

How to Setup Outsourced Manufacturing Scenarios



Applies to:

SAP ERP 6.0 EHP4+EHP5 and SAP SNC 7.0 (EHP1) For more information, visit the [Operations homepage](#).

Summary

This configuration guide covers the two main end-to-end processes of Outsourced Manufacturing: 'Subcontracting' and 'External Processing'. In both cases SAP's focus is to support the OEM (Original Equipment Manufacturer) in orchestrating the supply network. This can be achieved by using the Materials Management and/or Production Planning functionalities of ERP in combination with the 'Work Order Collaboration' scenario in SNC.

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Created on: 16 March 2010

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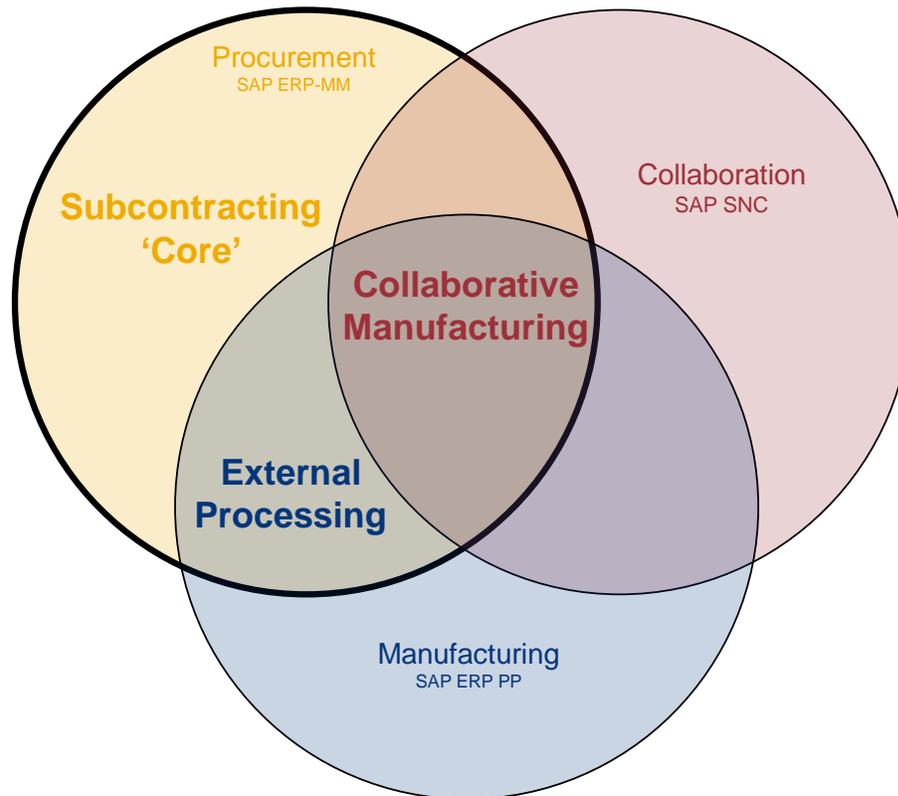
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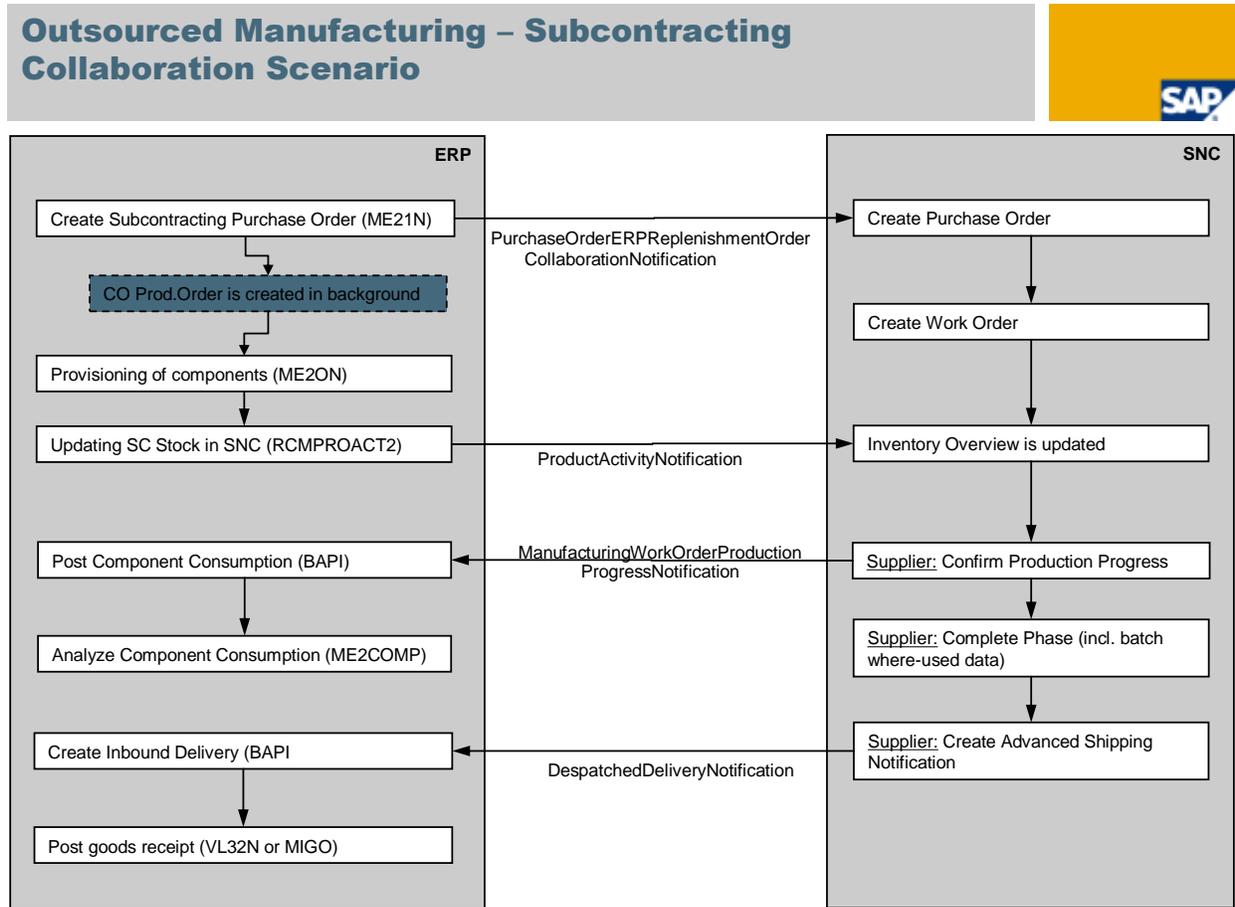
Collaborative Subcontracting Process

The first process is based on the classic Subcontracting scenario starting in the Materials Management area. By integrating this process with the SNC 'Work Order Collaboration' scenario the OEM gains full visibility of the production progress at the subcontractor, can identify bottlenecks earlier and receives reliable data about component usage.

Outsourced Manufacturing – Process Variants



The following graphic shows a process example:



Configuration of the collaborative Subcontracting Process

Necessary Master Data in ERP

- Create a vendor master (transaction XK01).
- Create a semi-finished material (transaction MM01). This represents the **Primary Product** we want to receive from our subcontractor. Additionally the Sales views must be maintained as we want to ship these components to the subcontractor.
- Create a semi-finished or raw material which represents a regular **component** for the Primary product. (Ensure that the sales views are maintained in case you want to create an outbound delivery to ship the component to the subcontractor.)
- Create a BOM (Usage '1' or '3') for the Primary Product - containing the component (transaction CS01). *Optional: You can also assign several components to the primary product*
- Create a Subcontracting Info Record (transaction ME11). In case the component consumption should be posted in-time (separately) the flag "RT Consum." needs to be set.

When the scenario is up and running SAP recommends to use an Integration Model in order to keep the following master data in sync between ERP and SNC: material, vendor, purchasing info record and Classes/Characteristics. The integration model can be created using transaction CFM1. In order to activate the integration model you need to use transaction CFM2.

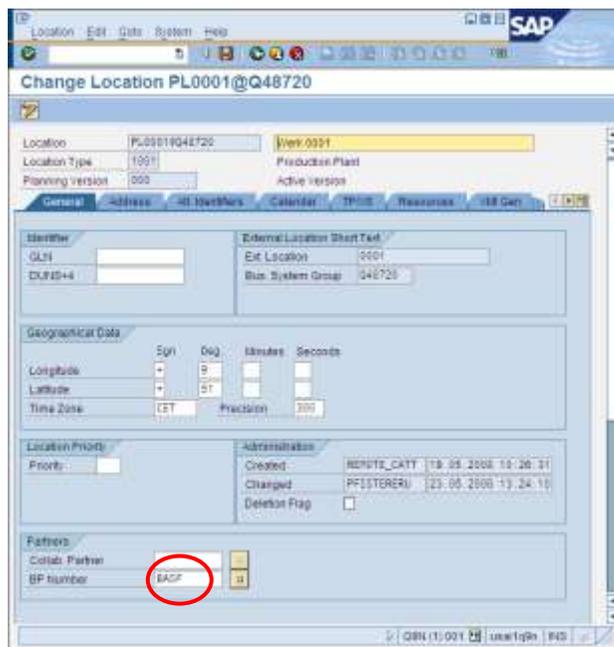
After these steps the ERP system will automatically transfer the master data to SNC (using the CIF interface) each time the master data is changed.

Necessary Master Data in SNC

- The user must be assigned to the partner roles (supplier or customer). This can be done in transaction "BP". Here's an example where the supplier has users assigned to:

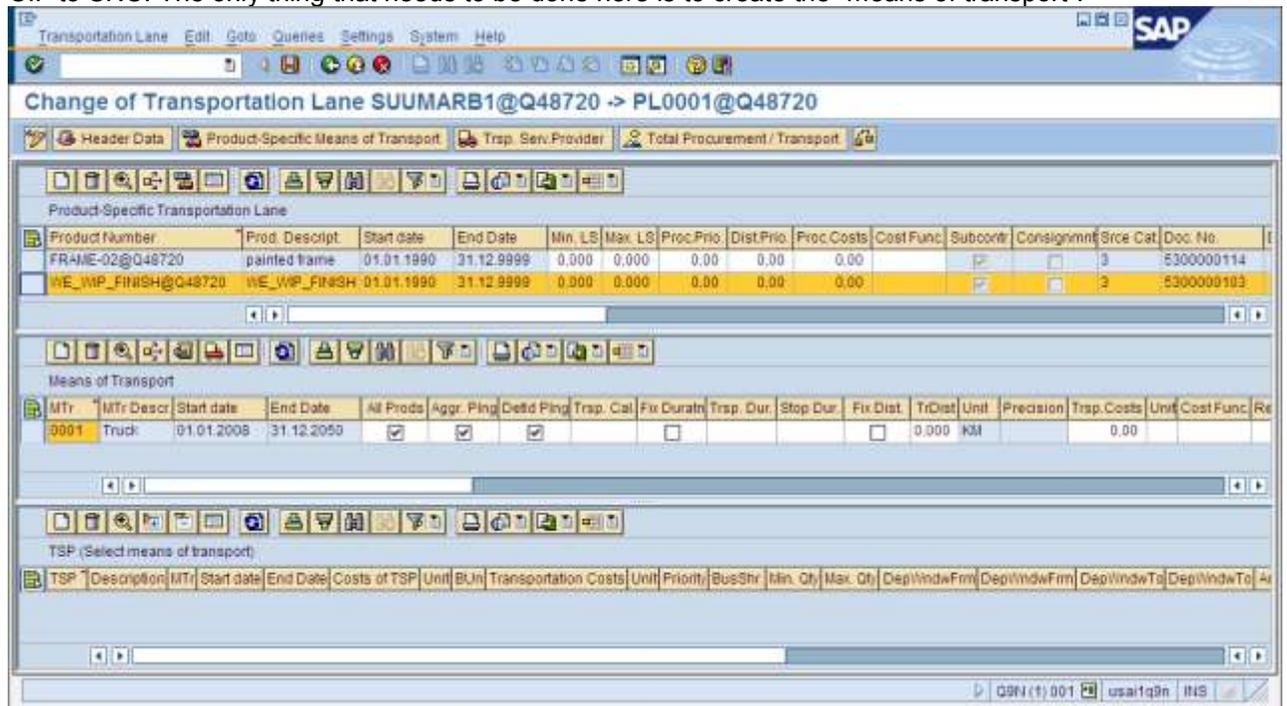


- A customer should be created in SNC (or use an existing one). Ensure that the customer is assigned to your plant location, e.g.:



- A transportation lane needs to exist in SNC for the respective customer-supplier-product combination (Supply Network Collaboration→Master Data→Transportation Lane). Normally the transportation lane is created automatically when the material/plant/purchasing info record data is transferred via

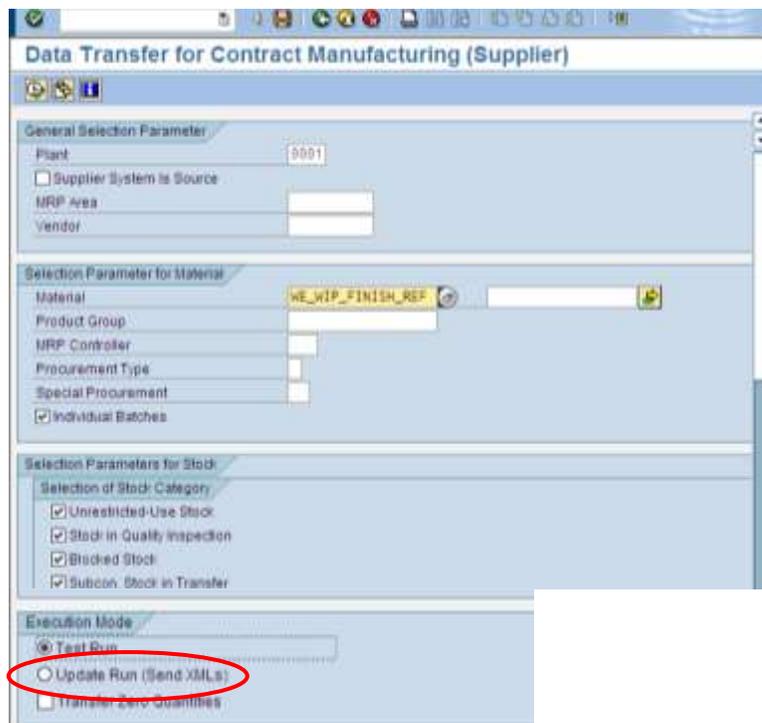
CIF to SNC! The only thing that needs to be done here is to create the “means of transport”:



- Now the stocks can be transferred to SNC. For this task 2 reports are available

- 1.) To transfer the unrestricted-use stock (= inventory of the customer) incl. batches: ROEMPROACT2 (actually not needed in this scenario)
- 2.) To transfer the subcontracting stock (=stock provided to vendor) incl. batches: RCMPROACT2

Example (RCMPROACT2):



Necessary XI-Settings

At least the following service connections must be configured.

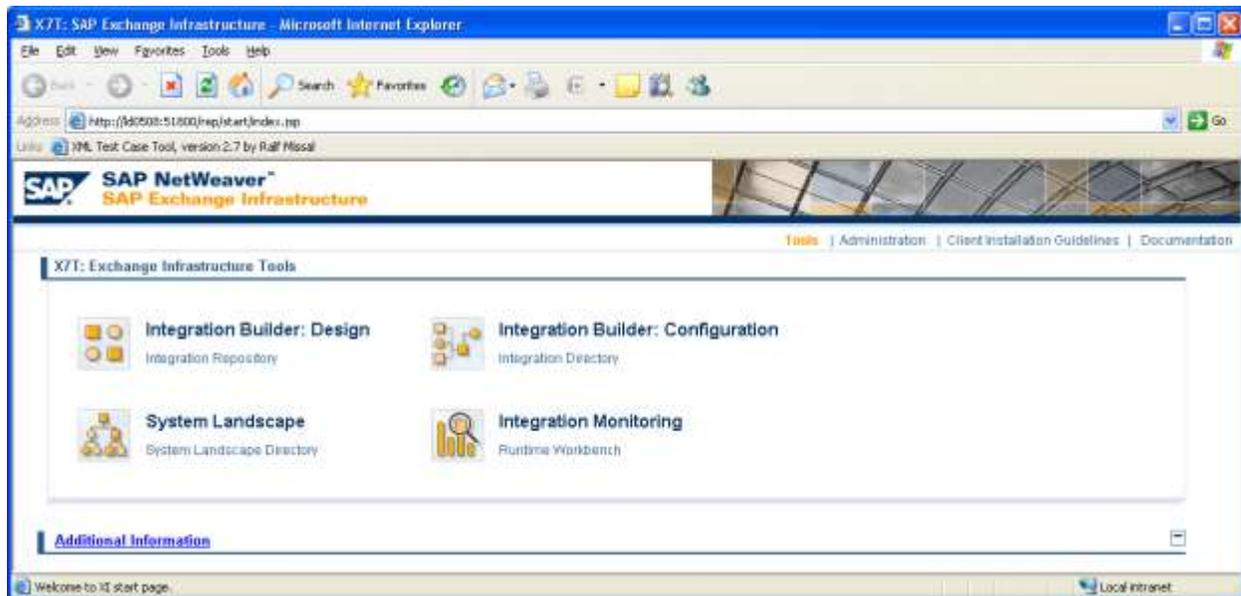
ERP				SNC		
Service Interface	Type	FEH		Service Interface	Type	FEH
ProductActivityNotification_Out	A		→	ProductActivityNotification_In	A	-
PurchaseOrderERPReplenishmentOrderCollaborationNotification_Out	A		→	PurchaseOrderERPReplenishmentOrderCollaborationNotification_In	A	-
ManufacturingWorkOrderProductionProgressNotification_In	A	X	←	ManufacturingWorkOrderProductionProgressNotification_Out	A	
ManufacturingWorkOrderInformation_In	A	X	←	ManufacturingWorkOrderInformation_Out	A	

Prerequisite: The ERP and SNC system are connected to the Integration Server (XI), means that in the System Landscape Directory of the XI both backend systems are represented as technical system.

Perform the following steps on the Integration Server:

1. Logon

Logon to the XI system (X7T) and start the Integration Builder from the Easy Access Menu.



2. Create a Business System

Call the System Landscape Directory (SLD). Click on Business Systems and the button *New Business System*.

- Select *Web AS ABAP* as system type.
- Select the technical system and enter the client, e.g. Q48 720.
- Enter the name of the Business System, e.g. Q48_720.
- Skip the installed products step

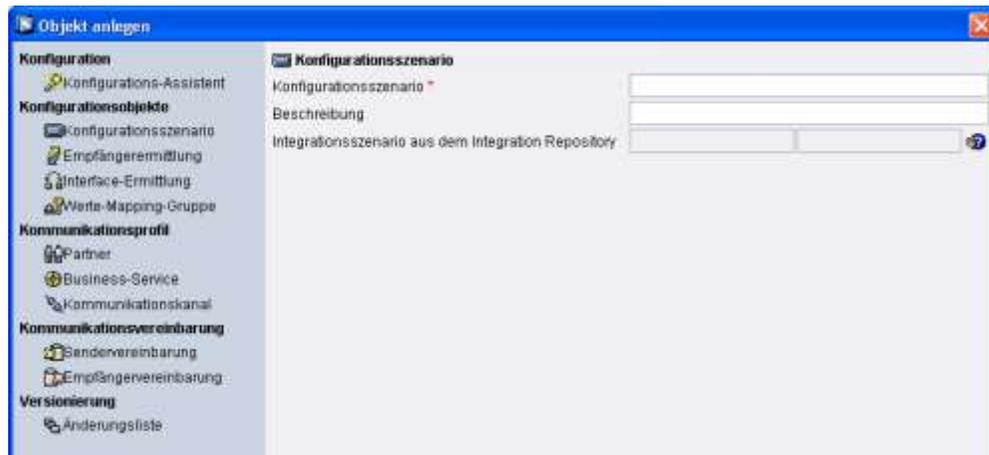
- Enter Application System as System Role and select the XI system you are logged on as related Integration Server.
- Repeat these step also for the other backend system

Close the SLD.

3. Create a Scenario

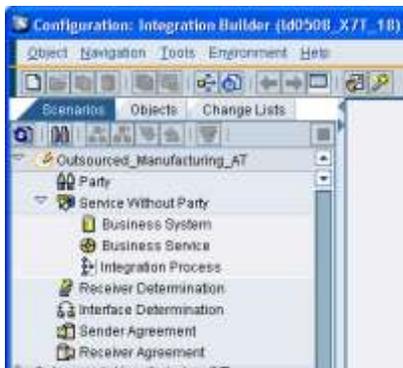
Create a Scenario to cluster the objects that will be created in the next steps. This step is optional but very helpful to find the objects later on.

- Start the Integration Directory
- Click on the icon *Create Object* and select Configuration Scenario on the following popup.
- Enter a name for the scenario a



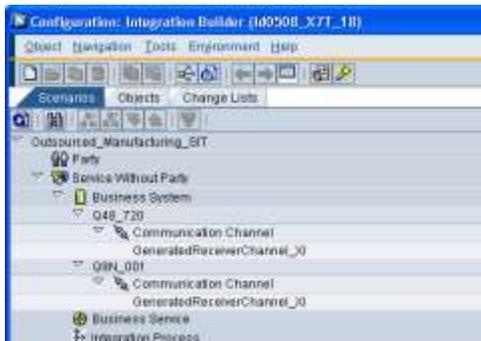
- Save the scenario.

4. Assign Business System to Scenario and create Communication Channels



- Select your scenario that you just created before expand the structure, and call the context menu by clicking the right mouse button on the Business System node.
- Select *Assign Business System*.
- On the following popup skip the step *Assign Partner*.
- In the next step select your Business System and switch on *Create Communication Channels Automatically*.
- Activate your changes either in the change list or by calling the context menu on the created objects. Objects that must be activated are marked with pen icon (see picture on the left)

In case you cannot find your Business System, cancel the creation and select *Environment -> Clear SLD Cache* in the menu.



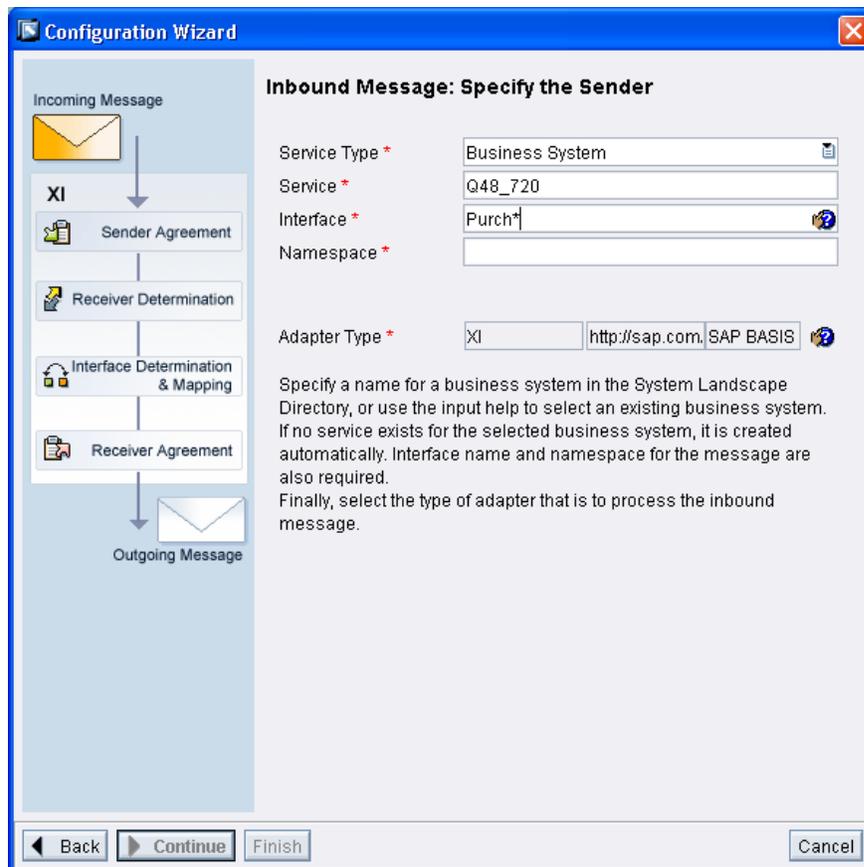
Delete all communication channels unequal to the ones you see in the picture.

Perform these steps for both systems (ERP & SNC).

5. Create the Service Connection

Perform the following steps for all services listed in the table above.

- Call the wizard (Icon with the magical wand) in the icon bar and select *Internal Communication*.
- On the following popup enter your sender Business System into field *Service* and your *Service Interface* into the interface field or select it from the value help. In case a service interface exists multiple times be sure to select the right one, means with the correct namespace.

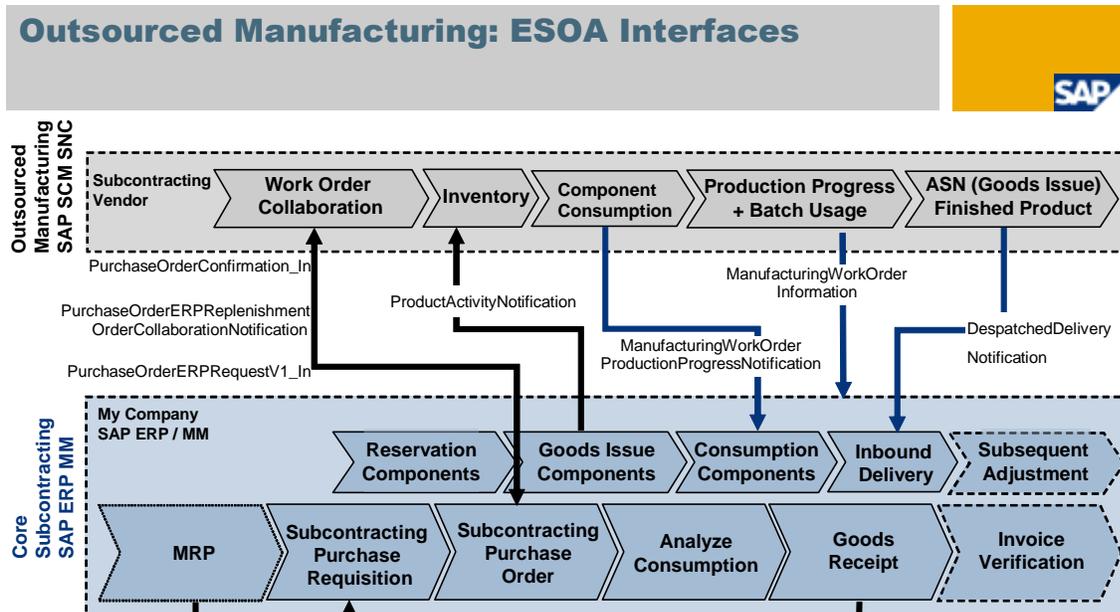


- Do the same for the receiver interface
- Skip the sender and receiver agreement.

- Skip the interface mapping. A certain mapping object between the service interfaces is in this case not necessary
- Select your communication channel
- Add the objects to your scenario
- Activate the created objects after finishing the wizard.

Customizing

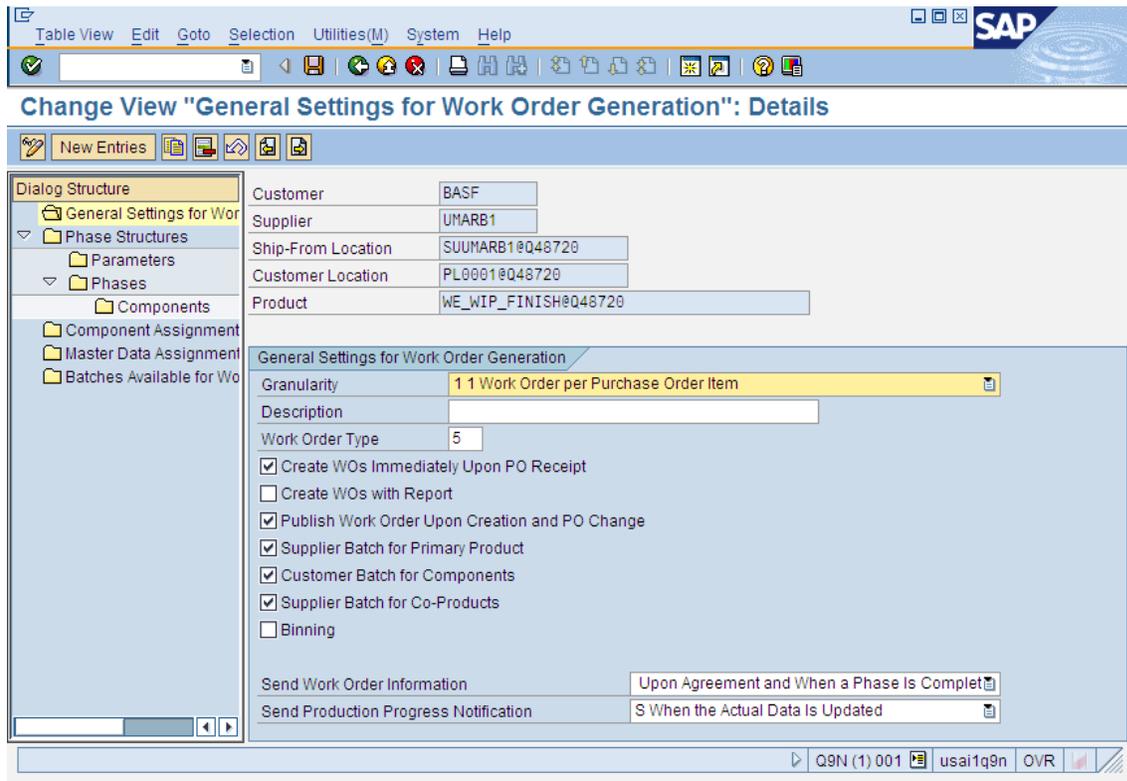
The integration between ERP and SNC needs to be set up, i.e. the PO, which was created with reference to the external operation, needs to be transferred to SNC automatically. In SNC a work order must be created automatically for this PO (eSOA Services need be set up for this, see also chapter 2.2.2 "XI-Settings").



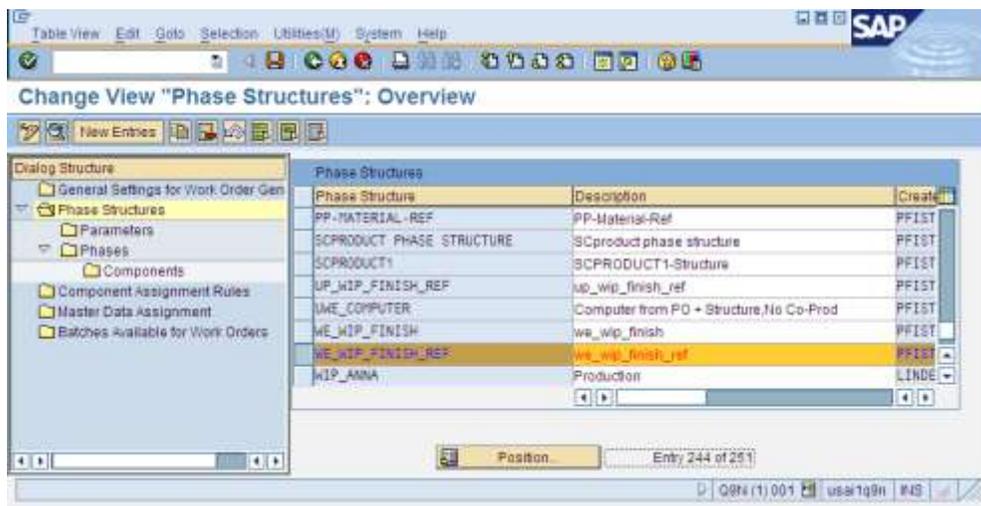
In general business function LOG_MM_OM_1 should be activated in the ERP system. With regards to SNC the following things need to be considered:

1. The work order configuration must be done in order to ensure that a WO can be created based on a Purchase Order. This can be done via menu path Supply Network Collaboration → Master Data → Application-Specific Master Data → Work Order → Work Order Configuration.

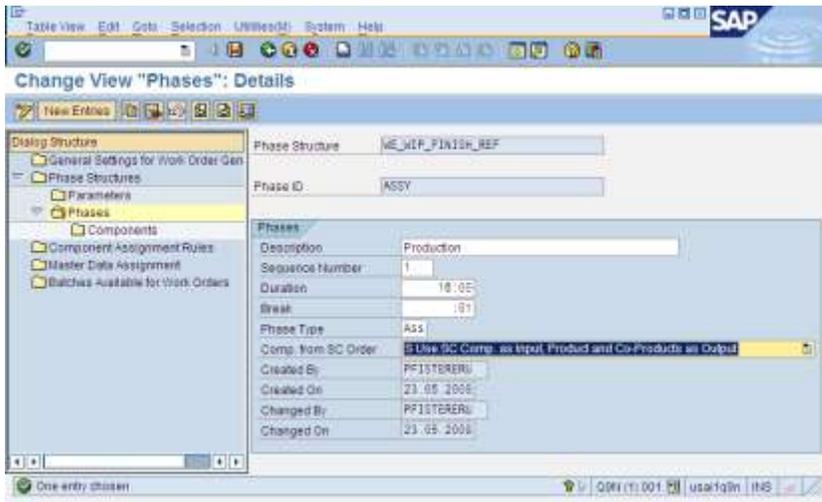
Basically the OEM (Original Equipment Manufacturer) has the possibility to let his component inventory be updated automatically by the subcontractor via SNC. For this scenario he needs to allow the in-time consumption postings on ERP side. Additionally it needs to be ensured, that the WorkOrder customizing in SNC supports the in-time consumption process. Thus in transaction "/n/sca/mfgcfg" you need to check for the relevant customer-vendor-product relationship if the right settings are set up, i.e. in the details the field "Send Production progress Notification" needs to be set to: "S When actual Data is updated".



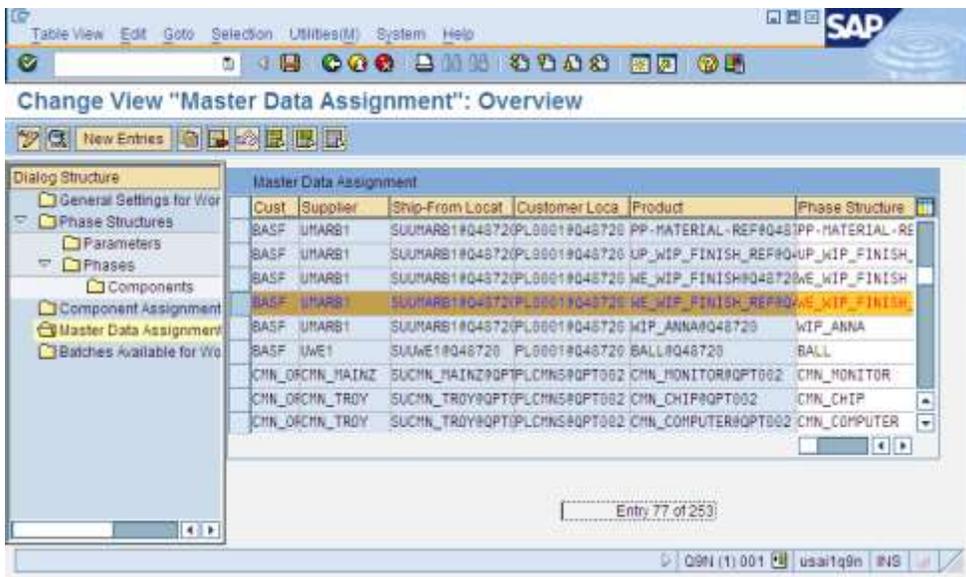
- Next thing is to create a phase structure. Here you can specify the phases (milestones) you want to track at a certain subcontractor for a certain product.

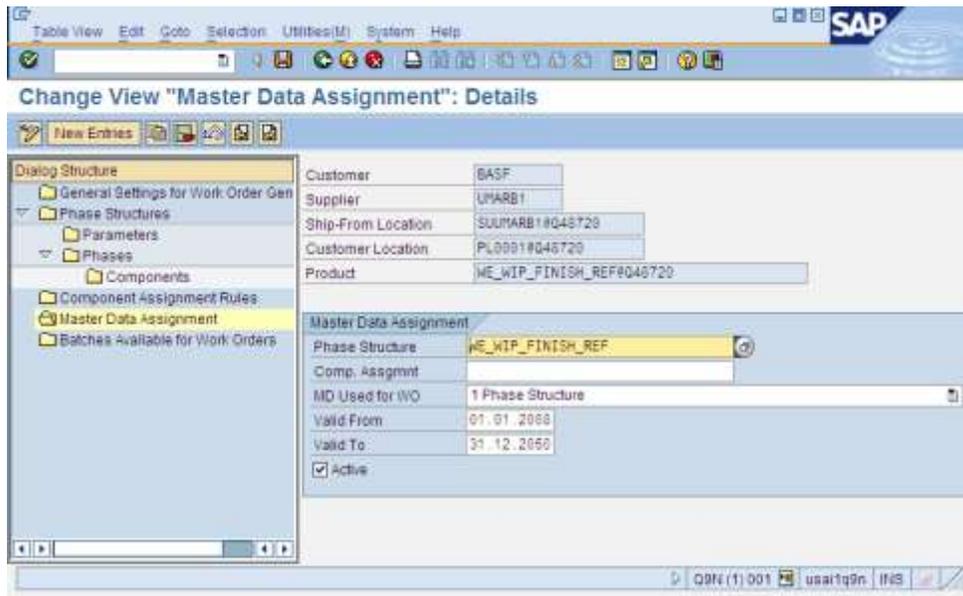


If you choose the option “S Use Comp. as Input, Prodcut and Co-Products as Output” for your phase you don’t need to specify components in this transaction. At WO creation the components will be taken from the PO and they will be available in the WO.



3. Then the Master Data Assignment needs to be set up for your combination of customer/supplier/customer location/supplier location/Product/Phase structure

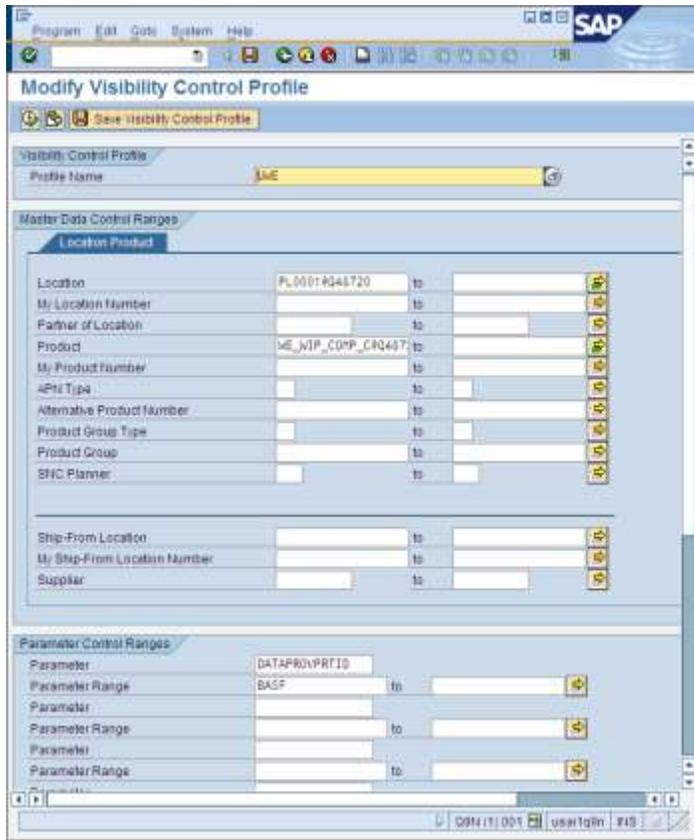




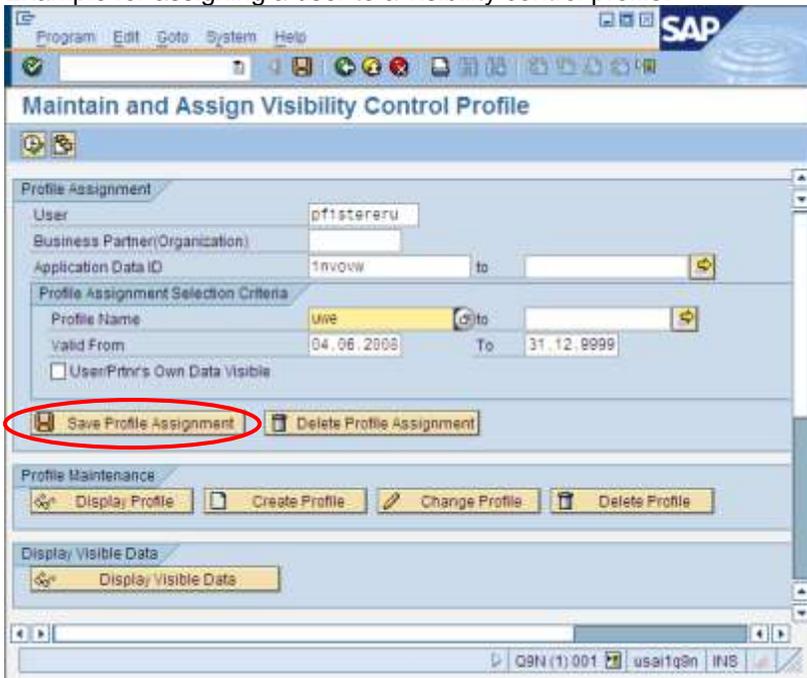
4. In order to use the new "inventory overview" transaction in SNC the Visibility Control needs to be set up for your user or business partner via transaction /SCF/VISCTRLPROFASSN. The inventory overview displays all the relevant stocks for components and/or final products and the corresponding batches. Here's how to set up the visibility control profile:



Example for a visibility control profile:



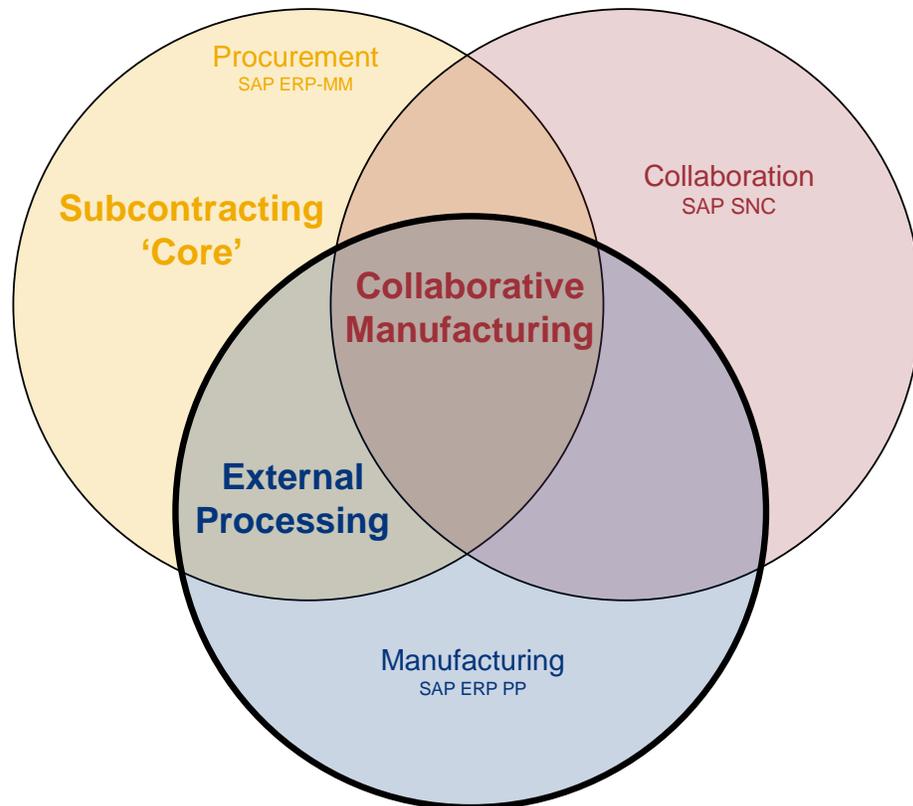
Example for assigning a user to a visibility control profile:



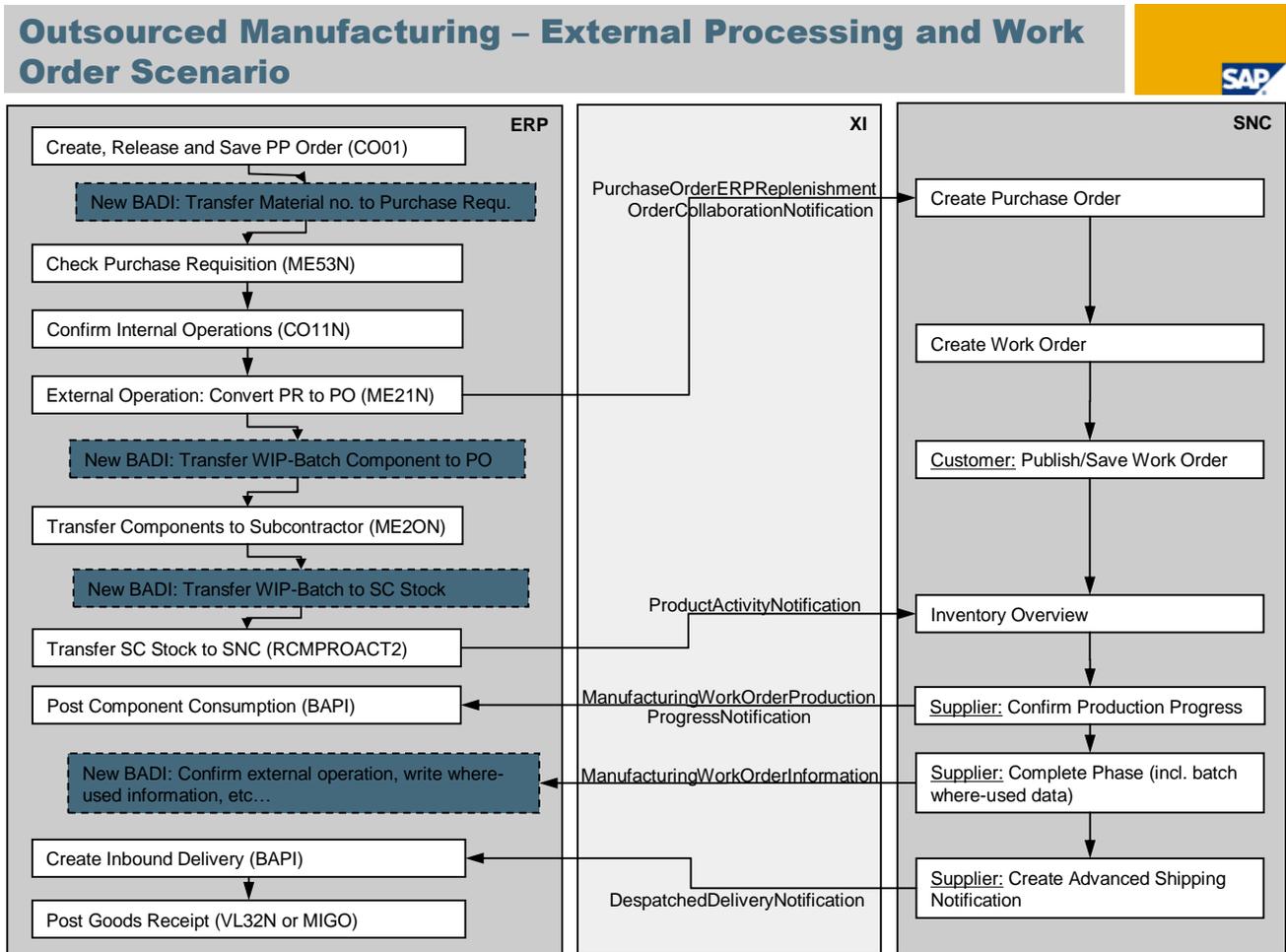
Collaborative Manufacturing Process (External Processing)

The second process variant is based on the External Processing scenario starting in the Production Planning area. This variant is used in case certain operations within the production process need to be performed by an external supplier. By integrating this process with the SNC 'Work Order Collaboration' scenario the OEM gains the same benefits mentioned above plus some further advantages. The OEM can e.g. automate the production confirmation process (in case he also uses Work-In-Process batches) and receive the batch assignment data recorded by the subcontractor in SNC.

Outsourced Manufacturing – Process Variants



The following graphic shows a process example:



Configuration of the collaborative Manufacturing Process (External Processing)

Necessary Master Data in ERP

Create a vendor master (transaction XK01).

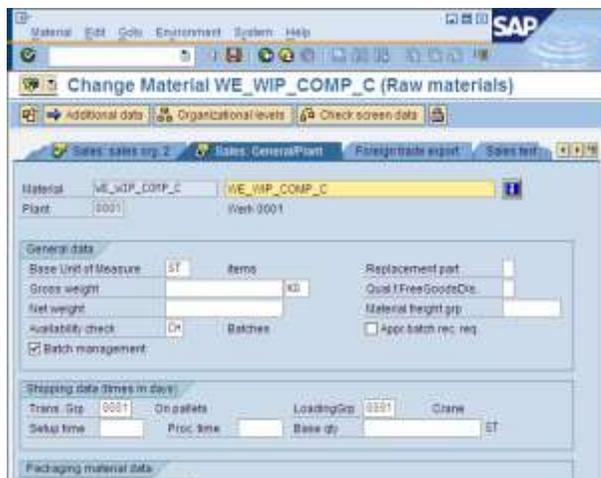
Create a 'Reference' Material (Material type UNBW --> Non-Valuated material). The Reference Material needs the 'Sales Views' in the Material Master. This is necessary because at a certain production step it will be sent out to a subcontractor via delivery. Thus we need the loading and transportation groups in the sales views to process the outbound delivery correctly.

Create a semi-finished material (transaction MM01) which is suitable for WIP-batches, i.e. on the 'Work scheduling' tab strip indicator 'Batch Management' has to be enabled. This represents the Primary Product we want to produce. Additionally maintain the field 'OB Ref. Material' using the Reference Material created before. The reference material will be later on used at the creation of the WIP batches. After each production operation a new WIP batch can be created. In this scenario the WIP batches are created for the reference material number.

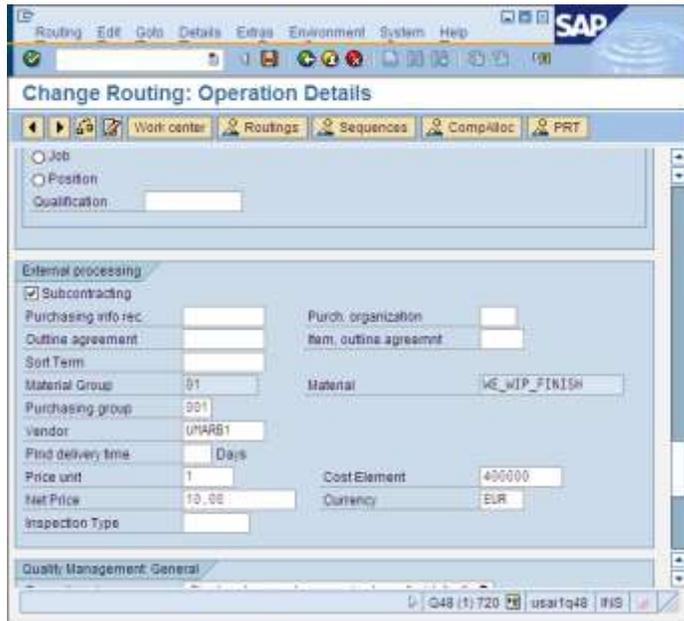
Note: The XML message "ManufacturingWorkOrderInformation" does only update the ERP system automatically if the business function LOG_MM_OM_2 is activated. This business function is available with ERP 6.0 EHP5. In ERP 6.0 EHP4 SAP only delivers an example implementation in a BADI for the external processing scenario with WIP batches.



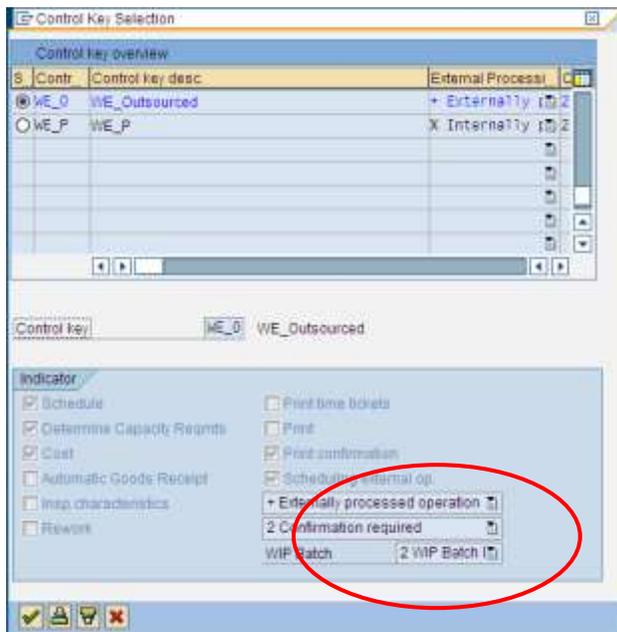
- Create a semi-finished or raw material which represents a regular **component** for the Primary product. Ensure that the sales views are maintained as we want to create an outbound delivery to ship the component to the subcontractor. Furthermore batch management should be activated for this component.



- Create a BOM (Usage '1' or '3') for the Primary Product - containing the component (transaction CS01).
- Create a Subcontracting Info Record (transaction ME11). In case the component consumption should be posted in-time (separately) the flag "RT Consum." needs to be set (recommended for testing!).
- Create a Routing with at least 1 internal and 1 external operation (transaction CA01). The external operation should have set the "Subcontracting" flag, vendor, Purchase org., purchase group. The Material and the material group are determined automatically in the new BADI Implementation.



The external operation also needs a control key which requires WIP-Batch Management:



When the scenario is up and running SAP recommends to use an Integration Model in order to keep the following master data in sync between ERP and SNC: material, vendor, purchasing info record and Classes/Characteristics.

The integration model can be created using transaction CFM1. In order to activate the integration model you need to use transaction CFM2.

After these steps the ERP system will automatically transfer the master data to SNC (using the CIF interface) each time the master data is changed.

Necessary Master Data in SNC

See Page 4.

Necessary XI-Settings

See Page 7

The following BADIs need to be activated to perform the scenario

1. The example implementation PP_OM_BI_WOINF_IN_CONF_DEMO for BAdI ICH_BIF_WO_INF_IN must be implemented and activated in order to receive the data from SNC and create the PP-order confirmation and WIP-batch.
2. The example implementation PP_OM_BI_BANF_HEADER_MAT_DEMO for BAdI PP_OM_BD_BANF_HEADER_MATERIAL must be implemented and activated in order to transfer the header material (or the corresponding reference material) of the production order to the purchase requisition.
3. The example class CL_IM_PP_OM_PO_COMPONENTS can be used as template when implementing BAdI ME_PROCESS_PO_CUST. The example coding creates the production order header material (or the corresponding reference material) as component in the purchase order.
4. The example implementation CL_EXM_IM_MB_INSM_WIP_CHANGE for BAdI MB_INSMK_WIP_CHANGE must be implemented and activated in order to transfer the WIP-Batch component from blocked stock into subcontracting stock.

Customizing

See page 10

In SNC the contract manufacturer can enter the exact assignment which component batch was used to produce a certain primary product batch. This information is stored in the work order and can be displayed at any point in time. That means for all process variants and options the full batch traceability can always be tracked and monitored in the SNC system.

In ERP the tracking of batches in the subcontracting processes could only be done on purchase order level up to EHP5. I.e. the system could only store the information about component batches that were used for a certain PO and about finished product batches that were created for this PO.

For most customers this granularity was sufficient in the past. But more and more customers need a detailed batch traceability. Thus SAP provided an example implementation for the scenario "External Processing with WIP batches" in EHP4 and delivers comprehensive detailed batch traceability in standard for all subcontracting processes. This document describes the settings that need to be done in EHP4 for detailed batch traceability in ERP.

Note: In the ERP-SNC scenario the n:m assignment of component batches to primary product batches can be achieved in ERP 6.0 EHP4 by using one of the following business process variants:

- External processing: Use backflushing of components at GR **OR** use WIP-Batch Functionality!
On the SNC-side it has to be ensured that only one assembly phase exists where all the components are assigned to (in order to have an exact match with the external operation of the PP order). With this set up the n:m batch assignment information can be transferred automatically to ERP!
- Subcontracting Variant: Use Backflushing of components at GR (+ create a separate material document for each primary product batch!). I.e. the in-time consumption needs to be switched off in the info record in this case.

As of EHP5 the business function LOG_MM_OM_2 is available which provides features to store the detailed batch information coming from SNC automatically in ERP.

Related Contents

For more information, visit the [Operations homepage](#).

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