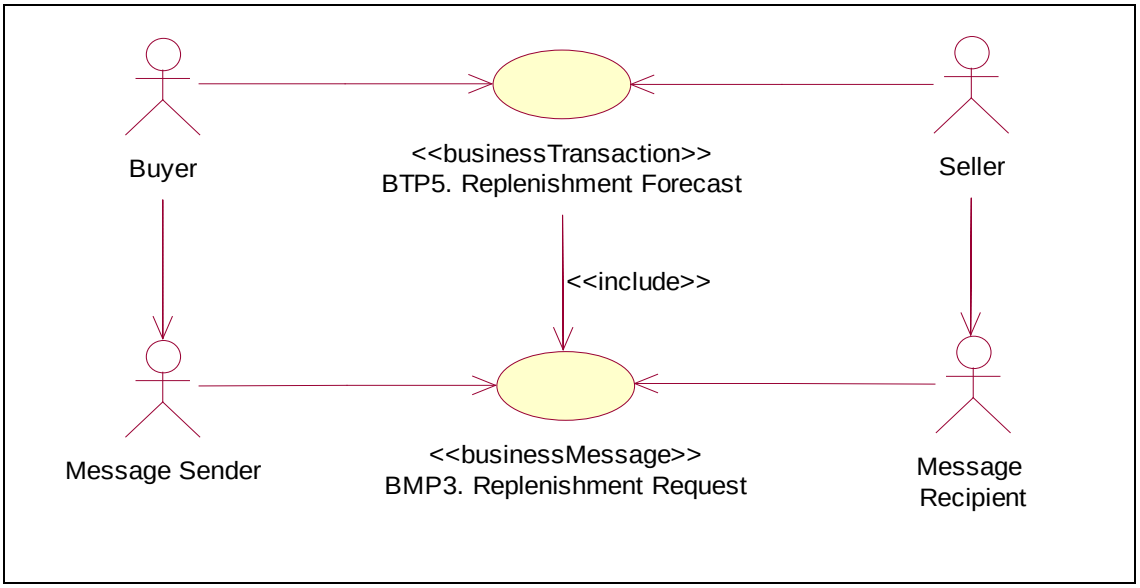
3.1. Technical Requirements

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

4. Business Transaction View

4.1. Business Transaction Use Case Diagram

Figure 4-1 Use Case Diagram: Business Transaction



4.2. 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 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	**Begins when:** Buyer has calculated his replenishment forecast. **Continues with**:

Step #	Actor	Activity Step
1.	Buyer	Sends Replenishment Request message to the Seller.
2.	Seller	Receives Replenishment Request message

<table>
<tr><td></td><td>Ends when: seller receives Replenishment Request message</td></tr>
<tr><td>Alternative Scenario</td><td>(any alternatives to the above scenario)
<table>
<tr><th>Step #</th><th>Actor</th><th>Activity Step</th></tr>
<tr><td>1.</td><td></td><td></td></tr>
<tr><td>2.</td><td></td><td></td></tr>
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</table>

4.3. Business Transaction Activity Diagram(s)

Not Applicable

4.4. Business Transaction Sequence Diagram(s)

Not Applicable

5. Information Model (Including GDD Report)

5.1. GDD Report Replenishment Request

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ReplenishmentRequest					
Association		ReplenishmentRequestItemLocationInformation	1..*	Contains the Replenishment Request for given trade items and locations for specific time periods.	
Association	replenishmentRequestIdentification	EntityIdentification	1..1	Unique replenishment request number assigned by the buying party.	
Association	buyer	TransactionalParty	1..1	Contains the identification of the party that is buying the goods.	
Association	seller	TransactionalParty	1..1	Contains the identification of the party that is selling the goods.	
Generalization		Document		Basic information about the content of the message including version number, creation date and time.	
Attribute	replenishmentRequestTypeCode	ReplenishmentRequestTypeEnumeration	1..1	Contains the type of goods requirements, gross or net.	renamed from replenishmentRequestDocumentType
Attribute	structureTypeCode	StructureTypeCode	1..1	Contains the type of grouping and sequence of the business document.	
ReplenishmentRequestItemLocationInformation				Contains the Replenishment Request for a given trade item and location for specific time periods.	
Association	shipTo	TransactionalParty	1..1	Contains the identification of the location whereto the required goods will be delivered.	
Association		ReplenishmentRequestIn	1..*	Provides the details for the Replenishment Request Inventory	

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
		ventoryStatusLineItem		Status Line Item.	
Association		TransactionalTradeItem	1..1	Contains the identification of the item for which the replenishment request is specified.	
Association	shipFrom	TransactionalParty	0..1	Contains the identification of the location wherefrom the required goods will be delivered.	
Association		ReplenishmentRequestRequirementsLineItem	1..*	The forecasted required quantities per time bucket.	
Association	inventoryLocation	TransactionalParty	1..1	Identification of the physical place at the receiving side where the items are to be stored.	

5.2. GDD Report ReplenishmentRequestInventoryStatusLineItem

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ReplenishmentRequestInventoryStatusLineItem				Information specifying the inventory status of a specific trade item at a specific location at a specific point in time.	
Association		LogisticUnitIdentification	0..1	Detailed identification of the logistic unit that contains the goods.	
Association	inventorySubLocation	PartyIdentification	0..1	Detailed identification of the location at which the goods are stored.	
Association		InventoryStatusQuantitySpecification	0..*	Information about the stored goods per inventory status.	
Attribute	lineItemNumber	positiveInteger	1..1	Provides the line number associated to the Replenishment Request Inventory Status Line Item.	

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	inventoryDateTime	dateTime	0..1	Date and time the inventory for this line item was assessed. If this is not provided the beginDateTime provided at the business document level represents the inventoryDateTime.	

5.3. GDD Report ReplenishmentRequestRequirementsLineItem

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ReplenishmentRequestRequirementsLineItem				The forecasted required quantities per time bucket.	
Association	requiredQuantitySpecification	QuantitySpecification	0..*	Specifies the cumulative quantity already received for the specified time bucket.	
Association	requirementsPeriod	DateTimeRange	1..1	Contains the start and end dates and optionally start and end times of the requirements period.	
Association	purchaseConditions	DocumentReference	0..1	Contains a reference to the commercial agreement under which the goods are supplied.	
Attribute	lineItemNumber	positiveInteger	1..1	Provides the line number associated to the Replenishment Request Line Item.	

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	planBucketSizeCode	PlanBucketSizeCode	1..1	Code specifying the duration of the requirements period.	renamed from timeBucketSizeType
Attribute	requiredQuantity	Quantity	1..1	The number of units required in the specified requirements period.	
Attribute	replenishmentRequestStatusCode	ReplenishmentRequestStatusEnumeration	0..1	Contains the status of the commitment: committed or planned.	attribute moved here from ReplenismentCondition
Attribute	replenishmentRequestTypeDescription	Description200	0..1	Kind of requirement. Also see Replenishment Request List.	attribute moved here from ReplenismentCondition, added Description to name

5.4. Class Diagrams

Figure 5-1 Class Diagram: Replenishment Request

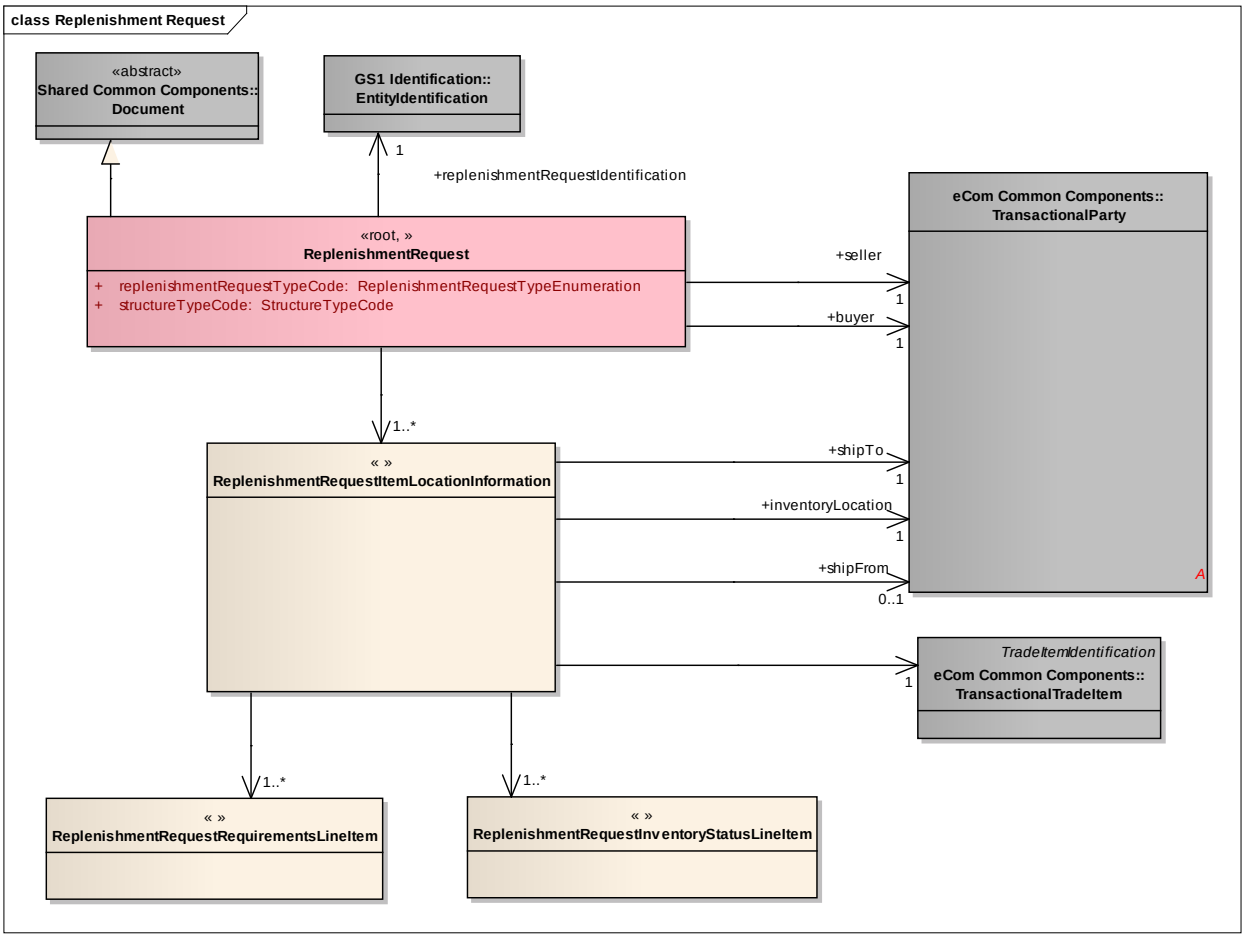


Figure 5-2 Class Diagram: Replenishment Request Inventory Status Line Item

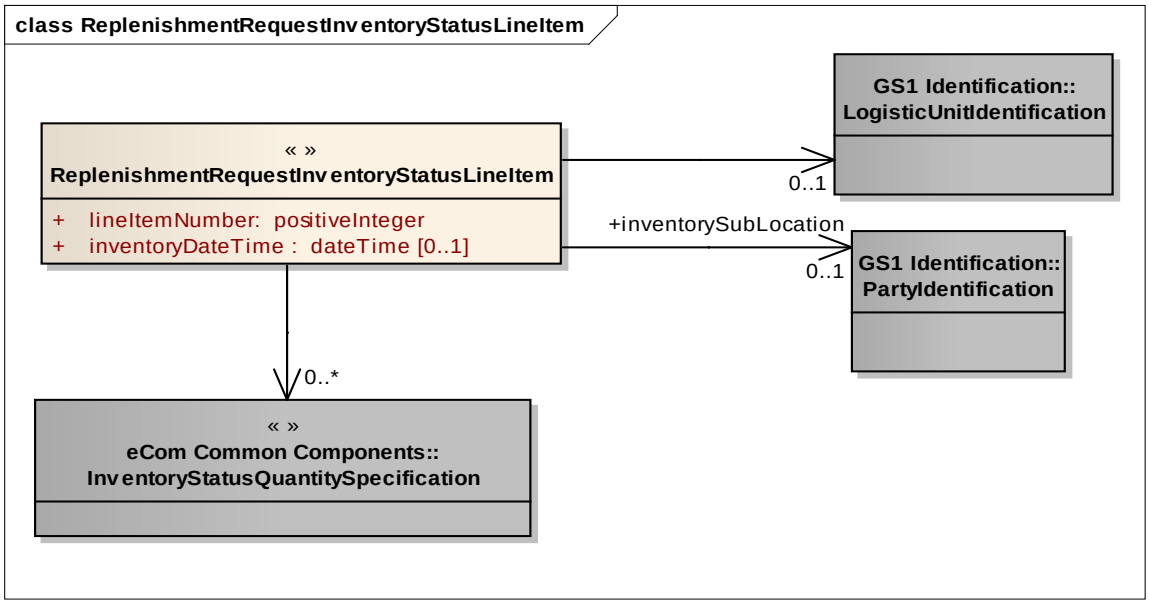
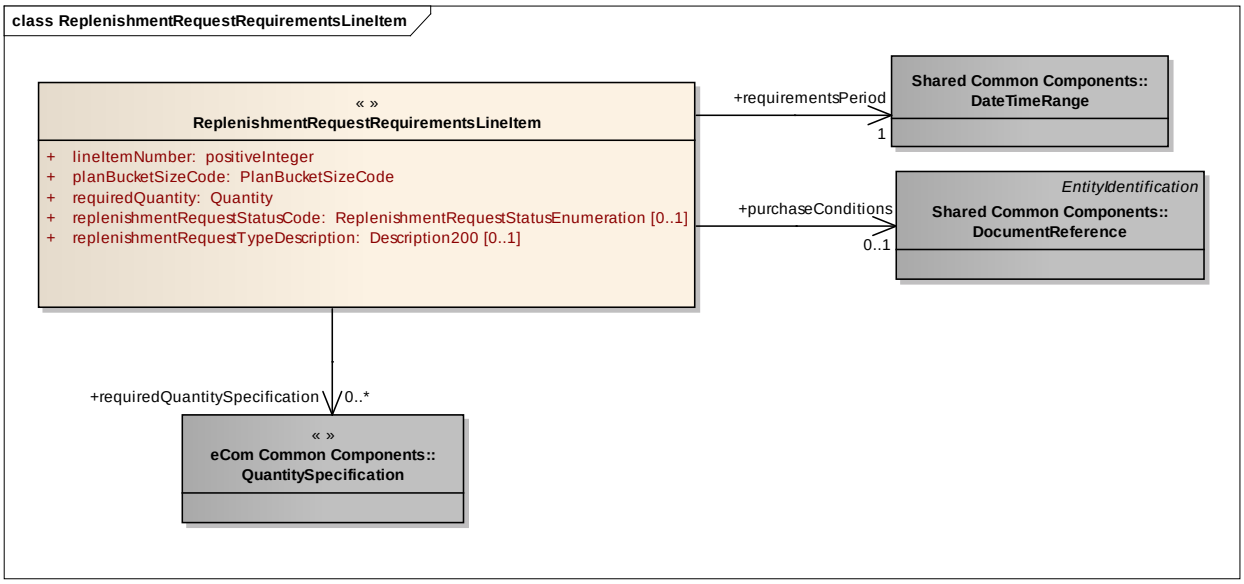


Figure 5-3 Class Diagram: Replenishment Request Requirements Line Item



Note: Reference Shared Common Library Business Message (BMS) Release 3.0.0 and eCom Domain Common Library Business Message (BMS) Release 3.0.0 for all common information.

5.5. Code Lists

5.5.1. ReplenishmentRequestTypeEnumeration

Code Value	Code Name	Code Definition
ACTUAL_SALES_AND_INVENTORY	Actual sales and inventory	Not Available
FORECAST_AND_INVENTORY	Forecast and inventory	Not Available
GROSS_REQUIREMENTS_AND_INVENTORY	Gross requirements and inventory	Not Available

5.5.2. ReplenishmentRequestStatusEnumeration

Code Value	Code Name	Code Definition
COMMITTED	Committed	Not Available
PLANNED	Planned	Not Available

5.5.3. Referenced common codes

Note: Reference Shared Common Library Business Message (BMS) Release 3.0.0 and eCom Domain Common Library Business Message (BMS) Release 3.0.0 for all Code Lists

Class	Codelist	Referenced in
ReplenishmentRequest	StructureTypeCode	eCom Domain Common Library Business Message (BMS) Release 3.0.0
ReplenishmentRequest RequirementsLineItem	PlanBucketSizeCode	eCom Domain Common Library Business Message (BMS) Release 3.0.0

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
- documentStatusCode	ORIGINAL
- replenishmentRequestTypeCode	GROSS_REQUIREMENTS_AND_INVENTORY
- structureTypeCode	ITEM_BY_LOCATION
EntityIdentification (+replenishmentRequestIdentification)	
- entityIdentification	2005001
PartyIdentification (+contentOwner)	
- gln	8712345678913
TransactionalParty (+seller)	
- gln	8812345678903
TransactionalParty (+buyer)	

ReplenishmentRequest	
- gln	8712345678913
Contact	
- personName	Kramer
- responsibility	Material Requirements Planner
ReplenishmentRequestItemLocationInformation *1	
TransactionalParty (+shipTo)	
- gln	8712345670009
TransactionalParty(+inventoryLocation)	
- gln	8712345634537
TransactionalTradeItemIdentification	
- gtin	08712345678906
ReplenishmentRequestRequirementsLineItem *1.1	
- lineItemNumber	1
- planBucketSizeCode	WEEK
- requiredQuantity	1000
DateTimeRange(+requirementsPeriod)	
TimePeriod	
- beginDate	2005-02-11
- endDate	2005-02-17
DocumentReference (+purchaseConditions)	
- entityIdentification	2004000012
- lineItemNumber	23
PartyIdentification (+contentOwner)	
- gln	8712345678999
QuantitySpecification(+requiredQuantitySpecification)	
- quantitySpecificationType	RECEIVED
- specificQuantity (value, unitOfMeasure)	500
ReplenishmentRequestRequirementsLineItem *1.2	
- lineItemNumber	2
- planBucketSizeCode	WEEK
- requiredQuantity	1200
DateTimeRange (+requirementsPeriod)	
- beginDate	2005-02-18
- endDate	2005-02-25
ReplenishmentRequestInventoryStatusLineItem *1.3	
- lineItemNumber	3
InventoryStatusQuantitySpecification	

ReplenishmentRequest	
- inventoryStatusType	AVAILABLE_FOR_SALE
- quantityOfUnits	100
InventoryStatusQuantitySpecification	
- inventoryStatusType	EXPIRED
- quantityOfUnits	10
ReplenishmentRequestItemLocationInformation *2	
TransactionalParty(+shipTo)	
- gln	8712345678951
TransactionalParty(+inventoryLocation)	
- gln	8712345674451
TransactionalTradeItem	
- gtin	08712345678906
ReplenishmentRequestRequirementsLineItem *2.1	
- lineItemNumber	4
- planBucketSizeCode	WEEK
- requiredQuantity	300
DateTimeRange (+requirementsPeriod)	
- beginDate	2005-02-11
- endDate	2005-02-17
DocumentReference (+purchaseConditions)	
- entityIdentification	2004000012
- lineItemNumber	23
PartyIdentification (+contentOwner)	
- gln	8712345678999
ReplenishmentRequestRequirementsLineItem *2.2	
- lineItemNumber	5
- planBucketSizeCode	WEEK
- requiredQuantity	1200
DateTimeRange (+requirementsPeriod)	
- beginDate	2005-02-18
- endDate	2005-02-25
ReplenishmentRequestInventoryStatusLineItem *2.1	
- lineItemNumber	6
InventoryStatusQuantitySpecification	
- inventoryStatusType	AVAILABLE_FOR_SALE
- quantityOfUnits	50

7. Implementation Considerations

Not Applicable

8. Testing

.

8.1. Pass / Fail Criteria

Not Applicable

8.2. Test Data

Not Applicable

9. Appendices

Not Applicable

10. Adherence to Architectural Principles

#	AG Principle	BSD Adherence Statement	Does BSD Adhere?	Comment
2.1	The GS1 Architecture shall be fully aligned to GS1 Strategy, Vision, & Mission	The solution in the BSD is aligned with the business problem as defined in the CR and BCD.	☒	
2.2	The GS1 Architecture shall leverage the use of GS1 Keys	The solution maintains the GS1 keys as the primary, mandatory identifiers.	☒	
2.3	The GS1 Architecture shall leverage the common GS1 Global Data Dictionary (GDD)	The solution does not alter the formats of primary identifiers and complies with data elements as defined in the Global Data Dictionary.	☒	
2.4	The GS1 Architecture shall be forward-looking, provide for migration strategies and backward compatibility, and support adaptable and flexible solutions	The solution is backwards compatible according to the stated scope in the document. The solution takes into consideration the potential impact of the standard, especially with respect to implementation and maintenance. Any potential known impact is documented.	☒	
2.5	The GS1 Architecture shall support business processes tied to trading partner needs, relevant, and committed to demonstrable business value	All business requirements contained in the related BRAD come from trading partners or representatives with a genuine intention to implement the standards when developed. All requirements are driven by the business needs of the trading partners.	☒	
2.6	The GS1 Architecture shall enable security where appropriate	Security solutions are included where appropriate.	☒	
2.7	The GS1 Architecture shall be consistent	The solution does not violate consistency of the data architecture within each layer and between each layer of the GS1 System. For example, requirements do not alter a key used across GS1 standards or alter a reusable object without applying this change across related standards.	☒	
2.8	The GS1 Architecture shall be royalty-free	The solution supports this principle where possible. The solution may include the use of other standards organizations that may not be royalty free.	☒	

#	AG Principle	BSD Adherence Statement	Does BSD Adhere?	Comment
3.1	The GS1 Architecture should promote the achievement of the best overall value at the lowest total cost of ownership	The solution promotes the achievement of the best overall value at the lowest total cost of ownership.	☒	
3.2	The GS1 Architecture should promote scalability	The solution takes into consideration the potential scalability of the standard. Any potential known impact to scalability is documented.	☒	`
3.3	The GS1 Architecture should promote seamless integration	The BSD promotes seamless integration with other GS1 Standards if in scope.	☒	
3.4	The GS1 Architecture should promote interoperability and compliance	The solution takes into consideration data and process interoperability. For example, any shared objects between interoperable messages must remain consistent. Any potential known impact to interoperability is documented.	☒	
3.5	The GS1 Architecture should promote simplicity and standard interfaces	The solution does not threaten the standardisation of the interfaces of the GS1 System. Interfaces are not limited to references to technology but also include such ideas as business interfaces and process interfaces.	☒	
3.6	The GS1 Architecture should avoid duplication	The solution does not create duplications with existing GS1 components. If there are potential duplications, these are documented with a stated rationale for the duplication.	☒	
3.7	The GS1 Architecture should promote technology independence and a layered approach	The solution does not impose implicit or explicit restrictions of any technology.	☒	
3.8	The GS1 Architecture should promote global cross-sector definitions and leverage the best of global and the best of local	The solution takes into account a global perspective.	☒	
3.9	The GS1 Architecture shall leverage a common strategy for extensibility	This solution uses consistent and common, extensibility approaches, methodologies and technology where available and applicable.	☒	
4.1	In support of a common GS1 Architecture, GS1 shall leverage work of other standards bodies wherever possible.	This solution utilizes works of other standards bodies wherever possible.	☒	

#	AG Principle	BSD Adherence Statement	Does BSD Adhere?	Comment
4.2	In support of a common GS1 Architecture, GS1 shall strive to eliminate exceptions and variances wherever possible	The solution strives to eliminate exceptions and variances wherever possible and does not create new variances.	☒	

11. Summary of Changes

Change	BMS Version	Associated CR Number
For BMS Release 3.0.0 Update to modelling methodology for Release 3.0.0	1.0.0	Not Applicable
For Issue Resolution: Cleaned up summary of changes Edited Business Example to reflect sequencing changes	1.0.0	Not Applicable
For XSD Peer Review: Updated Business Example: Under GoodsRequirementsItemLocationInformation *2, inventoryLocation was missing; this is a mandatory attribute.	1.0.0	Not Applicable
XSD Development (10-Oct-2011) Updated Business Example, renamed GoodsRequirementsItemLocationInformation into ReplenishmentRequestItemLocationInformation Removed {1..80} restriction in replenishmentRequestTypeDescription	1.0.0	Not Applicable
Public Review Removed the following code values from ReplenishmentRequestTypeEnumeration ▪ MATERIAL_REQUIREMENTS ▪ MATERIAL_REQUIREMENTS_AND_INVENTORY	1.0.0 (21-nov-2011)	Not applicable
Corrected example. Under GoodsRequirementsItemLocationInformation *1, inventoryLocation was missing; this is a mandatory attribute.	1.0.0 (28-nov-2011)	Not applicable
Publication ▪ Added Copyright R in GS1 Logo ▪ Changed Status to Approved ▪ Removed year reference in footer copyright statement ▪ Replaced Section 10 with updated AG Principles	1.0.0	Not Applicable