

How-To Guide

SAP Extended Warehouse Management

Document Version: 1.0

Basic Integrated Quality Inspection Process Using SAP Extended Warehouse Management and Quality Management in SAP ERP



Document History

Document Version	Description
1.0	First official release of this guide

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1 Business Scenario

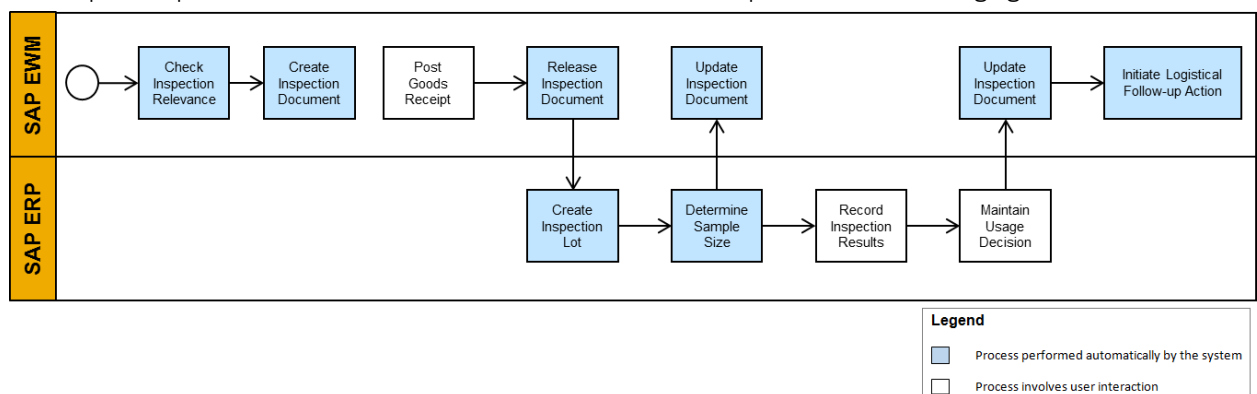
This how-to guide describes the basic setup of an integrated quality inspection process using SAP Extended Warehouse Management (SAP EWM) and the Quality Management (QM) component of SAP ERP. This guide focuses on the setup steps of the specific Q-Inspection Product/Batch Inbound Delivery (inspection object type (IOT) 4) process. This guide also provides an overview of the architecture of quality inspections in SAP EWM and a short overview of other IOTs implemented in SAP EWM.

The business process describes a straightforward quality inspection process for inbound deliveries from an external vendor when the warehouse is run by SAP EWM and the quality inspections are performed in the QM component of SAP ERP.

The start of the inspection process is triggered in SAP EWM either by the activation of an inbound delivery or by setting the *In Yard* status. The process then proceeds as follows:

1. Based on inspection rules, the system indicates that the inbound delivery item is relevant for inspection.
2. The system creates an inspection document.
3. During goods receipt (or the first partial goods receipt for an item), SAP EWM releases the inspection document.
4. SAP EWM triggers SAP ERP to create a corresponding inspection lot of inspection lot origin 17 (external) in the QM component of SAP ERP.
5. SAP ERP determines the sample size based on the QM setup in SAP ERP.
6. The inspection lot number and the sample size from SAP ERP updates the inspection document in SAP EWM.
7. After carrying out the inspection, the user records the inspection results and the usage decision in the QM component of SAP ERP.
8. The system updates the inspection document in SAP EWM.
9. Based on the decision code, as an optional step, the system triggers a logistical follow-up action.

The inspection process for inbound deliveries described above is depicted in the following figure:



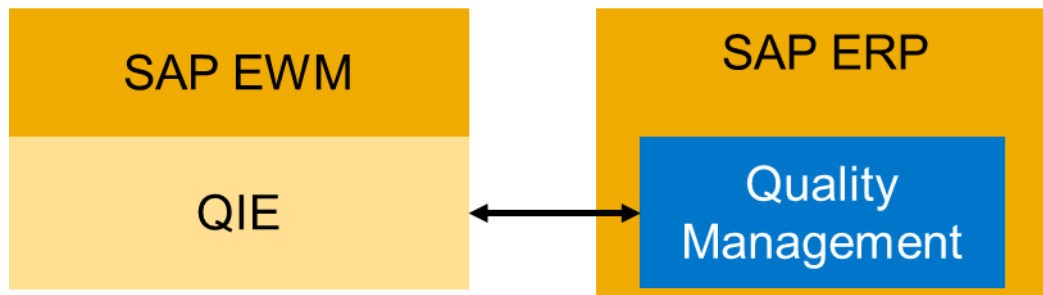
Inspection Process for Inbound Deliveries

2 Background Information

2.1 Quality Inspection Engine

SAP Extended Warehouse Management (SAP EWM) uses the Quality Inspection Engine (QIE) to implement inspection processes in the warehouse. You can either run quality inspection processes using only the QIE, or if you have already set up the Quality Management (QM) component in SAP ERP, you can use the QIE to integrate your quality inspection processes with SAP EWM.

In terms of software architecture, the QIE is a software component layer in the SAP EWM software stack. This is depicted in the following figure:

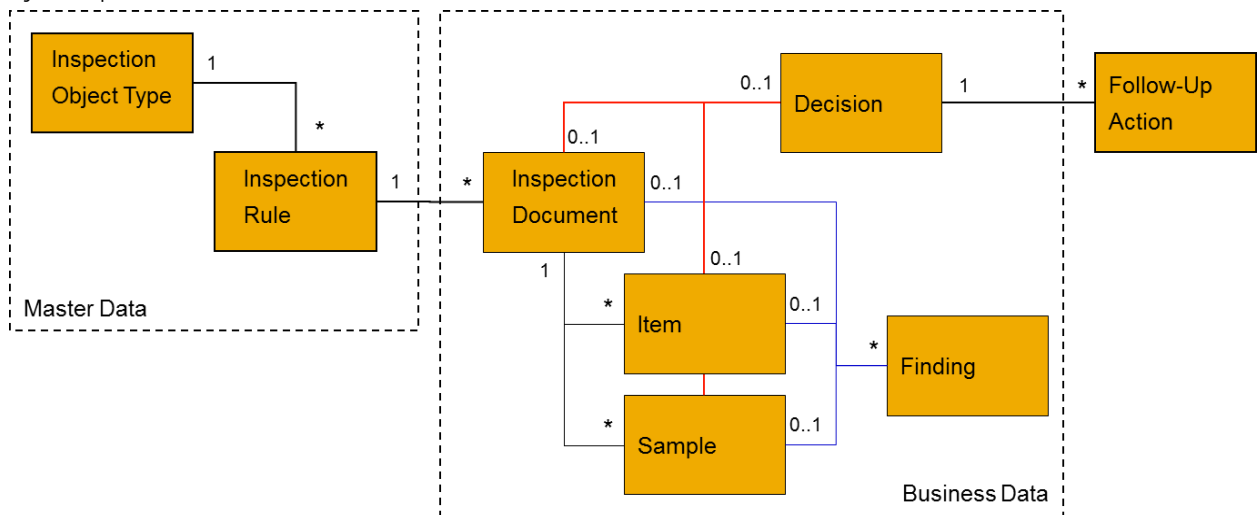


Simplified SAP EWM Software Stack Integrated with the QM Component in SAP ERP

For more information about the QIE, see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose *Quality Management (QM)* -> *Quality Inspection Engine*.

2.2 Data Model of the Quality Inspection Engine

The figure below illustrates the data model of the QIE and the relationship between the entities, and is followed by an explanation:



Data Model of the QIE

The inspection object type (IOT) defines the following:

- Business process for the inspection
- Inspected object (for example, the product, handling unit (HU), or delivery)
- Warehouse number

You can have many inspection rules for each IOT. Based on selection criteria (also known as properties), the inspection rule determines which objects to trigger an inspection for and specifies the inspection details, for example, the inspection process, the procedure, the inspection frequency, and codes.

Based on the inspection rule, the system creates multiple inspection documents during the inspection process. An inspection document contains the inspection specification and is used to collect inspection results, findings, and the usage decision for an inspected object.

Each inspection document can have multiple items and samples assigned to it. The inspection documents, its items, and its samples can have many findings, but there can only be one decision.

A follow-up action, such as putaway or scrapping, can be assigned to a usage decision.

2.3 Supported Inspection Processes/Inspection Object Types

This section gives an overview of the supported quality inspection processes in SAP EWM. For more information about IOTs, see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose *Quality Management (QM)* -> *Customizing Settings for QM in EWM* -> *Inspection Object Types*.

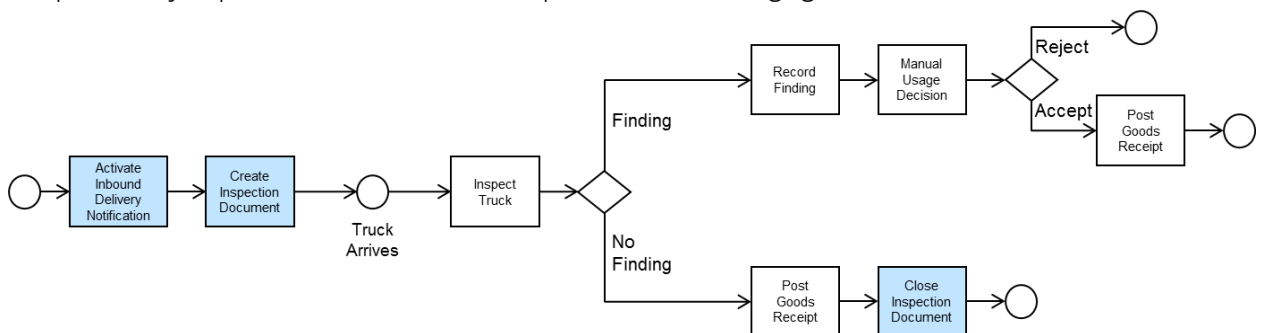
2.3.1 IOT 1: Preliminary Inspection Inbound Delivery

Upon activation of an inbound delivery, SAP EWM automatically generates and releases an inspection document to check the delivery. Once the truck arrives with the goods, the inspection is carried out. The user can record the findings and can make a usage decision. Note that the inspection document cannot contain samples or items.

i Note

IOT 1 is the inspection of one delivery in a truck. Using IOT 1, an inspection on truck level is equal to an inspection on delivery header level. Therefore this type of inspection works when one truck corresponds to one vehicle (if there is a vehicle) and one vehicle contains only one transportation unit (TU).

The preliminary inspection described above is depicted in the following figure:



Business Process for IOT 1 Preliminary Inspection

2.3.2 IOT 2: Counting Inbound Deliveries


Counting is a quality inspection procedure in goods receipt used to compare the expected quantity as given in the inbound delivery item with the actual delivered quantity.

The system creates an inspection document as defined in the settings either at the activation of the inbound delivery or when the inbound delivery status is set to *In Yard*. You can perform the following types of counting:

- Explicit counting is performed at a special work center for counting.
- Implicit counting is performed during confirmation of the warehouse task.

If there is a difference between the actual delivered quantity and the expected delivery item quantity, the user records the actual delivered quantity together with an exception code. The counting result is stored in the inspection document.

2.3.3 IOT 3: Q-Inspection Returns Delivery

This IOT is used to process inspections of customer returns. For information about an example of such a customer returns process using IOT 3 in a preconfigured warehouse management process, see the [Customer Returns with Quality Inspection](#)  business scenario in SAP Solution Manager.

2.3.4 IOT 4: Q-Inspection Product/Batch Inbound Delivery

IOT 4 controls the inspection process of individual products or batches during goods receipt. The system generates the inspection document depending on the configuration either at the activation of the inbound delivery or when the inbound delivery status is set to *In Yard*.

The system supports several inspection processes, as follows:

- Inspection after goods receipt (SAP EWM 5.0 and higher)
- Acceptance sampling (SAP EWM 9.2 and higher)
Quality inspection before goods receipt posting for externally procured goods (see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose *Quality Management (QM)* -> *Acceptance Sampling*.)
- Presampling in production (SAP EWM 9.2 and higher)
Quality inspection before goods receipt during the production process (see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose *Quality Management (QM)* -> *Presampling in Production*.)

Note

In SAP EWM 9.0 and higher, stock that has similar properties, such as the same product or batch and that belong to the same document, for example, a purchase order, can be accumulated into the same inspection document. For more information, see *Inspection document summary* in SAP Note [1906105](#).

2.3.5 IOT 5: Q-Inspection Product/Batch Warehouse-Internal

Warehouse-internal inspections are used for goods already stored in the warehouse. Goods might be inspected shortly before the shelf life expiration date (SLED), the best before date (BBD), or periodically (recurring inspections). Inspections can be triggered by the following:

- Radio frequency
A user scans a bin and a HU label in order to create an inspection document.
- Warehouse monitor (monitor node *Stock and Bin* -> *BBD/SLED Overview*)
Note that mass creation of inspection documents is available in SAP EWM 9.0 and higher. For more information, see *Mass generation of inspection documents for EWM warehouse stock* in SAP Note [1906105](#).
- Desktop transaction (transaction code **/SCWM/QIDPR**)
A user enters the storage bin and HU or product/batch.
- Report **/SCWM/R_STOCK_TYPE_CHANGE** (inspection interval in product master)
The report is available in SAP EWM 9.2 and higher. For more information, see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose *Quality Management (QM)* -> *Recurring Inspections*.

2.3.6 IOT 6: Preliminary Inspection Handling Unit


You use this process if you want to inspect HUs, for example, pallets, before goods receipt posting.

For each delivery loaded in a TU, all HUs can be classified as “good” or “bad”. After the classification of all the HUs, the system automatically creates a HU inspection document. The system generates one inspection document for each delivery and one item for each HU.

3 Configuration of the Quality Inspection Process

This section gives a step-by-step description of the configuration settings of a simple quality inspection process triggered at goods receipt (inspection object type (IOT) 4) in an SAP Extended Warehouse Management (SAP EWM) driven warehouse and performed in the Quality Management (QM) component in SAP ERP.

3.1 Prerequisites

- SAP EWM 9.0 and higher¹
You have activated the SCM_EWM_FND business function (transaction **SFW5**).
- SAP ERP 6.03 and higher (SAP ERP 2005 with Enhancement Package 3 and higher)
A preconfigured warehouse exists in the SAP EWM system (for more information about the [Warehouse Management with Preconfigured Processes](#)  business scenario, see SAP Solution Manager).
- The data exchange between the SAP EWM warehouse and the corresponding SAP ERP system is set up as described in the implementation guide for the preconfigured warehouse.

3.2 Integration of SAP ERP System and the Quality Inspection Engine

In this section, you learn the technical integration settings between the Quality Inspection Engine (QIE) in your SAP EWM system and the QM component in your SAP ERP system.

3.2.1 SAP ERP System: Required Business Add-In (BAI) Implementation

In standard SAP EWM and SAP ERP systems, the default communication technology between the QIE and the QM component of SAP ERP is SAP NetWeaver Process Integration (SAP NetWeaver PI). However, a standard SAP EWM system communicates with SAP ERP using the queued remote function call (qRFC) communication technology. To avoid using different communication technologies in SAP EWM and the QIE, we recommend switching the SAP standard communication technology setting in the QIE from SAP NetWeaver PI to qRFC as follows (see section 5.1 in the appendix for screenshots):

1. Open the *BAI Builder: Initial Screen for Implementations* screen by entering transaction **SE19** to start maintaining enhancements.
2. In the *Create Implementation* screen area, select the *New BAI* radio button.
3. In the *Enhancement Spot* field, enter **QPLEXT_COMM_TEC** and choose the *Create Impl.* button.
4. In the *Create Enhancement Implementation* dialog box, enter a name for the enhancement implementation, for example, **Z_QPLEXT_COMM_TEC**, and a meaningful description in the *Short Text* field.
5. In the *Enhancement Implementation Z_QPLEXT_COMM_TEC: Create BAI Implementation* dialog box, do the following:
 - a) Assign a name to your BAI implementation, for example, **Z_QPLEXT_COMM_TEC**.
 - b) Assign a name to your implementation class, for example, **ZCL_QPLEXT_COMM_TEC**.
 - c) Select BAI definition *QPLEXT_COMM_TEC*.
6. In the *Create Implementation Class* dialog box, do the following:

¹ The described process works in SAP EWM 5.1 and higher but the configuration steps given in this guide are based on the preconfigured warehouse in SAP EWM 9.0 and higher.

- a) Select class *CL_QPLEXT_COMM_TEC*.
- b) Choose the *Copy Sample Class* button.

7. Save and activate your implementation.

As a result, enhancement implementation *Z_QPLEXT_COMMTEC* has an implementation class assigned and is activated.

i Note

For more information, see SAP Note [1278425](#).

3.2.2 SAP EWM System: Defining an External QM System

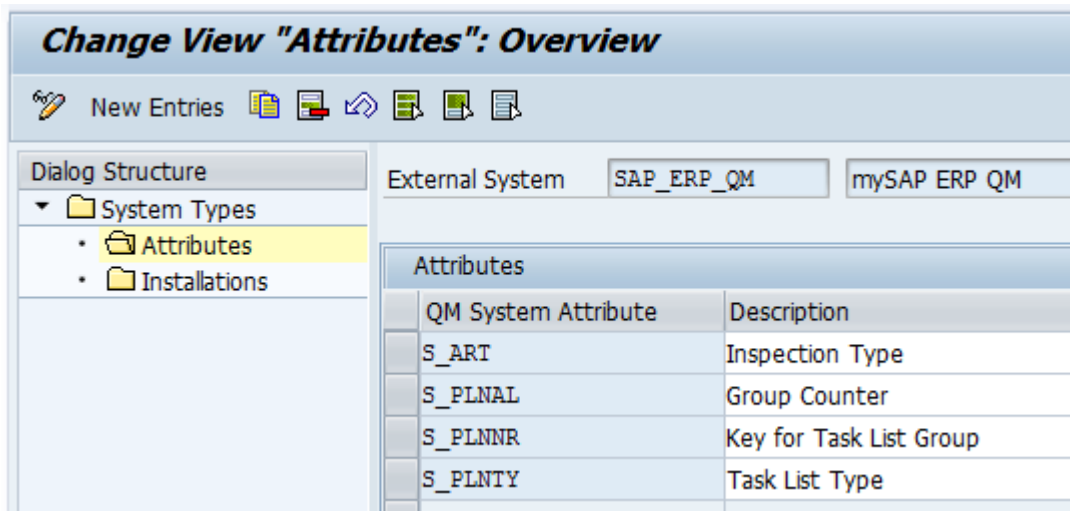
SAP EWM is a decentralized system and as a consequence, the SAP ERP system must be defined as an external QM system in the Customizing of the SAP EWM system.

Customizing Path: *Cross-Application Components -> Quality Inspection Engine -> Central Settings -> Communication with an External QM System -> Define External QM Systems*

Create a new system type and enter a name for the external QM system, for example, **SAP_ERP_QM**, and a meaningful description.

3.2.2.1 QM System Attributes

Select the new system type, for example, *SAP_ERP_QM*, and maintain the attributes as shown in the following figure:



Attributes Transferred When an Inspection Is Passed onto the External QM System (SAP EWM)

3.2.2.2 QM System Installations

Select the new system type, for example, *SAP_ERP_QM*, and maintain the installations. You have the following options for assigning installations to your external QM system:

First Option (Recommended):

1. In the *Installation* field, enter your installation.
2. Give your installation a name of your choice and add a description.
3. In the *XI Business System* field, enter the business system for the connected SAP ERP system as shown in the following figure:

Change View "Installations": Overview of Selected Set

Dialog Structure	External System	SAP_ERP_QM	mySAP ERP QM
<ul style="list-style-type: none"> System Types <ul style="list-style-type: none"> Attributes Installations 	Installations		
	Installation	Description	XI Business System
	INST_QM	Quality Management module of SAP ECC	B6V_600

Installation Settings for External QM System (First Option) (SAP EWM)

You can find the connected business system for SAP ERP in Customizing for *Extended Warehouse Management* under *Interfaces -> ERP Integration -> General Settings -> Define Business System*, as shown in the following figure:

Change View "Buffer for SLD Data of Business Systems":

New Entries




Business System	Logical system	Manual Maint.
B6V_600	B6VCLNT600	X Flag set. Event has occurred.

System Landscape Data (SLD) of Business System² (SAP EWM)

4. Activate an example BAdI implementation as follows (see section 5.2 in the appendix for screenshots):
 - a) Open the *BAdI Builder: Initial Screen for Implementations* screen by entering transaction **SE19** to start maintaining enhancements.
 - b) In the *Create Implementation* screen area, select the *New BAdI* radio button.
 - c) In the *Enhancement Spot* field, enter **QIE_COMMUNICATION** and choose the *Create Impl.* button.
 - d) In the *Create Enhancement Implementation* dialog box, enter a name for the enhancement implementation, for example, **Z_QIE_COMMUNICATION_NL**, and a meaningful description in the *Short Text* field.
 - e) In the *Enhancement Implementation Z_QIE_COMMUNICATION_NL: Create BAdI Implementation* dialog box, do the following:
 - i. Assign a name to your BAdI implementation, for example, **Z_EX_QIE_NL**.
 - ii. Assign a name to your implementation class, for example, **ZCL_EX_QIE_NL**.
 - iii. Select BAdI definition **QIE_EX_COMMUNICATION**.
 - f) In the *Create BAdI Implementation* dialog box, select enhancement implementation **/SCWM/ESI_QIE_COMMUNICATION** with BAdI implementation **/SCWM/EXI_QIE_COMMUNICATION_NL** and choose the *Copy Sample Class* button.
 - g) Save and activate your implementation.

As result, enhancement implementation **Z_QIE_COMMUNICATION_NL** has an implementation class assigned and is activated.

i Note

² We used the recommended naming convention (RFC destinations (see [Prerequisites for System Connection in ERP and EWM](#) )/logical systems in SAP ERP (see [Configuring Logical Systems in ERP](#) ), and logical systems in SAP EWM (see [Configuring Logical Systems in EWM](#) )) for the setup of the integration of SAP ERP with SAP EWM.

We recommend this option for the following reasons:

- The business system name can have up to 60 characters; the second option can have only 15 characters.
- The entry in the *Installation* field is copied into each inspection rule. Note that if you change the entry in the *Installation* field later, all inspection rules become invalid.

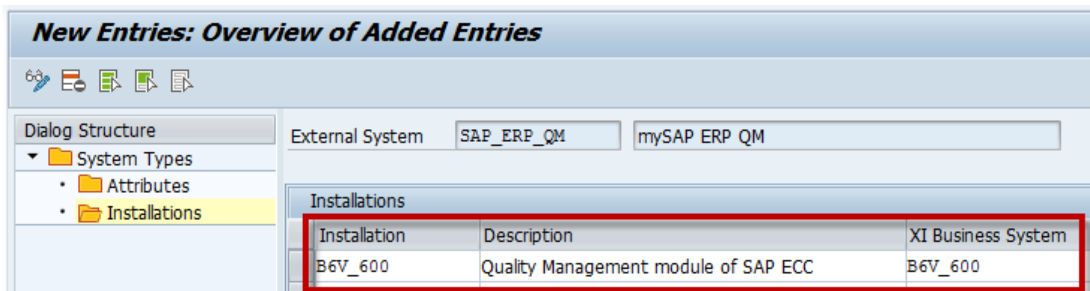
For more information, see SAP Notes [1893172](#) and [1897546](#).

Second Option:

1. As described in SAP Note [1278425](#), in the *Installation* field, enter the business system for the connected SAP ERP system as defined in Customizing for *Extended Warehouse Management* under *Interfaces -> ERP Integration -> General Settings -> Define Business System*.
2. Enter a descriptive text in the *Description* field.

The *XI Business System* field is not evaluated in this option and can be left empty.

The steps described above are shown in the following figure:



Installation Settings of External QM System (Second Option) (SAP EWM)

The second option is the way the external QM system setting has been done historically. The disadvantage of this option is that the name of the installation can have a maximum of 15 characters (see SAP Notes [1893172](#) and [1897546](#)).

Furthermore, as the installation name gets copied into each inspection rule, all inspection rules become inconsistent if you change the installation name later because you connect another SAP ERP system. Client copies are a typical use case when this happens.

3.3 Customizing Settings

This section gives a step-by-step description of the Customizing settings required in SAP ERP and SAP EWM for implementing the quality inspection process.

3.3.1 SAP ERP System: QM Customizing Settings

This chapter describes the necessary QM Customizing settings in SAP ERP to run a simple example of an integrated quality inspection process using SAP EWM and the QM component of SAP ERP, as follows:

1. To use an inspection plan, you need to define a task list usage.
2. For the quality inspection lot creation, you need to define an inspection type for the relevant business process (in this case, goods receipt) and assign it to inspection lot origin 17. Inspection lot origin 17 is used for externally triggered inspections (that is, triggered from the SAP EWM system)³.

For more information, see SAP Library for SAP ERP on SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose *SAP ERP Central Component -> Logistics -> Quality Management (QM) -> Quality Inspection (QM-IM) -> Inspection Lot Creation -> Inspection Lot Creation -> Inspection Lot Creation -> Inspection Type*.

3. You need to define code groups and decision codes for the usage decision.

3.3.1.1 SAP ERP System: Defining Task List Usage

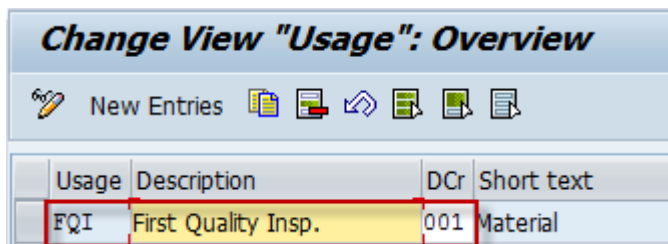
In most cases quality inspections are based on an inspection plan.

Customizing Path: *Quality Management -> Inspection Planning -> General -> Define Task List Usage*

Define a new task list usage as follows:

1. In the *Usage* field, enter a name for your task list usage, up to a maximum of three characters.
2. In the *Description* field, enter a meaningful description of your task list usage.
3. In the *DCr* (Dynamic Modification Criterion) field, enter *001 (Material)*.

The steps described above are shown in the following figure:



The screenshot shows the SAP 'Change View Usage: Overview' interface. It features a toolbar with icons for 'New Entries', 'Copy', 'Paste', 'Delete', 'Refresh', and 'Print'. Below the toolbar is a table with the following data:

Usage	Description	DCr	Short text
FQI	First Quality Insp.	001	Material

Task List Usage for Inspection Plans Used for SAP EWM-QM Integration (SAP ERP)

3.3.1.2 SAP ERP System: Defining Code Groups and Decision Codes for Usage Decisions

Code groups are required for usage decisions of inspection lots that belong to IOTs 4 or 5. A code group should contain usage decision codes for accepting and rejecting usage decisions.

i Note

The specific values of code groups and decision codes described below are just examples used within the simple quality inspection setup described in this guide. If a user is already using the QM component of SAP ERP, the user will already have maintained their own code groups and decision groups.

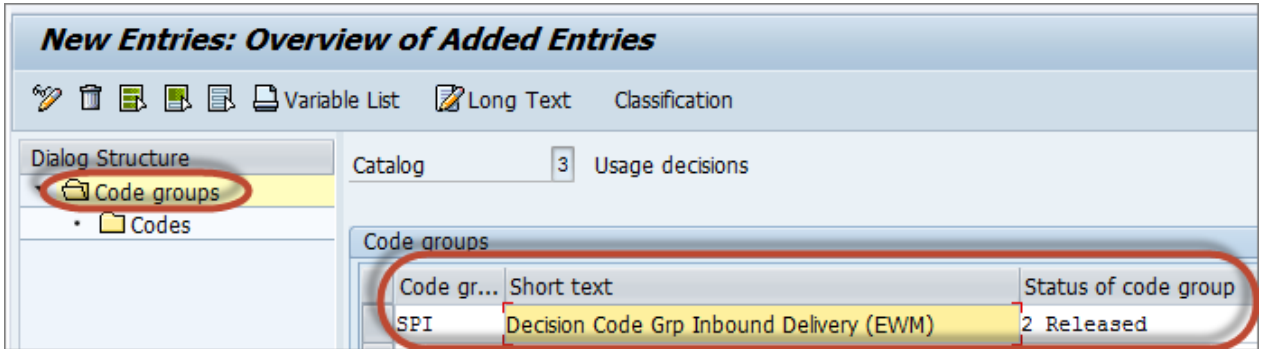
³ The inspection type determines how an inspection is performed.

Customizing Path: *Quality Management -> Quality Inspection -> Inspection Lot Completion -> Maintain Catalogs for Usage Decisions*

Define the code group and decision codes as follows:

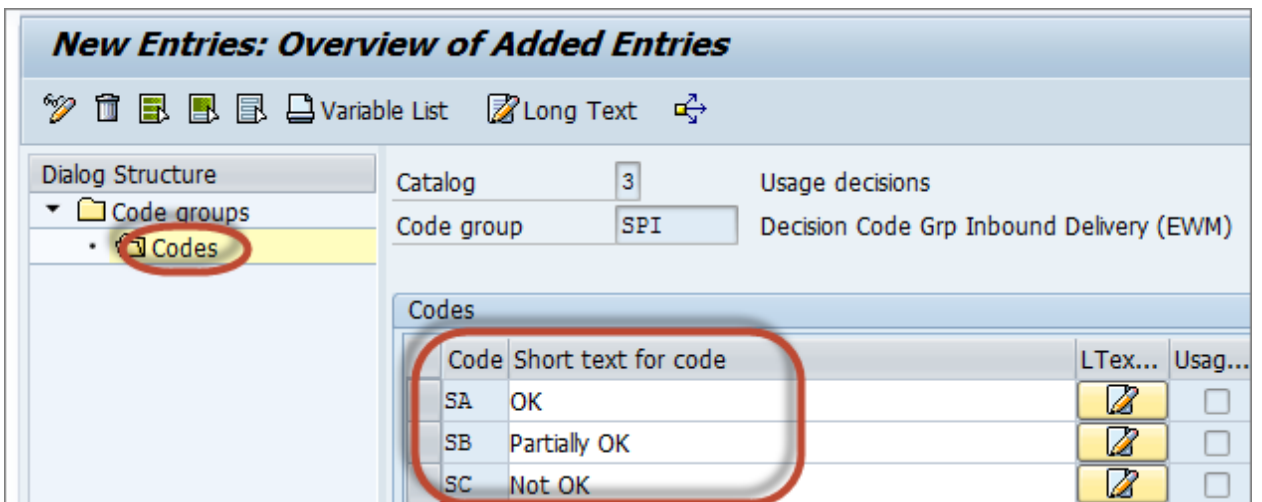
1. To create the code group, select the *Edit Code Groups and Codes* activity.
2. In the *Catalog* field, enter *Usage Decisions (3)* and choose the *Create/Change* button.
3. In the *Short Text* field, enter a meaningful short text.

The settings for the code group described above are shown in the following figure:



Settings for Code Group (SAP ERP)

4. Define the decision codes for the new code group for the usage decisions⁴, as shown in the following figure:



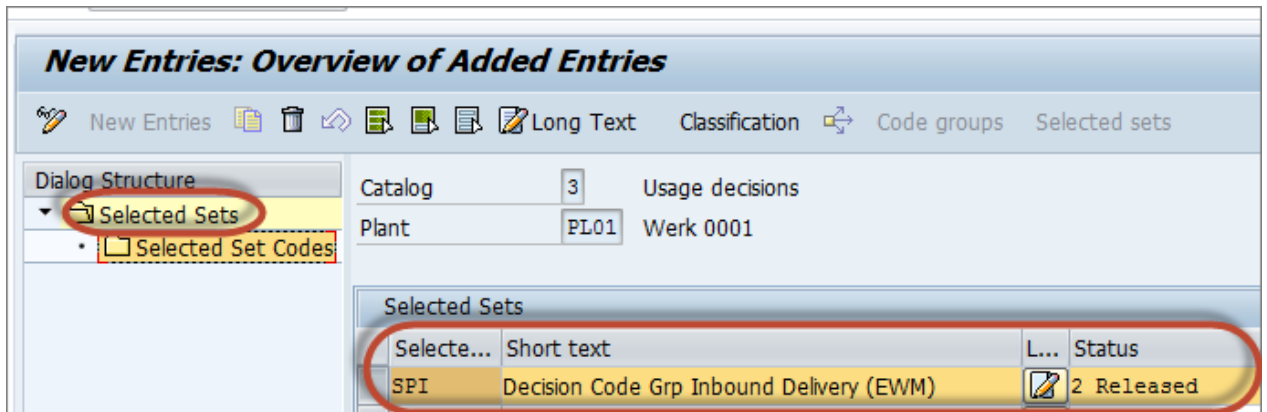
Settings for Usage Decision Codes (SAP ERP)

The code group can only be assigned to the inspection type if the code group is assigned to a selected set, as follows:

- a) Select the *Edit Selected Sets* activity.
- b) In the *Catalog* field, enter *Usage Decisions (3)*.
- c) Specify your plant and enter * for the *Selected Set* field.
- d) Press **Enter** and then choose the *New Entries* button.
- e) Enter a name for the new selected set and a meaningful short text.
- f) Release the set by setting the status to *Released*.

The settings for the selected sets described above are shown in the following figure:

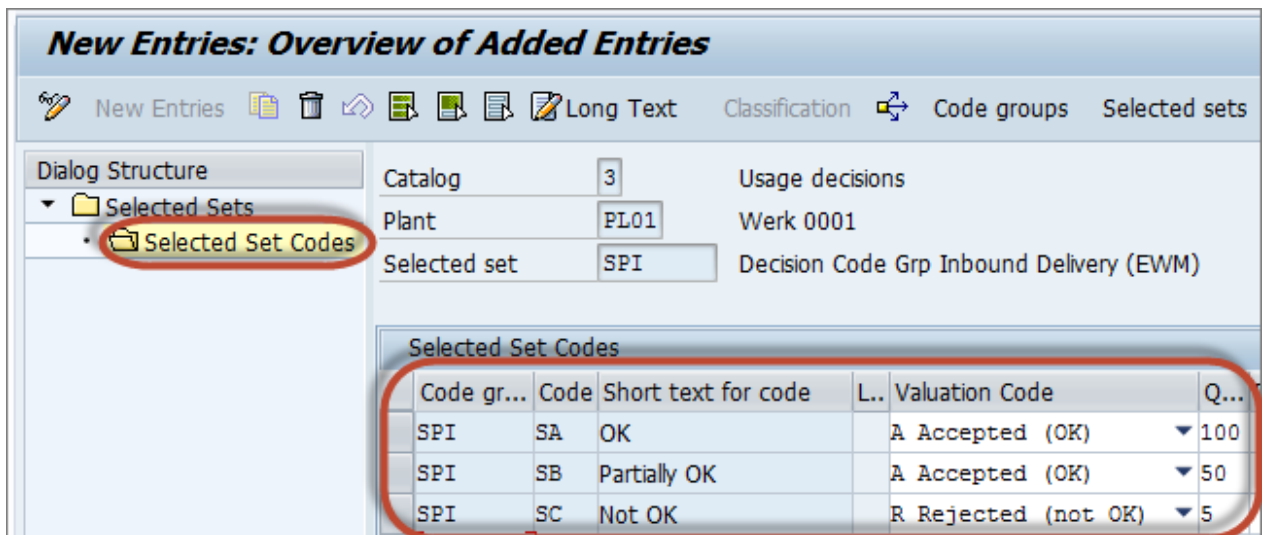
⁴ The decision codes and code group you define must also be defined in the SAP EWM system with exactly the same names. The codes and code group used in the screenshot correspond to SAP EWM codes and code groups as contained in BC Set / SCWM/QM_DECISION_CODES.



Settings for Selected Sets for Usage Decisions (SAP ERP)

5. Select the new set and maintain the selected set codes as follows:
 - a) Choose the codes from the code group you created earlier.
 - b) Choose proper valuation codes and quality scores (mandatory field).

The settings for the selected usage decision codes described above are shown in the following figure:



Settings for Selected Usage Decision Codes for Set of Usage Decision Codes (SAP ERP)

3.3.1.3 SAP ERP System: Inspection Types for Externally Created Inspection Lots

For quality inspections to be processed in the QM component of SAP ERP, you must set up inspection types for the affected business processes, that is, inspections during goods receipt or presampling in production.








Setting Up Inspection Types

For our example of a quality inspection process, we use and adapt inspection type 17 for the goods receipt inspection triggered by SAP EWM as an external system.

Customizing Path: *Quality Management -> Quality Inspection -> Inspection Lot Creation -> Maintain Inspection Types*

The Customizing mentioned above is shown in the following figure:

Change View "Inspection types": Details

New Entries       

Inspection Type 17 Inspection from External System

Inspection lot processing	Print control
Status profile <input type="text"/>	<input type="checkbox"/> Print sample drawing instr. immed.
Order type <input type="text"/>	<input checked="" type="checkbox"/> Print insp. instruction immediately
Physical-sample type <input type="text"/>	<input type="checkbox"/> Display detailed notificationns
UD selected set SPI	
<input checked="" type="checkbox"/> Selected Set in Same Plant	

Inspection results

Recording view Single values and summarized results (default view)

Notification type One Q-notification per insp. lot

Inspection planning

Task list usage FQI

Settings for Inspection Type 17 (SAP ERP)

i Note

Print control is set to print the inspection instruction.

Checking the Assignment of Inspection Type 17

You then assign inspection type 17 to the lot origin (17) that is used for externally triggered inspections.

Customizing Path: *Quality Management -> Quality Inspection -> Inspection Lot Creation -> Maintain Inspection Lot Origins and Assign Inspection Types*

First you check the data of origin 17 as follows:

- *LO* (Inspection Lot Origin): 17
- *No* (Number Range Number): 17
Check that number range 17 exists in Customizing for *Quality Management* under *Quality Inspection -> Inspection Lot Creation -> Maintain Number Ranges*.
- *TL Type* (Task List Type): *Q* (Inspection Plan)
- *Status*: 4 (Released (General))

The data mentioned above is shown in the following figure:

Change View "Origin": Overview

Dialog Structure

- Origin
 - Inspection types for the origin

L..	N..	DCr	TLType	Stat	Insp.Lot Origin Text
01	01	005	Q	4	Goods Receipt
02	02	002	Q	4	Goods Issue
03	03	001			Production
04	04	001	Q	4	Goods Receipt from Production
05	05	001	Q	4	Other Goods Receipt
06	06	002	Q	4	Return from Customers
07	07	003	Q	4	Vendor Audit
08	08	001	Q	4	Stock Transfer
09	09	001	Q	4	Recurring Inspection
10	10	002	Q	4	Delivery to Customer with Customer Order
11	11	002	Q	4	Delivery to Customer Without Sales Order
12	12	001	Q	4	General Delivery
13	13	001			Repetitive Manufacturing
14	14				Plant Maintenance
15	15		Q	4	Sample Management
16	16		Q	4	Stability Study
17	17	001	Q	4	Externally Triggered Inspection
89	89	001	Q	4	Miscellaneous

Settings for Inspection Lot Origin Used for Externally Triggered Inspections (SAP ERP)

Then, you select inspection lot origin 17 and choose *Inspection Types for the Origin* to check the entry as follows:

- *Var.* (Variant of the Inspection Lot Origin): two digit number
- *InspType*: Your new inspection type

Change View "Inspection types for the origin": Overview

Dialog Structure

- Origin
 - Inspection types for the origin

Origin: 17 Externally Triggered Inspection

Var	InspType	Short text
01	17	Inspection from External System

Check Assignment of Inspection Type 17 to Inspection Lot Origin 17 (SAP ERP)







Checking the Default Values for Inspection Type 17

The default values of the inspection type control how quality inspections are performed. These values are set on the Quality Management view of the material master as the default settings for inspection type 17.

Customizing Path: *Quality Management -> Quality Inspection -> Inspection Lot Creation -> Define Default Values for Inspection Type*

Maintain the settings for the new inspection type as shown in the following figure:

Change View "Default values for the inspection type": Details

New Entries      

Inspection Type Inspection from External System

Inspection variant

Inspect by task list Assign reqmts automatically
 Record characteristic results

Sample

Sampling procedure Modification rule

100% inspection Skips allowed

Inspection percentage

Trigger sample calculation manually

Inspection lot completion

Automatic usage decision

Q score procedure

Allowed share of defects

Avg. insp. duration

Default Values for Inspection Type 17 (SAP ERP)

3.3.2 SAP EWM System: QM Customizing Settings

This chapter describes the necessary QM customizing settings in SAP EWM to run a simple example of an integrated quality inspection process using SAP EWM and the QM component of SAP ERP, as follows:

- You generate, maintain, and activate an IOT version for your inspection process.
- You define the indices for the QIE object that are necessary for searching inspection documents.
- You maintain possible follow-up actions to be performed based on the usage decision of your inspection lot.
- You maintain the same code groups and decision codes in the SAP EWM system as you did previously in the SAP ERP system.

3.3.2.1 SAP EWM System: Inspection Object Types

IOTs are used to define in which software component, in which process, and for which object the inspection documents can be created in the QIE.

Generating IOT Versions

Generate a new version of IOT 4 (Q-Inspection Product/Batch Inbound Del.) as follows:

Customizing Path: *Extended Warehouse Management -> Cross-Process Settings -> Quality Management -> Basics -> Generate Inspection Object Types Version*

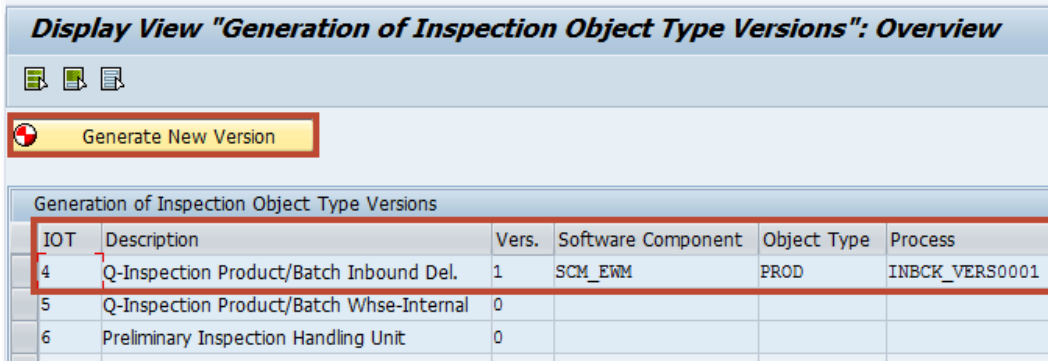


If a version of IOT 4 already exists, carefully align the generation of a new version with all possible stakeholders of the IOT. Activation of a new IOT version deactivates all existing inspection rules for the IOT.

Furthermore, you need to define an index for the QIE objects for your new IOT versions and update your item type and sample type with the new IOT version.

1. Select the entry for IOT 4 and choose the *Generate New Version* button.
2. Note down the generated process name in the *Process* column.

The steps described above are shown in the following figure:



Generation of IOT Versions (SAP EWM)

i Note

When you open this maintenance dialogue, a dialog box might inform you about read-only mode. You should still be able to generate new versions.

Maintaining IOT Versions

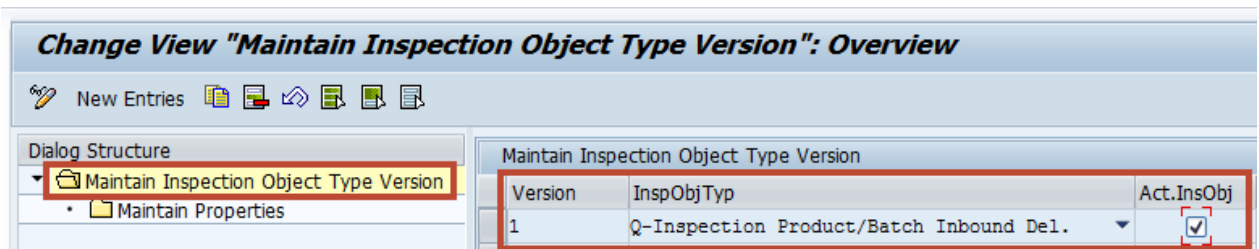
You activate the IOT and define the properties that need to be used to search for an appropriate inspection rule. You then bring these properties into a sequence relevant for the inspection rule determination, according to the level of detail for your search.

Customizing Path: *Extended Warehouse Management -> Cross-Process Settings -> Quality Management -> Basics -> Maintain Inspection Object Types Version*

Maintain the current version for IOT 4 by entering the following data:

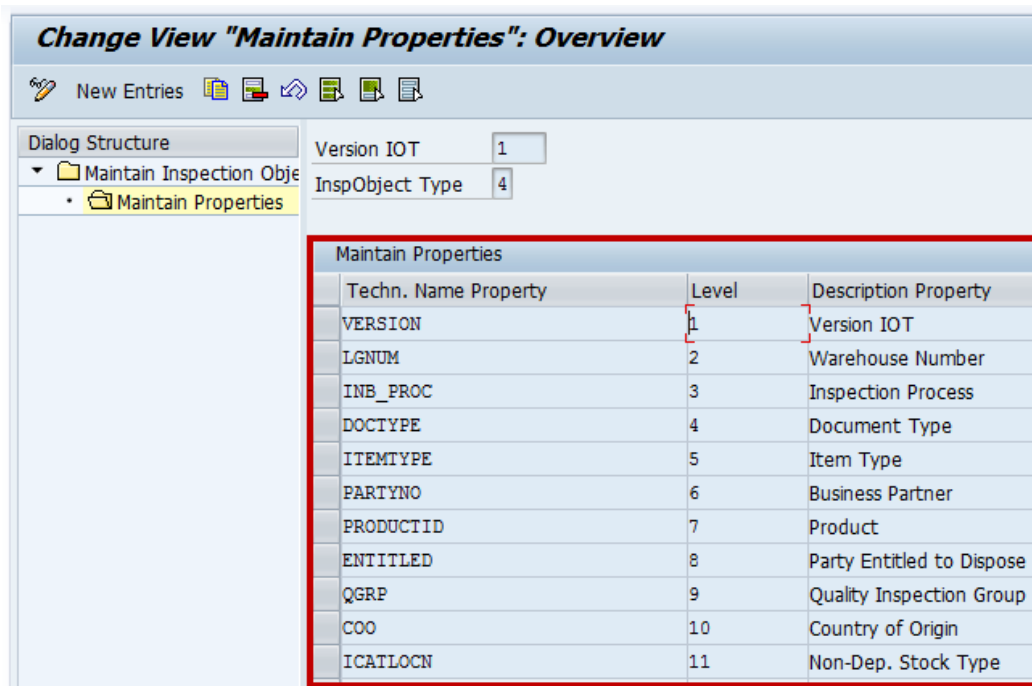
1. In the *InspObjTyp* (Inspection Object Type for Quality Inspection) field, enter *Q-Inspection Product/Batch Inbound Del.*
2. Select the *Act.InsObj* (Activation of Inspection Object Type) checkbox to activate the IOT.

The steps described above are shown in the following figure:



Maintenance of IOT 4 Version (SAP EWM)

3. Select the new IOT version and double-click the *Maintain Properties* folder.
4. Maintain the properties as shown in the following figure:



Properties for IOT 4 (SAP EWM)

5. Save your settings.

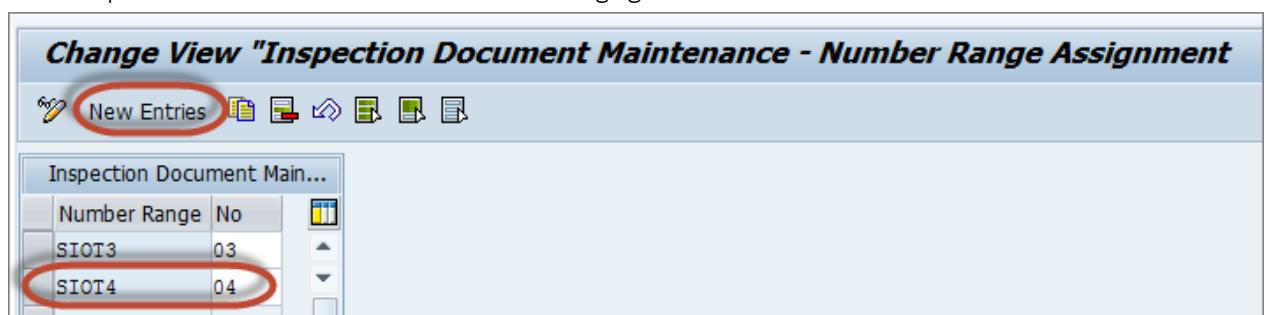
Defining Number Range for IOT 4

You must define and assign a number range for IOT 4 as follows:

Customizing Path: *Extended Warehouse Management -> Cross-Process Settings -> Quality Management -> Settings for Inspection Rules -> Define Number Ranges for Inspection Documents*

1. Choose the *Define Number Ranges* activity.
2. Choose the *Intervals* button and check that an entry exists for number range number 04 as follows:
 - *From Number:* 004000000000
 - *To Number:* 004999999999
3. Choose the *Assign Number Ranges to Inspection Documents* activity.
4. Create an entry for the number range that you want to use for IOT 4 inspections and assign the number range the number 04.

The steps described above are shown in the following figure:



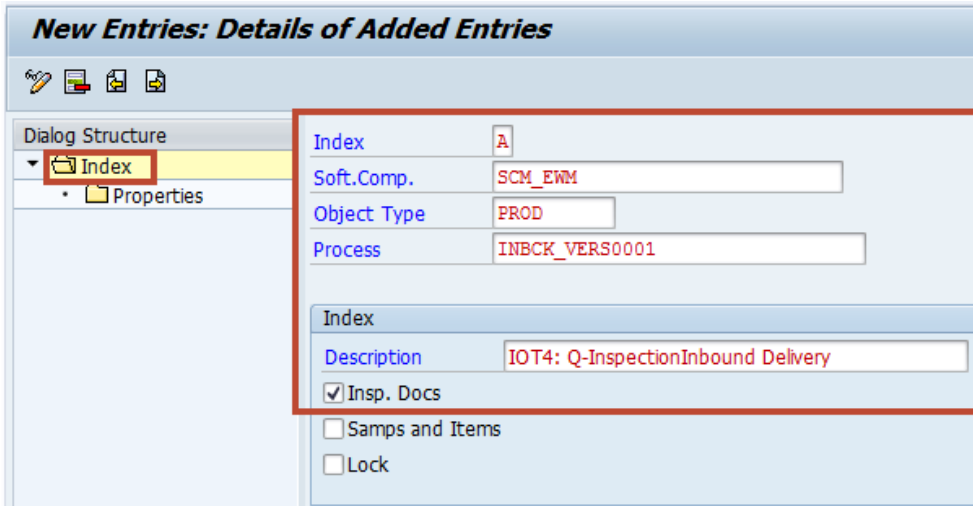
Defining Number Range for Inspection Documents of IOT 4 (SAP EWM)

Defining Indexes for Quality Inspection Engine Objects

To search inspection documents by attributes such as product, batch, or reference document number (REFDOCNO), you must define an appropriate search index.

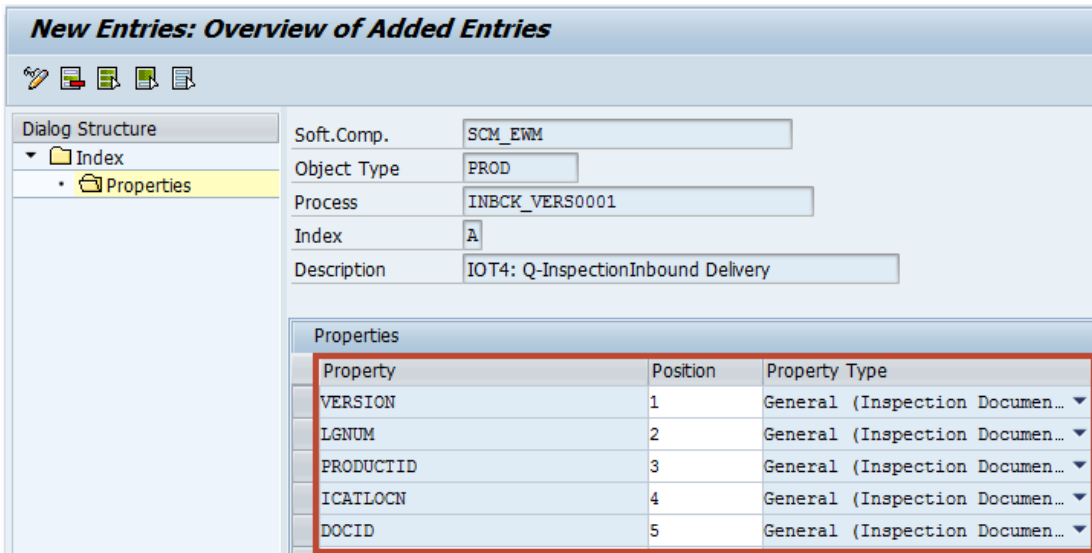
Customizing Path: *Extended Warehouse Management -> Cross-Process Settings -> Quality Management -> Basics -> Define Indexes for QIE Object*

The search index described above is shown in the following figure:



Basic Settings for New Index (SAP EWM)

You define the properties for the IOT that the index is to contain, as shown in the following figure:

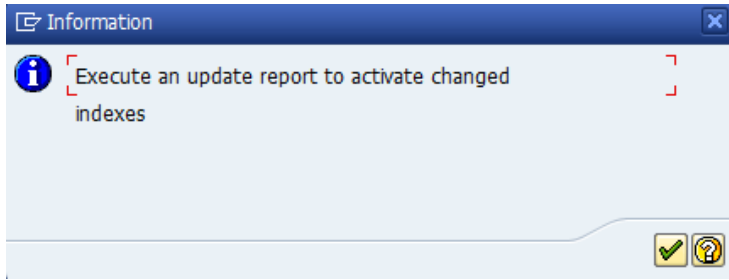


Defining Properties for New Index (SAP EWM)

i Note

You can specify a maximum of 10 properties.

If inspection documents, samples, or items already exist in your system, the following message will appear:



Message to Run Index Update Report (SAP EWM)

The report *Activate Indexes and Delete Indexing for Locked Indexes* (QIE_INDEX_UPDATE) indexes the existing inspection documents, samples, and items. You run the report as follows:

1. Run the report QIE_INDEX_UPDATE in transaction **SE38**.
2. Enter the data of your new index as shown in the following figure:

A screenshot of the SAP report "Activate Indexes and Delete Indexing for Locked Indexes". The report title is at the top. Below it, there are two sections: "Delete Indexing" and "Activate Indexes". In the "Delete Indexing" section, the checkbox "Delete Indexing for All Locked Indexes" is checked. In the "Activate Indexes" section, there is a table with four rows: "Index" (value: A), "Software Component" (value: SCM_EWM), "Object Type" (value: PROD), and "Process" (value: INBCK_VERS0001). Each row has a "to" field and a right arrow button. The "Delete Indexing" section and the "Activate Indexes" table are circled in red in the original image.

Index Update Report (SAP EWM)

3. Execute the report.
The system gives you a message indicating whether the indexing was successful.

Activating IOT 4

You activate the IOT for your warehouse so it can be used.

Customizing Path: *Extended Warehouse Management -> Cross-Process Settings -> Quality Management -> Basics -> Warehouse-Dependent Activation of Inspection Object Type*

You maintain the data as shown in the following figure:

Change View "Warehouse-Dependent Inspection Object Type": Details

New Entries

Warehouse No. W001
 InspObject Type 4

Warehouse-Dependent Inspection Object Type

Activ. InspObj.
 Follow-UpAct. LF Inspection Planning at Activation of Delivery
 Number Range SIOT4
 External System SAP_ERP_QM
 Installation INST_QM

Item Type
 Status Profile
 Change Pr/Batch
 Qty Diff. All.
 Decis. InspDoc Inspection Document Decided with Code of Elements
 Canc. Dec. Elements
 Act.Decision
 Catalog (ext.)
 Acceptance Sampling
 GR Control
 Prod. Presampling

Settings for Warehouse-Dependent Activation of IOT 4 (SAP EWM)

3.3.2.2 SAP EWM System: Maintaining Follow-Up Actions

You maintain follow-up actions for an inspection outcome. You can use follow-up actions for quality control or simply for informative purposes. You maintain follow-up actions as follows:

1. You activate warehouse-independent BC Set /SCWM/QM_FOLLOW_UP_ACTION_INDEP and warehouse-dependent BC Set /SCWM/QM_FOLLOW_UP_ACTION for your warehouse number on the *SAP Easy Access* screen under *Tools -> Customizing -> Business Configuration Sets -> Activation of BC Sets* (transaction **SCPR20**).
2. You check the follow-up action settings:

Customizing Path: *Extended Warehouse Management -> Cross-Process Settings -> Quality Management -> Result -> Maintain Follow-Up Action*

For the simple quality inspection process discussed in this document, the following follow-up actions are set up:

- A – Putaway
- D – Scrapping

The follow-up actions mentioned above are shown in the following figure:

Change View "Follow-Up Actions": Overview

New Entries [Icons]

Dialog Structure

- Follow-Up Actions
 - Follow-Up Actions for Quality Results
 - Code Group
 - Assign Follow-Up Actions

FollUpActn	Follow-Up Action
A	PUTAWAY
B	STOCK TRANSFER
C	STOCK TRANSFER TO REMANUFACTURER
D	SCRAPPING
E	RETURN

Setting for Follow-Up Actions (SAP EWM)

- a) Select the follow-up actions and double-click the *Follow-Up Actions for Quality Results* folder, as shown below:

Change View "Follow-Up Actions for Quality Results": Details

New Entries [Icons]

Dialog Structure

- Follow-Up Actions
 - Follow-Up Actions for Quality Results
 - Code Group
 - Assign Follow-Up Actions

Warehouse No. W001

Follow-Up Actn A

InspObject Type 4

Follow-Up Actions for Quality Results	
Int. Action	4 Put Away for Delivery
Non-Dep. StkTpe	FF
Whse Proc. Type	
Exception Code	

Setting for a Putaway Follow-Up Action (SAP EWM)

Change View "Follow-Up Actions for Quality Results": Details

New Entries [Icons]

Dialog Structure

- Follow-Up Actions
 - Follow-Up Actions for Quality Results
 - Code Group
 - Assign Follow-Up Actions

Warehouse No. W001

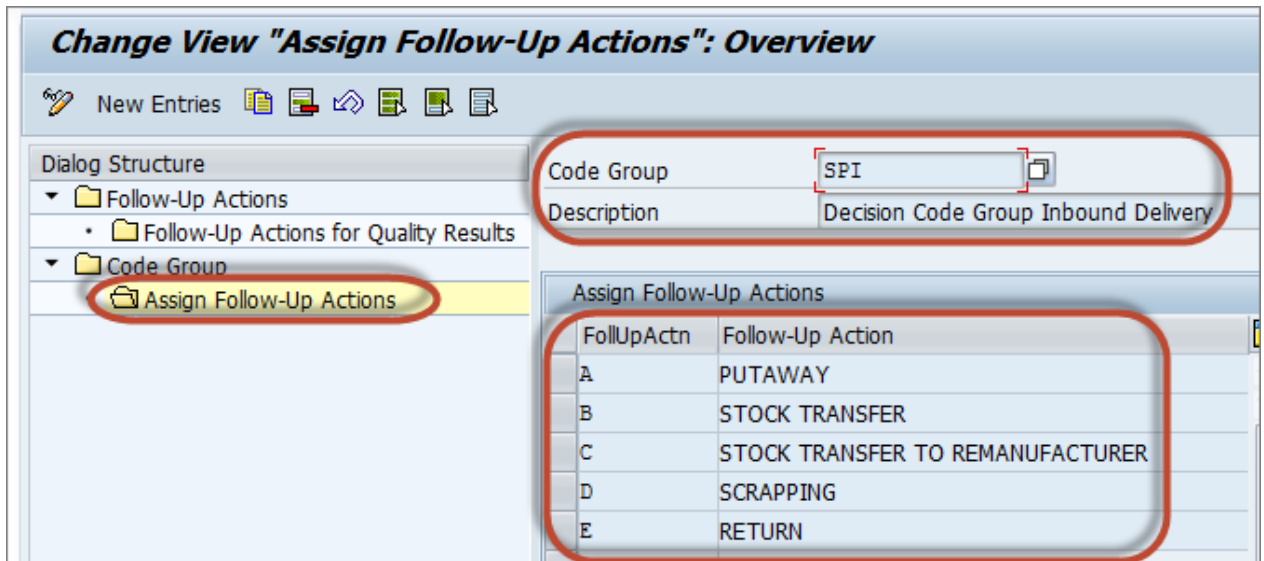
Follow-Up Actn D

InspObject Type 4

Follow-Up Actions for Quality Results	
Int. Action	1 Scrapping
Non-Dep. StkTpe	BB
Whse Proc. Type	P420
Exception Code	

Setting for a Scrapping Follow-Up Action (SAP EWM)

- b) Assign the follow-up actions to the new decision code group as follows:
- i. Select the entry for the new decision code group.
 - ii. Double-click the *Assign Follow-Up Actions* folder and enter the three follow-up actions, as shown below:



Assignment of Follow-Up Actions to the New Decision Code Group (SAP EWM)

3.3.2.3 SAP EWM System: Code Groups and Decision Codes for Usage Decisions

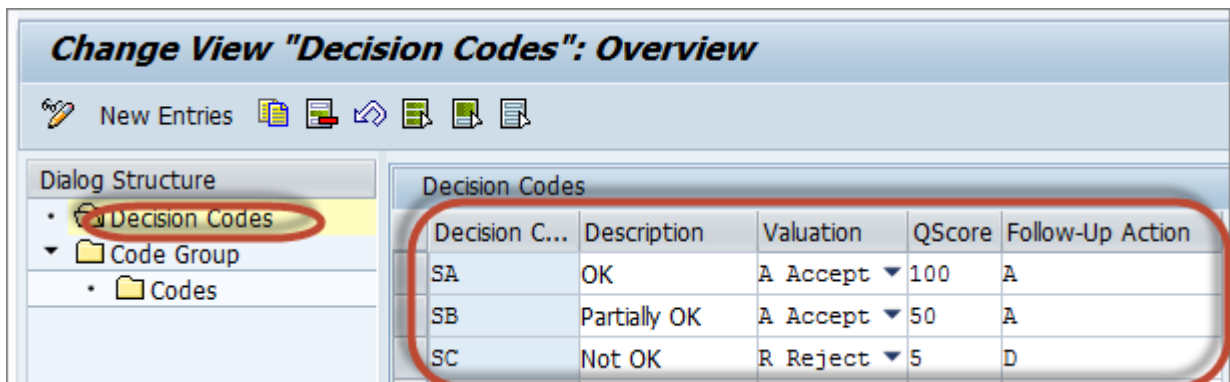
If the quality inspection process integrates an SAP ERP system with an SAP EWM system, you must define identical decision code groups and decision codes in both systems (see [here](#) for the SAP ERP part).

Defining Decision Codes and Code Groups

1. You activate warehouse-independent BC Set / SCWM/QM_DECISION_CODES on the *SAP Easy Access* screen under *Tools -> Customizing -> Business Configuration Sets -> Activation of BC Sets* (transaction **SCPR20**).
2. You check the decision code settings:
 Customizing Path: *Extended Warehouse Management -> Cross-Process Settings -> Quality Management -> Result -> Define Decision Codes*

Decision Codes

You define decision codes for the new code group for the following usage decisions, as shown below:



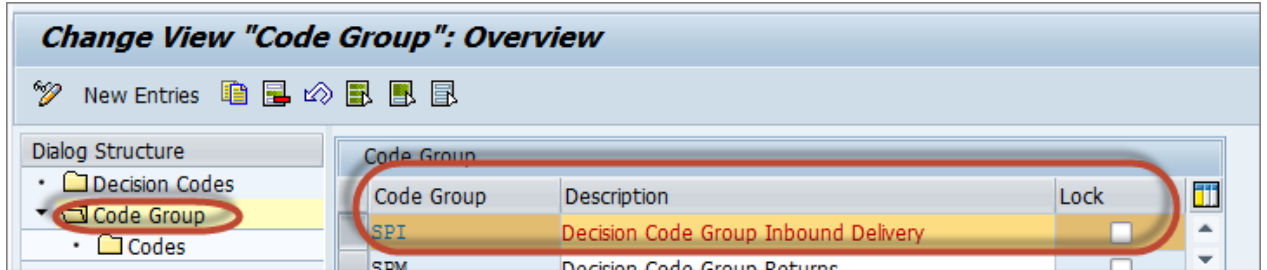
Definition of Decision Codes (SAP EWM)

Code Groups

You define the code group as follows:

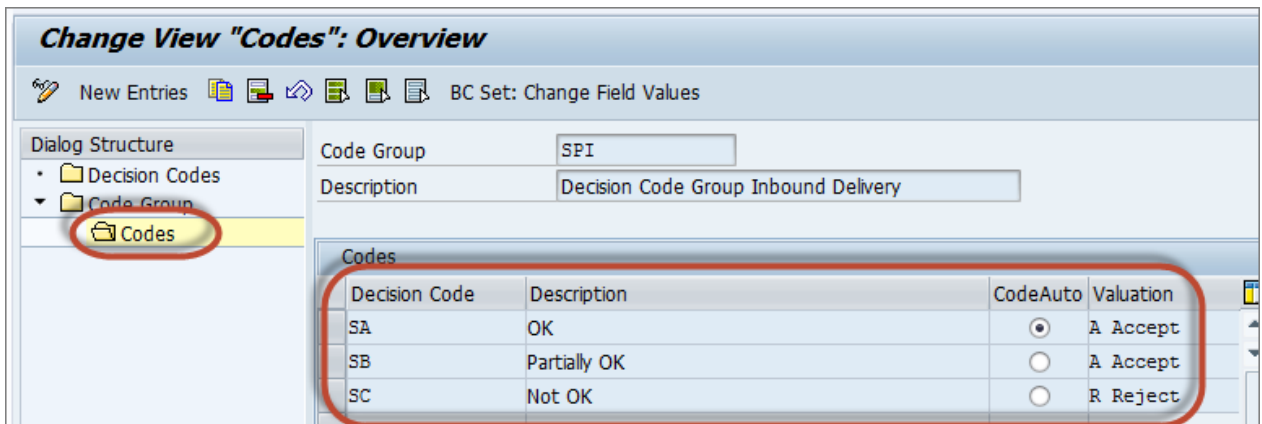
1. Create an entry for the code group you defined previously for the SAP ERP system.
2. Enter a meaningful description.

The steps described above are shown in the following figure:



Definition of Code Group for Decision Codes (SAP EWM)

3. Assign the decision codes to the new code group as follows:
 - a) Select the entry for your code group.
 - b) Double-click the *Codes* folder and add your decision codes as shown in the following figure:



Assignment of Decision Codes to Code Group (SAP EWM)

Note that the first decision code, *SA*, is used for the automatic inspection decision⁵.

3.3.2.4 SAP EWM System: Quality Inspection Application Log

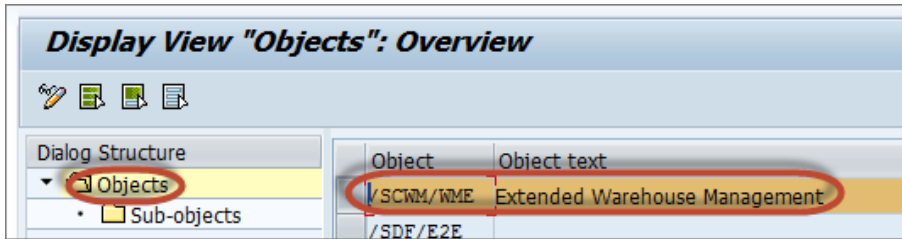
Maintaining Application Log Sub-Object

1. You activate warehouse-independent BC Set / SCWM/QM_LOG_SUBCOMP on the *SAP Easy Access* screen under *Tools -> Customizing -> Business Configuration Sets -> Activation of BC Sets* (transaction **SCPR20**).

⁵ Use case: If there is a skip in the context of dynamic modification, the inspection is completed immediately after it is created. The code with the indicator for the automatic inspection decision is used for the inspection decision. For information about dynamic modification, see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose *Quality Inspection (QM-IM) -> Master Data -> Dynamic Modification*.

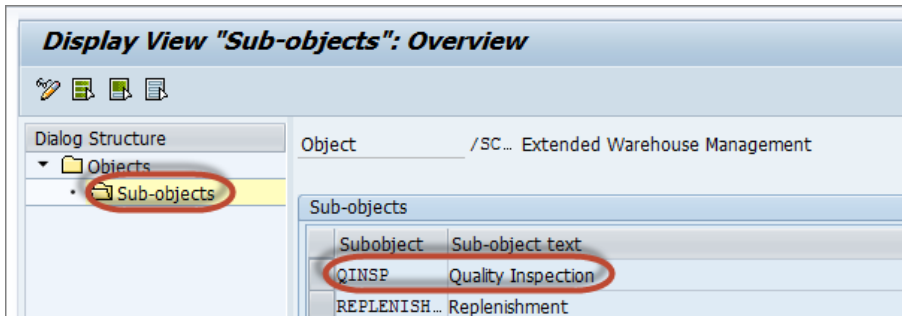
2. You check the decision code settings by maintaining view cluster APPL_LOG using transaction **SM34** and checking the entries for object /SCWM/WME (Extended Warehouse Management).

The step described above is shown in the following figure:



Application Log Object (SAP EWM)

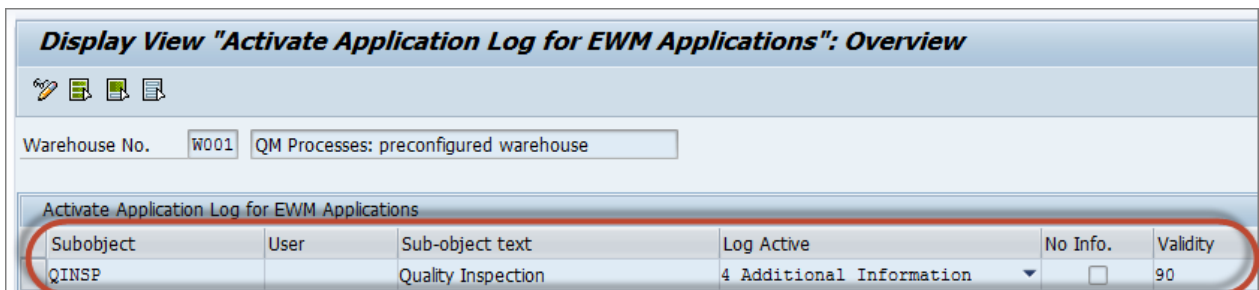
3. You check if sub-object QINSP is maintained, as shown in the following figure:



Application Log Sub-Object (SAP EWM)

Activating the Quality Inspection Application Log

Activate the application log for sub-object QINSP (Quality Inspection) on the *SAP Easy Access* screen under *Extended Warehouse Management -> Settings -> Application Log -> Activate Application Log* (transaction /SCWM/ACTLOG), as shown in the following figure:



3.4 Master Data

3.4.1 SAP ERP System: Master Data

This chapter describes the master data necessary in SAP ERP to run a simple example of an integrated quality inspection process using SAP EWM and the QM component of SAP ERP, as follows:

1. You must add QM settings in your material master data.
2. You must create QM-specific master data, such as:
 - Inspection characteristics
 - Sampling procedure
 - Inspection plan for the inspected material
3. You must transfer your material master to SAP EWM using the Core Interface (CIF).

3.4.1.1 SAP ERP System: Material Master with Active Quality Management Settings

For information about the Configuration of Warehouse Structure and Master Data for SAP EWM business scenario, see [Creating Products](#) in SAP Solution Manager.

1. Copy one of the material masters that was created during the master data setup of the preconfigured warehouse on the *SAP Easy Access* screen under *Logistics -> Materials Management -> Material Master -> Material -> Create (General) -> Immediately* (transaction **MM01**).

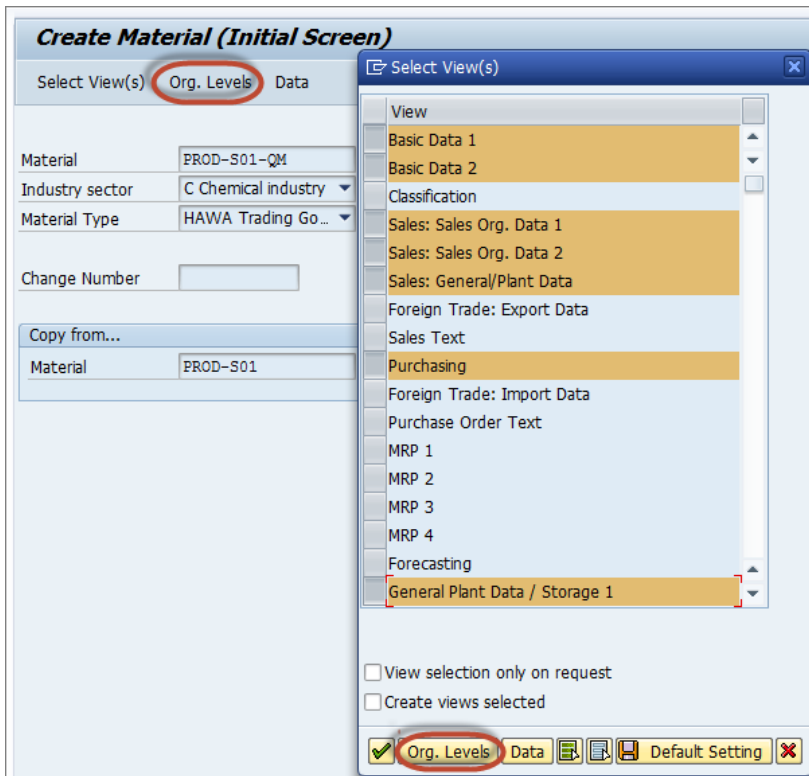
The step above is shown in the following figure:

The screenshot shows the 'Create Material (Initial Screen)' dialog box. It has a title bar with 'Create Material (Initial Screen)' and three tabs: 'Select View(s)', 'Org. Levels', and 'Data'. Below the tabs, there are three input fields: 'Material' with the value 'PROD-S01-QM', 'Industry sector' with a dropdown menu showing 'Chemical industry', and 'Material Type' with a dropdown menu showing 'Trading Goods'. Below these fields is a 'Change Number' field which is empty. At the bottom, there is a 'Copy from...' section with a 'Material' field containing the value 'PROD-S01'. Red boxes highlight the 'Material' field in the top section and the 'Material' field in the 'Copy from...' section.

Selection Screen Entries for Copying Material Master (SAP ERP)

2. Select the following views:
 - *Basic Data 1*
 - *Basic Data 2*
 - *Sales: Sales Org. Data 1*
 - *Sales: Sales Org. Data 2*
 - *Sales: General/Plant Data*
 - *Purchasing*
 - *General Plant Data/Storage 1*
 - *General Plant Data/Storage 2*
 - *Quality Management*
 - *Accounting 1*
 - *Accounting 2*

The views mentioned above are shown in the following figure:



Create Material Master - Select Views (SAP ERP)

3. Enter the same values for the plant, storage location, sales organization, and distribution channel as the organizational level for the template and copied material master, as shown in the following figure:

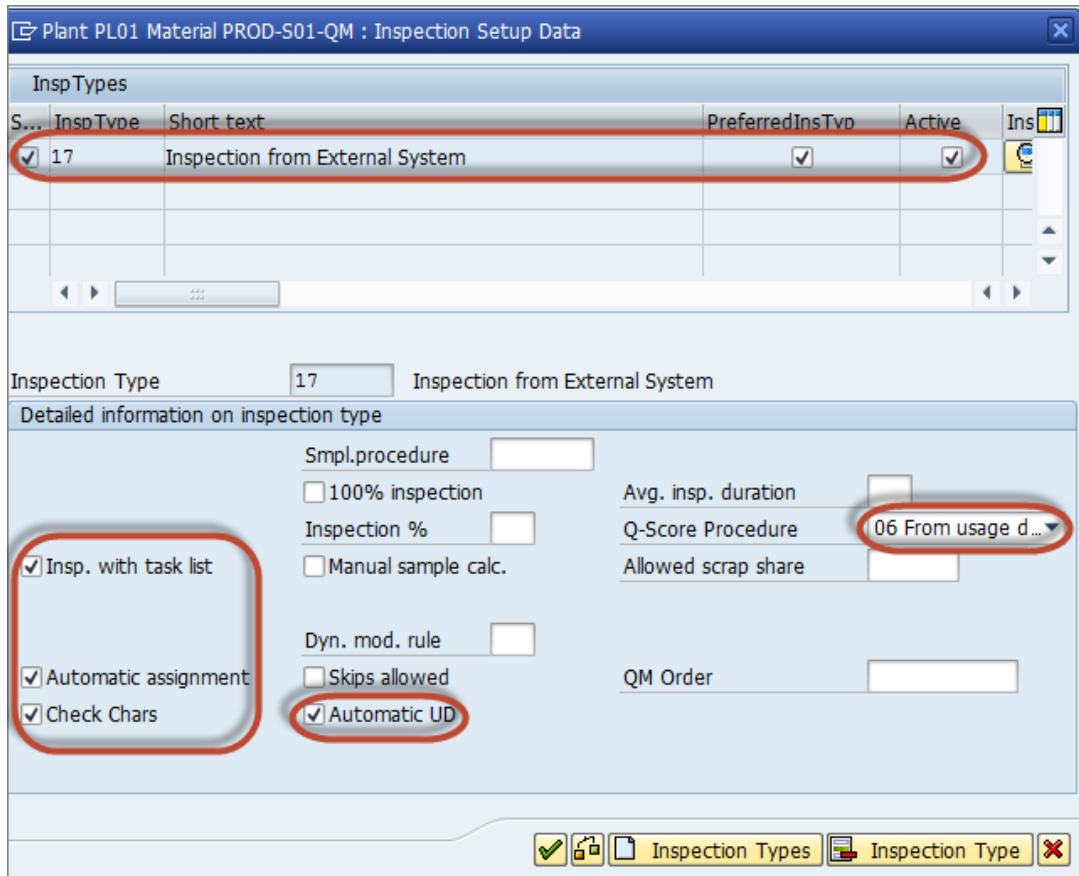


Selection Screen for Copying Organizational Data (SAP ERP)

4. Copy all data from the material master template.
5. On the *Quality Management* tab page, choose the *Insp. Setup.* button.
6. Choose the *Inspection Types* button and enter the following values:
 - *InspType:* 17
 - *Preferred InsTyp:* Yes (checkbox selected)
 - *Active:* Yes (checkbox selected)
 - *Insp. Type Det.:* Choose the *Detail* button
7. Maintain the following detailed information for the inspection type:
 - *Q-Score Procedure: From Usage Decision Code (06)*
 - *Insp. with Task List:* Yes (checkbox selected)
 - *Automatic Assignment:* Yes (checkbox selected)

- *Check Chars*: Yes (checkbox selected)
- *Automatic UD*: Yes (checkbox selected)

The properties mentioned above are shown in the following figure:



Quality Management Setting in Material Master (SAP ERP)

Continue to take over the remaining data of the material master template.

After these steps, in transaction **MM01** you must also create the product for storage location ROD. Create the product for the *General Plant Data/Storage 1* material master view.

3.4.1.2 SAP ERP System: Maintaining Quality Management Data

This chapter describes the QM master data necessary in SAP ERP to run a simple example of an integrated quality inspection process using SAP EWM and the QM component of SAP ERP.

The following necessary steps are explained:

1. Creating inspection characteristics
2. Creating a sampling procedure
3. Creating an inspection plan

Creating Inspection Characteristics

You create a master inspection characteristic as a basis for inspections. In our example inspection process, we use an example characteristic for which a concentration is measured and captured as a percentage.

1. On the *SAP Easy Access* screen, choose *Logistics -> Quality Management -> Quality Planning -> Basic Data -> Inspection Characteristic -> Create* (transaction **QS21**).

The initial screen for creating a master inspection characteristic is displayed, as shown in the following figure:

Create Master Inspection Characteristic: Initial Screen

Master inspection characteristic

Plant	PL01
Master insp.charac.	EWM_CONC
Valid From	19.01.2015

Initial Screen for Creating Inspection Characteristics (SAP ERP)

2. On the *General Data* screen, maintain the data as shown in the following figure and press Enter:

Create Master Inspection Characteristic: General Data

Control indicators Time axis

Mstr insp.char. EWM_CONC Plant PL01
Class char.

Control Data

Preset indicators 3000 Quantitative charac. Qualitative charac.

General Information

Status 2 Released 1 Complete copy model
Language Key EN
Short text FQI: Concentration [%]
Search field FQI
Int. char. descrip.

Other Languages Classification
 Sample-Drawing Text Inspection Methods
 Catalogs

Maintain Inspection Characteristics (SAP ERP)

3. The system displays the following dialog boxes for you to enter control indicator data:

Inspection Characteristics - First Control Indicators Dialog Box (SAP ERP)

Inspection Characteristics - Second Control Indicators Dialog Box (SAP ERP)

4. Choose the *Quant. Data* button to maintain the quantitative data, which is shown in the following figure:

Quantitative Data			
Decimal places	2	Msmt unit	%
Target value	100,00		
LoPlaus. limit	95,00	UpPlaus. limit	100,00

Dialog Box for Setting Quantitative Data for Inspection Characteristics (SAP ERP)

- In the field next to the *Status* field, enter *Complete Copy Model*.
- In the *Status* field, enter *Released*, press **Enter**, and save your data.

The settings above are shown in the following figure:

Change Master Insp. Characteristic Version: General Data

Control indicators Time axis

Mstr insp.char. Plant Version

Class char.

Quantitative insp. char., Summarized recording, Required char., Fixed scope

Control Data

Preset indicators Quantitative charac. Qualitative charac.

General Information

Status

Language Key

Short text

Search field

Release Inspection Characteristics (SAP ERP)

Creating a Sampling Procedure

- On the *SAP Easy Access* screen, choose *Logistics -> Quality Management -> Quality Planning -> Basic Data -> Sample -> Sampling Procedure -> Create* (transaction **QDV1**).
- In the *Sampling Procedure* field, enter **FQI_SP1** and press *Enter*.
- Maintain the following data and save your data:
 - Description: First Quality Inspection: Sample Proc.
 - Sampling Type: 100 Fixed Sample
 - Valuation Mode: 500 Manual Valuation
 - Without Insp. Points: Yes (checkbox selected)
 - Sample Size: 1

The settings above are shown in the following figures:

Create Sampling Procedure: Assignments

Sampling procedure: FQI_SP1 [First Quality Inspection: Sample Proc.]

Assignments

Sampling type	100 Fixed sample
Valuation mode	500 Manual valuation

Inspection points

Without insp. points

General Data for Sampling Procedure (SAP ERP)

Create Sampling Procedure: Special Conditions

Sample

Sampling procedure: FQI_SP1 First Quality Inspection: Sample Proc.

Assignments

Sampling type	100 Fixed sample
Valuation mode	500 Manual valuation
Control chart type	

Determination rule: 10 Fixed sample

Sampling Procedure - Sample (SAP ERP)

Fixed Sample

Sampling procedure: FQI_SP1

Sample

Sample size	1
-------------	---

✓ ✗

Set Sample Size for Fixed Sample (SAP ERP)

Creating Inspection Plan for QM Material

1. Create an inspection plan for your QM material on the *SAP Easy Access* screen under *Logistics -> Quality Management -> Quality Planning -> Inspection Plan -> Create* (transaction **QP01**).
2. Enter the material, plant, and a name for the inspection plan group as shown in the following figure, and press Enter:

Create Inspection Plan: Initial Screen

Copy model Task lists Operations

Material	PROD-S01-QM
Plant	PL01
Group	FQI

Inspection Plan Entry Screen (SAP ERP)

3. In the *Usage* field on the *Create Inspection Plan: Header Details* screen, enter the usage that you maintained previously (*FQI*).
4. In the *Status* field, enter *Released (General)* (4).

The settings mentioned above are shown in the following figure:

Create Inspection Plan: Header Details

Task lists Material assignment Operations

Material PROD-S01-QM Small part, fast-moving 01

Task list

Group	FQI	Small part, fast-moving 01
Group Counter	1	<input type="checkbox"/> Long text exists
Plant	PL01	

General data

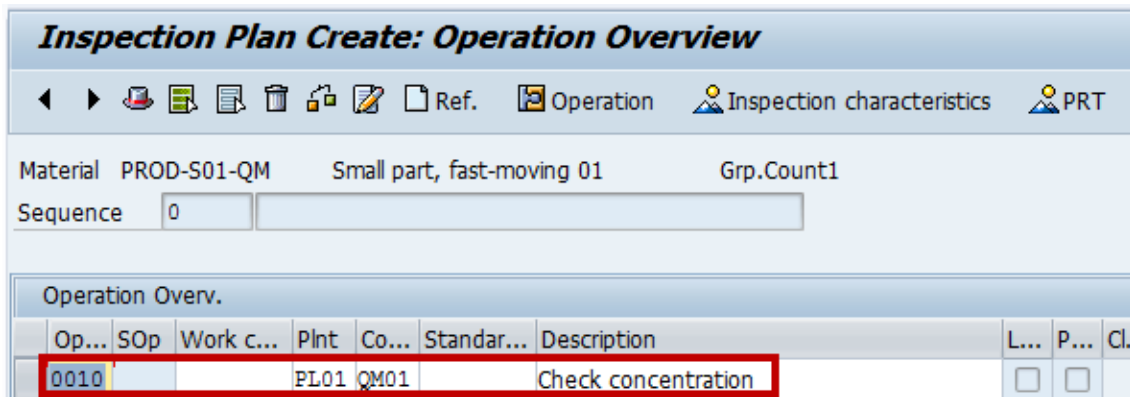
Deletion flag

Usage	FQI	First Quality Insp.
Status	4	Released (general)

Header Data for Inspection Plan (SAP ERP)

5. Choose the *Operations* button.
6. Select the first operation and maintain the following data:
 - *Control Key*: QM01
 - *Description*: Check concentration

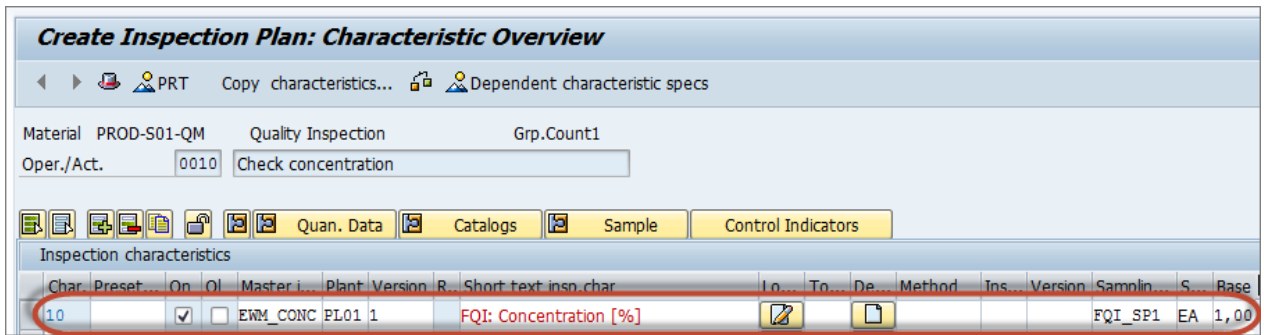
The settings mentioned above are shown in the following figure:



Settings for Inspection Plan Operations (SAP ERP)


7. Select the operation line and choose the *Inspection Characteristics* button.
8. Go to the first line and enter the previously created master inspection characteristic **EWM_CONC**.
9. Press **Enter**, and assign your sampling procedure **FQI_SP1**, and save your changes.

The settings mentioned above are shown in the following figure:



Assign Inspection Characteristics to Inspection Plan Operations (SAP ERP)


3.4.1.3 SAP ERP System: Changing CIF Model

Add your new material to the CIF integration model. For more information about the *Integration of SAP ERP with SAP EWM*, see SAP Solution Manager. For information about adding your new material to the CIF integration model, see the *Activating Master Data Transfer Using CIF in ERP* section in the [Integration of SAP ERP with SAP EWM](#) guide  in SAP Solution Manager.

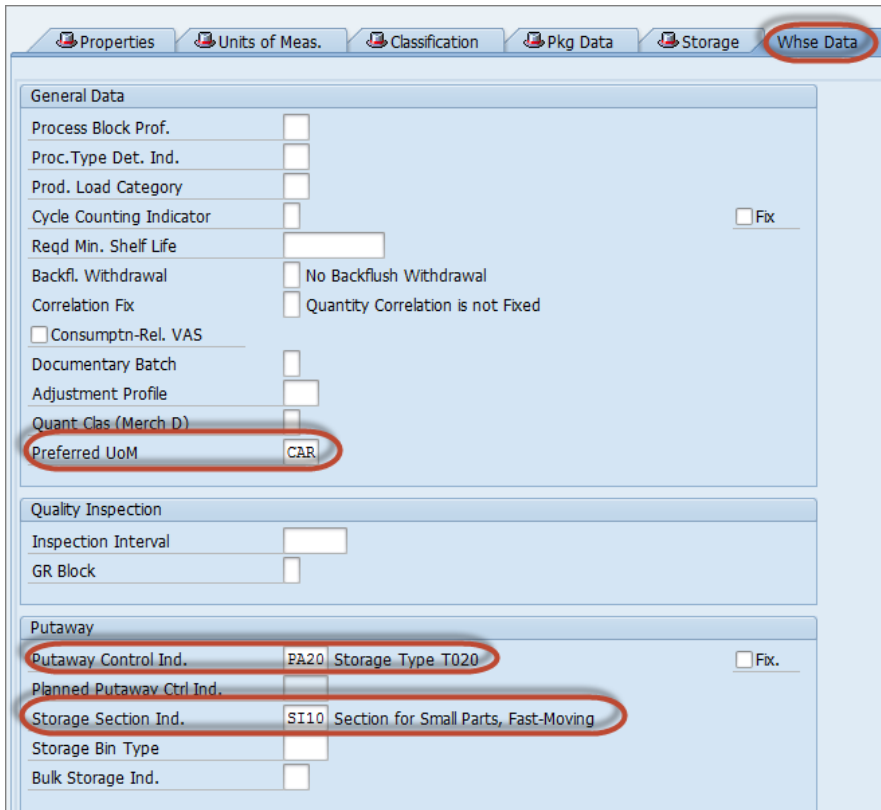
3.4.2 SAP EWM System: Master Data

This section describes step-by-step the master data setup required in the SAP EWM system for a simple QM process.

3.4.2.1 Creating Products

For information about the Configuration of Warehouse Structure and Master Data for SAP EWM business scenario, see [Creating Products](#)  in SAP Solution Manager.

You create products on the *SAP Easy Access* screen under *Extended Warehouse Management -> Master Data -> Product -> Maintain Warehouse Product* (transaction **/SCWM/MAT1**). You make additional warehouse product settings for product PROD-S01-QM as shown in the following figure:

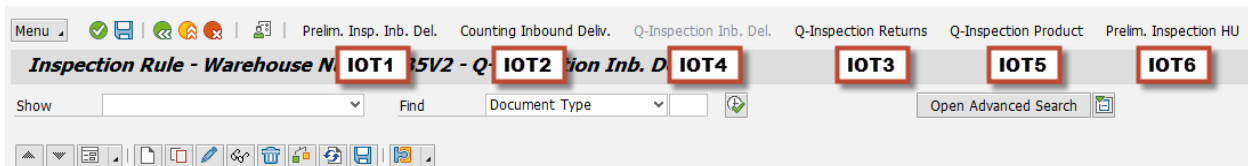


Warehouse Product Setting in Warehouse Data View (SAP EWM)


3.4.2.2 Creating Inspection Rules

Based on selection criteria (also known as properties), the inspection rule determines which objects to trigger an inspection for and specifies the inspection details, for example, the inspection process, the procedure, the inspection frequency, and codes.

1. On the *SAP Easy Access* screen, choose *Extended Warehouse Management -> Master Data -> Quality Management -> Maintain Inspection Rule* (transaction / **SCWM**/**QRSETUP**).



Inspection Rule Screen Showing Relation to IOTs (SAP EWM)

2. Choose  (*Create*).
In the current example, you are creating an inspection rule for IOT 4 Q-Inspection Inbound Delivery.
3. In the *Inspection Process* field in the *Properties* screen area, enter *0* (*Inspection After Goods Receipt*).
4. In the *Product* field, enter **PROD-S01-QM**.

This indicates that whenever an inbound delivery item contains product **PROD-S01-QM**, the inspection rule triggers the creation of an inspection document for the delivery item of product **PROD-S01-QM**.

The settings mentioned above are shown in the following figure:

Properties	
Inspection Process	0 Inspection after Goods Receipt
Document Type	
Item Type	
Business Partner	
Product	PROD-S01-QM Small part, fast-moving 01
Ent. to Dispose	
Quality Insp. Group	
Country of Origin	
Non-Dep. Stock Type	

Settings in Inspection Rule of IOT 4 (*Q-Inspection Inbound Delivery*) (SAP EWM)

5. In the *Arguments – General* screen area, specify the inspection as follows:
 - *Inspection Procedure* – for example, *C (100% Inspection)*
 - *Code Group* and *Code Group Item*
 - *Number Range*
 - *Indep. ST Arg.* (Location-Independent Stock Type) – for example, *QQ (Stock in Quality Inspection)*

The settings mentioned above are shown in the following figure:

Arguments - General	
Inspection Procedure	C 100% Inspection
Code Group	SPI Decision Code Group Inbound Deli...
Code Group Item	SPI Decision Code Group Inbound Deli...
Finding Type	
Catalog Filter	
Action Profile	
Dynamic Mod. Criteria	
Dynamic Mod. Rule	
Authorization Group	
Number Range	SIOT4
Rule Group	
Insp. Dur.	
Indep. ST Arg.	QQ Stock in Quality Inspection
Step	
InspDoc. Cr. Ctrl	

Inspection Rule Settings for Arguments - General (SAP EWM)

6. In the *Arguments – External System* screen area, set the integration settings with the QM component in SAP ERP as follows:.
7. In the *Inspection Type* field, enter inspection type 17 to be used for material PROD-S01-QM, as defined in section 3.4.1.1.
8. In the *Task List Type* field, enter *Q* (Inspection Plan).

The settings mentioned above are shown in the following figure:

Arguments - External System	
Inspection Type	17
Task List Type	Q
Task List Group	
Group Counter	

Inspection Rule Settings for External QM System (SAP EWM)

i Note

If you leave the *Task List Group* and *Group Counter* fields empty as shown in the figure above, SAP ERP determines the inspection plan. If you specify the task list group and the group counter, for example, *FQ* and 1, then SAP ERP does not determine the inspection plan. Instead, the inspection plan is determined based on your SAP EWM inspection rule settings.

4 Quality Inspection Process Step-by-Step

This process extends the [Inbound Process Without Packing Information \(Manual WT\)](#) business process of the [Warehouse Management with Preconfigured Processes](#) business scenario by a simple quality inspection process integrated with the Quality Management (QM) component of SAP ERP. For information about this business process in the [Warehouse Management with Preconfigured Processes](#) business scenario, see SAP Solution Manager.

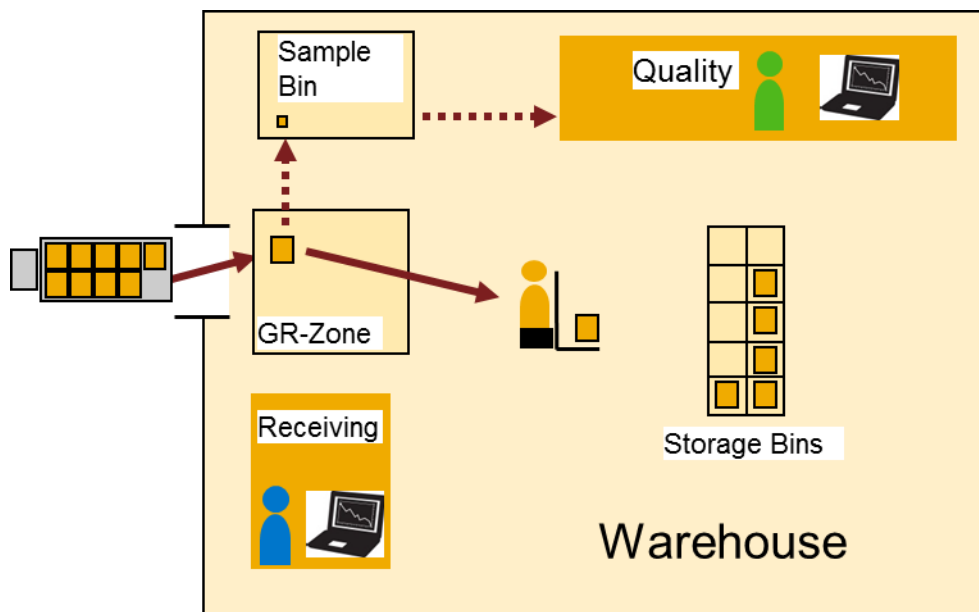
You use this business process to receive goods on pallets from external vendors. Each pallet contains only a single product. In addition, your vendor adds a non-stock relevant sample⁶ to each delivery item. You check the goods in the goods receipt (GR) zone. Upon goods receipt posting, warehouse orders are created in SAP Extended Warehouse Management (SAP EWM) and inspections lots are created in the SAP ERP system. You bring the samples and the printed inspection instructions to the sample bin.

Depending on the product attributes, you move the goods to different areas in the warehouse using the information contained in the printed warehouse order.

Independently from the logistical processes in the warehouse, the quality inspector picks up the samples with attached inspection instructions from the sample bin and brings them into the laboratory for inspection. After recording the inspection results, a usage decision is made. Based on the usage decision, a follow-up action for the related stock in the warehouse is triggered, for example, posting the inspected stock from quality stock into free available stock.

4.1 Process

The figure below illustrates a simple inbound process with a quality inspection and is followed by an explanation:



Sketch of Simple Inbound Process with Quality Inspection

1. The truck arrives at the checkpoint and the truck driver is assigned a warehouse door.
2. The truck driver brings the delivery note to the GR office.
If the vendor has sent an ASN to SAP ERP, the GR office clerk finds the inbound delivery in the SAP EWM system. Otherwise, he creates the inbound delivery.
3. The warehouse worker unloads the truck and checks the goods against the delivery note.
4. The warehouse worker brings the checked, and possibly, revised delivery note to the GR office.

⁶ The sample is not listed in the delivery note or advanced shipping notification (ASN). It is just physically added to the delivery item by the vendor, for example, attached to the first pallet of a delivery item.

5. The GR office clerk posts the GR.
6. Upon GR posting, the system automatically creates and prints warehouse orders for the inbound delivery to move the goods into the warehouse.
7. At the same time, the system triggers the creation of inspection lots of origin 17 in the SAP ERP system and prints the inspection instruction for the samples.
8. The truck leaves the warehouse.
9. The warehouse work picks up the sample instructions for the GR-posted delivery items from the printer, attaches them to the samples delivered by the vendor, and brings them to the sample bin.
10. The warehouse worker moves the goods from the GR zone into the warehouse to its final putaway storage bin.

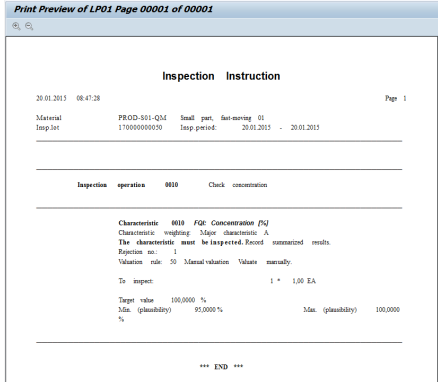
Note that as long as the quality inspection result is not available, the stock remains in quality stock.


Independently of the logistical process in the warehouse, at a later point in time the quality inspector picks up the quality samples from the sample bin and takes them to the laboratories for inspection.

During the inspection, the results are recorded and the usage decision for the inspection lot is made. Based on the usage decision, a follow-up action is triggered, for example, posting the inspected stock from quality stock into free available stock.



4.2 Test Case

Step	Step Description	Step Processor	Input Data	Expected Result
Preparation Step 1	Create a purchase order (PO) (SAP ERP)		<ol style="list-style-type: none"> 1. In SAP ERP, start transaction ME21N. 2. Enter the following data: <ul style="list-style-type: none"> • <i>Vendor</i>: For example, <i>VEND001</i> • <i>Purchasing Organization</i>: <i>0001</i> • <i>Purchasing Group</i>: <i>001</i> • <i>Company Code</i>: <i>0001</i> • <i>Material</i>: For example, <i>PROD-S01-QM</i> • <i>PO Quantity</i>: <i>1 PAL</i> • <i>Delivery Date</i> • <i>Net Price and Currency</i> • <i>Plant</i>: <i>PL01</i> • <i>Storage Location</i>: <i>ROD</i> 3. Save your entries. 	The PO, for example, 4500000203, is created.
Preparation Step 2	Create an inbound delivery (SAP ERP)		<ol style="list-style-type: none"> 1. In SAP ERP, start transaction VL31N. 2. Create an inbound delivery with reference to the PO, for example, 4500000203. 3. Enter an ASN number in the <i>External ID</i> field. Make a note of the ASN number as you need it in later steps. 4. Save your entries. 	The inbound delivery, for example, 180000319, is created and sent to SAP EWM.
1	A truck arrives at the checkpoint and drives to the door	Truck driver and checkpoint clerk	This step is carried out outside of the system.	

2	Unload the truck and check the goods	Warehouse worker	This step is carried out outside of the system. The warehouse worker checks the goods.	
3	Post GR (SAP EWM)	GR office clerk	<ol style="list-style-type: none"> 1. Start transaction /SCWM/GR. 2. Search for the inbound delivery using the ASN number. 3. Edit the inbound delivery. 4. Select the GR posting checkbox and save. 5. Post the GR. 	<p>The putaway warehouse orders are created based on the palletization data that you created for your products.</p> <p>The putaway warehouse orders are printed. You can check the spool requests in transaction SP01.</p>
4	The truck leaves	Truck driver	This step is carried out outside of the system.	
5	Put away sample (SAP ERP)	Warehouse worker		
5.1	Print inspection instruction (SAP ERP)		<p>After GR posting, the system automatically creates an inspection lot and prints the inspection instruction, as shown in the following figure:</p> 	<p>The inspection lot is created and the inspection instruction is printed.</p> <p>You can check the spool requests in transaction SP01.</p> <p>i Sample is printed by background user</p>
5.2	Put away sample to sample bin	Warehouse worker	<p>This step is carried out outside of the system.</p> <p>The warehouse worker attaches the inspection instruction to the sample and puts the sample delivered by the vendor into the sample bin.</p>	
6	Put away the goods and post the GR (SAP EWM)			
6.1	Put away the goods	Warehouse worker	This step is carried out outside of the system.	

6.2	Confirm the putaway warehouse orders	Warehouse clerk	<ol style="list-style-type: none"> 1. Start transaction /SCWM/TO_CONF. 2. Search for the warehouse order (see screenshot at step 5.1 above) then confirm and save it. 	The putaway warehouse orders are confirmed. The stock is moved to the final storage bin. Stock is still in stock type Q4 (<i>Stock in QI in Warehouse</i>).
7	Quality inspection in the QM component (SAP ERP)			
7.1	Pick up sample from sample bin	Quality inspector	This step is carried out outside of the system.	
7.2	Perform quality inspection and record results (SAP ERP)	Quality inspector	<ol style="list-style-type: none"> 1. Start transaction QE51N⁷. 2. Select inspections lots in the work list for the following: <ul style="list-style-type: none"> • Your plant • Insp. lot origin 17 • Material PROD-S01-QM • Lot created on <today's date> 3. Check the inspection lot number on the inspection instruction attached to the sample. For more information, see <i>4.3 Screenshots: Capturing Results</i>. 4. Record the inspection result by selecting characteristic <i>0010 FQI: Concentration [%]</i> and entering the mean value, that is, the measured (mean) value for the concentration. 5. Save your changes. 6. On operation level 0010, check the concentration and accept or reject the characteristic. 7. Choose  (<i>Close</i>), save your changes, and exit the screen. 	<p>A list of open inspection lots is shown.</p> <p>Once the results for the characteristic is recorded, the characteristic gets a green traffic light.</p>

⁷ You can access the work list for inspection lots using transaction **QA32**.

7.3	Record usage decision (SAP ERP)	Quality inspector	<ol style="list-style-type: none"> 1. If you are still in transaction QE51N, double-click the inspection lot whose results you recorded in the previous step. Alternatively, start transaction QA11 and select your inspection lot. 2. Record the usage decision for the inspection lot. For more information, see section 4.4 <i>Screenshots: Capturing Usage Decision: ACCEPT</i> or section 4.5 <i>Screenshots: Capturing Usage Decision: REJECT</i>. 3. Save. 	<p>To see the result, do the following:</p> <ol style="list-style-type: none"> 1. Check in the warehouse monitor (transaction /SCWM/MON) at node <i>Inbound</i> -> <i>Documents</i> - <i>Inbound Delivery</i>. 2. Double-click to open the selection screen and search for your inbound delivery in SAP EWM using the ASN number. 3. Choose  (<i>More Methods</i>) and choose <i>Display Inspection Documents</i>. 4. Select the inspection document and  choose (<i>Form View</i>). In the <i>External Doc. Number</i> field, you find the inspection lot number. In the <i>Decision</i> field, you find the usage decision recorded in this step in transaction QA11. Based on the usage decision code, a follow-up action has been determined and automatically entered in the <i>Follow-Up Action</i> field.
8	Perform follow-up action (SAP EWM)	Automatic step		

8.1	Update inspection document (SAP EWM)	Automatic step		<p>Check in the warehouse monitor (transaction /SCWM/MON) at node <i>Documents</i> -> <i>Inspections</i> by selecting the following:</p> <ul style="list-style-type: none"> • Inspection Object Type 4 • Release Date (Insp. Document) • Product • Inspection document <p>The <i>Ext. Number</i> field holds the SAP ERP inspection lot number. In the <i>Decision Code</i> field, the usage decision is pulled from transaction QA11 and the corresponding follow-up action is entered in the <i>Foll.-Up Action</i> field.</p> <p>For more information, see section 4.4 <i>Screenshots: Capturing Usage Decision: ACCEPT</i> or section 4.5 <i>Screenshots: Capturing Usage Decision: REJECT</i>.</p>
8.2	Perform follow-up action (SAP EWM)	Automatic step	<p>If the usage decision is <i>ACCEPT (SA)</i>, stock is posted from stock type Q4 (<i>Stock in QI in Warehouse</i>) to F2 (<i>Unrestricted-Use Warehouse</i>).</p> <p>If the usage decision is <i>REJECT (SC)</i>, stock is posted from stock type Q4 (<i>Stock in QI in Warehouse</i>) to S6 (<i>Scrapping from Warehouse</i>).</p> <p>The system creates a warehouse task to move the stock from the current bin to the scrapping zone.</p>	<p>Check in the warehouse monitor (transaction /SCWM/MON) for stock in the final putaway storage bins. For more information, see section 4.5 <i>Screenshots: Capturing Usage Decision: REJECT</i>.</p>

Menu | [Icons] | Defects... | Results history | Valuat

Record Results for PROD-S01-QM: Characteristic Single Screen

Material: PROD-S01-QM | Quality Inspection

Char.: 0010 10 | FQI: Concentration [%]

Status: 1 Must be processed | Valuation

Attribute: | ResDatOrgn: |

Addnl info: | Position: |

Specs: Fixed Insp. Scope		Results	
Inspect	1 * 1,00 EA	Inspected	0
		Nonconf.	
Targ.Value	100,00 %	Mean value	99,00

Transaction **QE51N** - Record Result Measurement for Inspection Characteristic (SAP ERP)

Manual Valuation

Char. 10 FQI: Concentration [%]

Make a decision:

Accept

Reject

[Green Check] [Red X]

Transaction **QE51N** - Close Result Measurement for Inspection Characteristic (SAP ERP)

4.4 Screenshots: Capturing Usage Decision: ACCEPT

Record Usage Decision: Characteristic Overview

Inspection Lot: 170000000050
 Material: PROD-S01-QM
 System Status: INSP RREC PRII
 Insp. End Date: 06.05.2015

Quality Inspection
 UserStatus

Defects | **Characteristics**

Chars Relevant for Usage D...

C...	V...	L...	Weighting	Defect ...	Specifications	Result	Short text for the insp...	No...	Shar...	S.. Val

Usage Decision for Inspection Lot

- Decision Usage decisions
 - SPI Decision Code Grp Inbound Delivery (EWM)
 - SA OK
 - SB Partially OK
 - SC Not OK

Choose

Usage decision

UD code

Quality score 0 From usage decision code

FollowUpActn

Transaction **QA11** - Record Usage Decision for Inspection Lot (SAP ERP)

Usage decision			
UD code	SA	SPI	OK
Quality score	100	From usage decision code	
FollowUpActn			

Transaction **QA11** - Recorded Usage Decision for Inspection Lot (SAP ERP)

Warehouse Management Monitor SAP - Warehouse Number W01

Inbound Delivery

Blocked Document	Doc. Type	Document Type Description	Manually Vehicle	ASN	Warehouse
410000000003	INBS	Inb. Del. - Unpacked Prod. from Vendor		ASN150506-002	Partially C

Display Inspection Document

Transaction /**SCWM/MON** - Forward Navigation from Inbound Delivery to Inspection Document (SAP EWM)

Process Product Inspection Document in Whse Number W01

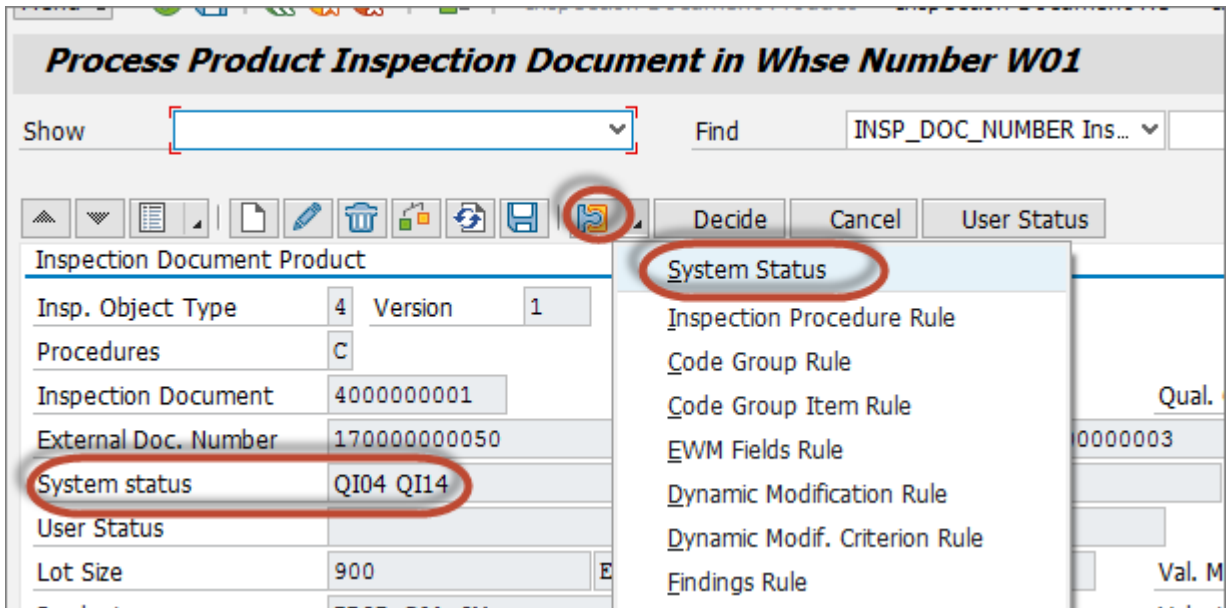
Show [] Find INSP_DOC_NUMBER Ins... []

Decide Cancel User Status

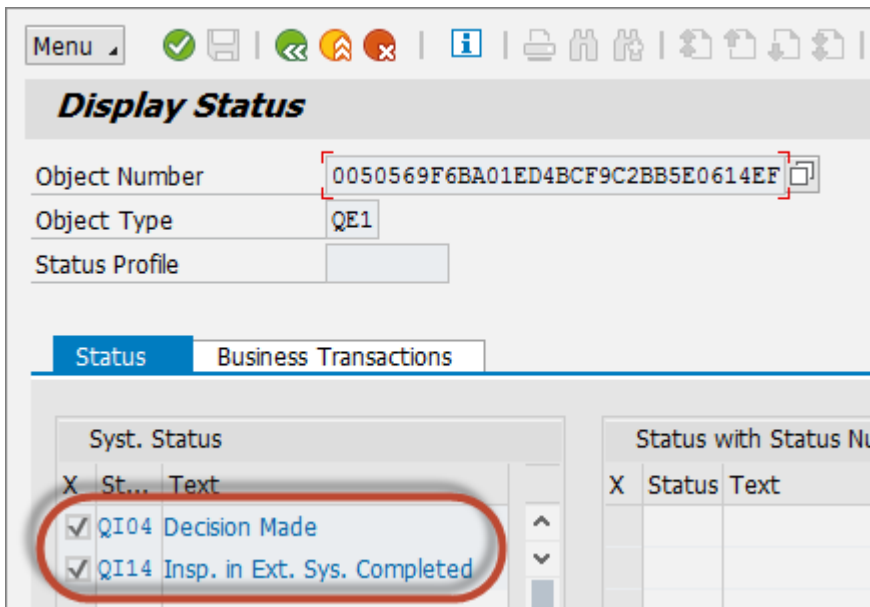
Inspection Document Product

Insp. Object Type	4	Version	1	Inspection after Goods Receipt
Procedures	C	Quality Insp. Group		
Inspection Document	4000000001	Non-Dep. Stock Type		Qual. Ctrl
External Doc. Number	170000000050	Document Number	410000000003	
System status	QI04 QI14	Code Group	SPI	
User Status		Acceptance Number	0	
Lot Size	900	Acceptance Number(%)	0,00	Val. Mode
Product	PROD-S01-QM	Quality Score	100	Valuation
Batch		Sampling Scheme		A
Storage Bin		Fixed Sample Size	0,000	
Handling Unit		Calc. Sample Size	900	EA
Ent. to Dispose	BPPL01V	Sample Size (%)	0,00	SmplType
Country of Origin		External Sample Size	0,000	
Exception Code		Inspection Stage		
Follow-Up Action	A	Dynamic Mod. Rule		
Decision	SA			DMod.Val. A
				OK

Transaction /**SCWM/QIDPR** - Display Inspection Document (SAP EWM) After Usage Decision



Transaction /SCWM/QIDPR - Forward Navigation from Inspection Document to System Status (SAP EWM)



Transaction /SCWM/QIDPR - System Status (SAP EWM)

4.5 Screenshots: Capturing Usage Decision: REJECT

This section shows screenshots of a REJECT usage decision and its consequences on the stock. The stock type changes from quality stock (Q4) to blocked stock (S6). Furthermore, the system creates a warehouse task to move the stock from its current bin to the scrapping zone (SCRAP-ZONE bin).

Prior to the usage decision, the stock to be inspected is stock type Q4 (*Stock in QI in Warehouse*) and has an inspection document assigned, as shown in the following figure:

Physical Stock				
Storage Bin	Product	ST	Description of Stock Type	Qual.Insp
T020-01-04-A	PROD-S01-QM	Q4	Stock in QI in Warehouse	4000000000

Transaction /SCWM/MON - Physical Stock Prior to Usage Decision (SAP EWM)

Menu | [Icons] | Defects... | Results history | Valu

Record Results for PROD-S01-QM: Characteristic Single Screen

Material: PROD-S01-QM | Quality Inspection

Char.: 0010 10 | FQI: Concentration [%]

Status: 2 Processed | Valuation

Attribute: | ResDatOrgn: |

Addnl info: | Position: |

Specs: Fixed Insp. Scope		Results	
Inspect	1 * 1,00 EA	Inspected	1
Targ.Value	100,00 %	Nonconf.	
		Mean value	94,000

Transaction **QE51N** - Record Result for Inspection Characteristic (SAP ERP)

Menu | [Icons] | Defects... | Results history | Valu

Record Results for PROD-S01-QM: Characteristic Single Screen

Material: PROD-S01-QM | Quality Inspection

Char.: 0010 10 | FQI: Concentration [%]

Status: 2 Processed | Valuation

Attribute: | ResDatOrgn: |

Addnl info: |

Manual Valuation

Char. 10 FQI: Concentration [%]

Make a decision:

Accept

Reject

[Green Check] [Red X]

Transaction **QE51N** - Close Result Recording for Inspection Characteristic and Decide Inspected Characteristic (SAP ERP)

Menu | Defects ... | Inspection Lot | Results history... | Defective quantity...

Record Usage Decision: Characteristic Overview

Inspection Lot: 170000000051 | Material: PROD-S01-QM | Quality Inspection | System Status: INSP RREC PRII | UserStatus: | Insp. End Date: 06.05.2015 *Inspection characteristics were rejected*

Defects | **Characteristics**

Chars Relevant for Usage D...

C...	V...	L...	Weighting	Defect ...	Specifications	Result	Short text for the insp...	No...	Shar...	S..	Valua
			02 Ma...	02 Ma...	100,00 %	94,000	FQI: Concentration [%]	0	0 ppm	5	R Re

Usage Decision for Inspection Lot

- Decision Usage decisions
 - SPI Decision Code Grp Inbound Delivery (EWM)
 - SA OK
 - SB Partially OK
 - SC Not OK**

Usage decision

UD code

Quality score From usage decision code

FollowUpActn

Transaction **QA11** - Choose Usage Decision REJECT for Inspected Stock (SAP ERP)

Physical Stock				
Storage Bin	Product	ST	Description of Stock Type	Q. Insp.
T020-01-04-A	PROD-S01-QM	S6	Scrapping from Warehouse	

Transaction /SCWM/MON - Stock Type Change to S6 for Physical Stock of Inspected Stock (SAP EWM)

5 Appendix

5.1 Business Add-In (BAdI) Implementation: Define Communication Technology

1. Start transaction **SE19** to open the *BAdI Builder: Initial Screen for Implementations*, as shown in the figure below:

BAdI Builder: Initial Screen for Implementations

Edit Implementation

New BAdI
Enhancement Implementation

Classic BAdI
Implementation

Display Change

Create Implementation

New BAdI
Enhancement Spot: QPLEX_T_COMM_TEC

Classic BAdI
BAdI Name

Create Impl.

Initial Screen for BAdI Implementation

2. In the *Create Implementation* screen area, select the *New BAdI* radio button.
3. In the *Enhancement Spot* field, enter **QPLEX_T_COMM_TEC**.
4. Choose the *Create Impl.* button.
5. Enter a name for the enhancement implementation and a meaningful description, as shown in the figure below:

Create Enhancement Implementation

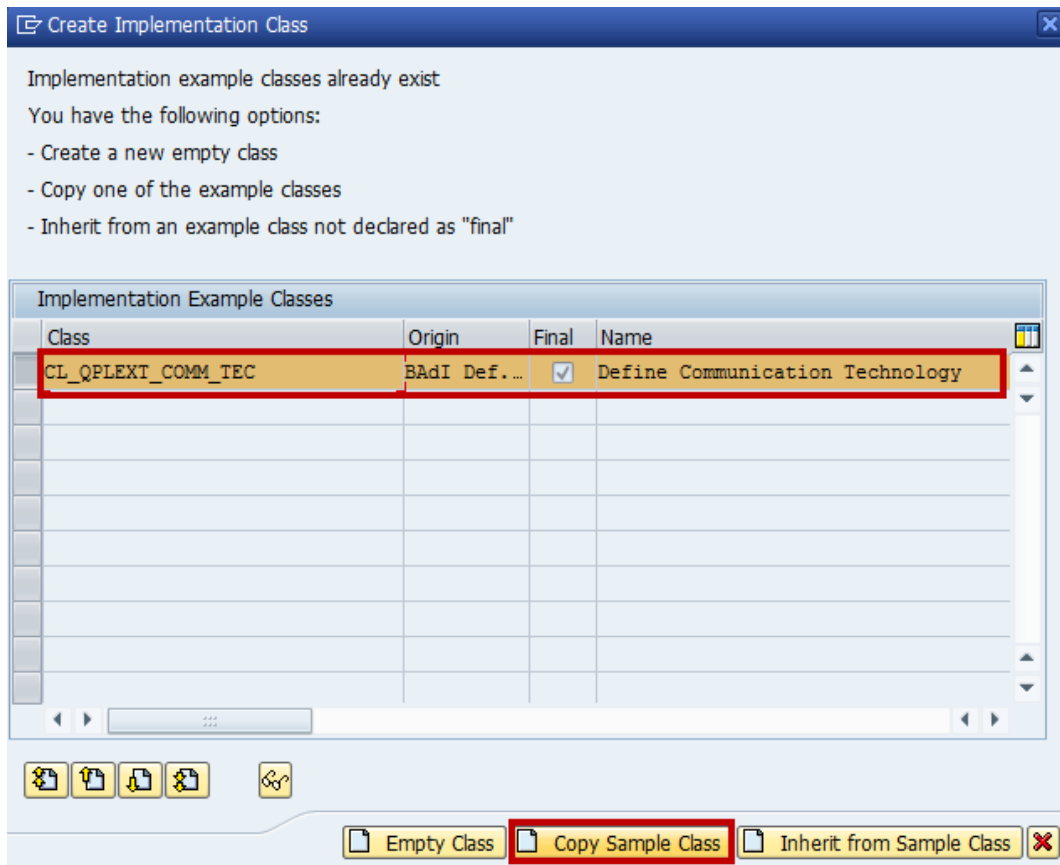
Enhancement Implementation: Z_QPLEX_T_COMM_TEC

Short Text: Choose Integration technology qRFC for SAP EWM

Composite Enhancement Implementation

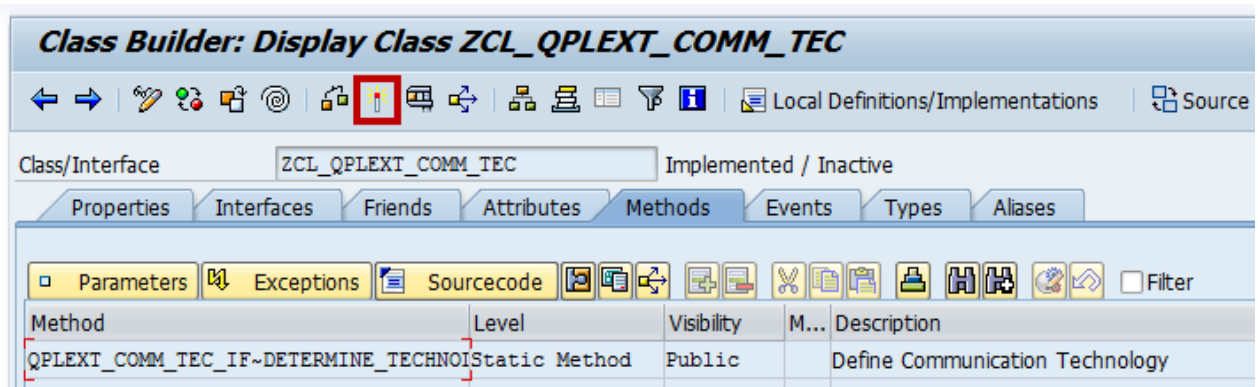
✓ ✗

Creation of Custom Enhancement Implementation (Example)



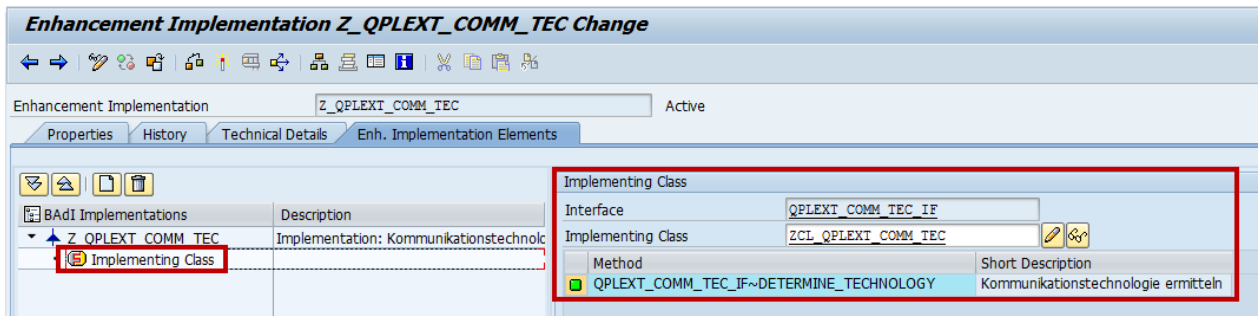
Creation of a BAdI Implementation Class

10. Save and activate your implementation, as shown in the figure below:



Activation of a BAdI Implementation Class

As a result, your enhancement implementation Z_QPLEXT_COMMTEC has an implementation class assigned and is activated, as shown in the figure below:



Enhancement Implementation

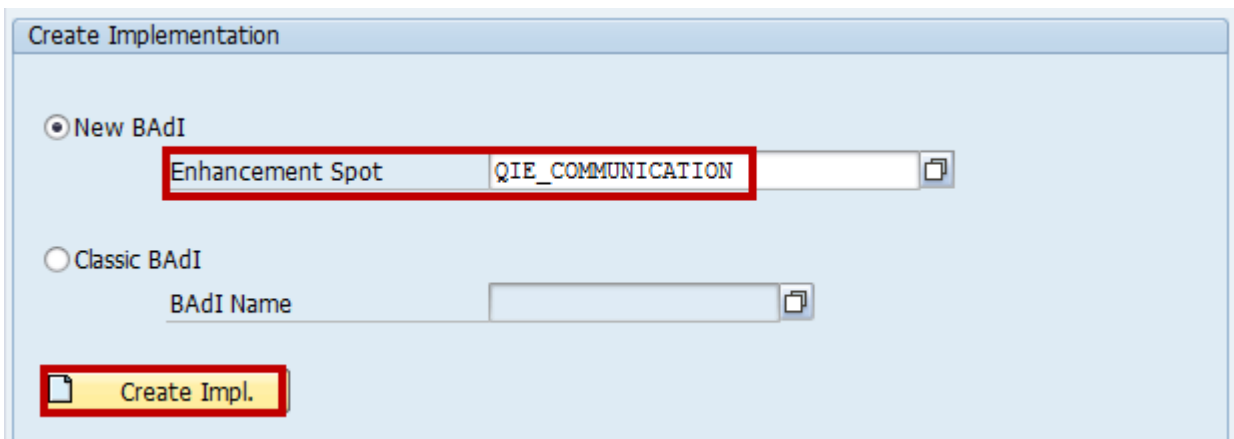
i Note

For more information, see SAP note [1278425](https://www.sap.com/help/1278425).

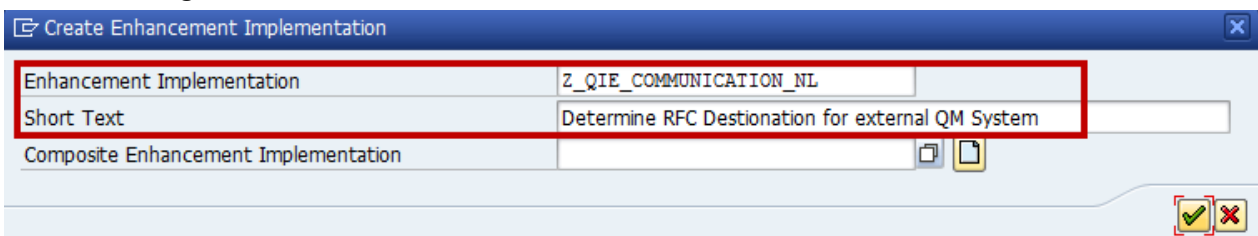
5.2 BAdI Implementations for the Quality Inspection Engine

1. Start transaction **SE19** to open the *BAdI Builder: Initial Screen for Implementations*.
2. In the *Create Implementation* screen area, select the *New BAdI* radio button.
3. In the *Enhancement Spot* field, enter **QIE_COMMUNICATION**.
4. Choose the *Create Impl.* button.

Some of the steps described above are shown in the following figure:



5. In the *Create Enhancement Implementation* dialog box, enter a name for the enhancement implementation, for example, **Z_QIE_COMMUNICATION_NL**, and a meaningful description, as shown in the figure below:



6. In the *Enhancement Implementation Z_QIE_COMMUNICATION_NL: Create BAdI Implementation* dialog box, do the following:
 - c) Assign a name to your BAdI implementation, for example, **Z_EX_QIE_NL**.
 - d) Assign a name to your implementation class, for example, **ZCL_EX_QIE_NL**.

The steps described above are shown in the following figure:

Enhancement Implementation Z_QIE_COMMUNICATION_NL: Create BAdI Impleme			
Create BAdI Implementations for Existing BAdI Definitions			
BAdI Implementation	Implementation Class	BAdI Definition	Short Text
Z_EX_QIE_NL	ZCL_EX_QIE_NL	QIE_EX_COMMUNICATION	Communication

- In the *Create BAdI Implementation* dialog box, select enhancement implementation `/SCWM/ESI_QIE_COMMUNICATION` with BAdI implementation `/SCWM/EXI_QIE_COMMUNICATION_NL` and choose the *Copy Sample Class* button, as shown in the figure below:

Example implementations exist!

You have the following options:

- Create a new, empty implementation
- Copy one of the example implementations
- Copy an example implementation and inherit from its class (if not final)

Enhancement Implementation	BAdI Implementation	Final	Description
<code>/SCWM/ESI_QIE_COMMUNICATION</code>	<code>/SCWM/EXI_QIE_COMMUNICATION_NL</code>	<input type="checkbox"/>	Implementatio



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