

CRM – Fundamentals II

SAP CRM

Course Overview

The course introduces basic customizing settings for business transactions, introduces the CRM Middleware, the CRM WebClient UI and concludes with a Case Study. A certification test can take place afterwards.

Target Audience

This course is intended for the following audiences:

- Solution Consultants and project team members responsible implementing Customer Relationship Management with SAP CRM.

Course Prerequisites

Required Knowledge

- Basic business knowledge of CRM processes and CRM concepts
- TCRM10 - CRM Fundamentals I

Recommended Knowledge

- Knowledge of SAP ERP Sales and Distribution business processes (e.g. course SCM600 or certification in SCM Order Fulfillment).

Course Duration Details

Unit 1: Introduction

SAP CRM Introduction / Wrap up of TCRM10

Exercise 1: Logon and Personalization

Unit 2: Transaction Processing

Structure of Transactions

Exercise 2: Business Transactions

Transaction Types Item Categories and Item

Category Determination

Exercise 3: Transactions and Related Customizing

– Sales

Exercise 4: Transactions and Related Customizing

– Service (Optional)

Exercise 5: Implementing and Testing Copying

Control – Sales

Exercise 6: Implementing and Testing Copying

Control – Service (Optional)

Basic Functions in Business Transactions

Exercise 7: Text Determination – Sales

Exercise 8: Text Determination – Service (Optional)

Exercise 9: Incompleteness - Sales

Exercise 10: Incompleteness – Service (Optional)

Unit 3: Activity Management

Overview of Activity Management

Exercise 11: Activities

Customizing Activities and Special Activity
Functions

Exercise 12: Activities and Related Customizing
– Sales

Exercise 13: Activities and Related Customizing
– Service (Optional)

Unit 4: Partner Processing

Overview of Partner Processing

Exercise 14: Partner Processing

Customizing Partner Processing

Exercise 15: Analyze and Set Up Partner
Processing – Sales

Exercise 16: Analyze and Set Up Partner
Processing – Service (Optional)

Unit 5: Actions

Action Processing

Exercise 17: Action Definitions and Customizing
– Sales

Exercise 18: Action Definitions and Customizing
– Service (Optional)

Unit 6: CRM Pricing

Overview of Pricing

Condition Maintenance and Pricing Functions

Exercise 19: Condition Maintenance and
Customizing – Sales

Exercise 20: Condition Maintenance and
Customizing – Service (Optional)

Unit 7: CRM Billing

Overview of CRM Billing

Customizing CRM Billing

Exercise 21: Creating Billing Documents – Sales

Exercise 22: Creating Billing Documents – Service
(Optional)

Unit 8: Introduction to CRM Middleware

Architecture Overview

Exercise 23: Architectural Overview

Unit 9: Data Exchange with ERP Backend

Introduction

Customizing Synchronization

Exercise 24: General Configuration

Exercise 25: Customizing Adapter Object: Initial Load

Exercise 26: Finding an Adapter Object

Download from ECC to CRM

Exercise 27: Business Adapter Objects: Delta Load

Exercise 28: BDocs and Flow Contexts

Upload from CRM to ECC

Exercise 29: Delta Load from CRM to ERP and Replication Administration

Unit 10: CRM Middleware Operations

CRM Middleware: Monitoring

Exercise 30: CRM Middleware: Monitoring Error Handling

Data Integrity Manager & Requests

Exercise 31: Data Integrity Manager & Requests

Troubleshooting Initial Load from R/3 to CRM

Troubleshooting Delta Load from R/3 to CRM

Troubleshooting Load from CRM to R/3

Exercise 32: Troubleshooting

Unit 11: Data Exchange with 3rd Party Backend

External Interface Adapter (XIF)

Exercise 33: External Interface for IDocs

Unit 12: BW (BI) Adapter Overview

Overview of the BI (Business Intelligence) Adapter

Exercise 34: BW Adapter Overview

Unit 13: Groupware Adapter Overview

Overview of the Groupware Adapter

Unit 14: Introduction to CRM WebClient UI

UI Elements

Exercise 35: Starting the CRM WebClient UI

Personalization

Exercise 36: Personalizing the CRM WebClient UI

Unit 15: Business Roles

Business Role Overview

Exercise 37: Creating and Analyzing a Business Role

Business Role & Authorization Concept

Unit 16: Navigation Bar

Navigation Bar Customizing

Exercise 38: Navigation Bar

Transaction Launcher Customizing
Exercise 39: Transaction Launcher

Unit 17: Architecture

UI Components
Generic Interaction Layer and Business Object Layer
Exercise 40: GenIL Model and BOL Browser

Unit 18: UI Configuration

UI Configuration
Exercise 41: UI Configuration Tool
Design Layer
Fact Sheet 25 Minutes
Exercise 42: Fact Sheet

Unit 19: Extensibility Tools

Easy Enhancement Workbench
Exercise 43: Easy Enhancement Workbench
Application Enhancement Tool
Exercise 44: Application Enhancement Tool

Unit 20: Component Enhancement Concept

Component Enhancement
Exercise 45: Component Enhancement

Unit 21: Case Study

Case Study
Exercise 46: Case Study

Course Goals

This course will prepare you to:

- perform basic customizing of business transactions
- customize basic functions relevant for transaction processing
- understand the concept and main functions of the CRM Middleware
- explain the CRM WebClient UI and perform different steps in UI configuration
- do a Case Study to review/test the your knowledge

Course Objectives

After completing this course, you will be able to:

- use the basic knowledge a CRM Solution Consultant requires for all consultant profiles

This course introduces generic features and functions of SAP CRM which most likely will become relevant for any CRM customer, no matter which scenario he later on will focus on.

Course Instructor Profile – Level of Knowledge Required

- You should be familiar with different CRM scenarios and standard features and functions of SAP CRM.
- You should know that CRM offers several Key Capabilities: CRM Web Channel, CRM Marketing, CRM Interaction Center, CRM Field Applications, CRM Partner Channel Management, CRM Sales, CRM Service.
- You should have a good knowledge of ERP standard functionality in the area of Sales and Distribution (SD) as well as Customer Service (CS).
- You should familiarize yourself with ERP master data in order to be able to understand and explain differences between both systems.

Hints on Preparing This Course:

- Check <http://service.sap.com/curr-info> for an additional Instructor Guide in Microsoft Word format. This word document instructor guide is subject to change and might be adapted from time to time. It consists of update information (trouble shooting; additional demonstrations). Therefore make sure that you have the latest version. Some kind of change log will be provided in order to identify what has changed.

Note: Feel free to give feedback to the course author with respect to course content and/or suggestions for demos and exercises.

Also it would be helpful to communicate if you think that the information in this handbook misleading, insufficient or incorrect.

The timing of lessons and exercises must be considered an estimation. Depending on the skills of the instructor and the expertise of participants, timing might vary individually.

- Visit the RKT learning maps for internals <http://service.sap.com/rkt-crm>

Training System Availability:

Your training system will be available and accessible on Sunday evening (CET time zone) of the week the training takes place. Do not use the system or prepare your course before that time. The system can still be in use by another course or in the refresh procedures of the IT preparation for your course! If you need a test/prep. system before your course takes place, see details under paragraph Test-/Prep. System

Test/Preparation System

There are test/prep. systems for most of the SAP courses available. You will find the necessary information on <http://service.sap.com/curr-info>. In case you cannot access this site please ask the responsible Education coordinator (the one who send you this guide) to make the relevant information available to you. If no test/prep. system exists for the course, but testing or preparation is essential, the responsible Education department can order such a system – this should be done ideally at least one week before the training. Please note that test/prep. Systems must not be used for training without the permission of KPS. An access violation fee will be charged in this cases.

Training WTS farm:

Nearly all SAP courses are designed to be taught via SAP Training Window Terminal Service Server Farms (=WTS-Farms) to enable also trainings on customer site (so called Onsite-Training). If restrictions of the course don't mention another WTS Farm or the usage of the local PC front end, always use the 'Common Training' WTS farm for your training. Use SAP software on local PC front end only in SAP owned training centers with good network bandwidth connections. The usage of SAP software on local PC front end restricts the training support to the local IT support. The global training support can only support trainings via Training WTS farms.

- **Training at SAP training centers/Internal SAP training:** The internal connectivity to the training WTS farms can only be used inside of SAP network infrastructure. To connect to the training WTS farm use <http://wts.wdf.sap.corp:1080>. Choose your home region (US, EMEA or APJ). Select the 'Training-Zone' menu. Connect to 'Common Training', if no other WTS farm is named for the training.
- **Customer Onsite training / Third party training center:** Customer Onsite training can only connect to SAP training WTS farm via the SAP Citrix Secure Gateway (SAP CSG). Therefore you need a CSG-User ID. The User ID has to be already created by the education department for the time of the training. The data (User ID and password) are delivered to you by the education department. Trainer and participants using the same dedicated CSG-User-ID and password for the training. To connect to the training WTS farm use <http://mywts.sap.com>. Enter the CSG-User ID and password. Choose your home region (US, EMEA or APJ). Select the 'Training' icon. Connect to 'Common Training', if no other WTS farm is named for the training.

Training System:

- SAP CRM 7.0 System.
- SAP ERP 6.0 System, EhP 4

Note: Please make sure to test demos, exercises & solutions in advance in the test prep system and/or in your training system. But please only use the training system in the week when your event is scheduled. In other weeks the system is used by other courses and interference might lead to severe problems in those classes.

Unauthorized usage of a training system may result in a conventional fee.

User ID and Passwords for Trainer:

- CRM-system:
 - User: TRAINING
 - Password: <monthly password>

Caution: It is vital to use user TRAINING, especially when logging on to the CRM WebClient UI, since some of the demos described in this course depend on this.

Using any of the CRM-## users may result in problems (for example, demo specific business roles are not available!)

User ID and Passwords for Course Participants:

- CRM-system:
 - User: CRM-## [## = Group Number]
 - Password: welcome

Caution: Optional but recommended: Use transaction **ZUSR** to change this password.

1. ZUSR
2. Maintain users
3. CRM-01 to CRM-65
4. Execute
5. Change password and choose accept.

- ERP-system:
 - User: CRM-## [## = Group Number]
 - Password: welcome

Caution: Optional but recommended: Use transaction **ZUSR** to change this password.

1. ZUSR
2. Maintain users
3. CRM-01 to CRM-65
4. Execute
5. Change password and choose accept.

Preparation in the System

Caution: Please read this section carefully. It contains important information for successfully conducting this course!

1. CRM-system

- a) Use report ZSENQOFF (via SE38) in order to deactivate table enqueue mechanism. You could use ZSENQON to switch it on again. Both reports also exist in SAP ERP system. Without using ZSENQOFF participants will not be able to do the customizing exercises at the same time.
- b) Use Transaction /nscc4 in order to set the **Changes Without Automatic Recording** (of transport requests) for your training client.
- c) **Case Study preparation (only relevant for week 2 after system refresh!)**

Attention: In week two (for Case Study), it is necessary to create a different organizational unit **Battery World**, mark it as a sales organization and map it also to ERP sales organization 2200.

In order to avoid data exchange problems (Material Master), please remove the sales organization mapping of IDES Training Company at the beginning of week two or immediately before the Case Study starts.

Choose transaction code /nppoma_crm

In the locator use Search term **IDES TR*** for Organizational unit. Double click the entry *IDES CRM Training Company* and go to tab strip *Function* and choose the radio button **Sales**.

Remove value 2200 in the field R/3 sales org.

Save the data.

Use transaction **PRC_CONDTYPE_CRM** to rename condition type **0K07** to **CustDiscount CRM**.

2. ERP-system

- a) Use report ZSENQOFF (via SE38) in order to deactivate table enqueue mechanism. You could use ZSENQON to switch it on again. Both reports also exist in SAP ERP system. Without using ZSENQOFF participants will not be able to do the customizing exercises at the same time.

Escalation Steps - Reporting Problems:

- In case of any problems during or when preparing for SAPCRM course please contact the SAP hotline (Walldorf, SAP-42887) / local hotline or better create an IT/IBC message.
- Create in CSN System an IT/IBC message in using component TRAI- choose TRAI-EU, TRAI-US or TRAI-APA depending on your region.
- Provide the system information, system data and client plus log on data (if you have changed it for user TRAINING).
- Describe the problem with application data, access details, application paths.

Course Schedule

The course TCRM20 is a two week classroom training. The following table can be considered a rough estimate how long topics should be presented. It depends both on the instructor and on the participants to find a different “pace”.

Course Schedule Table

Day 1	Basic Customizing
Day 2	Basic Customizing
Day 3	Basic Customizing (up to CRM Billing)
Day 4	CRM Middleware
Day 5	CRM Middleware (up to Groupware Adapter)
Day 6 - Week 2 - System refresh!	CRM WebClient UI
Day 7	CRM WebClient UI
Day 8	CRM WebClient (buffer time) Case Study
Day 9	Case Study (optionally review)
Day 10	Certification

Caution: The proposed durations of lessons and exercises in TCRM20 (referenced from the standard courses) are estimates and have to be adapted here and there.

For example the part *UI Configuration* with its units tends to be too long for two days, hence you can either go with a higher pace of use buffer time on day 8.

Information regarding exercises/solutions

None. Certain information regarding exercises/solutions are part of the specific lessons.

If necessary, future Information will be included into the additional instructor guide on the Service Marketplace.

Example ABAPs CATTs:

No need to start CATT's

Unit 1

1

Introduction

This unit consists of one lesson which can be used to wrap up TCRM10 content.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Describe the SAP CRM Application

Unit Contents

Lesson: SAP CRM Introduction / Wrap up of TCRM10.....	2
Exercise 1: Logon and Personalization.....	11

Lesson: SAP CRM Introduction / Wrap up of TCRM10

2

Lesson Duration: 15 Minutes

Lesson Overview

This lesson is intended to shortly wrap up the content of the course TCRM10.

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the SAP CRM Application

Use this lesson to “get everyone into the boat”.

You might want to use more or less time for this introductory lesson, depending how vivid participants TCRM10 knowledge is.

The last two days of TCRM10 dealt with three topics:

Account Management

Organizational Model

Product Master

Mention that participants created their own data like corporate accounts, an organizational unit and a product master.

Please note that due to the system refresh participants will use similar master data than in TCRM10. This data is already prepared in the training system. Check the following table to get an overview:

	TCRM10 data	TCRM20 data
Corporate Account	##Stockmann	##Decot
Contact Person	Michael ##Contact	Michele ##Contact
Product (Material)	##Monitor	##Screen
Product (Service)	##Repair	##Maintenance

Business Example

You want to get a quick overview of the SAP CRM solution.

CRM Without Compromise – Comprehensive
The SAP CRM Solution

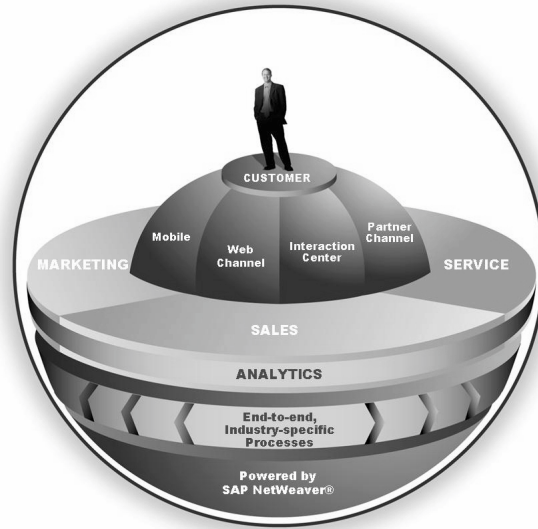


Figure 1: The SAP CRM solution

SAP CRM provides companies with a complete CRM solution that covers the breadth of Marketing, Sales, Service and Analytics.

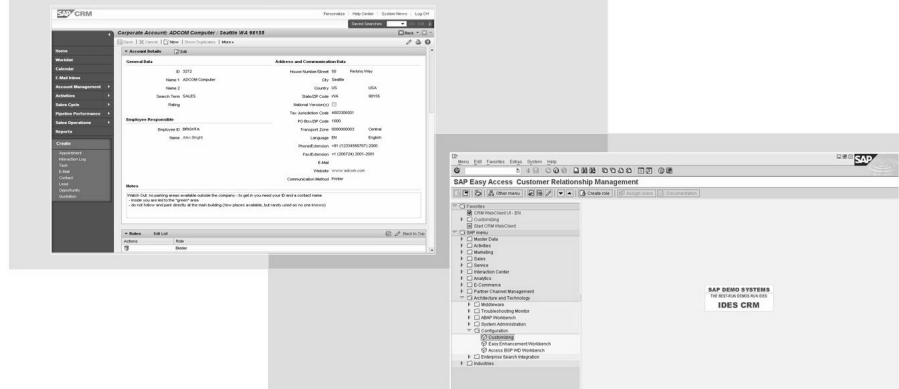
Main interaction channels are:

- Channel Partners or Partner Channel Management which enables indirect sales
- Mobile for field and mobile workers
- Interaction Center for call center employees
- Web Channel enabling the customer self-service channel

SAP CRM provides

- Simplified and unified experience for the end-user to drive user adoption
- Comprehensive functionality supporting end-to-end business processes across industries
- Flexible deployment options that deliver CRM without Compromise; your choice of on-demand, on-premise, or hybrid
- Extensible, service-enabled CRM that enables business process innovation and differentiation through flexible and open integration points

The CRM WebClient User Interface is designed for the business user, providing a role-based workspace that is easy to use and navigate



The SAP Graphical UI is used for administrators and administrative tasks such as Customizing, System Administration, Role Administration etc.

Figure 2: CRM WebClient UI vs SAP GUI

As of SAP CRM 2006s, the SAP GUI interface should only be used for administrative purposes. Examples are the following:

- System administration
- Customizing
- ABAP Workbench activities/ custom developments
- SAP Business Workflow
- User maintenance/ Role administration
- System monitoring
- Middleware (Settings/Monitoring)

The SAP GUI is used frequently during this course because the aim is to make the participants familiar with the basic settings of SAP CRM.

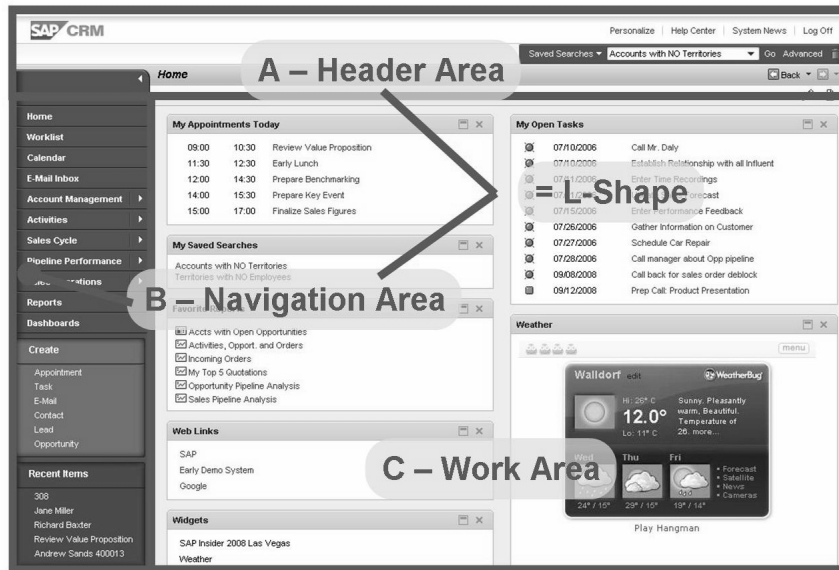


Figure 3: Main Screen Areas of the CRM WebClient UI

The main areas a user can see on the screen are:

- The Header Area
- The Navigation area
- The Work Area

The L-Shape always stays fix, so the user always has access to common functionalities and never gets lost.

The Work Area changes its content based on the navigation or functions a user executes.

The L-Shape provides easy global navigation through the entire SAP CRM application. It includes generic shortcuts for fast data entry or data access. The L-Shape consists of the header (top) and navigation (left) area.

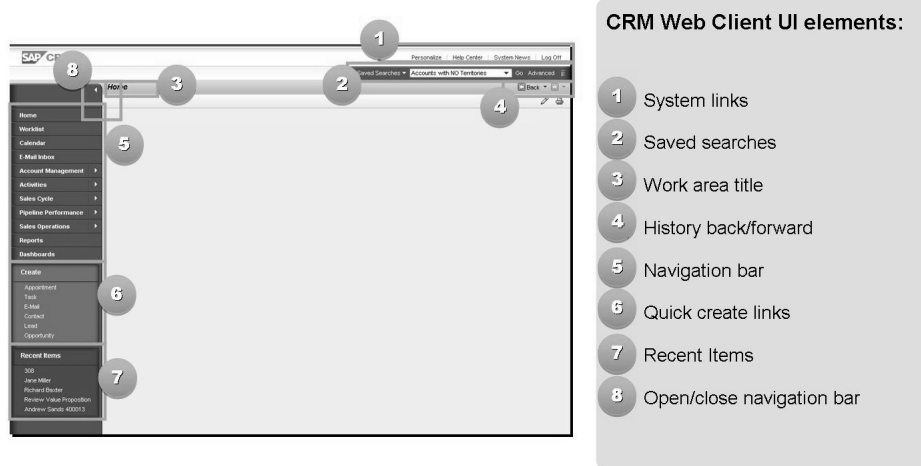


Figure 4: Main CRM WebClient UI Screen Elements

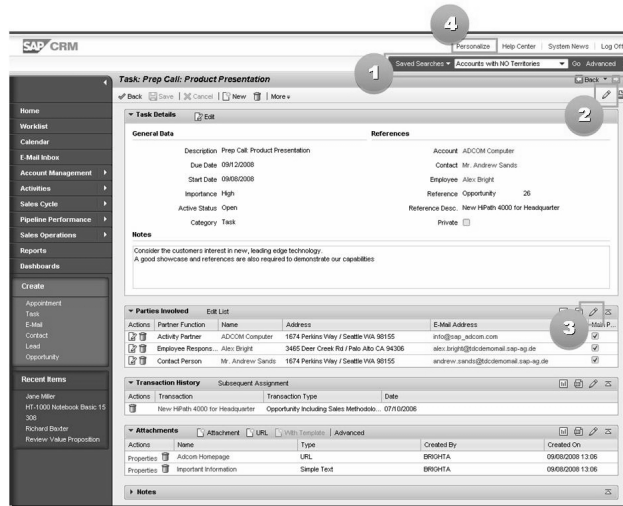
The L-Shape is a fix point for the user as it never really changes or goes away from the screen no matter what the user does.

The main part on the left hand side consists of navigation possibilities to easily access all information or functionality within the current role.

The upper part provides generic functionality normally available for all users.

Corporate branding can generally be applied to all areas via the Cascading Style Sheets (css files), while the upper area is often used to place corporate images or color schemes.

Users can tailor the application according to their needs via multiple personalization options.



- 1 **Saved Search Models**
 - Often used searches can be saved
 - Accessible everywhere
- 2 **Overview Page (only page layout)**
 - Visibility and sequence of content
 - Drag & Drop
- 3 **Tables**
 - Visibility, sequence and width of columns
 - Drag & Drop
- 4 **General Settings**
- 5 **Entry Pages**
 - Structure and content
 - Drag & Drop

Figure 5: End User Personalization

Allowing the user to tailor the final application to a large extent to his/her own needs was a main focus for the CRM Web Client user interface.

Standard personalization options everyone can find in the internet have been kind of a template for the personalization options available.



Figure 6: Business Partner in the Application

Corporate Accounts are Business Partners of the category Organization. A Corporate Account can have different Business Partner roles like “Sold-to-Party”, “Prospect”, “Competitor”, etc. It is possible that an Account has different roles (e. g. “Sold-to-Party” and “Competitor”) at once. Corporate Accounts are typically used in B2B-Scenarios.

Individual Accounts are Business Partners of the category Person. Individual Accounts can also have different roles. In principle an Individual Account can also be a Contact Person for another Corporate Account. Individual Accounts are typically used in B2C-Scenarios.

Groups are Business Partners of the category Group. Groups are very similar to Corporate Accounts and can be used for different purposes (e. g. married couple).

Contact Persons are Business Partners of the category Person with contact person relationship to an Corporate Account. One Contact person can have multiple contact person relationships to different Accounts.

Employees are Business Partners of the category Person with the BP role “Employee”, usually assigned to an internal Organization.

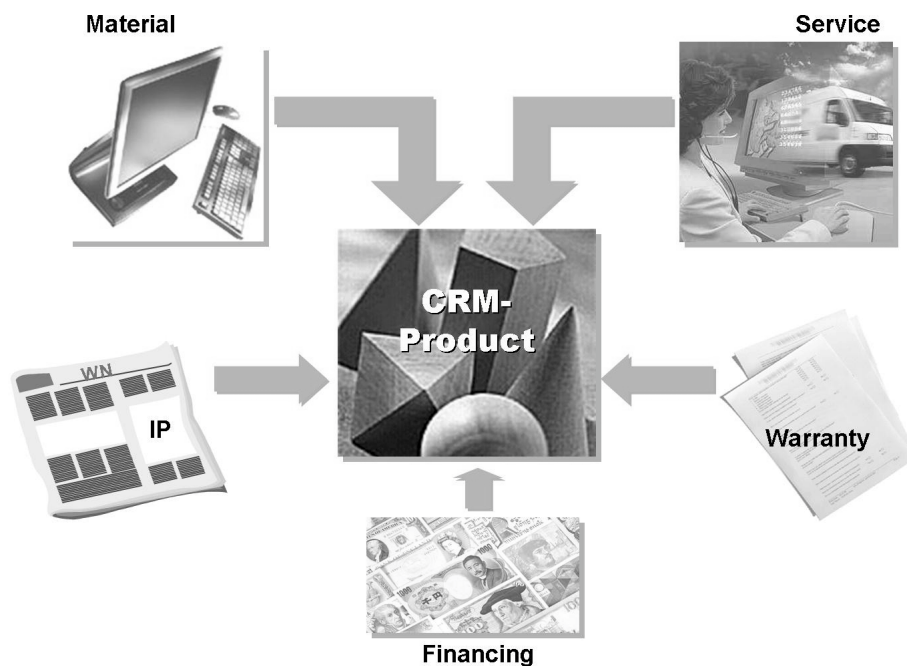


Figure 7: CRM Product Master

Products are goods which are the object of a company’s business activities. Products can be tangible, such as a PC, or intangible, such as services like PC maintenance.

The product master provides you with all information on the products that your company purchases and sells. It is the central source from which product-specific data can be retrieved.

Product information is used in marketing, sales, and service processes. The product master functionality is integrated into various business roles and therefore provides all functionality you require for working with products within the relevant business context.

Organizational management in CRM allows you to

- Display your company's functional organizational structure as a current organizational plan by using the objects organizational unit and position
- Reflect your sales or service structure: e.g. sales organization, sales office, sales group
- Characterize your organizational units by organizational and general attributes
- Define rules to determine the organizational unit responsible

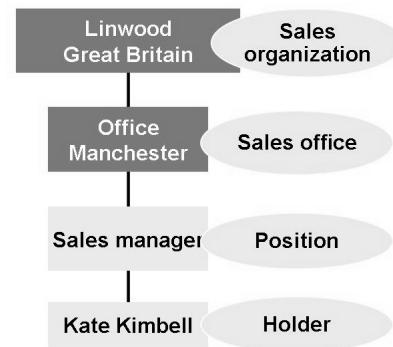


Figure 8: Organizational Management

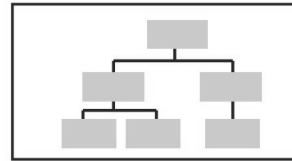
Organizational objects are objects used for modelling an organizational plan. They can be linked to hierarchies to form functional relationships in the organizational plan for your company. There are two kinds of organizational objects:

- **Organizational units:** They are used to form the basis of an organizational plan. Organizational units are functional units of a company. Depending on how a company is organized, these can be, for example, departments, groups or project teams.
- **Positions:** They show the functional task distribution of individual items and their report structure in the organizational plan. Positions are concrete items in a company, which can be occupied by holders (employees or users), for example, the sales manager for Europe.

How to define organizational management

Step 1

- Define the organizational structure
- Create organizational units and positions
- Assign organizational and general attributes



Step 2

- Make the customizing settings for automatic determination of organizational units in transaction documents



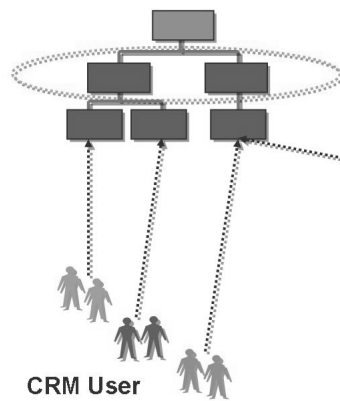
Step 3

- System determines organizational data in the transaction automatically



Figure 9: Organizational Management Settings

Organizational Model



Organizational Model plays an important role for the business role assignment. Business roles can be assigned to positions and organizational Units.

CRM Business Role

Position Details		Change Period	General Data
General Data			
Description	Manager PC4U Global		
Code	ManagGLOBAL		
Head of org. unit	<input checked="" type="checkbox"/>		
Role Assignment			
Business Role	Sales Professional		
Functional Assignments			
Sales Organization	PC4U Global		
Sales Office	PC4U Global		
Sales Group	PC4U Global		

Figure 10: Business Role Assignment

Unit 2

Transaction Processing

This unit introduces the general idea of CRM transaction processing. It is not meant to explain every functional detail available within transaction processing. There again are two sets of exercises. One (default) works with Sales Quotations, the other with Service Orders.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Give examples of the different CRM business transactions
- Describe the structure of business transactions
- Explain and create transaction types and related customizing settings
- Configure the basic functions of business transactions

Unit Contents

Lesson: Structure of Transactions	22
Exercise 2: Business Transactions	27
Lesson: Transaction Types Item Categories and Item Category Determination	30
Exercise 3: Transactions and Related Customizing – Sales	39
Exercise 4: Transactions and Related Customizing – Service (Optional)	51
Exercise 5: Implementing and Testing Copying Control – Sales	61
Exercise 6: Implementing and Testing Copying Control – Service (Optional)	67
Lesson: Basic Functions in Business Transactions	73
Exercise 7: Text Determination – Sales	91
Exercise 8: Text Determination – Service (Optional)	95
Exercise 9: Incompleteness - Sales	99
Exercise 10: Incompleteness – Service (Optional)	103

Lesson: Structure of Transactions

22

Lesson Duration: 30 Minutes

Lesson Overview

This lesson introduces the concept of a business transaction and explains its structure.

Lesson Objectives

After completing this lesson, you will be able to:

- Give examples of the different CRM business transactions
- Describe the structure of business transactions

Business Transactions in SAP CRM Marketing, sales and service documents like Leads, Opportunities or Service Orders within SAP CRM are called (business) transactions. There is a generic concept behind transaction processing and data model, called **one-order** concept.

Give a general overview of CRM transactions. You can mention that there are many different business transactions available in CRM standard, quite a few which are industry specific. Customers can and will create their own type of business transaction using basic customizing which will be introduced later in this unit.

Hint: Due to the business role concept, in CRM WebClient UI a user typically only sees a limited number of different CRM business transactions.

If you feel confident log on with different business roles in order to demo different transactions.

Business Example

Transactions are a flexible means to control and manage processes according to your company's requirements. You need to be familiar with the structure of transactions.

Business transactions in SAP CRM are used to describe business processes and transactions.

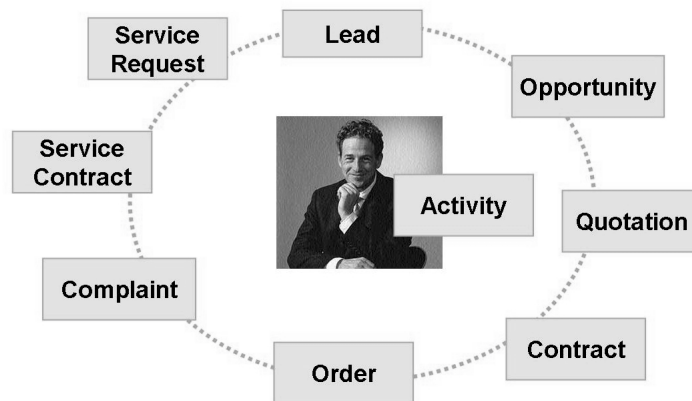


Figure 11: Business Processes in SAP CRM

General Structure of Transactions:

Every business transaction in SAP CRM contains header data like description, number and main business partner.

Header data is controlled by a transaction type (defined in customizing)

Most business transactions can contain item data. Item data is available once a product is added to a transaction, e.g. when adding a material into a sales order or a service product into a service contract.

The generic concept of CRM transactions allows adding different kinds of products into one transaction, e.g. it is possible to add a service product (2 hour repair) as well as a material (selling something) to a service order.

A business transaction provides business structures and functions that can be used in the various processes of a company, for example, in sales, marketing or service.

The same interface and processing concepts are used for all business transactions. The various components of business transactions can be used repeatedly.

You can enter items from different business contexts in one transaction. For example, you can enter a service, a service part and sales item in a service order.

CRM offers many different types of business transactions. Usually a business user will only be able to work with a limited number of types of transactions.

Unit 2: Transaction Processing

Header Data

Item Data

Item Actions

Figure 12: CRM WebClient UI - Example of a CRM Business Transaction

This figure shows a standard SAP CRM In-House Repair order, one of several different business transactions available with SAP CRM. Independent of the type of business transaction, the look and feel is always similar.

With so called **Item Actions** a user can navigate into the Edit mode of item details. When in Display mode, a user can use the **item number hyperlink** to navigate to the item details (in display mode).

Business Transaction

	Business Partners	General data, such as Description Priority Sales cycle Purchase order number Pricing procedure Status Subject ...
	Material 1 Quantity	Item-specific data, such as Pricing relevance ATP relevance Confirmation relevance Resource planning relevance Billing relevance ...
	Material 2 Quantity	
	Service 1 Quantity	

Figure 13: General Structure of Transactions

A business transaction represents a business interaction with a business partner.

The structure of a business transaction depends on the leading business transaction category (for example, contact, opportunity, sales, service).

Tasks usually only have a header level.

Leads, Opportunities, Sales and service transactions usually have a header and item level.

Depending on the business context, it is mandatory to include at least one product into the transaction. For example, a sales order or a service contract usually contain at least one line item (product).

Sales transactions have an additional schedule line level (delivery quantities and delivery dates, possibly after an ATP check).

Demonstration:

Log on as **Sales Professional**.

Create an activity and/or opportunity and/or quotation and enter basic information.

Use OPPT, AG and enter account 3271 and product 3271.

Hint: When you get a pop-up to choose the transaction type, you can personalize the technical transaction type id to the UI. You will be able to better identify business transactions. This is helpful because the training system contains (too) many active transaction types. Also it can happen that a participant copies a transaction type while being logged on with a different language. Hence a transaction type description might not be unique anymore in the course language.

Lesson: Transaction Types Item Categories and Item Category Determination

28

Lesson Duration: 90 Minutes

Lesson Overview

This lesson introduces the basic customizing of transaction types.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain and create transaction types and related customizing settings

You should introduce the basic customizing of transaction types.

Business Example

Transactions are a flexible means to control and manage processes according to your company's requirements. You need to be familiar with the various types of transactions.

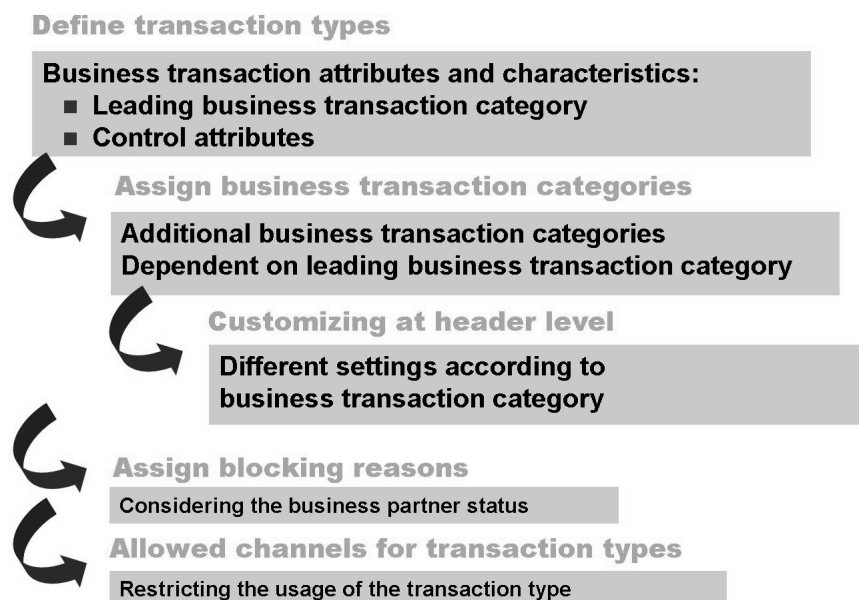


Figure 14: Business Transaction Customizing: Header

Transaction types are defined in customizing.

SAP delivers a few hundred transaction types. Some are industry specific. Customers can and will define their own transaction types.

Every transaction type contains general control attributes, e.g. many profiles and procedures, number range assignment etc.

The fact that many different marketing, sales and service transactions have to be controlled via transaction type customizing only, every transaction type is assigned to one or more business transaction category with controlling attributes. One can say that those business transaction categories express different “aspects” of a transaction. The data model restricts the combination of leading business transaction with business transaction categories. E.g. it is not possible to add an Opportunity aspect to a sales order transaction type.

Since CRM 5.0 it is possible to restrict the usage of transaction types in different interaction channels using the setting allowed channels for a transaction type. A prerequisite for the replication of order items (e.g. returns or sales order items) to the ERP system is that transaction type equal sales document type (as well as item categories, and item category determination etc).

Caution: It is not possible to download SAP ERP sales document types to SAP CRM transaction type because of the different data models!

Demonstration

Show different transaction types in customizing, e.g. 0001, LEAD, OPPT, AG and SRVO

SAP Implementation Guide → Customer Relationship Management → Transactions → Basic Settings → Define Transaction Types (shortcut /ncrmc_process_ma).

All have basically the same “general” settings (e.g. leading transaction category, a set of different profiles and number range assignment) 0001, LEAD, OPPT are only assigned to one business transaction categories only, AG to two and SRVO even to three. Show the sales specific settings using AG or SRVO transaction type. Show the service specific settings of SRVO.

Mention that in CR100 only “generic” settings of a transaction type are introduced. Other classes focus on specific settings like ATP Relevance or Resource Planning Relevance.

A transaction type defines the attributes and characteristics of a business transaction (for example, sales order, service request, visit) and the controlling attributes (for example, text determination procedure, partner determination procedure, status profile, organizational data profile). A transaction type controls how a specific business transaction is processed.

A business transaction can be assigned to one or more business transaction categories, depending on what the leading business transaction category is. Assigned business transaction categories allow detailed control of the transaction.

Only specific combinations of business transaction categories are possible.

Examples:

The transaction category **SRVO** (*Service Transaction*) has the leading business transaction category *Service Process* and the three assigned business transaction categories *Business Activity*, *Sales* and *Service Process*

The transaction category **LEAD** (*Lead*) has the *leading* business transaction category *Lead* and one assigned business transaction category *Lead*.

The transaction category **TA** (*Standard Order*) has the leading business transaction category *Sales* and two assigned business transaction categories *Business Activity* and *Sales*.

Assign blocking reasons: You can use blocking reasons to block a business partner against the entry of certain business transactions. When the block applies to the transaction category, you cannot enter any business transactions for the blocked business partner.

Permitted **Channels** for transaction types: Once you have assigned transaction types to particular channels, only these transaction types are available for selection in the input help of each corresponding channel.

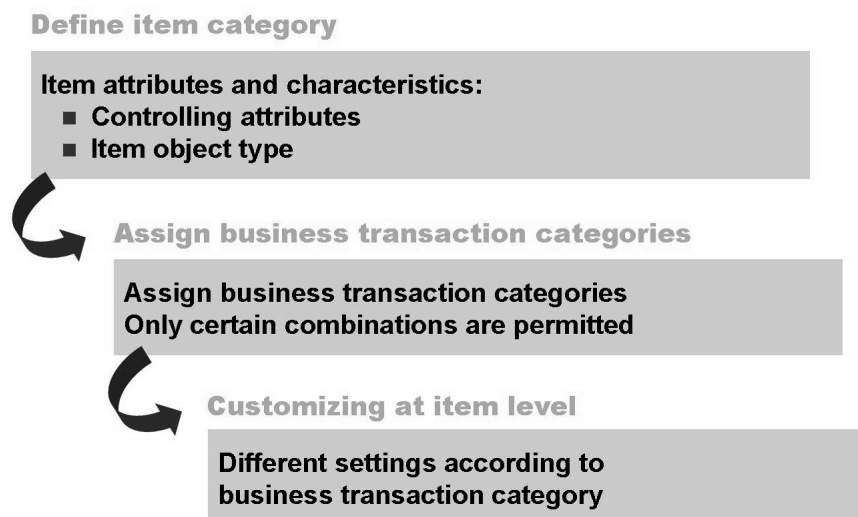


Figure 15: Business Transaction Customizing: Item

Item categories are used to control the item level of a business transaction.

You can create a service order and add a service item which is resource planning relevant. At the same time you can add a material (service part) that needs an availability check. Also you can add a material (sales item) that will be transferred to the ERP system to trigger a delivery. These three items are completely different and the means to control the details are item categories.

Caution: It is not possible to download SAP ERP item categories to SAP CRM!

An item category specifies the properties and attributes of a business transaction item, and therefore controls how the item is processed. First, you assign the item category to an item object type. The item object type defines the business context in which an item category is used. Like transaction types, an item category is assigned to one or more business transaction categories.

First you define the general settings (the attributes that are the same for every type of item category).

Item object type; partner determination procedure; status profile; ATP profile; action profile; date profile; BOM explosion and configuration data.

Next you define the business context in which the item category is used. Settings differ depending on the assigned business transaction category. For example, billing reference is defined under *Sales* and confirmation relevance under *Service Process*.

The item category **SRVP** (service product item) is assigned the two business transaction categories *Sales* and *Service Process*.

The item category **OPPT** (opportunity item) is assigned the business transaction category *Opportunity*.

Activities do not usually have items. Customizing of item categories and item category determination is not necessary in this case. Exception: Contact reports/activity reports.

Demonstration

Show different item categories in customizing, e.g., OPPT, AGN, SVCP

SAP Implementation Guide Customer Relationship Management → *Transactions* → *Basic Settings* → *Define Item Categories* (Shortcut: `/ncrmc_item_ma`).

All have basically the same “general” settings (e.g. leading item category, a set of different profiles) OPPT and AGN only are assigned to one business transaction category, SVCP to two. Show the sales specific settings using AGN or SVCP item category. Show the service specific settings of SVCP.

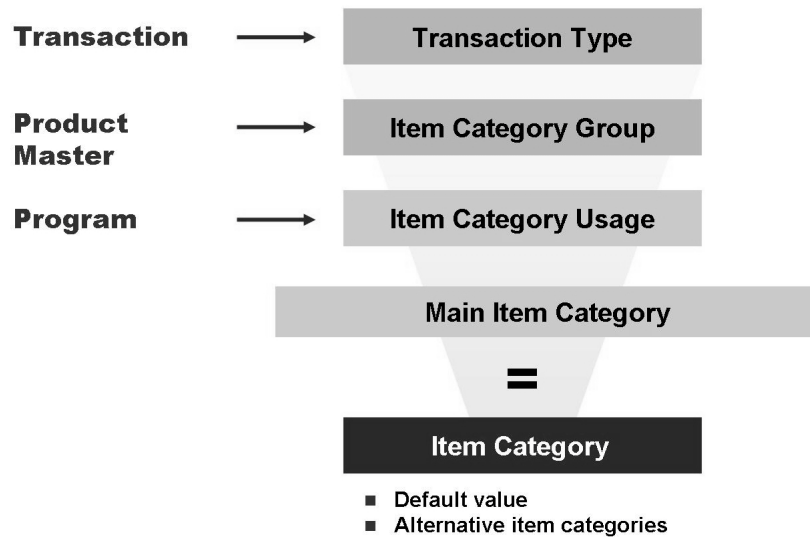


Figure 16: Customizing: Item Category Determination

Once a product is entered into a business transaction, the system automatically tries to determine a default item category.

In many cases the transaction type as well as the item category group (from the product master) is used to determine a default item category. For special requirements the item category usage (e.g. when adding free goods items) and the item category of the main item are also needed. If alternative item categories are maintained, a user can overwrite the default item category in a business transaction.

In case of document replication: The determination procedure of item categories should be set up in the same way like in ERP system. Otherwise problems can occur during the upload to ERP. SAP delivers the most common item categories for sales transactions (TAN, TAM, TAC and TAE) and the appropriate determination. In CRM custom made item categories and their determination must always be setup manually. There is no copy mechanism available once customers copy a transaction type. Again no customizing download from ERP is supported.

Caution: In item category determination for sales quotations and sales orders it is important to only find one kind of item category per transaction type. When setting up item category determination in a way that both “quotation” and “order” item categories are determined for a

Lesson: Transaction Types Item Categories and Item Category Determination

new transaction type, it will not be possible to create such a transaction in CRM WebClient UI. Neither *Create* → *Quotation* nor *Create* → *Sales Order* will contain the corresponding transaction type!

Once a student runs into this (“I can’t find my transaction type”), check item category determination.

Demonstration:

Show different entries in customizing.

AG + NORM (Standard item) = AGN (Quotation Item)

TA + NORM (Standard item) = TAN (Sales Item)

TA + NORM + FREE (Free Goods) + TAN = TANN (Free of Charge Subs.)

TA + 0002 = TAC (Sales Configuration)

In parallel create those documents in the application!

Caution: Note that in standard CRM WebClient UI technical keys are not displayed. Instead the item category description is displayed.

Via UI configuration it is possible to display the technical ID of a transaction type in the **Details** view of the corresponding application.

Demonstration

Follow the exercises to create your own transaction type.

Don’t forget to assign your own organizational data profile (or pick one of the participants in case you forgot).

Test the new transaction type with your own data. You should be able to create an error free quotation.

You can define per business transaction category and item category group, which item categories the system defaults for processing business transactions. At the same time, you can define which item categories can alternatively be entered manually for system default.

The *Item Category Group* field of the product master is dependent and independent of the organizational data (the *Distribution Chain* is dependent and the *Details* are independent).

Unit 2: Transaction Processing

The procedure for item category determination should be set up in the same way as in the SAP ERP system, especially when there are transactions that will be replicated. Otherwise, problems may occur during the upload to the ERP system.

Other user-defined item categories and their corresponding determination procedures must be set up manually. It is not possible to download Customizing from ERP.

In some situations (“complaints”), the item category determination is derived from the action definitions.

Examples for item category determination:

- A sales item (NORM) in a standard sales order (TA) results in item category TAN.
- A sales item (NORM) in a standard sales order (TA) that belongs to a higher-level item of item category TAN results in item category TANN once free goods determination takes place (item category usage is FREE).
- A service product item (SRVP) in a standard service order (SRVO) results in item category SRVP.

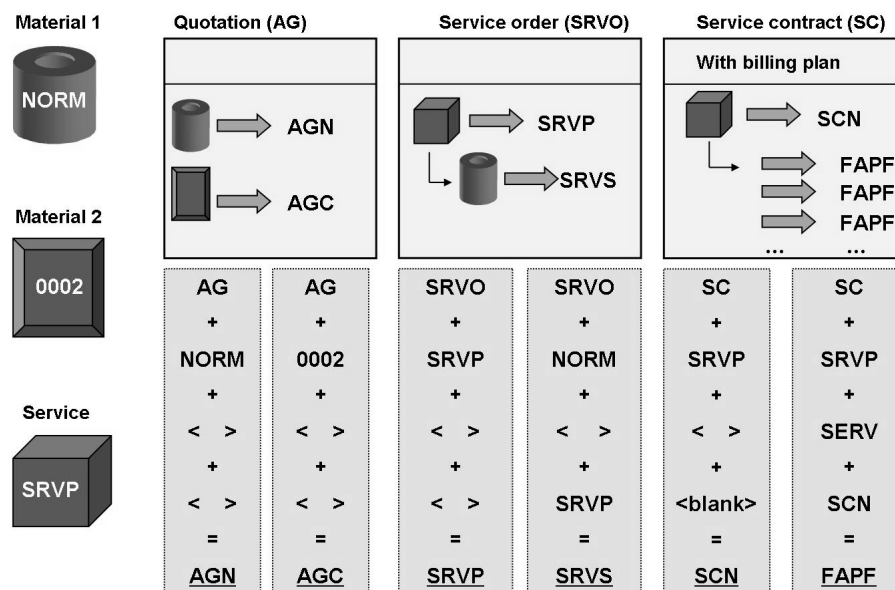


Figure 17: Examples of Item Category Determination

Demonstration:

In the system display the entries shown on this slide.

*SAP Customizing Implementation Guide → Customer Relationship Management
→ Transactions → Basic Settings → Define Item Category Determination
(/ncrmc_it_assign)*

The figure illustrates some normal examples for item category determination.

- **Quotation processing** with two items. A quote is made for a stock material (item category group sales item = NORM) and a configurable product (item category group configuration above = 0002). Due to the different products (item category groups), the system determines two different item categories (AGN and AGC).
- **Service order processing** with two items. A quote is made for a service (item category group service product = SRVP) and a corresponding [subitem] sales item (item category group sales item = NORM). The system determines item categories SRVP and SRVS.

Alternatively, there could also be a corresponding service part item (item category group service material = SRVM). In this situation, the system would have determined the item category SRVM

- **Service order with billing plan.** A service product is entered (item category group service product = SRVP). Additional billing plan subitems are generated by the item category usage (service billing plan = SERV). The system determines the main item category SCN and billing plan items with item category FAPF.

Lesson: Basic Functions in Business Transactions

67

Lesson Duration: 120 Minutes

Lesson Overview

This lesson explains some basic functions available in business transactions.

Lesson Objectives

After completing this lesson, you will be able to:

- Configure the basic functions of business transactions

Introduce a number of basic functions within CRM business transaction processing.

Business Example

Transactions are a flexible means to control and manage processes according to your company's requirements. You need to be familiar with the various functions of transactions.

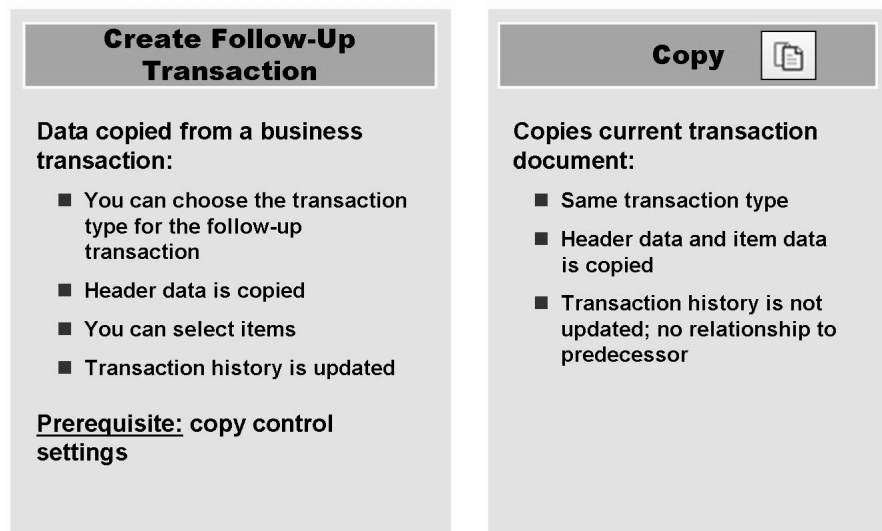


Figure 18: Copying Business Transactions

Make clear that the “tool” in the CRM system that controls what documents can be copied into other documents is the “Copying Control”. Copying versus create follow-up: Give a short summary over the points on the slides which make the differences between these two kinds of copying business transactions clear. Repeat that you have maintained the Customizing settings for copying control if you want to create follow-up transactions.

Caution: Sometimes participants would like to use the **Copy** functionality to create similar documents for different business partner. Mention that in the standard delivery the main business partner cannot be changed once copying a document. Although it is possible to change this via partner determination procedure customizing it is **not recommended to do this**. Determination processes like Organizational Data Determination etc. usually are processed once a business partner is entered. This will not happen if simple copying is triggered.

Demonstration

For example show in the customizing *IMG → Transactions → Basic Settings → Copying Control for Transaction Types → Define Copying Control for Transaction Types* for the transaction types which you used above that there are only some special transaction types for copying are available (e.g. you can only copy OPSM to AG, TA or OPSM).

After this show the effects of these customizing settings directly at the program. Demonstrate also that you can always create activities as a follow up document – therefore are no customizing settings necessary, it is always possible. Mention too that you can also create some transaction types from activities without any settings in the copying control

Caution: There is a new feature available that allows to reduce the creation of follow-up activities to the ones that are specified in copying control for transaction types!

→ *SAP Customizing Implementation Guide Customer Relationship Management → Transactions → Settings for Activities → Activate Copying Control for Activities*

To save time creating transactions, you can copy an existing transaction and use this as the basis for a new transaction. You can choose whether you want to connect both transactions using the transaction history (Creating a Follow-Up

Transaction) so that, for example, you can view the transaction history of a business transaction at any time, or whether you just want to make a simple copy without updating the transaction history.

The processing of follow-up transactions requires several settings in copy control Customizing:

- Copy control for transaction types.

- Copy control for item categories.

- Determination of the item category during the copy (optional).

You must also ensure that settings have been made for the target transaction (for example, item category determination).

When you **copy** transactions, the system produces a copy and displays it for processing. When the copied transaction is saved, the document flow is **not** updated; in other words, the copied transaction has no connection to the original transaction.

Customers can adjust the conditions of the copy control according to their individual requirements. You have the option of writing your own data transfer routines using BAdI (business add-in) methods. You can use the BAdI **CRM_COPY_BADI** to create copy routines.

The transaction history allows you to display interlinkages between business transactions at header and item level.

- ▶ **Transaction History**
 - Quotation
 - Replicated document
 - Contract
 - Service orders
 - Confirmation
 - ...
- ▶ **Shipping Documents**
 - Delivery documents
- ▶ **Confirmations**
 - Confirmations
- ▶ **Billing Documents**
 - Invoices
 - Credit memos
 - Debit Memos

The display of the transaction history is context-specific and depends on each transaction type.

Figure 19: Transaction History/Document Flow in Transactions

Demonstration

Create a quotation of type **Quotation -> Order (ZAG2)** for business partner 3271 and product HT-1010 (quantity 1).

Create a follow-up sales order of type **Telesales (TA)** and copy the item.

Show transaction history of quotation and/or sales order.

Caution: The transaction history of the sales order does not include the replicated ERP sales order. You could process the sales order in ERP (Delivery, Picking, Goods Issue and Billing) and show the other assignment blocks **Shipping Documents** and **Billing Documents**.

The transaction history is updated when follow-up transactions are processed.

You can navigate from the transaction history to linked business transactions.

In some cases (for example, Delivery), you can use the transaction history to navigate to a connected ERP system. However, this requires use of SAP Internet Transaction Server (ITS).

The Transaction History is also available on item level.

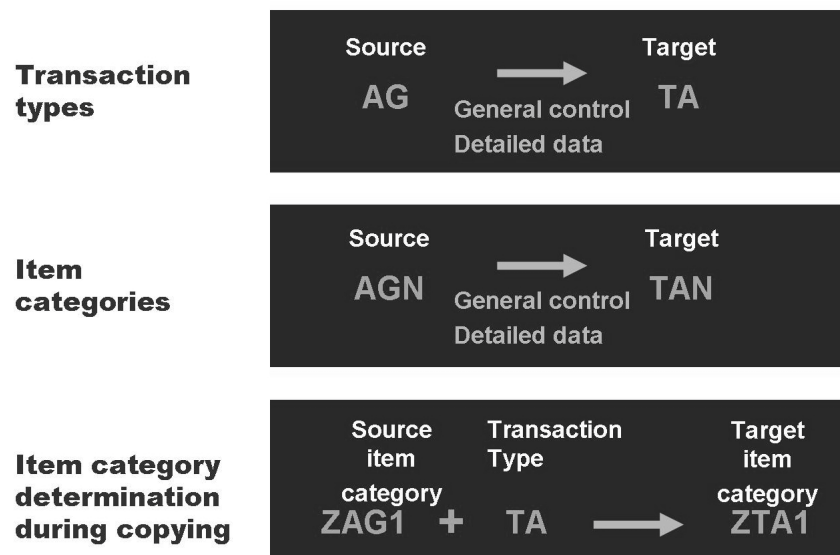


Figure 20: Customizing: Copy Control

The slide wants to show that you can define a specific item category determination that should be executed when copying. The item category is used to find the target item category in the source transaction for the transaction type in the target transaction.

Copying Control for Business Transactions → Define Item Category Determination when Copying. If the system cannot find an entry for the copying transaction in this table, the item category is found in the target transaction using the normal item category determination. *Transactions → Basic Settings → Define Item Category Determination.*

Copy control is required to process follow-up transactions.

Copy control is mandatory for item categories if you want to copy products (items) to a follow-up document.

Creating a service order which will automatically be assigned to a service contract (using Contract Determination) requires copying control for item categories only.

The definition of item category determination when copying is optional and can be used if item category determination is not required in the target transaction.

Copy control can be maintained in Customizing: *SAP Implementation Guide → Customer Relationship Management → Transactions → Basic Settings → Copying Control for Business Transactions.*

Demonstration

Maintain copying control for transaction types. Create a new entry for your new transaction type and make it possible to copy data into a Telesales (TA) sales order in case you created a transaction type “Quotation”.

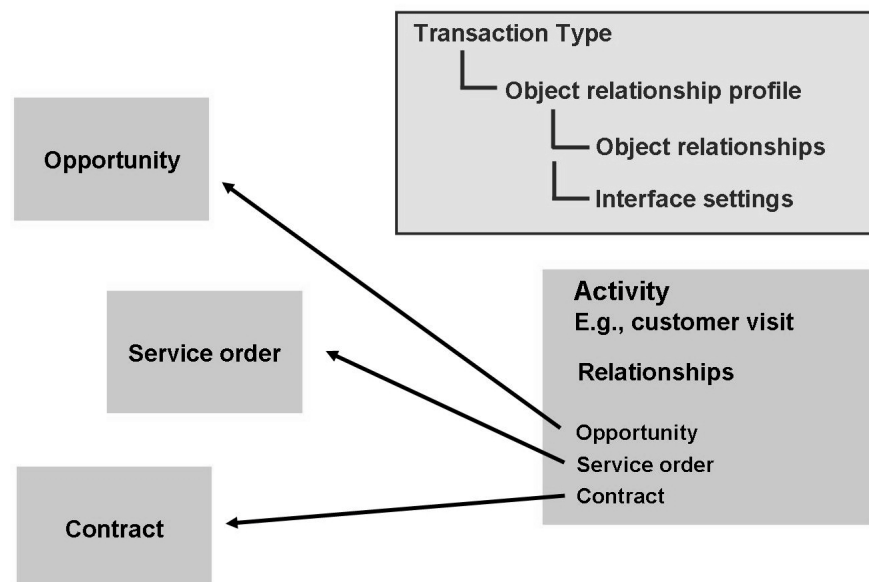


Figure 21: Subsequent Referencing

When you create an activity and then see that it should have been created as a follow-up transaction to an existing case, you can subsequently link this activity to an existing transaction.

You can subsequently link follow-up transactions from header to header.

It is not possible to subsequently link from item to item.

When you subsequently link follow-up transactions, the document flow is updated automatically. When you delete a link, the document flow is updated accordingly when you save the transaction.

To enable subsequent referencing, you have to create an object relationship profile in Customizing and assign it to a transaction type.

SAP Implementation Guide → Customer Relationship Management → Transactions → Settings for Activities → Define Object Relationship Profile

Demonstration

Create an activity of type Appointment (0000) and enter account 3271. **Save**

In the **Appointment Details** go into **Edit** mode.

On the right-hand side choose Reference = Opportunity and enter ID 978.

Opportunity “Pocket PCs” was assigned subsequently and after saving the activity, Transaction History is built up! Show the Assignment Block!

Go into transaction type customizing of 0000 and point to Object Reference Profile **ACT_SUBSEQ**.

Optional: Show this profile in customizing. *Customer Relationship Management → Transactions → Settings for Activities → Define Object Relationship Profile*



- Text Determination
- Date Management
- Status Management
- Incompleteness Check

Figure 22: Basic Functions in Business Transactions

Other basic functions are described during this course. These include:

- Partner processing
- Action processing
- Pricing

The following sales-specific functions are covered in more detail by the course CR300 “CRM Sales”:

- Product substitution
- Free products
- Credit limit check
- Availability check (ATP check)

Notes

The text of the text field in the details of a business transaction is transferred with the logon language to the first position of the "Notes" assignment block.

Notes

First note

Header note

Customer requirement

Internal note

Figure 23: Texts/Notes in Transactions

Explain that in the CRM system the texts are stored within various objects. Point out that the texts can be saved in different languages. Here you have to make clear several things to the participants.

Texts can be stored in a object and can be copied into another objects

You can determine conditions under which texts are to be copied

Documents can contain texts at header and item levels

You can define obligatory text

You can customize if changes are allowed and the way the texts are copied (more about that later in the unit)

You can set up texts so that a log is written. For example if you open text determination procedure **ZLSP0003** you can observe that three text types contain the “P” (protocol) and one text type contains the “R” (display log) entry.

You can maintain different notes for each business transaction.

The first note can usually be created in the overview area of a business transaction.

You can create texts and notes for several other objects in the SAP CRM system. These include:

- Business partners
- Products
- Product catalogs
- Billing documents (header and item)
- Texts can be maintained in different languages.

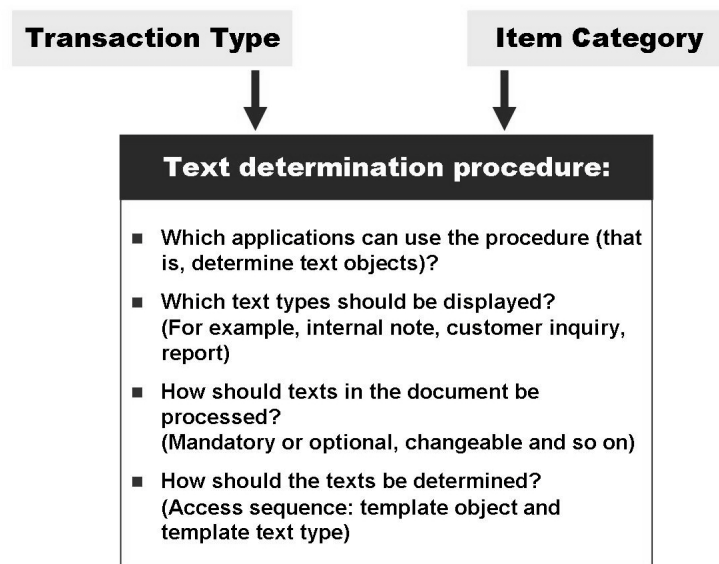


Figure 24: Text Determination Procedure

According to your business scenario, you combine a number of text types in the text determination procedure. These texts are displayed automatically in transactions or can be entered manually.

Text objects and text types are defined in *Customizing: SAP Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Text Management* → *Define Text Objects and Text Types*.

Text determination procedures and access sequences are also defined in *Customizing: SAP Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Text Management* → *Define Text Determination Procedure*.

Caution: In the demo/exercises you can observe a “new feature”. The sequence of text types which can be defined within the details of a text determination procedure is of no use anymore. In SAP GUI this sequence controlled the order of text types on the Text tab page. In the CRM WebClient UI this sequence can no longer be controlled via customizing. Therefore always use ENTER once you run into warning messages referring to a missing sequence.

Demonstration

First show some examples for texts and where these texts are located in the objects:

In the WebClient UI show an **Appointment (0000)** and go to the Assignment Block **Notes**

Choose New.

Points out that there are different text types such as Note, Preparation, Correspondence ... available.

Go back to the **Appointment Details**. Enter a text in the **Notes** field

Save the Appointment. Check the Assignment Block **Notes**.

Check which text determination procedure was assigned to the Transaction Type 0000 (Appointment).

SAP Implementation Guide → Customer Relationship Management → Basic Functions → Text Management → Define Text Determination Procedure

Choose the Text Object CRM_ORDERH (Transaction Header) and show the list of text determination procedures. Mark ACT00001 and show the **Definition of Procedure**

Due to the fact that A002 (Note) is the first entry in this text determination procedure, the note you entered was transferred into this text type!

Date management enables you to process the dates that are relevant for you in one transaction.

Examples of date types in business transactions:



Figure 25: Date Management

Date management enables you to process as many dates as you wish in a document. It is used, for example, in contracts (for example, cancellation date, run time), activities (total duration of an activity) and quotations ('valid to' date). You can, however, also use it in any other transaction types.

Dates are important for the correct processing of all business transactions. In global business processes that cover several countries and time zones, it is particularly necessary to have a date management system that can convert time zones and the factory calendar in documents of business partners involved in a transaction. The component Date Management enables you to process as many dates as you require in a document. You can either enter dates yourself, or, by using date rules, have the system calculate these. In Customizing, you can define date types, durations, and date rules to meet your requirements.

The component Date Management offers a flexible tool for defining dates and processing these in documents. It also provides the same interface for all CRM documents, as well as the same processing and controlling (Customizing) of dates. Date Management covers the following functions:

- You can define dates (date types) and durations to meet your requirements. That means you can name the date types and durations according to your company terminology.
- For every transaction at the header and/ or item level, you can define which date type you need for the transaction, that is, which item type you need.

By doing this, you avoid saving unnecessary date types on the database. The same applies for durations (for example, contract run time).

To assign dates and durations to an item category, you group the date types and durations you want together in a date profile and assign this to a transaction type or an item type.

- You can calculate dates using predefined rules.

In date rules, you can link whichever date types and durations you require, as well as other date rules, with each other so that you get calculation chains.

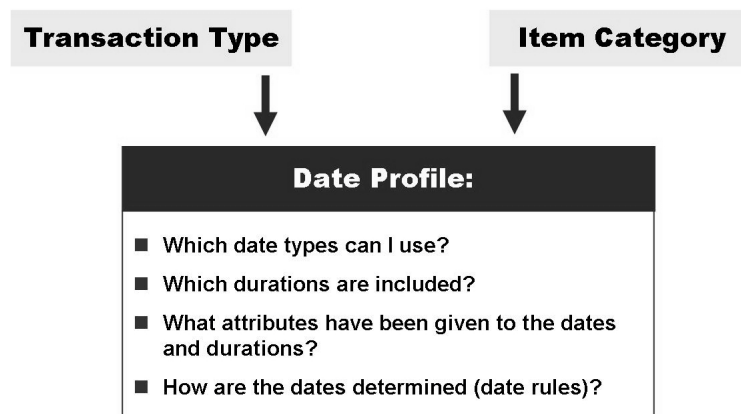


Figure 26: Date Profile

Date types are descriptions of business transaction dates, for example, start of contract, end of contract, date of signature.

The duration is the period between two points in time. It consists of a numerical value and definable time unit.

Date profiles, date types and date rules are defined in Customizing:

SAP Implementation Guide → Customer Relationship Management → Basic Functions → Date Management → Define Date Profile

SAP Implementation Guide → Customer Relationship Management → Basic Functions → Date Management → Define Data Types, Duration Types and Date Rules

Demonstration

In the WebClient UI create a new Quotation.

Point to the Dates information in the Details on header level.

Optional: Open the transaction type and point to the assigned date profile.

Optional: Open the date profile and show details.

Caution: The definition of date rules is a little different from other customizing activities since these rules require XML syntax. You can recommend to the customers to look into standard rules and that they should make use of the copy and adapt approach.

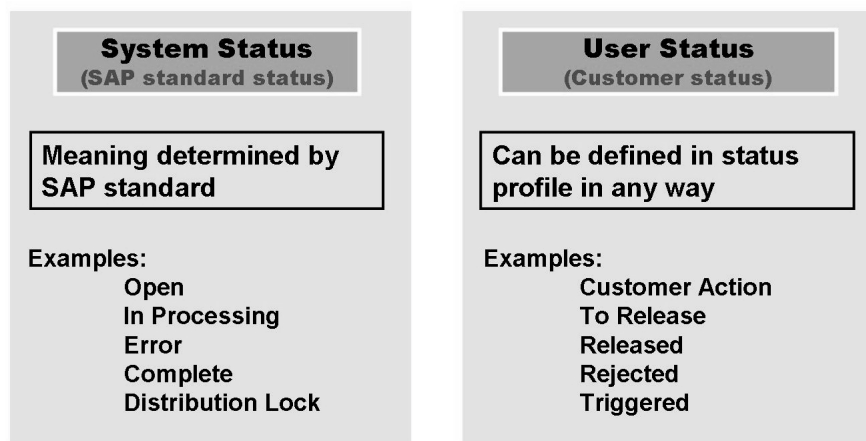


Figure 27: Status Management

You can specify the following information in a status profile:

- You define user statuses and document their function. A status profile can contain one or more user statuses
- You determine the sequence in which the user statuses are run. This sequence is determined by the status number. If you do not assign a status number to a user status, this status can always be set. Note, however, that only one user status with a status number can be active at any one time. When you assign a status number to a user number, you must also assign a highest and lowest status number. These numbers restrict the status number range from which the user status can be selected.
- By means of Object types, you assign at least one object type to the status profile. The assignment of the object type determines if the status profile can be assigned to the transaction type and/or the item category. Example: If, for example, you assign the object type "CRM order header" to the status profile for quotations, you can only assign this status profile to transaction type header. If you assign the status profile for quotations the object type "CRM Order Item", you can only assign the status profile to the item category. If you assign both object types to the status profile for quotations, you can make the assignment to both the transaction type and item category.
- You define the initial status that is automatically activated when the object is created.
- In the status profile, you can define a transaction to be executed when a given user status is reached, with the result that one or more system statuses and/or user statuses can be set or deleted

System statuses: If a status profile (for the user status) is not assigned to a transaction type/item categories, system statuses are displayed in the application (in the transaction).

In standard systems, some of the system statuses are not displayed in the CRM WebClient UI. The user only sees the statuses that are relevant to them. Other statuses that are required for the program flow are set but not always displayed.

User statuses: If a status profile (for the user status) is assigned to a transaction type/item categories, user statuses are displayed in the application (in the transaction).

SAP Implementation Guide → Customer Relationship Management → Transactions → Basic Settings → Status Management → Change Status Profile for User Status

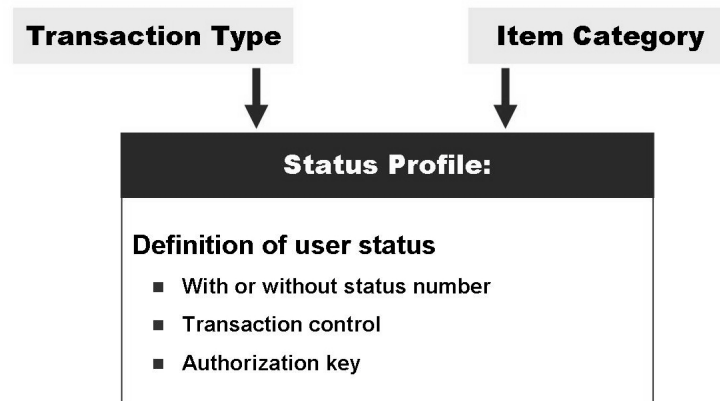


Figure 28: Status Profile

Demonstration

SAP Implementation Guide → Customer Relationship Management → Transactions → Basic Settings → Status Management → Change Status Profile for User Status

Show Status Profile **CRMQUOTE** and double-click to call details.

The status profile shows status number 10 as initial

The last row shows that user status influences the transaction status (last row in status profile). Also status In process has lowest status number 20 which means you cannot go back to **Open**.

Choose Menu *Goto* → *Translation* → *tatus Translation* Choose Language **EN**

Assign the Status Profile to your quotation transaction type and create a new Quotation in the WebClient UI.

Enter a Sold-To party and show the Status field

Once a Status Profile is assigned to the transaction type, the WebClient UI **only shows the User Status**

User statuses are defined in a **status profile**. In status profiles you can do the following:

- Define the activation sequence of user statuses
- Define an initial status/start status
- Set a transaction status that is connected with the user status

You must assign at least one object type, such as the CRM order header, to the status profile.

The incompleteness check allows you to find out whether a transaction is complete or not.

For example, the *External Reference* field is a required entry field in standard sales orders.

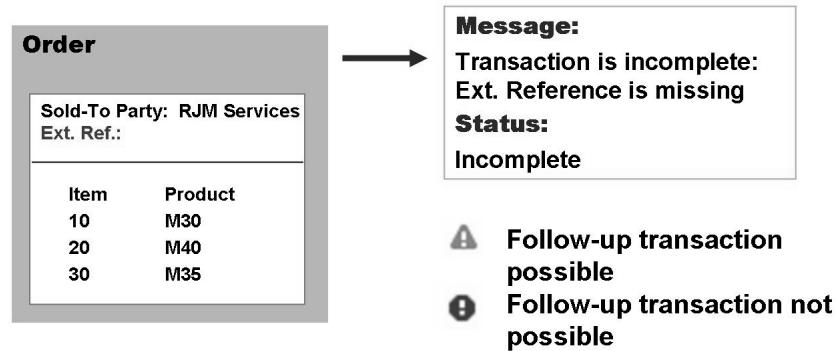


Figure 29: Incompleteness Check

You can make settings for the incompleteness check in business transactions. You can define when a business transaction in the system should be considered incomplete and what message type the system should issue during data processing. You can restrict the incompleteness check to individual transaction types and to individual business partners.

The scope of the check can differ for each object. For example, the system checks different fields in a sales order than it checks in an opportunity.

The report CRM_ORDER_INCOMP_CHECK can be used to select incomplete transactions.

You can define the incompleteness check in Customizing. To do so, follow the Customizing path: *SAP Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Incompleteness*.

In Customizing, you define which fields are mandatory for which transaction type and/or item category:

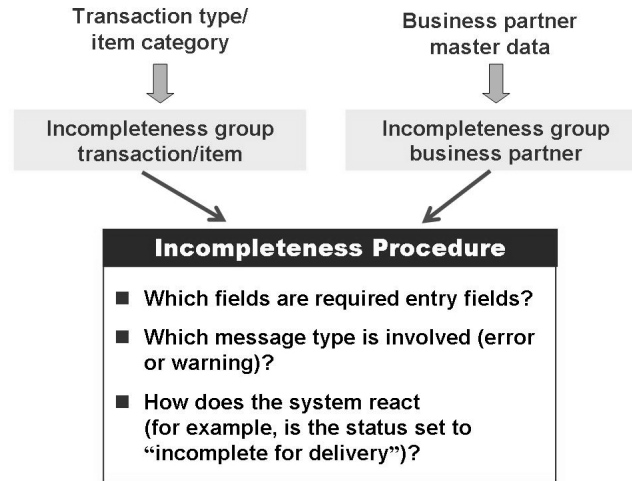


Figure 30: Incompleteness Check: Customizing

To set up the incompleteness check, perform these steps:

Define an incompleteness group for business transactions and items.

Define an incompleteness check for business partners. In the business partner master data, assign the required business partners to the incompleteness group in the *Sales Area Data* on the *Sales* tab page.

Assign transaction types to the incompleteness groups. In the incompleteness check, the same conditions are valid for all transaction types that are assigned the same incompleteness group.

Assign item categories to the incompleteness groups. In the incompleteness check, the same conditions are valid for all item categories that are assigned the same incompleteness group.

Define the incompleteness procedures that are valid for the various subobjects of a transaction, for example, SALES for sales data or PRODUCT_I for product data at item level. In an incompleteness procedure, you can group fields that you want to check for completeness. If you do not enter data in any of these fields in the business transaction, the transaction is considered incomplete. For each field in the procedure, you must also define whether the message issued during data processing should be a warning or an error message.

Assign the incompleteness groups to the incompleteness procedures. This specifies the business transactions in which checks are carried out. If you assign an incompleteness group for business partners to an incompleteness procedure, the system carries out the check only for those business partners to whom the incompleteness group was assigned. However, if you create a transaction using that transaction type and business partner, the incompleteness procedure is valid

only for the business partner, that is, the system does not display a combination of both procedures as incomplete. Only the fields from the incompleteness procedure for the business partner are displayed as incomplete.

Unit 3

Activity Management

This unit introduces some basic functions with CRM activities. Note that the course CR300 has more details on activities.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Define activities and activity management
- Configure a transaction type for activities
- Describe the survey integration
- Describe groupware integration

Unit Contents

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Lesson: Overview of Activity Management

98

Lesson Duration: 25 Minutes

Lesson Overview

This lesson provides a brief overview of activity management.

Lesson Objectives

After completing this lesson, you will be able to:

- Define activities and activity management

Introduce Activity Management. Activities are CRM one order documents and follow the general transaction concept. Most activities can be created without entering products.

Business Example

Using different options in SAP CRM, you want to create and monitor various activities.

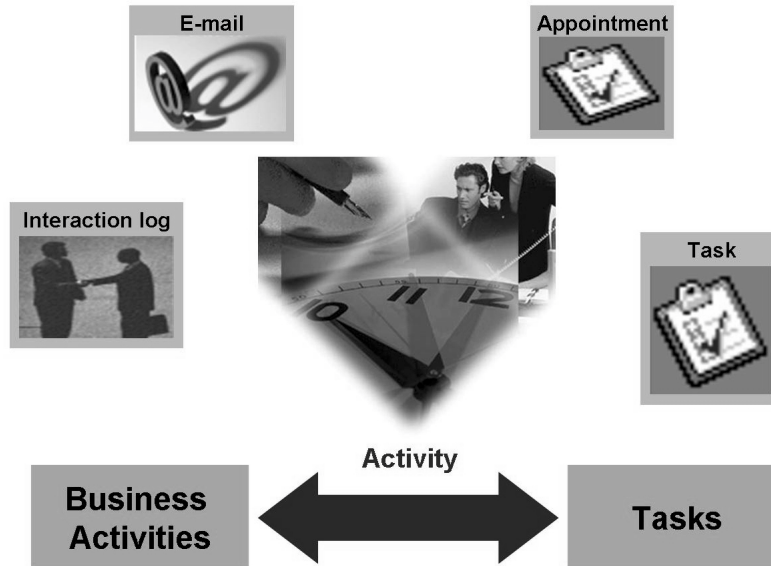


Figure 31: Types of Activity

Activity Management is an integral part of Customer Relationship Management (CRM) and administers all activities undertaken by the employees of your company. Any data saved in an activity is an important source of information that needs to be accessed by all relevant employees.

You can use Activity Management at any time during the CRM life cycle. Activities such as interaction logs and appointments keep a record of any interaction that has taken place between your company and its customers. Tasks provide a way for your employees to manage their own workload and to record reminders. You can mark appointments, interaction logs and tasks as private. Thus, everything undertaken by employees within a department or company can be managed quickly and easily in one transaction.

Activities can be created as subsequent documents for a wide variety of other business transactions, such as opportunities, leads, sales orders, or contracts.

Activities might be telephone calls, customer visits, general preparatory tasks, reminders of appointments (private and business-related), and so on.

- Appointments
- Interaction Logs
- E-Mails
- Tasks

From a technical point of view, there are two leading business transaction categories for activities:

A **Business Activity** contains information about the interaction with the business partner on a particular date.

A **Task** contains information about the activities that one or more employees have to complete by a particular date.

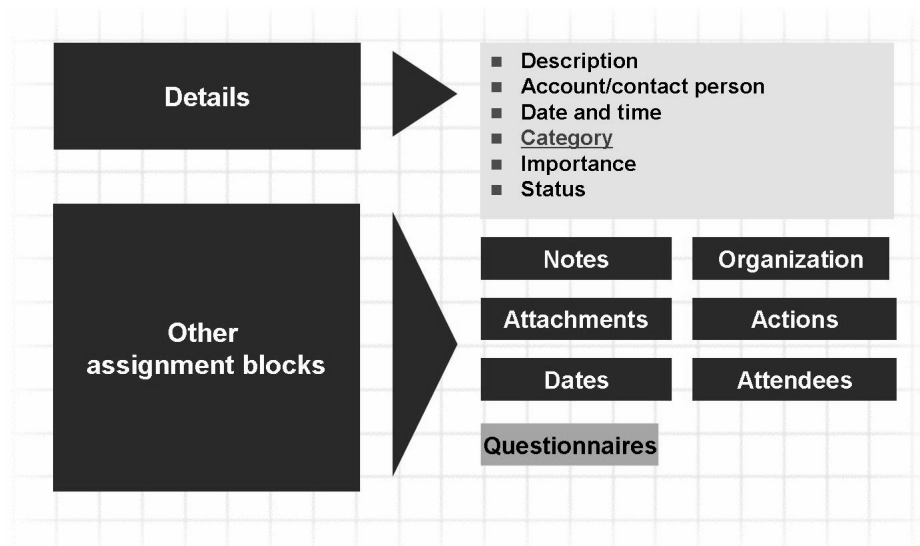


Figure 32: Structure of Activities

Activities are used to record business activities and tasks such as activities that are carried out on behalf of the company.

Unit 3: Activity Management

A business activity must have a partner, a start date and a finish date.

You use tasks when you want to create an activity that is not associated with a particular account. Like interactions, tasks can be public or **private** and can cover a wide range of possibilities, for example, the preparation of a customer presentation, or a reminder to buy a birthday card. If you mark a task as private, it cannot be viewed by other users.

The category that is assigned to the activity (transaction type) determines where this activity can be created in the application. For example,

The **Category 202** (Incoming Call) is assigned to the **Transaction Type 0003** (Outgoing Phone Call).

The **Class Interaction Log** is assigned to the **Category 202** (Incoming Call).

The application displays the transaction “Outgoing Phone Call” if the employee chooses *Create* → *Interaction Log*.

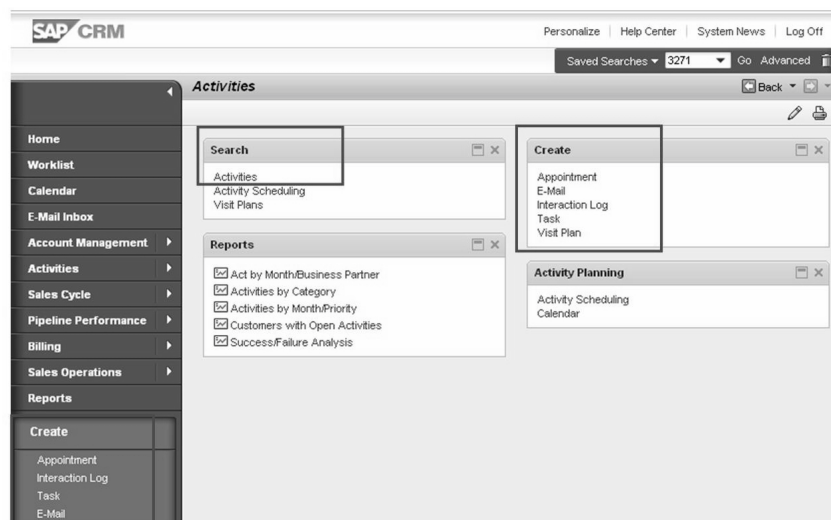


Figure 33:

In the CRM WebClient UI different applications for different types of activities are available. For example, both Appointment and E-Mail technically are Business Activities, but they look differently when created in the CRM WebClient UI.

This slide shows the Activities work center of the Sales Professional (SALESPRO).

Demonstration

Create different activities.

Lesson: Customizing Activities and Special Activity Functions

104

Lesson Duration: 50 Minutes

Lesson Overview

This lesson goes into details of customizing activities and explains some key integration points (eg. with survey tool and groupware).

Lesson Objectives

After completing this lesson, you will be able to:

- Configure a transaction type for activities
- Describe the survey integration
- Describe groupware integration

This lesson introduces some activity specific functions.

Business Example

You may have to make Customizing settings for activities in the future.

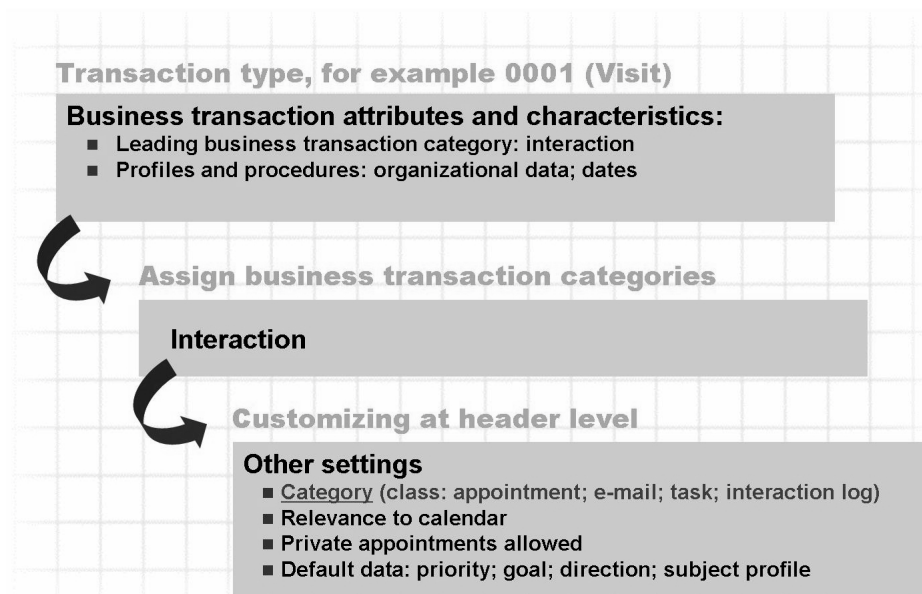


Figure 34: Customizing Activities

Activities are CRM business transactions and are controlled using transaction types.

There are transaction settings that are activity-specific such as Categories, Goals, Priorities, and Activity Reasons.

SAP Implementation Guide → Customer Relationship Management → Transactions → Settings for Activities → Maintain Categories, Goals and Priorities

If required, product entries can be allowed in activities. Therefore you define Activity Journals. Activity-specific item categories like ACT, ACT0 or ACT1 are needed for this.

Activities can always be created as follow-up transactions.

Customizing copy control is possible, but not necessary.

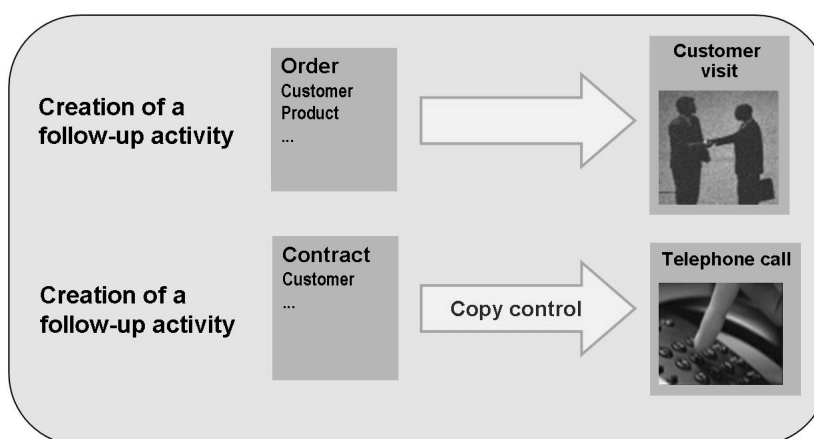


Figure 35: Follow-Up Activities

You can copy an existing business transaction and use it as the basis for a subsequent transaction. You then have two options:

Create a follow-up transaction.

Copy a business transaction. In this case, the system creates a copy of the transaction currently in use and displays it for processing. When the copied transaction is saved, the **transaction history is not updated**, that is, the copied transaction has no connection to the reference document.

Copy control Customizing is not required to create a follow-up transaction.

Hint: It is possible to reduce the number of available transaction types when creating a follow-up activity.

Therefore use *SAP Customizing Implementation Guide* → *Customer Relationship Management* → *Transactions* → *Settings for Activities* → *Activate Copying Control for Activities*

Once this setting is made, only the transaction types maintained in Copying Control are available!

When you **copy** an activity, the system produces a copy of the activity you requested and displays it for processing. When the copied transaction is saved, the transaction history is not updated, that is, the copied process does not have a reference to the reference document.

Integration of Questionnaires

- Customer surveys
- Customer visit evaluation
- Customer satisfaction surveys, and so on

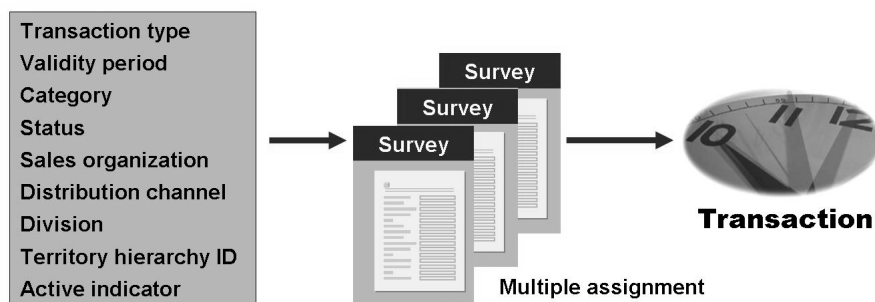


Figure 36: The Survey Suite

Some types of business transactions can contain one or more surveys/questionnaires.

Surveys can be freely defined within the Survey Suite (shortcut: `crm_survey_suite`) in Customizing.

SAP Implementation Guide → *Customer Relationship Management* → *CRM Cross-Application Components* → *Survey Suite*

The Survey Suite infrastructure is based on XML.

After creating and activating a survey, it is necessary to customize “survey determination”.

Surveys can be translated into several languages.

Surveys can be evaluated within CRM if the corresponding setting was made. (Mark a survey and choose **Survey attributes**. Use flag **Evaluation Without Business Information Warehouse before you activate the survey**. Use menu *Extras* → *Display Evaluation* to show the evaluation.

Transactions that can contain surveys: - Activities: e.g. used for customer satisfaction survey - Leads, e.g. used for qualifying (“hot” Lead) - Opportunities, e.g. used for Assessment (“go/no-go decision”) - In-House Repair Diagnosis item, e.g. to note a failure report

Demonstration

Create different types of transactions and show the surveys/questionnaires.

Create a Business Activity of type **Appointment**

Create a Lead of type **Lead**.

Create an Opportunity of type **Sales Methodology**.

Just show in the customizing settings where the questionnaires are assigned to the transaction

Go to the *Transactions* → *Settings for Activities* → *Questionnaires* → *Define Questionnaires* and also *CRM* → *Transactions* → *Settings for Activities* → *Questionnaires* → *Define Determination for Questionnaires*

The **Questionnaire** in the activity is based on the Survey Tool.

You can use the questionnaire for all question and answer formats that help maintain your customer relationships. The following examples show how the questionnaire can be used:

A telephone call script that leads you through the conversation with the customer

A customer feedback form

Sales call reports for your sales employees

You can assign more than one survey to a transaction, for example, leads, opportunities, activities and framework agreements. You can assign surveys at item and header level. This allows you to assign surveys more flexibly, for example, depending on the organizational unit, phase or product.

Surveys can also be evaluated in the SAP CRM system.

You can find the Customizing settings in the IMG under *SAP Customizing Implementation Guide* → *Customer Relationship Management Transactions* → *Settings for Activities* → *Questionnaires*.

The transaction code for the CRM Survey Suite is CRM_SURVEY_SUITE.

Questionnaires are also used for transactions of the type Lead, Opportunity and In-house Repair.

With activity journals, you can record and update information gathered from customer visits or telephone calls.

Activity journals can contain:

- Products or product categories
- Product-related information such as what products were discussed with the customer, or the number of samples given to the customer

Product	Discussed	Number of Samples	Priority
XT-2006	<input checked="" type="checkbox"/>	8	High
XT-2007	<input checked="" type="checkbox"/>	2	Medium

Notes
Customer is considering ordering XT-2006 in second quarter of 2007.

Figure 37: Activity Journals

Using Activity Journals it is possible to add product information to an activity. Template Types and Templates have to be defined before it is possible to use activity journals. The usage of activity journals requires item category determination settings. You can use the standard template type to copy products from preceding documents to activity journals, or to copy products from activity journals to follow-up transactions. For example, products from an opportunity are automatically copied to the corresponding activity journal template type when you use the standard activity journal template type. This template type is valid for all transaction types, categories and date ranges. Note that you carry out this activity only once. Once you have created the standard template type, you cannot make any changes to it, such as add new fields, and you cannot assign a transaction type or an activity journal template to it.

Maintenance of Activity Templates / and Activity Template Types via CRM WebClient UI **Sales Operations**

You need to have made the relevant Customizing settings for the transaction type and item category. You make these settings under Customizing for CRM → Transactions → Basic Settings → Copying Control for Business Transactions → Define Copying Control for Transaction Types and Define Copying Control for Item Categories.

You also need to use copying routine ACT001 (only item within standard activity journal). This copying routine is part of the Business Add-In implementation **ACTIVITY_ONLY_STAND**. You specify this copying routine in the Customizing activities referred to above, for the transaction type and item category.

Demonstration

Choose *Create* → *Appointment*

Choose Bus. Activity With Products. Enter account **3271**.

Open Assignment Block **Activity Journals**.

Edit the journal IDES Standard. You will find an activity journal pre-filled with products.

Maintain information like “Discusses” , “Number of Samples” or “Product Priority” on product level.

Go back and save the activity.

Demonstration

Choose *Sales Operations* → *Search* → *Activity Journal Templates*

Choose Search.

Open **IDES_STANDARD** in order to explain the preceding demonstration.

The information in the activity journal may or may not be product-related. An activity journal can contain the following information:

- Type and number of products discussed with customers or samples handed out to customers, for example, in the pharmaceuticals industry
- Position of products in store, for example, whether they are placed on the promotional shelf, at the check-out or near the store entrance
- Customer feedback.

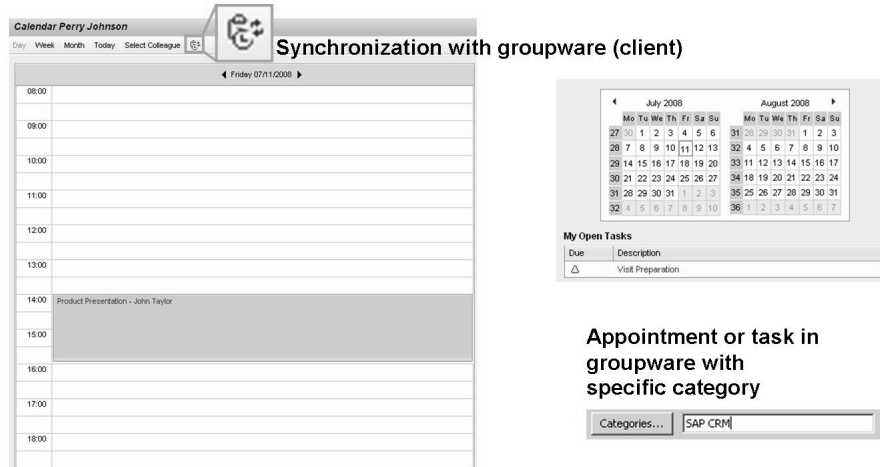
The information gathered in activity journals can be used to:

- Track the distribution of samples in the pharmaceuticals industry
- Analyze sales data, for example, number of products handed out to customers
- Track the progress of your sales team, for example, the number of discussions held with customers and the result of these discussions

To enable product entries in activities, you must make entries in the Customizing activity for the item category determination.

You may define additional fields for activity journals.

Examples: transaction type 0020; item categories ACT, ACT0 and ACT1



Prerequisites for a calendar entry in the SAP CRM system:

- The calendar indicator for each transaction type (main switch)
- The calendar indicator for each partner function (partner determination procedure)

Figure 38: Integration of the Calendar - Integration of Client's Groupware

Demonstration

Show customizing of transaction type 0000 (Appointment)

Navigate to the **Customizing Header** of **Business Activity** details

Point to the **Calendar** relevance. Once this flag is set, this type of activity in principle can show up in the calendar.

Mention that there is another flag which will be introduced in unit Partner Processing. It is possible to control for which partners (partner functions) the calendar entry will be made.

Point to the flag **Private Appointments Allowed**.

Also mention other default settings like priority or direction.

Hint: Send EMail flag:

Until CRM 5.0 whenever an activity was saved, an e-mail was being sent to the main partners of the activity document upon save. This could be viewed on the SAP Business workplace. Hence this flag was introduced and it controls the sending of the email. If it is only checked at the transaction type level then the mail would still be sent to all the main partners of the activity document.

You can use the calendar to create activities, for example, private or public appointments. You can also display your colleague's appointments by displaying their calendars. You can

- Toggle between a monthly, weekly, or daily view of the calendar and display a day by clicking on it in the month thumbnail

- Click on appointments and contacts to view the details

- Create appointments by choosing a cell in the calendar.

- Move appointments or other activities by using the drag and drop function.

- Print the calendar in the view that is currently displayed.

- Open colleagues' calendars. You can see all your colleague's appointments except for private ones. You require authorization from system administration to view a calendar.

- Display and edit open tasks.

You can synchronize CRM activities with groupware calendars so that CRM business activities are displayed in other applications such as Microsoft Outlook. This is an additional function to synchronizing normal appointments from the SAP calendar.

For more information on Client-Based Groupware Integration see the Online Documentation <http://help.sap.com> *SAP Business Suite → SAP Customer Relationship Management → SAP CRM 7.0 → Application Help (English) → SAP Customer Relationship Management → Data Exchange and Mobile Technologies → CRM Integration Services → Groupware Integration Guide → Client-Based Groupware Integration*

Optional Demonstration (local software required!)

If you have access to a PC / WTS server with proper client-based groupware software, you could demonstrate the Client-Based Groupware Integration.

Create an appointment (0000) in SAP CRM Calendar. Create an Appointment in your Outlook (use Category **SAP CRM**)

Use the Synchronization icon in SAP CRM Calendar and grant access to the Exchange server (Pop-Up!).

Appointments will be exchanged depending on the synchronization settings in both directions.

There is a bidirectional data exchange between SAP CRM and groupware solutions

Server-based for:

- Tasks
- Business activities
- Contact partners → Groupware: business activity (CRM → Groupware)



Figure 39: Groupware Integration on Servers

Using server-based Groupware integration, you can exchange data such as business partner data and CRM activities (appointments and tasks) between the CRM server and a Groupware server. CRM Middleware provides a framework, using the Groupware Adapter, that facilitates the seamless integration of the CRM server with the Groupware server.

You can integrate CRM activity management with groupware applications (Microsoft Outlook and Lotus Notes). This means that you can synchronize business activities and tasks in your CRM calendar and groupware calendar. Data is exchanged in both directions. This means that you can display activities and the corresponding data that you have maintained in the CRM system (such as date, time, location and business partners involved) in your own office management system, and vice versa. This allows you to work more quickly and effectively because you do not have to keep referring back to your CRM calendar or your groupware calendar to check your appointments and tasks.

Groupware integration with CRM Enterprise is server-based, meaning the data is exchanged automatically in the background, without having to be triggered by the user.

The Groupware Adapter on the CRM server supports the conversion of messages. It is based on the SyncPoint technology. BDoc messages are converted to standard Groupware formats (iCalendar and vCard). For this, a mapping framework is used that comprises the MapBox and the payload interface (a SOAP-based messaging interface for the exchange of data between the CRM server and the Groupware

connector). iCalendar and vCard are the Internet standards for the display of Groupware calendar objects or Groupware contacts. Predefined mappings are delivered for Groupware integration.

The SAP Groupware connector executes message synchronization between the CRM server and the Groupware server. A messaging interface is used here, based on XML-SOAP.

For more detailed information on data exchange options refer to the Online Help <http://help.sap.com> *SAP Business Suite* → *SAP Customer Relationship Management* → *SAP CRM 7.0* → *Application Help (English)* → *SAP Customer Relationship Management* → *Data Exchange and Mobile Technologies* → *CRM Integration Services* → *Groupware Integration Guide* → *Server-Based Groupware Integration*

The screenshot shows the 'Activity Monitor' dialog box in the SAP GUI. The dialog has a title bar with 'Activity Monitor' on the left and 'SAP GUI' on the right. The main area contains several sections of controls:

- Activity Selection:** Three checkboxes: My Activities, My Department's Activities, and My Colleague's Activities.
- Business Partner ID:** Two input fields with a 'to' label between them and a search icon on the right.
- Status:** Three radio buttons: Not completed, Completed, and All.
- Activity Date:** Two input fields with a 'to' label between them and a search icon on the right.
- Activity Type:** Four radio buttons: Business, Activities, Tasks, and Both.
- Organizational Data:** Two input fields with a search icon on the right, and two smaller input fields below them, each with an ellipsis (...) to its right.

Figure 40: Reporting Activities - Activity Monitor

The activity monitor can be called by choosing *SAP Menu* → *Activities* → *Activity Monitor* .

The activity monitor allows you to select activities using various criteria. You can adjust the list that is displayed using the SAP List Viewer (ALV) function.

For more information about this analysis and other analyses, see the documentation in SAP Library under *SAP NetWeaver* → *BI Content* → *Customer Relationship Management* → *CRM Analytics* → *Cross-Scenario Analyses* → *Activity Analysis*.

Demonstration

In SAP GUI call transaction **Activity Monitor** *SAP Easy Access Menu* → *Activities* → *Activity Monitor (/n*

Show selection options, execute an arbitrary search and, for example, show options to filter, sort and to create Selection Variants.

Use business role Analytics Professional (ANALYTICSPRO)

1 → 2 → 3 → 4 → 5 → 6

Select Report Area Select Fields Define Filters Define Table Define Chart Share Report

1

Select Report Area

Select Report Area

Report Name: Activity

Report Description: Activity Analysis

Business Role: Sales Professional

Report Area: Activities

Default Display: Table

Chart

Chart Above Table

Table Above Chart

Business Role
(Sales Professional)

Report Area
(Activities)

2

Field Selection

Select Fields

Here you can select the fields and key figures that you would like to see in the report. The available data is specific to the report area selected in step 1.

Available Fields : Total 12		Selected Fields : Total 6	
Field Name		Field Name	Displayed Name
Activity		Account	Account
Activity Type		Employee Responsible	Employee Responsible
Contact		Key Figures	Key Figures
Direction		Number of Activities	Number of Activities
End Date		Category	Category
Month (End Date)		Status	Status
Organizational Unit			
Priority			
Quarter (End Date)			

◀ Back 1 2 Forward ▶

Figure 41: Creation of a CRM Interactive Report for Activities - Part 1

You can create, edit, and display reports in SAP Customer Relationship Management. CRM Interactive Reports retrieve data in real-time. You create these reports in the CRM WebClient UI with the help of a wizard, which leads you through the individual steps. You can then release these reports for certain users. You do not require a separate SAP NetWeaver Business Intelligence (SAP NetWeaver BI) system to be able to use CRM interactive reports.

Prerequisites for CRM Interactive Reporting

- You have installed a separate SAP NetWeaver BI client on the CRM server.
- You have completed the configuration steps necessary to set up reporting. For more information, see SAP Solution Manager.

The standard business role Analytics Professional (ANALYTICSPRO) provides a wizard which allows to easily create reports.

It is possible to choose from different report areas. Depending on the report area, different fields are displayed.

Demonstration

Log on as **Analytics Professional (ANALYTICSPRO)**

Choose *Reports* → *Create*

Report Name: **Activities**

Report Description: **Test Report for Activities**

Select **All Roles**

Select **Activities**

Choose **Next**.

Pick any of the available fields (for example **Account; Employee Responsible; Key Figures, Status, Priority**)

Choose **Next**.

To be continued (see next slide)

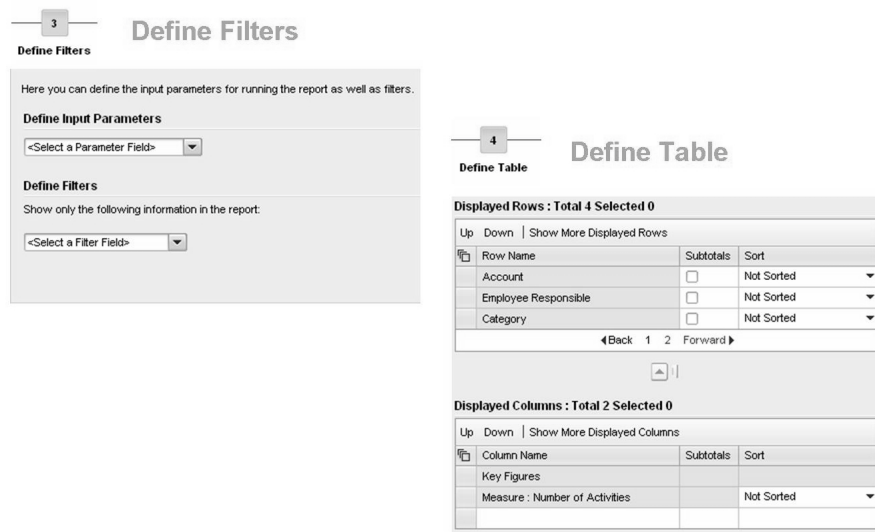


Figure 42: Creation of a CRM Interactive Report for Activities - Part 2

Demonstration (continued)

Optionally choose a Filter criteria

Choose **Next**

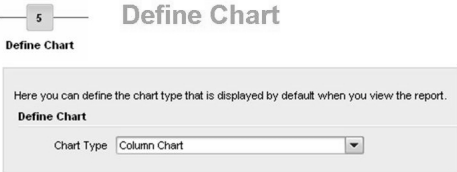

Unit 3: Activity Management

Optionally change the layout of the table.

Choose **Next**.

To be continued (see next slide)

The wizard allows to define filters and the layout of the table.

Type	Employee Name	E-Mail Address	Share
	Perry Johnson	perry.johnson@ides.com	<input checked="" type="checkbox"/>

Figure 43: Creation of a CRM Interactive Report for Activities - Part 3

Demonstration (continued)

Optionally choose a Table/Chart selection.

Choose **Next**

Assign an employee, for example use search help to find the employee via User name TRAINING.

After choosing a type of Chart the last step allows to share the report. The Analytics Professional can assign Employees. Once these employees log on to the CRM WebClient UI, they will be able to see the newly created report under *Reports* → *Shared Reports*. See next slide.

- Log on with business role **Sales Professional (SALESPRO)**
- Choose **Reports**

Shared Reports

Activity

Display

Table Only

Account	Employee Responsible	Category	Status	Number of Activities
ADCOM COMPUTER	Ron Chan	Telephone Call	In process	1
			Open	10
ALPHA Center	Ron Chan	Telephone Call	Open	11
Media Store	Perry Johnson	Appointment	Open	1
Park Lane Hotel And Spa	Jane Millers	Follow Up PhoneCall.	Open	1
	Perry Johnson	Telephone Call	Complete	1
			In process	1
Tidemmann Electronics	Ron Chan	Telephone Call	Open	11

Figure 44: Using the new Activity Report

Demonstration (continued)

Log on to the CRM WebClient UI (user TRAINING/monthly password

Choose **Sales Professional**

Choose **Reports**

Scroll down to **Shared Reports**.

Execute the report you created!

After the report has been created and shared, the Sales Professional is able to run the report in his WebClient UI application.

Unit 4

Partner Processing

After the introduction of business transactions and activities, this unit introduces one of several “Basic Functions” that are relevant within transaction processing.

Partner Determination is a **mandatory function** once customers create business transactions.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Explain the options and functions associated with partner processing in business transactions
- Create a partner determination procedure in Customizing
- Describe access sequences, create them in Customizing and use them in the partner determination procedure

Unit Contents

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Lesson: Overview of Partner Processing

132

Lesson Duration: 30 Minutes

Lesson Overview

This lesson gives a brief overview of partner processing in business transactions.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the options and functions associated with partner processing in business transactions

This lesson introduces the concept of partner processing.

Business Example

In transaction processing, you want to ensure that the business partners involved in a transaction are automatically determined by the system.

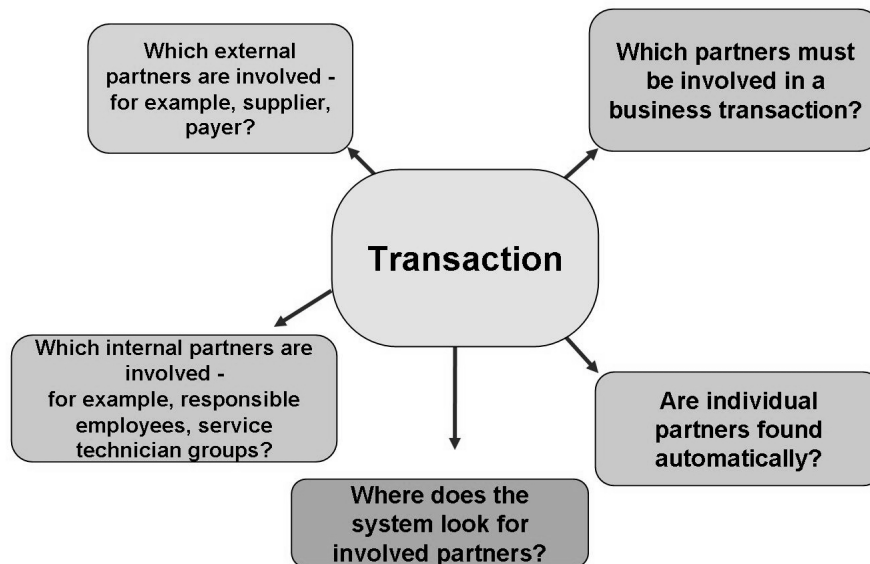


Figure 45: Partner Processing: Motivation

Partner processing controls how the system works with business partners in transactions. It ensures the accuracy of partner data in transactions by applying rules you specify in Customizing, and it makes your work easier by automatically entering certain partners and related information, like addresses.

One of the most important aspects of partner processing is partner determination, the process by which the system automatically finds and enters the partners involved in a transaction. In most transactions, you manually enter one or more partners, and the system enters the others through partner determination. Various sources of information make partner determination possible; two of the most important are business partner master data and organizational data.

Partner determination controls business partner processing in transaction processing. Partner data can be checked for correctness using rules defined in Customizing. In this way, the user creates complete, consistent transactions.

All transactions in CRM involve business partners. Partner processing allows you to work with these partners efficiently and consistently.

Partner processing allows you to define partners with your company's terminology. It also lets you specify exactly how partners are handled in transactions and how SAP CRM and SAP ERP exchange partner processing information.

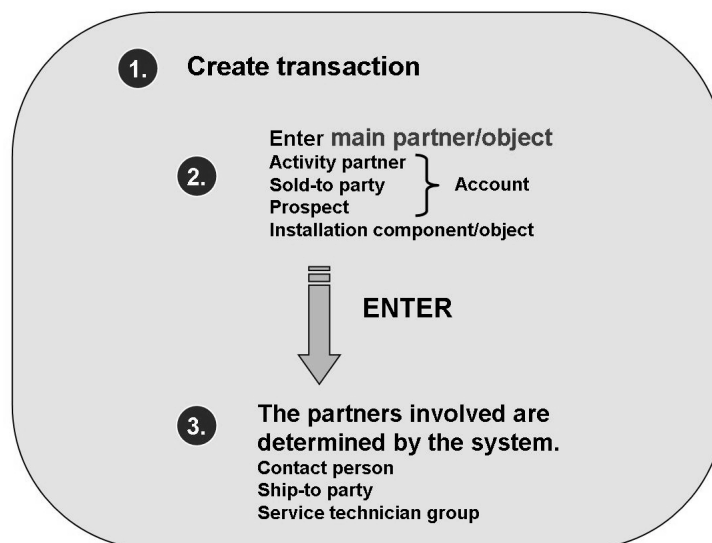


Figure 46: Automatic Partner Processing

Demonstration

Log on to the CRM WebClient UI (Sales Professional) and create a quotation, either of type **Quotation ERP** or of the type you created in Transaction Processing.

Depending on the kind of quotation either enter account 3271 or your account.

Unit 4: Partner Processing

If necessary personalize Assignment Block **Parties Involved** so that it is displayed directly.

Partners have been determined.

Choose Edit List.

Mention that, for example, it is possible to

change partners

add additional partners

Try to remove partner function Ship-To Party. An error message will be displayed since this partner function is mandatory.

Demonstration

Log on to the CRM WebClient UI (Service Professional) and create a Service Order of type Service Process (ZSE1).

Enter **Component 3305** as reference object.

Press **ENTER**.

Partners have been determined!

Optional Demonstration

Log on to the CRM WebClient UI (Service Professional)

Choose *Service Orders* → *Create* → *Service Order*

Choose Service Process (ZSE1)

Instead of a Sold-to party enter **installed base component 3305**

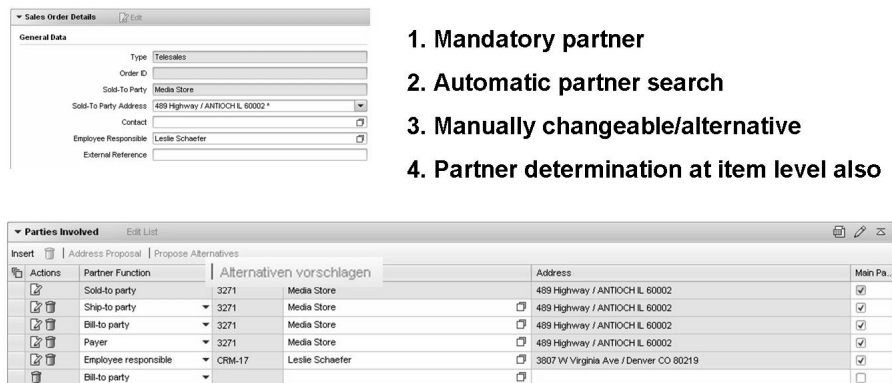
The relevant Sold-to Party is derived!

During transaction processing, the main business partner or technical object (installed base component or object) is specified. During sales, this is usually the sold-to party; during an opportunity, this is the sales prospect.

Partner processing ensures that other partners involved in the transaction are determined automatically by the system.

In the case of a sales transaction, for example, these other partners are the ship-to party, the bill-to party and the payer.

In the case of an opportunity, for example, these other partners are the contact person(s) of the sales prospect and the (own) responsible employees.



1. Mandatory partner
2. Automatic partner search
3. Manually changeable/alternative
4. Partner determination at item level also

Figure 47: Partner Processing in the Application

In a transaction, partners can be determined at both header and item level.

1. Which partners must be involved in the transaction?
It is possible to define that certain partners are mandatory for a business transaction. If the determination fails or no partner was entered manually by the user, the business transaction will result in an error.
2. Are partners determined automatically?
Using access sequences (search strategies) it is possible to automatically determine partners.
3. Manually changeable
Users can change partners that were determined automatically if this setting is made for the appropriate partner function in Customizing.
Under exceptional circumstances, you can choose *Alternative proposals* to restart the partner search (for example, after the change of other involved partners).
4. Partners are also determined at item level.
It is possible that different partners are determined at item and header levels. For example, an employee responsible might be found due to the product category. This means that you must enter a partner determination procedure in the corresponding item categories.

Lesson: Customizing Partner Processing

138

Lesson Duration: 40 Minutes

Lesson Overview

This lesson goes into details of customizing partner processing.

Lesson Objectives

After completing this lesson, you will be able to:

- Create a partner determination procedure in Customizing
- Describe access sequences, create them in Customizing and use them in the partner determination procedure

Give an overview of the most important partner processing customizing activities.

Business Example

You would like to set up partner processing/determination in business transactions and make yourself familiar with the basic options within customizing of partner processing.

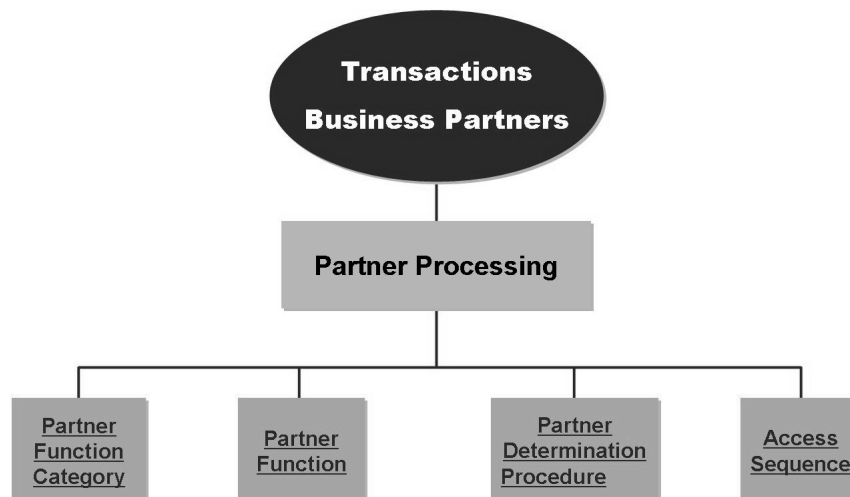


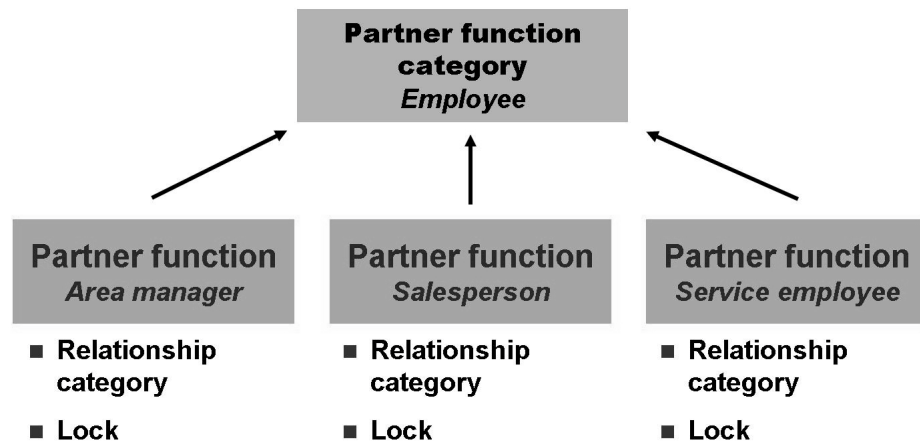
Figure 48: Partner Processing in Customizing

Partner function category: This classification of responsibilities is used as a system key for identifying the partner function and the business partners who take on these responsibilities. The SAP CRM system includes SAP predefined partner function categories that cannot be changed or created again. For example, the *customer* partner function has the partner function category *sold-to party*.

Partner function: The partner functions describe the people with whom you do business. Customers can also be referred to as sold-to parties, clients, patients or tenants. Partner functions describe those partners that you use in your organization. You can assign names freely.

Partner determination procedure: Rules that determine how the system works with business partners during transaction processing. This procedure combines partner functions and access sequences and contains additional information.

Access sequence: A search strategy for determining the data sources the system uses for partner determination and the order in which the sources are used.



**Partner functions are freely definable.
Partner function categories are predefined.**

Figure 49: Partner Function Categories and Partner Functions

Partner function categories are predefined “classifications” and are assigned partner functions. The system uses these categories to identify and work with partner functions.

The partner function category **Undefined Partner** is a free category that you can use when none of the other partner function categories suits your needs. The benefit is that you can create partner functions, and include them in transactions, even when none of the predefined categories is appropriate. The system’s processing of the category Undefined Partner is limited. Normally, there are certain system functions or rules associated with a function category, for example the system “knows” that a sales transaction must include a sold-to party. However, in the case of the Undefined Partner there are almost none. When you assign a

partner function to this category, you can choose any relationship category, either an existing one or one you create yourself, to correspond to it. However, the relationship category *Is the Undefined Partner Of* corresponds only to the partner function category *Undefined Partner*.

Partner functions are defined in Customizing.

SAP Implementation Guide → *Customer Relationship Management* → *Basic Functions* → *Partner Processing* → *Define Partner Functions*.

When you define a partner function, you can assign a (corresponding) relationship category. This relationship category corresponds to the business partner relationship category.

For example, the relationship category ***is responsible BP for*** is assigned to the partner function ***Employee Responsible***.

If an access sequence is defined for determining the employee responsible from the business partner relationships, then the corresponding person must be assigned with the relationship category (***Is the Employee Responsible For/Has the Employee Responsible***).

Block: specifies whether the source partner for a partner determination is added to the results list of that determination. For example, if the lock field is set for the contact person partner function, the sold-to party is not determined as its own contact person in a sales transaction. If, on the other hand, the lock field is not set, the sold-to party can also appear as the contact person function in the transaction.

Demonstration

Show IMG activity *SAP Customizing Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Partner Processing* → *Define Partner Functions*

Mention that a customer can define his own partner functions (for example, when in need of industry terminology)

The partner determination procedure basically specifies which partner functions can be found automatically in a transaction.

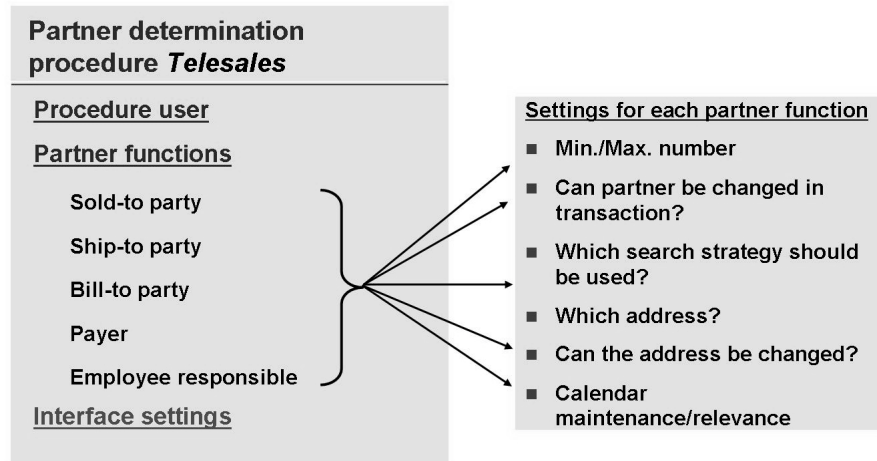


Figure 50: Partner Determination Procedure

Partner determination procedures are defined in Customizing.

SAP Implementation Guide → *Customer Relationship Management* → *Basic Functions* → *Partner Processing* → *Define Partner Determination Procedure*

A **partner determination procedure** can be assigned to a transaction type and an item category. A partner determination procedure consists of three levels:

Procedure user (for example, sales transaction, service transaction, opportunity)

Partner functions in the procedure (for example, sold-to party, employee responsible)

To prevent every partner function that is defined in the system and corresponding partners from being included in transactions, make the setting *Permitted Functions* = *Only Functions Assigned in Procedure*.

The **determination time** can be set for each partner function. However, partner determination occurs only before the initial save. If a transaction is saved and then subsequently altered, no new partner processing (determination) takes place.

A simpler form of the partner determination procedure is used in Installed Base and Case Management.

Demonstration

Show IMG activity *SAP Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Partner Processing* → *Define Partner Determination Procedure*

Display the details of any procedure, for example 00000001 (Telesales) which is used in sales orders and quotations.

Optionally follow the example within the exercise. Create your own procedure, add partner function **Contact Person (CRM)**.

Assign access sequence **Training: Business Partner Relationship Sold to Party (ZT02)**.

An access sequence is a search strategy that provides the data sources and the order in which the system checks them during partner processing.

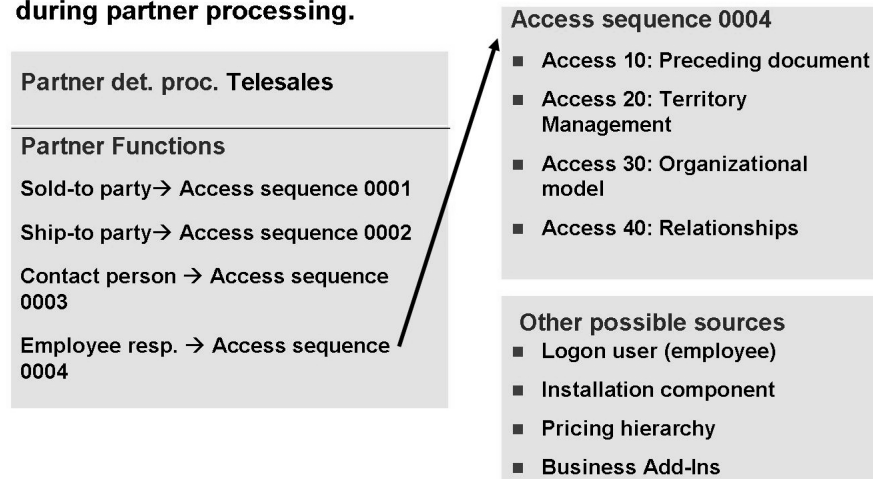


Figure 51: Access Sequences

Access sequences are search strategies that specify the sources of data the system uses for finding partners, the order in which it uses these sources, and related details.

Access sequences allow the system to carry out partner determination, the system's way of automatically finding and entering partners in a transaction.

When you define a partner determination procedure, you can assign an access sequence to each partner function listed in the procedure. Then, when you create a transaction, the system knows how to search for partners to carry out these functions. If you do not assign an access sequence, or the system cannot find partners in the sources listed, users enter the partner manually

Access sequences are defined in Customizing.

SAP Implementation Guide → Customer Relationship Management → Basic Functions → Partner Processing → Define Access Sequences

In the partner determination procedure, you can select which access sequence should be used to determine the partner for each partner function. If there is no access sequence in the partner determination procedure for a partner function, you can enter the partner manually.

Customer-specific sources can be defined via BAdI definition COM_PARTNER_BADI.

Demonstration

Show IMG activity *SAP Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Partner Processing* → *Define Access Sequences*

Show any of the existing access sequences, for example **Training: Business Partner Relationship Sold to Party. (ZT02)**.

This sequence only contain one individual access accessing the source “Business Partner Relationships”.

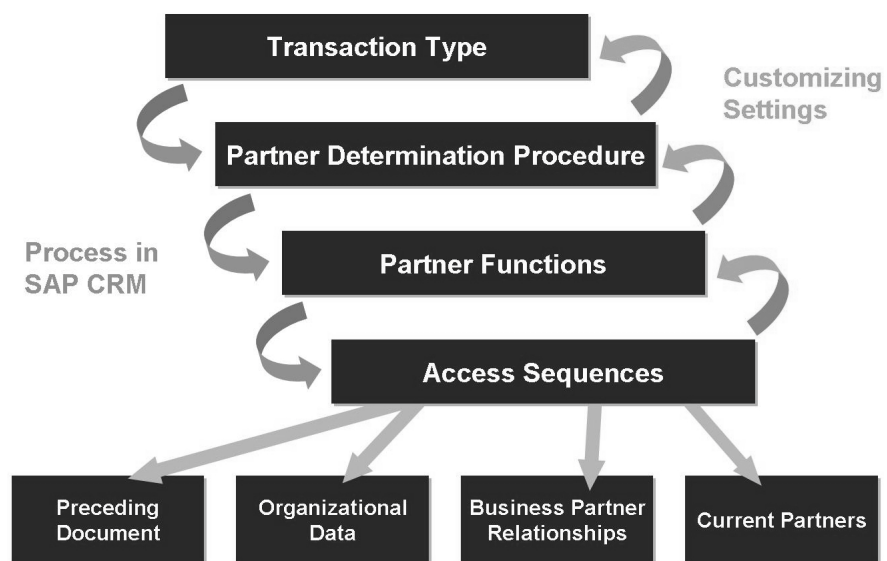


Figure 52: Partner Processing: Overview

In Customizing, the business transaction (for example, quotation, order, service contract) is assigned to the transaction type *Business transaction types*.

Procedure users are assigned to the partner determination procedure.

The business transaction type and procedure user must match in order to assign a partner determination procedure to a transaction type.

Lesson: Action Processing

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Lesson Duration: 70 Minutes

Lesson Overview

This lesson gives an overview of the actions functionality, how it can be used and configured.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the options for processing actions

This lesson introduces the basic function Actions which is used in many areas of SAP CRM. This lesson focusses on actions related to CRM business transactions. Applications like Case Management or CRM Billing is not specifically mentioned.

Business Example

You want to set up your business transactions so that, under certain circumstances, follow-up processes or transactions are triggered automatically. In addition to issuing forms, this also includes generating follow-up activities, for example.

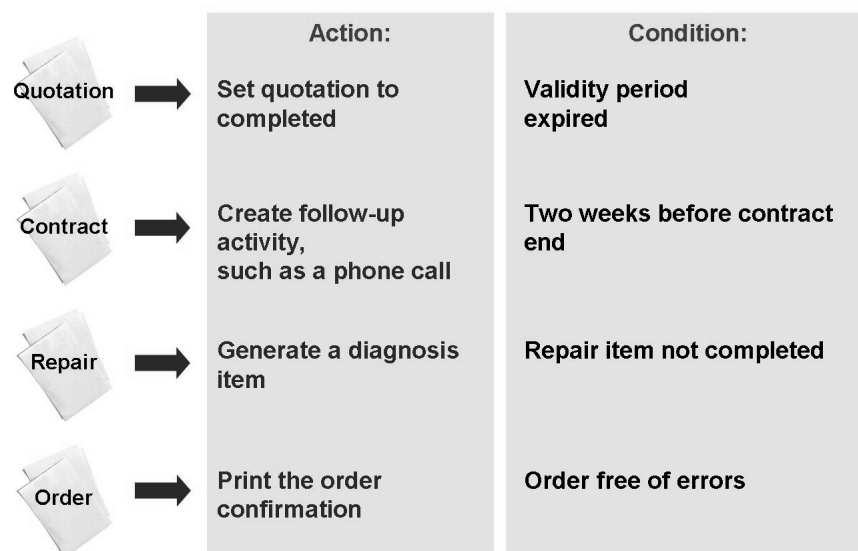


Figure 53: Examples for Actions

Demonstration

In CRM WebClient UI (Sales Professional) create a Quotation ERP

Enter account 3271 and change the valid-to date to today's date

Save the quotation.

Mention or show that via action monitor (will be explained later) it is possible to select relevant actions.

Select via Application Key ***<number of quotation>*** and execute.



Caution: It is important to use *

Three actions have been selected.

Mark the **QUOTATION_REMINDER** action and execute.

Update the quote in the WebClient UI, for example by choosing **Edit** on QuotationDetails.

The Transaction History now contains an entry, an outgoing telephone call.

Optional Demonstration

Create an opportunity of type **Sales Methodology** (customer 3271), enter Sales Stage "Identify opportunity" and show the Assignment Block **Scheduled Actions**.

Choose **Schedule New Actions**. A list of stage specific actions is displayed.

Optional: change Sales stage to another value. Go back and show that different actions are relevant.

Mark **Arrange and Prepare Visit** and choose **Schedule**.

Save the opportunity and show the Assignment Block **Planned Activities**.

Optional Demonstration

Create a Complaint (customer 3271, product ht-1010).

Navigate to the **item details** and push the button **Return**.

Navigate back to the complaint (header) and observe a second item in the Assignment Block **Items**.

Actions are important for maintaining and improving business relationships. You can schedule and start predefined processes with the Actions component by means of user-definable conditions from transaction and marketing objects.

You can tailor the type and time of actions to the requirements of your customers and the processes in your company. This component enables you to match your service, sales and distribution management, and your campaign management even more closely to customer needs, and, simultaneously, to automate them.

The Actions component also provides the technique of controlling output. It thereby replaces Output Determination of the SAP ERP System.

Actions refer to the Post Processing Framework (PPF) Basis Components, which can automatically trigger output, follow-up activities or workflows.

SAP provides approximately 180 action profiles that can be used in “Application” transaction processing (CRM_ORDER). Other application such as billing (BILLING) and Case Management (CRM_CASE) also use action processing.

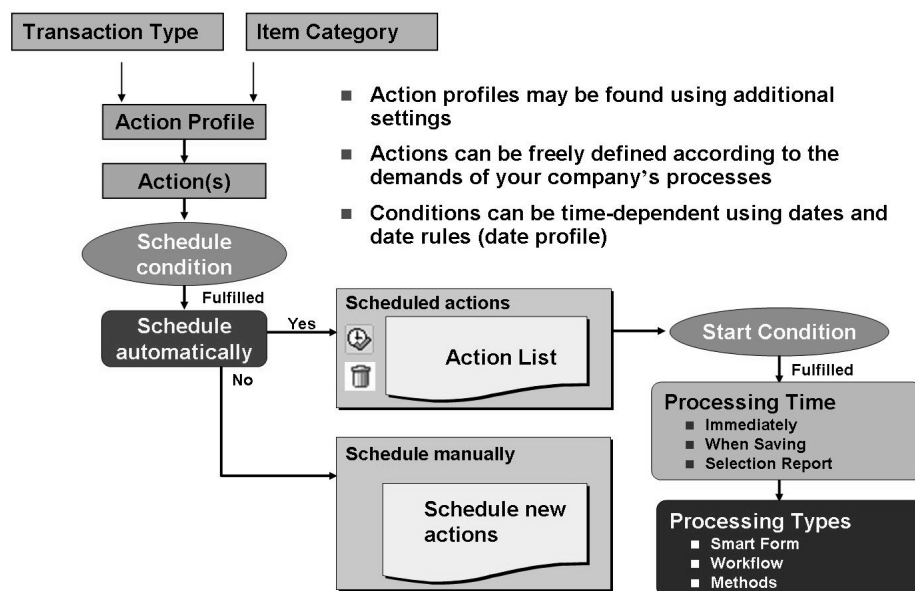


Figure 54: Action Processing: Workflow

An action profile is determined from the corresponding transaction type or item category.

You assign an action profile **directly** to a transaction type/item category.

You define an **action profile determination** (condition technique; the same as pricing).

An actions is always stored in relation to an action profile as an action definition.

You can control action processing using various settings and parameters:

Action changeable or executable in dialog

Processing time

Partner dependence

Action merging

Processing types

You should not usually model dependencies between actions.

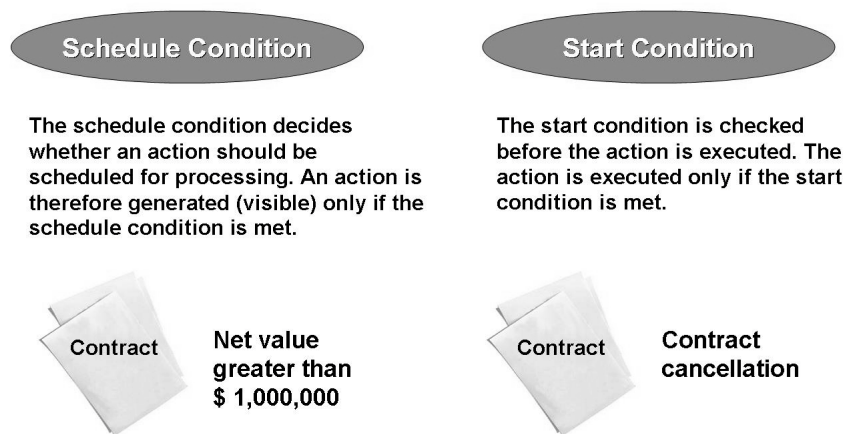


Figure 55: Conditions

There are two types of conditions: Schedule (or Planning) and Start condition.

As long as the **Schedule Condition** is not fulfilled the corresponding action is “not relevant yet” and therefore not visible within a business transaction (on Assignment Block Scheduled Actions).

Once the Schedule condition is fulfilled, the corresponding action is “relevant” and visible in the document. It now depends on the **Start condition** whether the action can be processed. If it is not fulfilled, the action will not be processed. If it is fulfilled it can be processed.

Example: You would like to inform the sales manager via e-mail if a quotation with a net value greater than 1,000,000 USD is close to become expired. Within this example you can use a Schedule condition “if value is greater than 1,000,000”) and a Start condition “if today is close to valid-until”)

Schedule condition: If the schedule condition (of an action) is not met, the action is no longer available in the transaction.

Start condition: Actions that are available in the transaction can only be executed if the start condition is met.

Condition definition: There are two modes for defining conditions:

Mouse-oriented PC mode

Direct text entry mode (traditional)

User settings can be made to change between both modes. When editing conditions, you can use expressions and constants and connect them with operators, for example, Status = "in process". Conditions can be checked for proper syntax and tested.

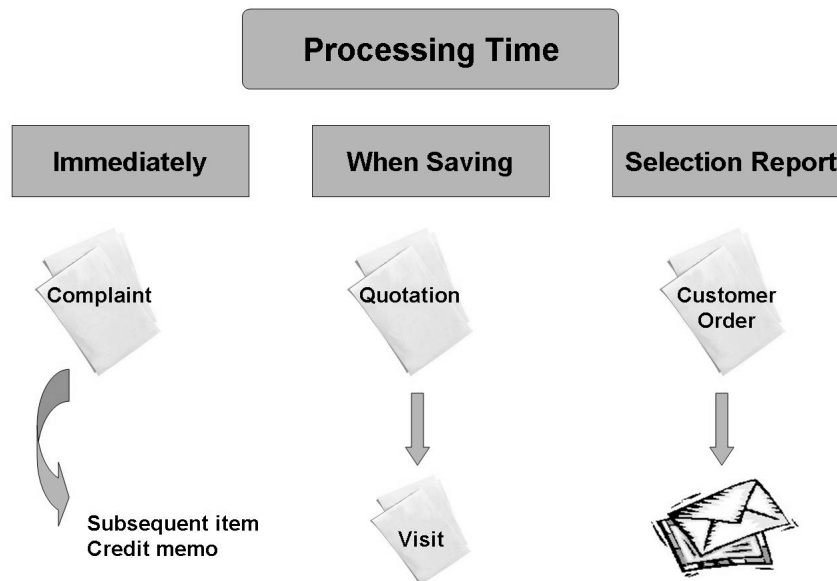


Figure 56: Processing Time

Some actions are processed immediately (once the Start condition is fulfilled), e.g. if you use the Sales Assistant within a Sales Methodology or the Return button within Complaints.

Others will be processed once the corresponding business transaction is saved.

Other actions, especially the ones that are used to monitor deadlines (e.g. the Complete quotation action or SLA's within service orders) are processed via Background Processing. Jobs (that process a number of actions automatically) are scheduled and frequently.

If you select *Immediately* as the processing time, the action is started as soon as the start condition is fulfilled.

If you configure the system so that processing starts when saving, the action is started when the transaction is saved.

If you define processing with the selection report and the start condition has been fulfilled, the action is started after the execution of a selection report. This processing type is particularly useful for actions that are used for deadline monitoring (such as monitoring the Service Level Agreements).

Actions are displayed in transactions that support actions and to which an action profile is assigned. You can display a list of actions scheduled for the transaction on the Actions tab page of the transaction. The following information is displayed in the list for each action:

- Status (action scheduled, action processed)
- Description (purpose of action)
- Conditions (settings for action definition and conditions are displayed)
- Creator, creation date

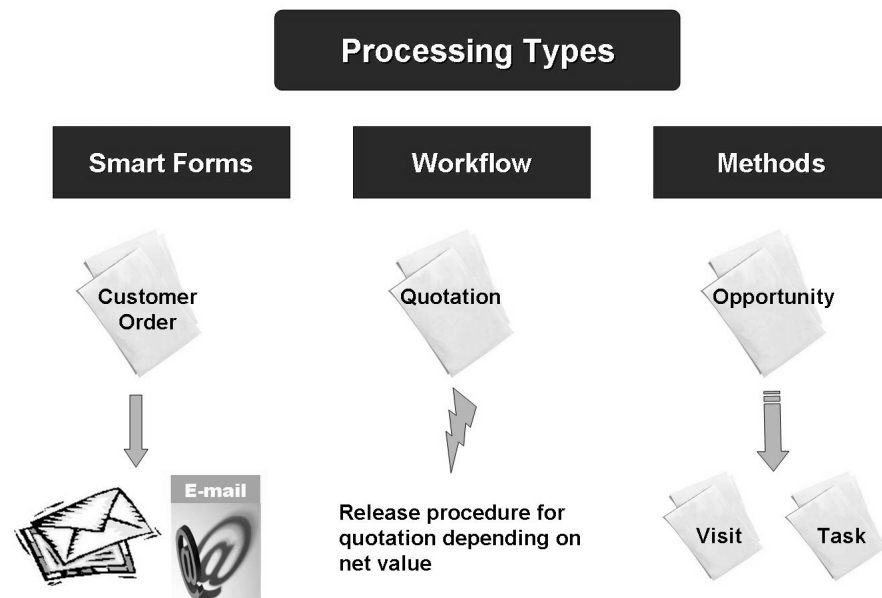


Figure 57: Processing Types

There are different Processing Types available:

- Smart Forms
- Workflow
- Methods

SAP Smart Forms are used for activities such as printing, e-mailing and faxing documents such as order confirmations.

Actions can create an event to start a workflow.

Methods are Business Add-In (BAI) implementations. You can define your own BAI implementation to adapt actions to your processes and needs. (EXEC_METHODCALL_PPF is the relevant BAI.)

There are many BAI implementations supplied by SAP that are used in the standard transactions.

Examples for standard methods include the following:

- COPY_DOCUMENT (create a follow-up document)
- COMPLETE_DOCUMENT (set status completed within document)
- CREDIT_MEMO (create credit memo item)
- REPAIR_ITEM (create a repair item)
- IO_EVENT_CREATE (create a workflow event)

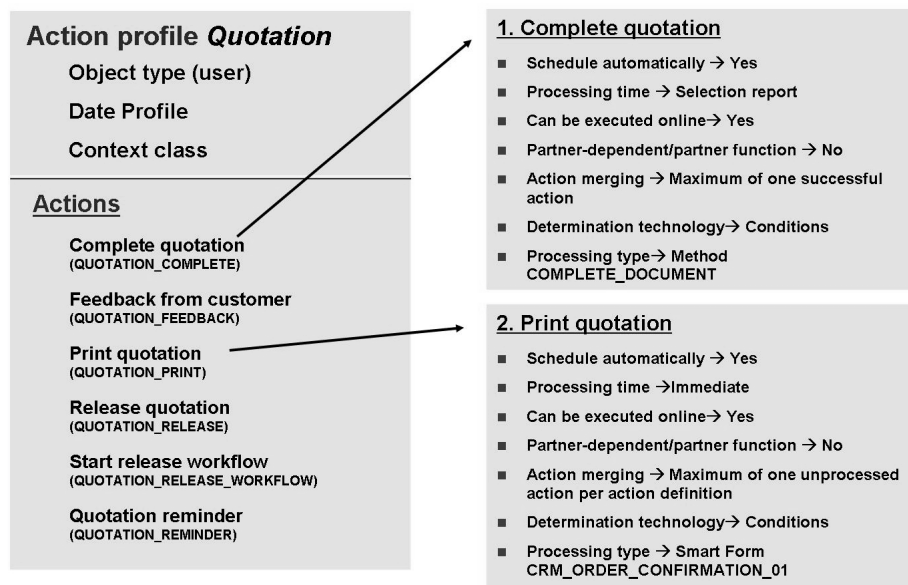


Figure 58: Example: Actions in a Quotation

The assignment of an action profile to an object type (the relationship to the leading business transaction type of a transaction category) controls which transaction types can be used by the action profile.

Actions are always determined for each action profile separately and may contain different detail settings.

SAP Implementation Guide → Customer Relationship Management → Basic Functions → Actions → Actions in Transaction → Change Actions and Conditions → Define Action Profiles and Actions

Conditions are defined using a separate function.

SAP Implementation Guide → Customer Relationship Management → Basic Functions → Actions → Actions in Transaction → Change Actions and Conditions → Define Conditions

The start transaction for editing action profiles and conditions is /nSPPFCADM.

The application (for transaction processing) is CRM_ORDER.

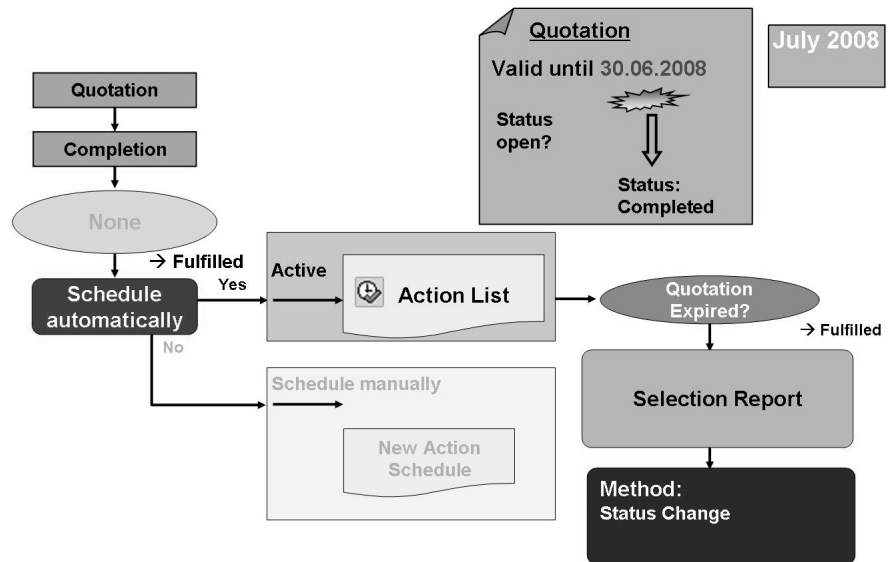


Figure 59: Customizing: Action 1 - Complete Quotation

This figure depicts the workflow of action processing for the action “complete quotation” within the context of the corresponding Customizing settings.

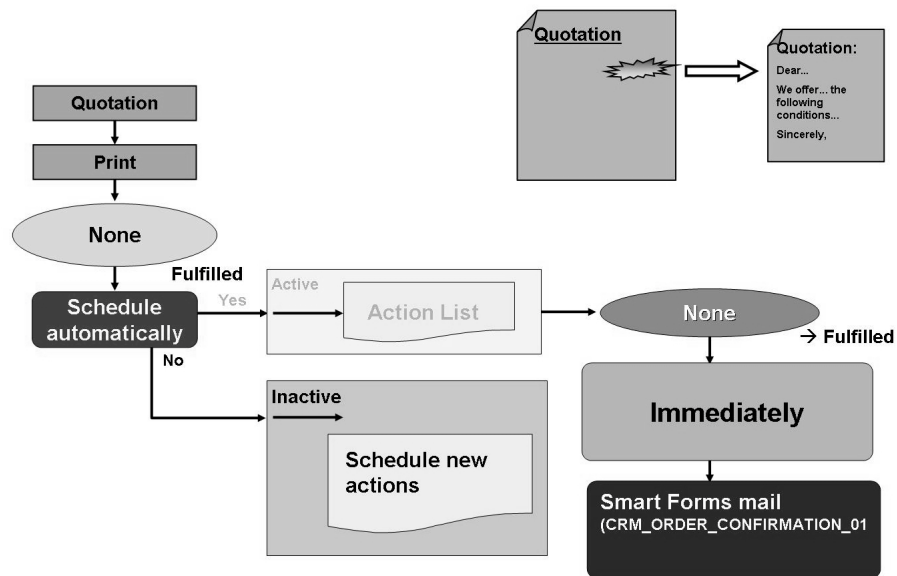


Figure 60: Customizing: Action 2 - Print Quotation

This figure depicts the workflow of action processing for the action “complete quotation” within the context of the corresponding Customizing settings.

You can use the **SAP Smart Forms** graphics tool to design the layout of message forms.

SAP CRM contains several Smart Forms for messages:

- Form CRM_ORDER_CONFIRMATION_01 (suitable for faxes, letters, and e-mail)
- Form CRM_LEAD_PRINT (suitable for faxes, letters and e-mails)
- Form CRM_ORDER_SERVICE (suitable for faxes, letters, and e-mails)

SAP Smart Forms offer the advantage of adapting forms without requiring programming knowledge, thanks to a completely graphical user interface.

When you request a printout of a form, the application program obtains the relevant data to be used and prints it on the form. Data retrieval and form logic are separated from one another.

SAP Smart Forms replace SAPscript forms.

Demonstration

Create a **Telesales** sales order for customer 3271 and product HT-1010.

Branch to the Assignment Block **Scheduled Actions**: An order confirmation action is visible can be processed. Depending on the settings, the user might not be able to process it from within the transaction.

It is possible to use the Action Monitor to process an action.

Demonstrate the layout of the order confirmation by clicking the **More** button (at the top of the screen!) and then **Preview Output**.

Use SAP Smart Forms to design your forms

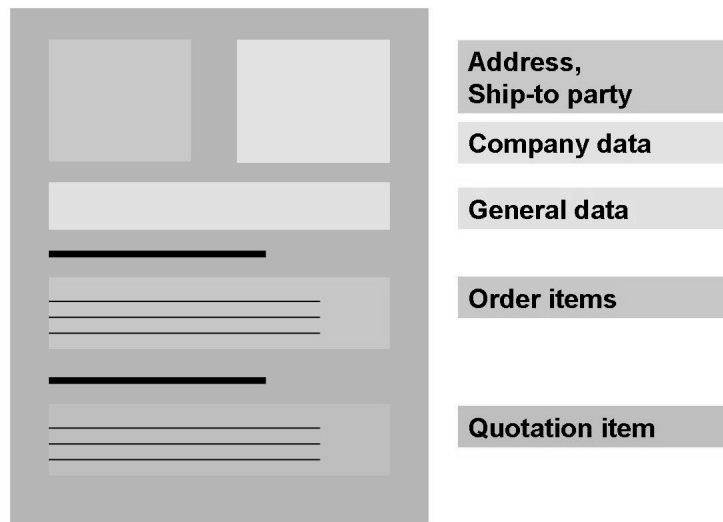


Figure 61: SAP Smart Forms: Layout of Messages

- The action monitor gives you an overview of all scheduled and processed actions and their statuses.
- You can trigger repeat action processing and display output (preview)
- You can define selection variants and use them for background processing.

PPF: Selection and processing of outputs

SAP GUI

Status	Application	Name of context	Key	Name of output type	Changed	Repeated	Manually	Blocked	Inactv.	Created on	Created at	Changed on	Change
△	CRM_ORDER	ORDER_MESSAGES	0005003009	ORDER_CONFIRMATION						06.12.2000	15:49:53		00:00:0
△	CRM_ORDER	Z_MSE	0005002542	FOLLOW UP QUOTATION						30.11.2000	10:04:50		00:00:0
△	CRM_ORDER	Z_MSE		FOLLOW UP QUOTATION						06.12.2000	09:19:31		00:00:0
△	CRM_ORDER	ORDER_MESSAGES	0005003522	ORDER_CONFIRMATION						11.12.2000	22:19:20		00:00:0
△	CRM_ORDER	Z_MSE	0005002542	PHONE CALL						30.11.2000	10:04:50		00:00:0
△	CRM_ORDER	ORDER_MESSAGES	0005003494	ORDER_CONFIRMATION						11.12.2000	14:56:19		00:00:0
△	CRM_ORDER	ORDER_MESSAGES	0005002299	ORDER_CONFIRMATION						28.11.2000	16:20:10		00:00:0
△	CRM_ORDER	ZZQUOTE	0005002767	STANDARD ORDER		☑				02.12.2000	15:00:33		00:00:0
△	CRM_ORDER	Z_MSE	0005003013	FOLLOW UP QUOTATION						06.12.2000	11:31:25		00:00:0
△	CRM_ORDER	Z_MSE	0005003017	FOLLOW UP QUOTATION						06.12.2000	12:00:26		00:00:0
△	CRM_ORDER	Z_MSE	0005002795	FOLLOW UP QUOTATION						04.12.2000	09:54:06		00:00:0
△	CRM_ORDER	QUOTATION	0005004198	QUOTATION_COMPLETE						16.01.2001	11:02:37		00:00:0
△	CRM_ORDER	Z_MSE		FOLLOW UP QUOTATION						08.12.2000	17:25:48		00:00:0
●	CRM_ORDER	Z_MSE	0005002596	FOLLOW UP QUOTATION		☑	☑	☑		30.11.2000	14:44:14	30.11.2000	14:44:4
△	CRM_ORDER	ORDER_MESSAGES	0005002946	ORDER_CONFIRMATION						05.12.2000	16:21:36		00:00:0

Figure 62: Action Monitor

The action monitor is used to process and control actions. If you have selected processing using **Selection Report** as time of processing for order confirmations it is necessary to use the action monitor.

It is possible to define **selection variants** and enter them into batch jobs together with the report RSPFFPROCESS. Those jobs process a number of actions frequently.

Examples:

“Generate e-mails for every service order item that is close to miss the response times (SLA’s).

“Printing of order confirmations every evening at 10 pm”.

The Action Monitor can also be used to create a list of actions which have not been process successfully, e.g. if you would like to repeat the action processing.

You can use the action monitor to monitor and trigger the processing of actions for several transactions.

The action monitor program, RSPFFPROCESS, originates from the **Post Processing Framework (PPF)**. You can use this program to check the processing of the actions (for example, output, follow-on documents).

If you set the *Processing using selection report* processing time for an action in Customizing (for example, for a message), you can select the actions with this program and initiate their processing. This is particularly useful for actions that are used for deadline monitoring (such as Service Level Agreements: First reaction and solutions times for service orders).

It can also be useful to use the action monitor to process actions with the processing time *When Saving* if, for example, time-dependent conditions were fulfilled after a certain time without any changes to the transaction. The program should be executed regularly so that actions are also started in these cases.

Unit 6

197

CRM Pricing

This unit introduces the Pricing functionality in SAP CRM. Pricing is another but rather crucial basic function within transaction processing. There are several options how to deal with CRM pricing

Use CRM specific pricing (not related to SAP ERP)

Reuse ERP specific pricing in SAP CRM

Don't use CRM pricing.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Describe the Internet Pricing and Configurator (IPC)
- Understand the essential features of the condition technique
- Describe the pricing functions
- Make certain settings in pricing Customizing
- Carry out condition maintenance in SAP CRM

Unit Contents

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Exercise 20: Condition Maintenance and Customizing – Service (Optional)	251

Lesson: Overview of Pricing

198

Lesson Duration: 40 Minutes

Lesson Overview

This lesson gives a brief overview of how pricing works in CRM.

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the Internet Pricing and Configurator (IPC)
- Understand the essential features of the condition technique
- Describe the pricing functions
- Make certain settings in pricing Customizing

Give an overview of CRM Pricing. This topic is “hot” since many customers are already using an SAP ERP system where pricing has been set up. Unfortunately it is not possible to transfer 100% pricing settings from ERP to CRM. One of the big obstacles is related to the IPC being JAVA software. Customer specific formulas and requirements from ERP (ABAP) cannot be transferred. Also there are few condition types which cannot be used in SAP CRM.

Hint: You should mention that understanding pricing functionality in SAP system takes some time and that this unit gives a rather short introduction. Participants who really need to get into pricing should consider to attend course **SCM620** (three days) which introduces SAP ERP pricing.

Business Example

You want to familiarize yourself with pricing in the SAP CRM system.

The Internet Pricing and Configurator (IPC) is responsible for pricing throughout the entire SAP CRM application.

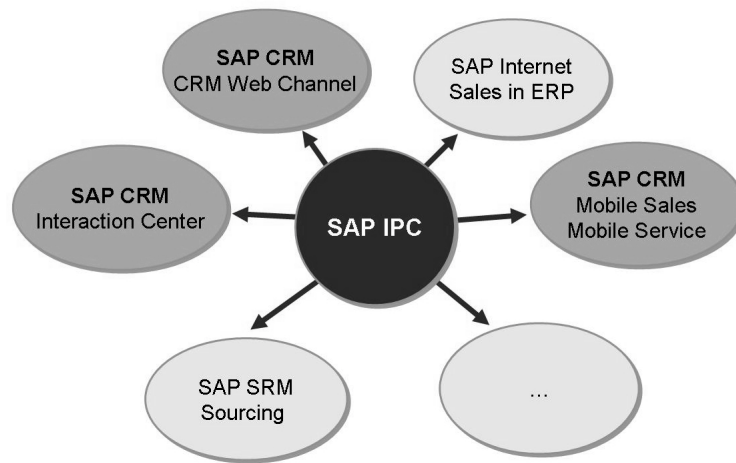


Figure 63: Pricing and Tax Determination in SAP CRM

SAP CRM use the IPC as pricing and configuration engine, independent of the CRM scenario. It is the aim of SAP CRM to only have one engine determining a price, no matter which channel is used! Also in some SAP ERP scenarios the IPC is used.

Since CRM 5.0 the IPC runs within the “Basis” (“NetWeaver Application Server”) via a so-called Virtual Machine Container (VMC). A customer must not install the IPC separately.

Optional Demonstration

Create a sales order of type **Telesales (TA)**

Enter product **HT-1010** with quantity 1.

Pricing engine is called and a net value is calculated.

Enter product **R-1000C** with quantity 1.

Configuration engine is called.

Observe error message related to missing configuration.

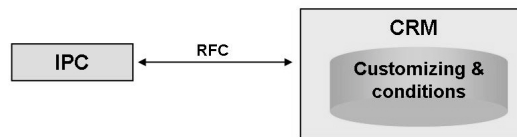
Go to the item details and configure the product.

The Internet Pricing and Configurator is used for pricing in SAP CRM scenarios.

Pricing information in the Internet (CRM Web Channel), CRM Enterprise and mobile clients (such as laptops) is processed by this component only (“one face to the customer”).

The IPC is only switched off in the rare case of a SAP CRM implementation without any pricing or configuration functions. For more information, see SAP Note 702735.

- The data is maintained in the SAP CRM system.
The IPC accesses the data in the CRM database.



- Data is maintained in the SAP ERP system.
The SAP ERP system supplies the CRM system with this data and the IPC accesses the CRM database.



Figure 64: IPC Implementation Scenarios

IPC implementation scenarios

- Scenarios without ERP integration:
 - You set up pricing Customizing in SAP CRM and maintain the conditions there. This data is only available in SAP CRM and cannot be transferred to the SAP ERP system. Exception: Trade Promotion Management.
 - Naming convention: standard Customizing objects normally start with a digit.
- Scenarios with ERP integration:
 - You set up pricing Customizing in the ERP system and maintain the conditions there. Both the Customizing and the master data can be transferred from the ERP system to SAP CRM via the CRM Middleware.
 - You cannot change the transferred Customizing in SAP CRM.
 - The transferred conditions cannot be changed in SAP CRM. However, you can declare exceptions.
 - Naming convention: standard Customizing objects normally start with a letter.
 - You use this scenario when you want to use ERP billing for certain CRM business transactions.

Pricing Procedure = Calculation Rule

Pricing Procedure	RVA AUS
1. Price	PR00
2. Customer Discount	K007
3. Sales Promotion	KA00
...	...

Figure 65: Pricing Procedure

The pricing procedure defines the valid condition types and their calculation sequence in the transaction.

The pricing procedure also defines the following:

- Which subtotals are created and displayed on the pricing screens
- If a condition type is mandatory
- How far the manual processing of pricing is possible
- Which requirements must be fulfilled in order that a specific condition type is taken into account.

Pricing procedures are defined in Customizing. *SAP Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Pricing* → *Define Settings for Pricing* → *Create Pricing Procedure*

Pricing procedures have a source (*CRM* or *R/3*).

Demonstration

Show standard pricing procedures in customizing.

Customer Relationship Management → *Basic Functions* → *Pricing* → *Define Settings for Pricing* → *Create Pricing Procedure*

Mention that every procedure has a source.

In general procedures with source = CRM can be edited in SAP CRM and not be transferred to ERP

In general procedures with source = R/3 (ERP) have been transferred from ERP via Customizing download

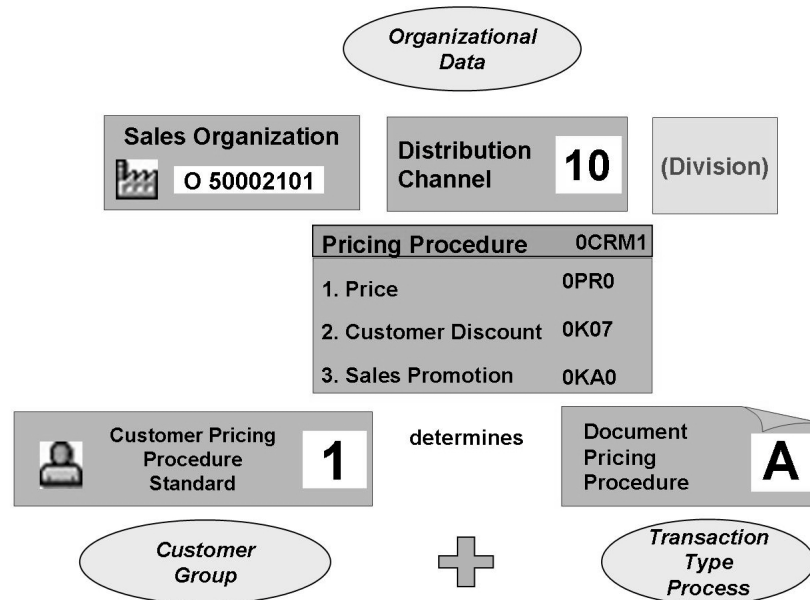


Figure 66: Determination of Pricing Procedure

The determination of the pricing procedure must be set up manually. You can set a division, but it is not required (as is the case in SAP ERP).

The following elements influence the determination of the pricing procedure:

- Sales organization
- Distribution channel
- Document pricing procedure (can be assigned to a transaction type)
- Customer pricing procedure (assignment in the business partner – sales area data – billing data)
- Division (optional)

The pricing procedure is determined in Customizing under the following path:
SAP Implementation Guide → Customer Relationship Management → Basic Functions → Pricing → Pricing in the Business Transaction → Determine Pricing Procedures

Demonstration

In CRM WebClient UI create a **Quotation ERP**

Enter account 3271 and product HT-1011 with quantity 1.

Point out that the system runs pricing as soon as the product was entered.

Show the influencing factors for pricing procedure determination (if necessary, check exercises for details) and show IMG activity *SAP Customizing Implementation Guide → Customer Relationship Management → Basic Functions → Pricing → Pricing in the Business Transaction → Determine Pricing Procedures*

Using the data, you should be able to determine **RVCXUS** as relevant pricing procedure.

The condition type defines the characteristics and attributes of a condition.

You can define a condition type for every type of price, surcharge, or discount that occurs in your business transactions.

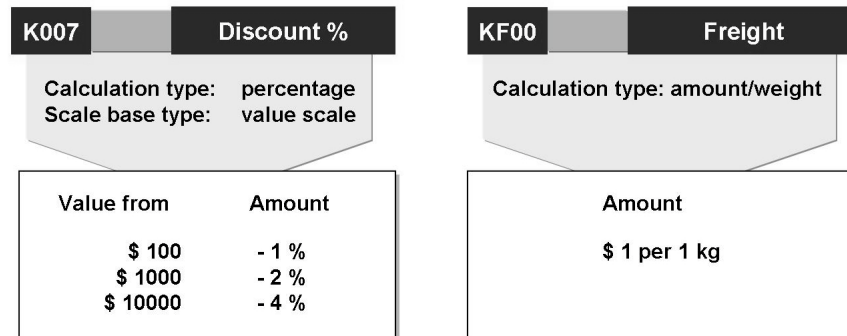


Figure 67: Condition Types

The condition type determines the category of a condition and how it is used.

The calculation type and the scale base type can be defined for each condition type.

Each condition type can be set as an automatic surcharge or an automatic discount.

Condition types are defined in Customizing under *SAP Implementation Guide* → *Customer Relationship Management* → *Basic Functions* → *Pricing* → *Define Settings for Pricing* → *Create Condition Types*.

Condition types have a source system (*local* = CRM or *other system* (such as R/3)).

SAP ERP condition types can be loaded into the SAP CRM system (Customizing download object CRM_PRC_CNDTYP).

SAP CRM condition types cannot be loaded into the ERP system.

Some ERP condition types cannot be used in SAP CRM.

The term price element is used in the application instead of condition type.

Optional Demonstration

Show existing condition types, for example PR00, OPR0 and again mention the source system.

If you feel confident, show details of a condition type.

SAP Customizing Implementation Guide → *Customer Relationship Management* → *Basic Functions* → *Pricing* → *Define Settings for Pricing* → *Create Condition Types*

Access Sequence = Search Strategy

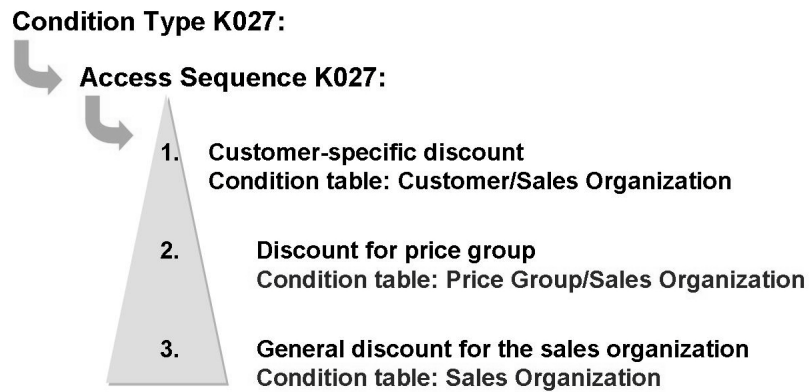


Figure 68: Access Sequence

An access sequence is a search strategy that the system uses to search for valid data in a specific condition type.

It comprises one or more accesses that are each defined by specifying a condition table.

The sequence of the accesses controls the priority of the individual condition records. The accesses tell the system where to start searching after a valid condition record.

Create an access sequence for each condition type for which you create condition records.

Access sequences are defined in Customizing:

SAP Implementation Guide → *Customer Relationship Management* → *Basic Functions* → *Pricing* → *Define Settings for Pricing* → *Create Access Sequences*

Condition types have a source system (*local* = CRM or *another system* (such as R/3)).

Demonstration

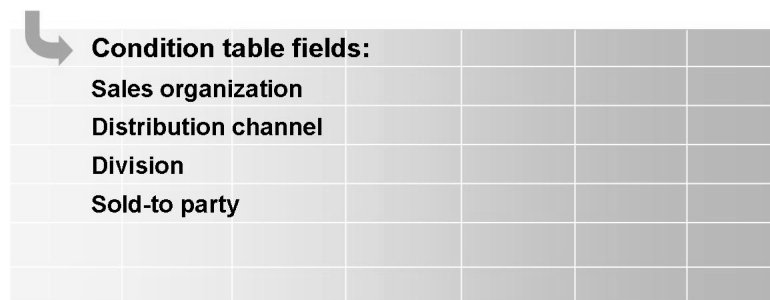
Show existing access sequences, for example PR02 and again mention the source system.

Show the details of this access sequence and mention that it is possible to define several accesses.

*SAP Customizing Implementation Guide → Customer Relationship Management
→ Basic Functions → Pricing → Define Settings for Pricing → Create Access
Sequences*

A condition table defines the combination of fields (keys) that identify an individual condition record.

Condition table Z007 customer/sales organization:



Condition table fields:				
Sales organization				
Distribution channel				
Division				
Sold-to party				

Figure 69: Condition Table

Condition table: a table that defines the combination of fields that an individual condition record consists of. The condition table consists of a combination of search and result fields.

Condition records are always created using a specific key.

Use tables to help you define the structure of condition record keys.

The key fields of a condition table must appear together at the start of the table, in other words, non-key fields must not appear between any two key fields.

Condition tables are defined in Customizing under the following path: *SAP Implementation Guide → Customer Relationship Management → Basic Functions → Pricing → Define Settings for Pricing → Create Condition Tables.*

Name ranges for condition tables:

SAP condition tables 001 – 500 created in the ERP system: SAP001 – SAP500

Customer condition tables 501 – 999 created in the ERP system: CUS501 – CUS999

SAP condition tables created in the CRM system: SAPxxxxx

Customer condition tables created in the CRM system: CUSxxxxx

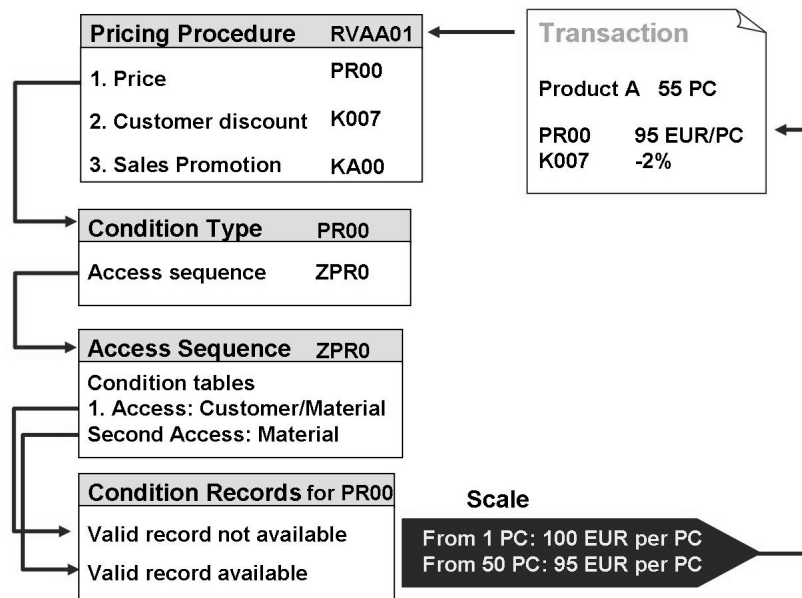


Figure 70: Condition Technique

The system reads the first condition type of the pricing procedure and determines the assigned access sequence. This step, together with the following steps, is repeated for each condition type in the pricing procedure.

The system reads the access sequence with the condition tables. The sequence of the condition tables forms the search strategy for determining the individual condition records. Each condition table contains the field combinations according to which the system should search in the condition records, for example business partner – product - price.

The system searches for valid condition records for the condition tables. If the system does not find a valid condition record for the first condition table, it carries on and searches for a condition record for the next condition table.

Once the system has found a valid condition record for a condition table, it makes the result available to pricing in the form of prices and discounts.

If the search procedure contains more than one condition type, the system repeats the search for condition records for each condition type.

In the SAP CRM system, the free goods, campaign and product determination functions are executed with the pricing mechanism (condition technique).

Different kinds of condition groups – for example, prices, discounts, surcharges, freight or taxes – can be determined.

Data about conditions is stored in condition records:

Special offer discount:

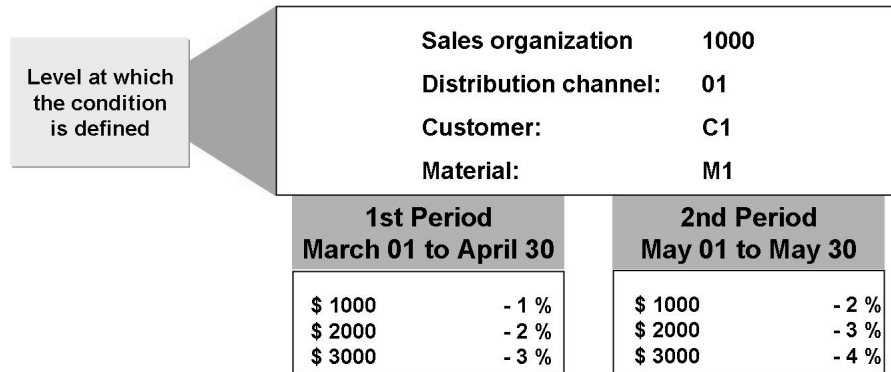


Figure 71: Condition Records

Data about conditions is stored in condition records.

You can limit a price agreement to a specific period. To do this, specify a **validity period**. This can be useful when you want to have different price lists for different years or have discounts valid only for the duration of a special offer.

The values in a condition record (price, markup, discount) can be maintained according to a **value scale**. You can specify an unlimited number of levels in a value scale.

Lesson: Condition Maintenance and Pricing Functions

208

Lesson Duration: 40 Minutes

Lesson Overview

This lesson goes into details of maintaining pricing related conditions in CRM.

Lesson Objectives

After completing this lesson, you will be able to:

- Carry out condition maintenance in SAP CRM

Introduce condition maintenance in SAP CRM.

Business Example

You want to familiarize yourself with the pricing condition maintenance functions in the SAP CRM system.

You can start condition maintenance from the following objects in CRM:

- Business partners
- Business partner hierarchies
- Products
- Contracts (price agreements)
- Campaigns (discounts)

You can also maintain conditions in general condition maintenance

Figure 72: Condition Maintenance

General condition maintenance in the SAP CRM system is called using the SAP GUI:

SAP Menu → Master Data → Prices and Conditions → Maintain Conditions

If you want to edit conditions for standard CRM business processes, enter CRM in the **application** field and a suitable (condition) **maintenance group**.

You can merge the required condition types/condition tables using the condition maintenance groups in Customizing. In general condition maintenance, the context **GCM** allows you to make the corresponding selection of condition types/condition tables.

Demonstration

Use SAP GUI to show Condition maintenance

SAP Menu → Master Data → Prices and conditions → Maintain Conditions

Application: CRM

Maintenance Group: BUPAPRICE.

Execute.

On the left Mark Condition Type

Choose Select Records icon.

In the Pop-Up window enter OPR0 for condition type.

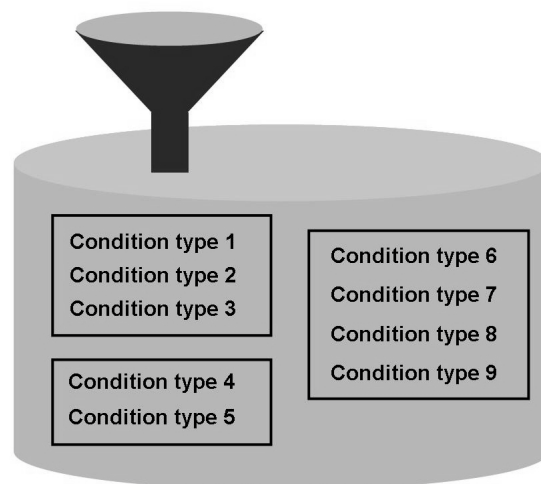
Choose Execute.

Condition records are displayed.

Optional: Using the STRG key mark a different set of fields (on the left) and again choose Select Records

In the pop-up the marked fields show up as key fields for condition record search.

Condition Maintenance Group



Maintenance Context

- General (GCM)
- Business partner
- Contract
- Campaign
- ...

Figure 73: Condition Maintenance Groups and Contexts

A condition maintenance group bundles condition tables and types for condition maintenance. There is a special view in condition maintenance for this.

The SAP CRM system contains general condition maintenance (**GCM**) as well as special maintenance contexts. In GCM, you can maintain the conditions that are in condition maintenance groups and which are assigned to the GCM maintenance context.

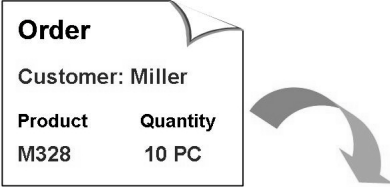
You can define separate condition maintenance groups and the assignment of maintenance contexts in Customizing:

SAP Implementation Guide → *Customer Relationship Management* → *Master Data* → *Conditions and Condition Technique* → *Condition Technique: Basics* → *Create Maintenance Group*

SAP Implementation Guide → *Customer Relationship Management* → *Master Data* → *Conditions and Condition Technique* → *Condition Technique: Basics* → *Define Maintenance Groups for Context*

Demonstration

Follow the corresponding exercise to create a new condition maintenance group.



Condition	Rate	UoM	per	Value	Curr
Material Price	100	\$	1 pc	1000	\$
Gross	100	\$	1 pc	1000	\$
Customer Discount	- 2	%		- 20	\$
Product Discount	- 5	\$	1 pc	- 50	\$
Net Value	93	\$	1 pc	930	\$
Shipment Costs	+ 2	\$	1 kg	+ 40	\$
Final Amount	97	\$	1 pc	970	\$

Figure 74: Pricing Analysis in Transactions: Example

You can carry out a **pricing analysis**. This is a log that gives you an overview of the transactions in automatic pricing.

You can use this information to check how the individual pricing elements **from the item** are calculated in the system.

The system displays information about each pricing transaction as well as the last pricing transaction that was carried out. This enables you to compare pricing transactions. This can be useful after failed searches or price changes.

Condition analysis is not available in the CRM WebClient UI. It can only be accessed using the SAP GUI and when the corresponding transaction is created or changed.

User parameter PRC_TRACE = X must be set.

- Item level pricing, formulas for more complex pricing
- Manual changes at item and header levels
- Different calculation types
- Two-dimensional scales, scales with different scale bases
- Validity periods
- Currency conversion, quantity conversion, and unit of measurement conversion
- Free goods discount (inclusive and exclusive bonus quantities)



Figure 75: Pricing: Functions

Differences between pricing in SAP CRM and SAP ERP:

- The following condition types are not supported in SAP CRM: EK01, EK02, BO01 to BO05, AZWR, RL00, MW15, VRPS, EDI1, EDI2.
- Mass copying of condition records is not possible in SAP CRM.
- Change documents are not available in SAP CRM.
- Archiving of pricing conditions is not possible in SAP CRM.
- For technical reasons in SAP CRM, you cannot display the underlying condition record from condition maintenance in a transaction.
- Unlike SAP ERP, there are several pricing program runs in SAP CRM. This means that it is also possible to compare different pricing runs. This might be useful after price changes or during an error search, for example.
- The pricing type cannot be predefined in SAP CRM when new pricing is started.
- Customer-specific SAP ERP formulas and requirements must be implemented accordingly in SAP CRM (IPC).

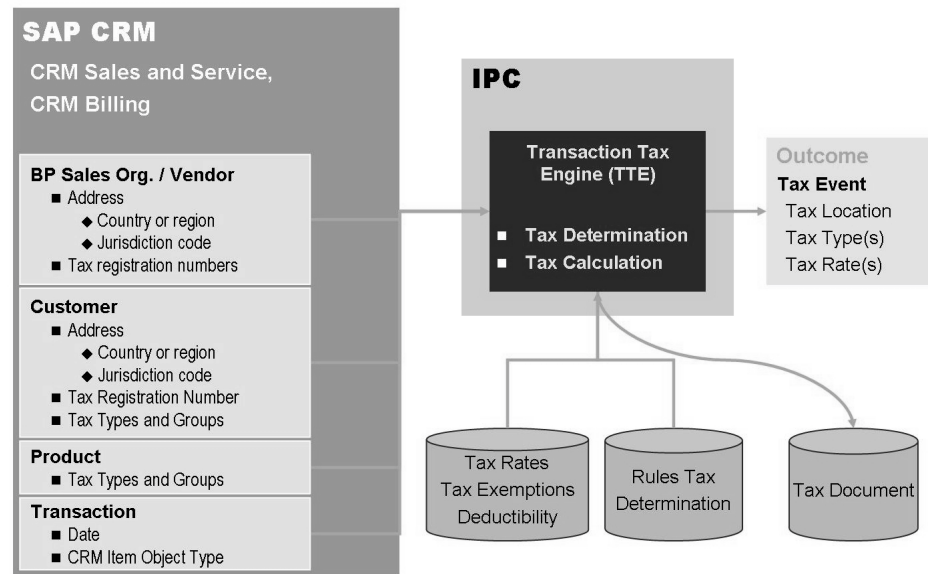


Figure 76: Tax Determination via TTE

If you create billing documents using CRM Billing, the taxes are determined via the Transaction Tax Engine.

The TTE determines and calculates tax based on the condition records and tax exemption licenses. The TTE uses the transferred data to determine the tax event, tax type(s) and the corresponding tax record.

To start the call of the Transaction Tax Engine, you need define the condition type **0TTE** (for tax calculation and the net price) or **1TTE** (for tax calculation and the gross price). We recommend that you use the **0CRM01** pricing procedure.

As of SAP CRM 4.0, there is a **persistent tax document**. This document is stored permanently in the system and can be accessed at all times. The persistent tax document comprises all input and output data for a particular TTE tax determination and calculation.

The simulation transaction TTE_SIMULATION supports:

Testing of all Customizing parameters

Testing of all tax calculation results

Saving of documents

Unit 7

235

CRM Billing

This unit introduces CRM Billing functionality. Although ERP customers have a hard time with the idea of using CRM Billing instead of ERP Billing (which probably is up and running for years), you can mention that both CRM Service and industry specific customers might want to use CRM Billing.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Explain the document flow in SAP CRM
- Create and describe billing documents
- Name the Customizing settings relevant for CRM Billing

Unit Contents

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Exercise 21: Creating Billing Documents – Sales.....	283
Exercise 22: Creating Billing Documents – Service (Optional).....	291

Lesson: Overview of CRM Billing

236

Lesson Duration: 35 Minutes

Lesson Overview

This lesson provides an overview of the billing process in SAP CRM.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the document flow in SAP CRM
- Create and describe billing documents

CRM Billing is a difficult topic to present. Once a customer has a billing application running (mostly ERP billing) it is hard to argue and explain why CRM billing might also be an interesting solution to look at.

Mention that there are CRM customers who don't have an SAP billing application yet and that they might want to start with CRM Billing.

Also there are very specific scenarios like Usage-Based Service Contracts (UBB), Market Development Funds (MDF) or CRM Rebates that use CRM Billing functionality.

Business Example

You want to use CRM Billing to invoice service transactions and customer orders. You need to familiarize yourself with the general concepts of CRM Billing.

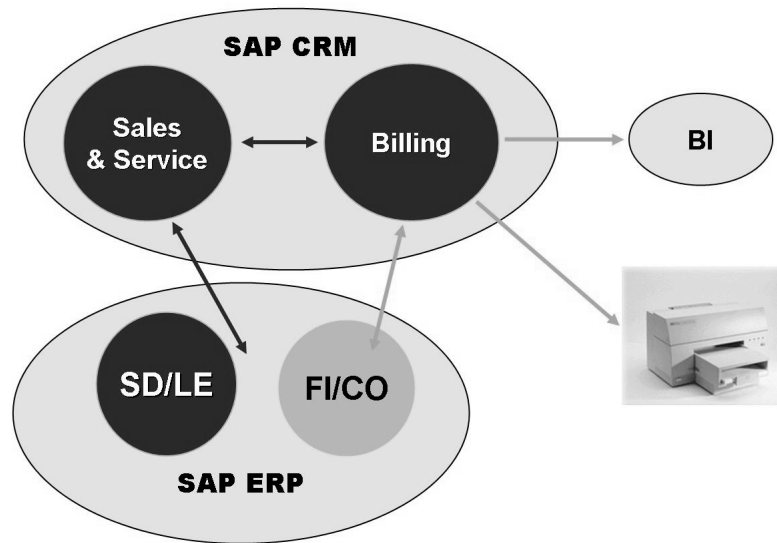


Figure 77: System Landscape

CRM Billing enables you to gather billing relevant processes from different source systems like SAP CRM or non-SAP applications.

After carrying out the billing process the resulting data can be distributed to the relevant Accounting systems (could be FI in ERP or other systems).

In SAP CRM, you can issue invoices for various business transactions. These include invoices for:

- Sales orders (with or without reference to delivery)
- Service contracts, service orders, service confirmations, confirmation processing

You can use CRM Billing to combine service order items and sales order items in the invoices. This simplifies communication with your customers.

If you want to invoice only CRM sales orders and you are currently using SAP Sales and Distribution (SAP SD), you have the option of using either SD Billing or CRM Billing. You should normally use CRM Billing to invoice contracts, service orders, confirmations and complaints.

The ERP component SAP FI-AR (accounts receivable accounting) or FI-CA (Contract Accounts Receivable and Payable) must be implemented if you wish to post billing documents in financial accounting.

The billing component in SAP CRM is a billing engine application that is generated beforehand. When you make Customizing settings for billing, make these for the **CRM Billing** application.

The billing process consists of three steps:

- Input processing
- Billing
- Output processing

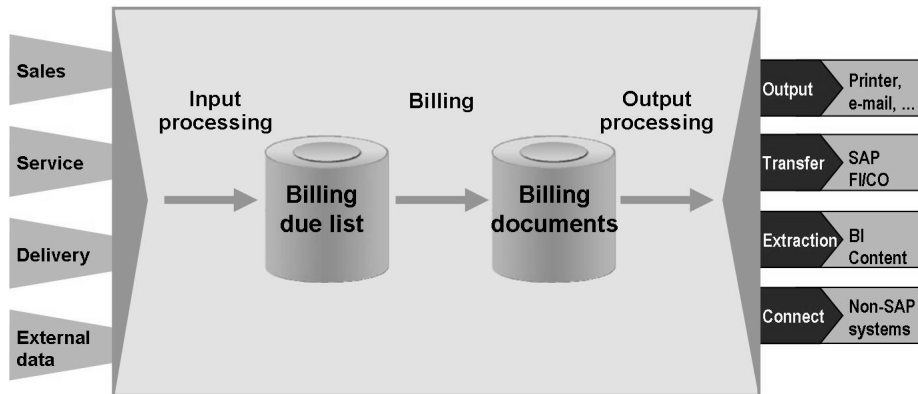


Figure 78: Process Overview

The process flow for creating and issuing invoices using the CRM Billing can be divided into three sub-processes:

Input Processing

Billing

Output Processing

CRM Billing takes over billing-relevant items from different business transactions and saves them as billing due list items during input processing. From the billing due list, you can process both single and collective billing from billing due list items and also trigger these to run in the background.

During billing, related billing due list items are also grouped together as far as possible from different CRM business transactions and transferred to a joint billing document.

You can cancel individual billing documents and also execute collective cancellations. The system transfers information on cancellations automatically to Financial Accounting.

Output processing is made up of invoice output, the transfer to SAP Financial Accounting and retrieval for SAP BI. You can choose from different output media (for example, print, fax or email) for invoice output, although output takes place using SAP Smart Forms. The ledger posting of billing data takes place either in SAP FI-A/R or in SAP FI-CA.

CRM Billing provides all relevant billing data for the SAP Business Warehouse for statistical reporting.

During **Input processing**, CRM Billing takes over billing-relevant items from different business transactions and saves them as billing due list items.

As of CRM Release 5.0, you can use an external interface to copy data from non-SAP systems to the CRM Billing due list. It supports the formats IDoc; XML SOAP via HTTP; XML via SAP NetWeaver Exchange Infrastructure

For more information, see the documentation for function module CRMXIF_BEA_DL_CRMB_SAVE.

If possible during **Billing**, the system groups related billing due list items from different CRM business transactions into a joint billing document. The billing due list can process due list items as part of an individual billing or as part of collective billing. It is also possible to perform the execution in the background.

Output processing consists of invoice output, the transfer to SAP Financials, and retrieval in SAP BI. The output is performed using SAP Smart Forms. The posting of billing data takes place either in SAP FI-AR or in SAP FI-CA. CRM Billing provides all relevant billing data for statistical reports (BI Content).

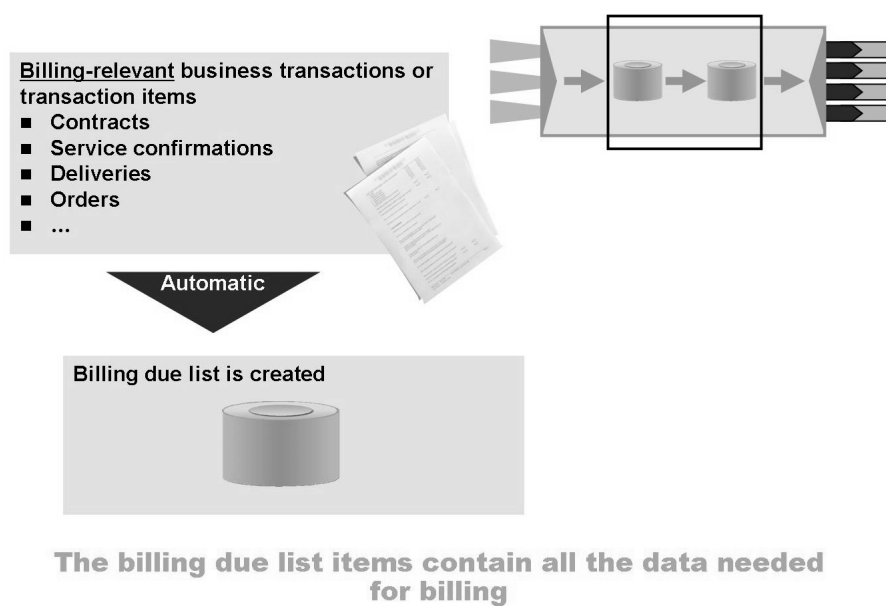


Figure 79: Input Processing

Integrated demonstration

Log on to the CRM WebClient UI with business role **Service Professional**

Create a Service Order of type **Service Process (ZSE1)**

Enter account **20Megastore** and three different products:

SRV1_4 (as Service)

R-1130 (as Service Part)

R-1130 (as Sales Item). This item category has a **CRM Delivery Related Billing relevance!**

Release the order, save it and not the number.

Log on to SAP ERP.

Use transaction VA03 and display the order number you have created in SAP CRM

You should see the Sales Item R-1130!

Deliver the order either using the menu *Sales Order → Deliver* or via VL01N. If necessary adapt the Selection Date (set to one week from today) and choose Shipping Point 3800.

From within the Delivery use Menu *Subsequent Functions → Create Transfer Order*

Choose Background processing and set the Adopt Picking Quantity to 2.

Since goods issue is posted right away, CRM Billing is informed and the CRM Billing Due List is updated.

In CRM WebClient UI process the Service Order. Create a follow-up Service Confirmation of Type Confirmation.

Copy both Service and Service Part items to it and enter 400440 as Executing Service Technician

Set the Status to Completed. CRM Billing is informed and the CRM Billing Due List is updated.

When you save a business transaction in which at least one item is relevant to billing, the system automatically transfers the data from this billing request item to the billing due list in CRM Billing.

CRM Billing uses the data from Customizing to determine the item category in CRM Billing for the transferred data record. When the system cannot determine an item category (if, for example, the item category determination is not set up completely), the system has to reject the transferred data record because billing is not possible without the item categories (the billing due list is incomplete).

CRM Billing saves all successfully processed and completed data as billing due list items.

You can search for billing due list items using various selection criteria.

You can display the details of each billing due list item.

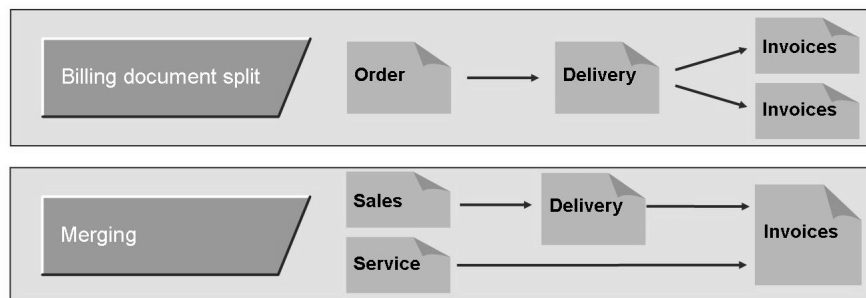
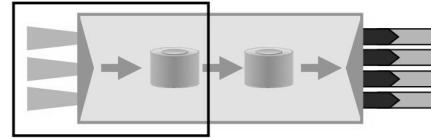
There are two ways of setting a billing block:

You give the business transaction item billing block status.

The billing item category is blocked for billing by the corresponding indicator.

Billing Methods

- Individual billing (dialog)
- Collective billing (dialog)
- Collective billing (background)
- Collective billing (job-controlled)



You can use copying requirements to control the conditions under which a transaction's item are billed.

Figure 80: Billing Process

As soon as you have saved a business transaction in which at least one item is billing-relevant, the system transfers the data from this billing request item to the Billing Due List. The system executes the following steps here, as far as saving the billing-relevant data. CRM Billing uses the data from application Customizing to determine the item category of CRM Billing for the transferred data record. When the system cannot determine an item category (if, for example, the item category determination is not completely set up), it has to reject the transferred data record, as no billing is possible without the item categories. By calling up appropriate services, CRM Billing completes the transferred items based on the following master data available in the system: Organizational data (Determination of billing units) Partner data (Transferral of business partners and execution of partner check) Pricing conditions (Transferral and determination of pricing conditions) Text data (Transferral of texts) Here, the system subjects the transferred items to a processing check which, in the following cases, results in the rejection of transferred items: The partner check (based on the settings for the partner determination procedure of the item category) ascertains whether there are any missing or incomplete mandatory partners. Pricing ascertains whether data needed to create a pricing document (particularly document currency and reference currency) is missing. CRM Billing saves all successfully processed and completed data as billing due items.

Demonstration

In the CRM WebClient UI (Service Professional) choose *Billing* → *Search* → *Billing Due List Items*

Search for items using the **Payer ID** (value help with **Name = 20Megastore**)

Two entries should be listed: the service order and the confirmation

Mark both entries and choose **Collective Billing**

Choose **Continue** and **Save**.

Display the billing document and mention that both **sales and service** related items have been billed using CRM Billing.

As a sub process of general billing, CRM Billing transfers billing due list items to billing document items and assigns these to the billing document headers. Therefore, billing documents (for example, invoices, credit memos and debit memos) are created from items which come from a wide range of CRM business transactions.

Split criteria in billing document header data includes the billing unit, payer, bill-to-party, billing document type, billing date, terms of payment and the *Split Criteria* field. You can also influence the split criteria using the copying requirements. To do so, follow the Customizing path: *SAP Implementation Guide* → *Customer Relationship Management* → *Billing* → *Define Copying Requirements*.

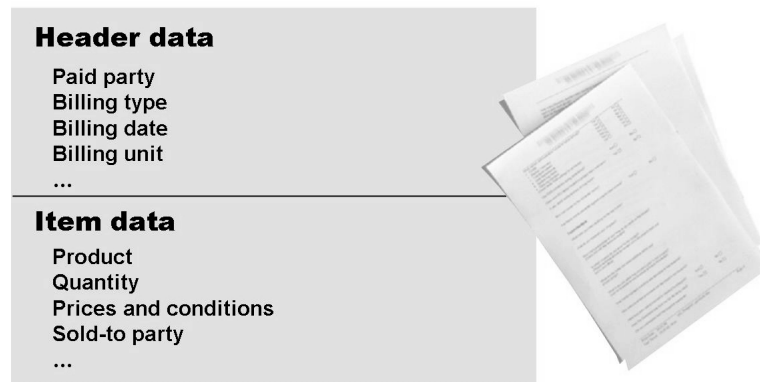


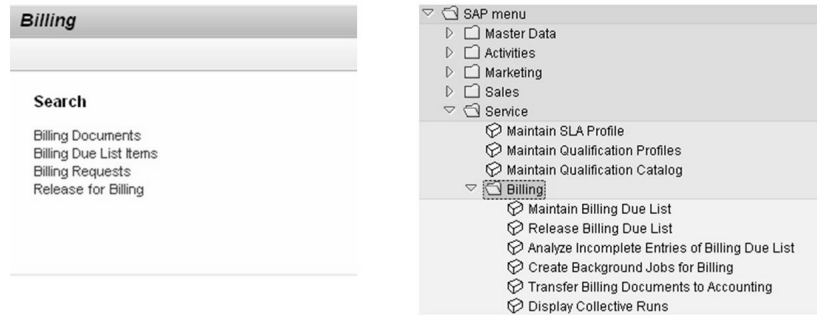
Figure 81: Billing Documents

Billing documents are not exchanged between the CRM and ERP systems.

As long as the invoices have not been transferred to accounting, you can make certain changes to the invoices (such as changing the value date, the prices and texts).

CRM invoices generate the sales data for the rebate.

You can cancel individual billing documents and also execute collective cancellations. The system transfers cancellation information to financial accounting automatically.



CRM WebClient UI

- Transactions billed manually

SAP GUI

- Variants for collective billing run
- Billing of individual transaction items

Figure 82: Billing Execution

Perform billing in the SAP GUI if

You are using variants to perform collective billing. Variants are a group of predefined selection criteria for billing.

You want to bill individual transaction items (for example, a monthly invoice from a service order).

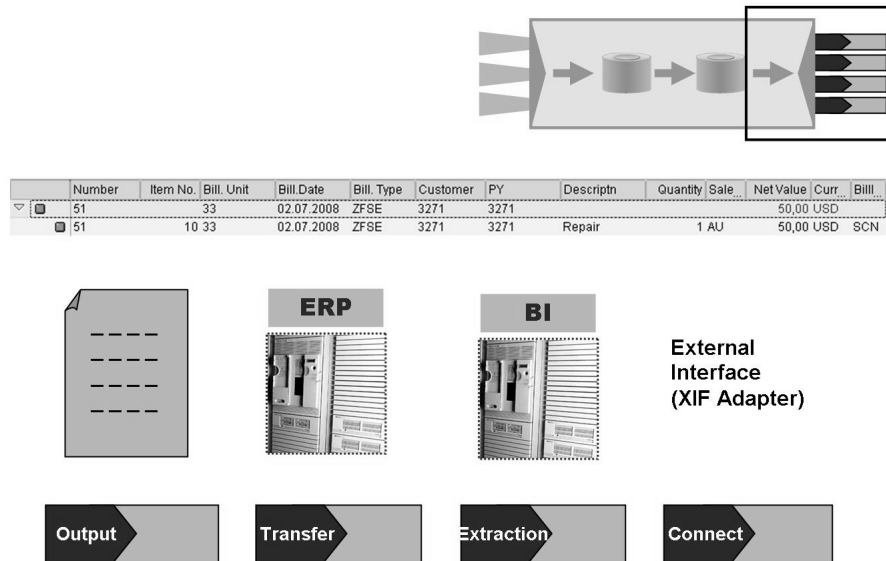


Figure 83: Output Processing

Demonstration

Show the Details of the Billing Document you created earlier and point to the accounting documents which have been created in SAP ERP. Optionally point to the Print Preview/Output which is possible since Action Profiles are linked to the Billing Type.

Output processing in CRM Billing aids the transfer of follow-up applications and SAP tools with billing document data and is split into the following processes:

Output of invoicing documents through different output media (for example, printer, fax, e-mail or external output management systems)

Transfer of billing data to a range of SAP ERP accounting applications

Provision of data for SAP Business Information Warehouse (SAP BI)

Connection of any non-SAP application to the external interface of CRM Billing – You can find more information about connection under *Interfaces for connecting to external systems*.

CRM Billing allows you to issue invoices in the following output methods: printer, fax, e-mail, archive, and external printing channels (via the XML interface in CRM Billing).

Smart Forms process the invoice in the layout you require. The formation of a specific invoice depends on the billing type of the corresponding action (for example invoices, credit memos, debit memos or cancellation documents).

You can monitor the transfer to accounting (status; error handling).

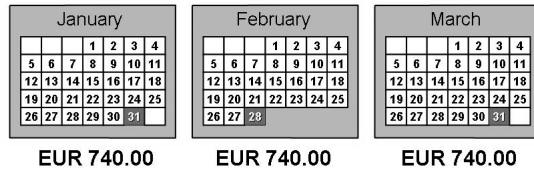
You can carry out the transfer to accounting separately (at a later point in time).

You can set up account determination either simply or flexibly (condition technique).

Billing plan procedure + Transaction type/item category ⇒ Billing plan type



Periodic billing
(for example, contracts)



Milestone billing
(for example, projects)

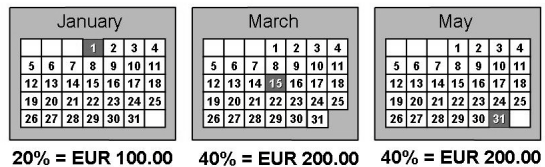


Figure 84: Billing Option: Billing Plans

Optional Demonstration

Create a Service Contract of type **Service Contract** and enter customer 3271 and product SER_022.

Show the items details and Assignment Block **Billing Plan**.

You use billing plans to schedule individual dates for billing for a product or service, independent of the product delivery or provision of the service. You can either bill the same amount at regular intervals (periodic billing plan) or bill different amounts at specified dates that have been predefined (milestone billing plan).

The billing plan specifies when a certain amount is invoiced.

Service contracts and leasing scenarios in particular use billing plans.

You set up billing plan types and billing plan determination in Customizing:

SAP Implementation Guide → *Customer Relationship Management* → *Transactions* → *Basic Settings* → *Billing Plan*

Lesson: Customizing CRM Billing

244

Lesson Duration: 40 Minutes

Lesson Overview

This lesson goes into details of customizing the billing process in SAP CRM.

Lesson Objectives

After completing this lesson, you will be able to:

- Name the Customizing settings relevant for CRM Billing

Introduce basic CRM billing customizing.

Business Example

You want to use CRM Billing to invoice service transactions and customer orders. You need to familiarize yourself with the relevant Customizing settings.

Billing-specific assignments of organizational units

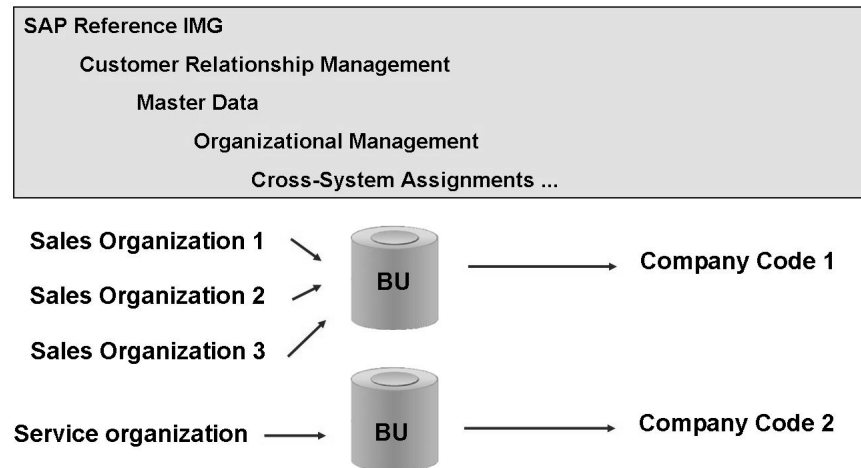


Figure 85: Customizing Organizational Data

During billing, the correct billing unit is derived from the organizational data of the transaction to be billed.

Requirements You have set up your organizational model in one of the following ways: In Customizing for Customer Relationship Management, under *Master Data* → *Organizational Management* → *Organizational Model*

In the CRM WebClient UI, on the Organizational Model page.

You need to specify which units are responsible for creating billing documents in your organization. Billing units can be sales organizations, service organizations, or vendors in intercompany billing scenarios.

The **billing unit** (BU) is a CRM business partner that has the role *Billing Unit*. For more information, see the IMG documentation:

SAP Implementation Guide → *Customer Relationship Management* → *Billing* → *Define Billing Units*

The billing unit can be defined separately and independently of the sales or service organization.

You can assign more than one sales organization to a billing unit (cross-sales organization billing)

Billing units are assigned uniquely to company codes.

Billing document-specific Customizing settings

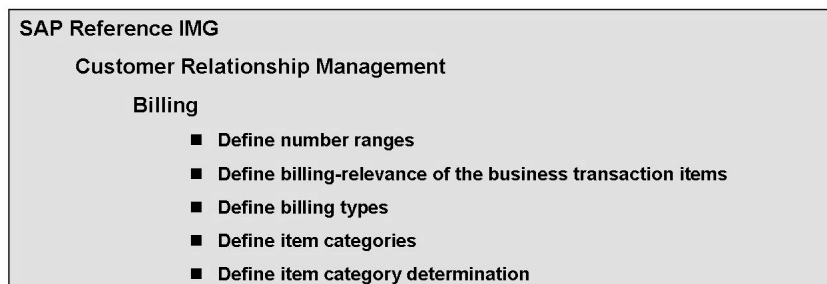


Figure 86: Billing Document Customizing: Unit Summary

Demonstration

Show billing customizing and explain billing item category determination using the service order example above!

In order to use all CRM *Billing* functions, you must maintain all the activities in the Implementation Guide under the Billing node. To find the billing node, choose the following path in the Implementation Guide: *Customer Relationship Management* → *Billing*.

Under *Define Billing Types*, determine the billing types for CRM Billing. A billing type specifies a billing document's characteristics and properties. The billing type attributes determine how the system behaves during billing.

Under *Define Billing Item Categories*, enter the item categories for CRM Billing. The item category determines the properties and characteristics of the billing due list items and the billing items. The item category attributes specify how the system behaves during input processing and billing.

Under *Item Category Determination*, make the settings for item category determination in CRM Billing. Item category determination is used to define the item category for CRM Billing using data from CRM business transactions. There are two ways of doing this:

In the *Assign Item Categories* activity, you can assign the item category in CRM Billing to a specific combination of transaction type (process type of source application) and an item category of the relevant CRM business transaction.

<p>Service order (SRVO)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Account <input type="checkbox"/> Service (SRVP) <input type="checkbox"/> Service part (SRVM) <input type="checkbox"/> Expense (SRVE) <p>Confirmation (SRVC)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Account <small>Pricing procedure</small> <input type="checkbox"/> Service (SVCP*) <input type="checkbox"/> Service part (SVCM*) <input type="checkbox"/> Expense (SVCE*) <p><small>* = Relevant for billing</small></p>	<p>Billing Customizing</p> <div style="border: 1px solid black; padding: 5px;"> <p>Item category determination (for billing): Source transaction type + Source item type → Billing item category</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">SRVC</td> <td style="padding: 2px;">+</td> <td style="padding: 2px;">SVCP</td> <td style="padding: 2px;">→</td> <td style="padding: 2px;">SCN</td> </tr> <tr> <td style="padding: 2px;">SRVC</td> <td style="padding: 2px;">+</td> <td style="padding: 2px;">SVCM</td> <td style="padding: 2px;">→</td> <td style="padding: 2px;">SCN</td> </tr> <tr> <td style="padding: 2px;">SRVC</td> <td style="padding: 2px;">+</td> <td style="padding: 2px;">SVCE</td> <td style="padding: 2px;">→</td> <td style="padding: 2px;">SCN</td> </tr> </table> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Item categories (for billing): Details of item type SCN (extract)</p> <ul style="list-style-type: none"> - Billing type F2SV - Billing block </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Billing types (for billing): Details of the billing type F2SV (Extract)</p> <ul style="list-style-type: none"> - Number range - Pricing procedure </div>	SRVC	+	SVCP	→	SCN	SRVC	+	SVCM	→	SCN	SRVC	+	SVCE	→	SCN
SRVC	+	SVCP	→	SCN												
SRVC	+	SVCM	→	SCN												
SRVC	+	SVCE	→	SCN												

Figure 87: Example: Customizing of the Service Confirmation

This figure shows extracts from standard SAP CRM Customizing. The example shows the confirmation of a service order with three typical items that are not relevant for billing. A confirmation transaction is created with other item types as a follow-up transaction.

In the example, the (transaction) item types of the confirmation are set as relevant for billing. In standard systems, the billing relevance is set to *Transaction-related billing after completion*. In this situation, it is necessary to complete the confirmation and the service order for billing. You also then use the **Release for Billing** function. If the billing relevance is set to *Order-related billing acc. to order quantity*, the billing due list is created when the confirmation is completed.

In billing Customizing, the “determination” is set by the billing item categories. In the example, item category SCN is determined.

If required, an enhanced item category determination can be set up in Customizing.

The default value for the billing type is stored in the details of billing item category SCN. This is F2SV in the example.

Note that the contents of the pricing procedure of the transaction to be billed must match the pricing procedure of the billing type (ideally they should be the same). You can ensure that this is the case by setting the “Copy Pricing Procedure” indicator for the billing type. If you do this, you do not have to assign a pricing procedure to the billing type.

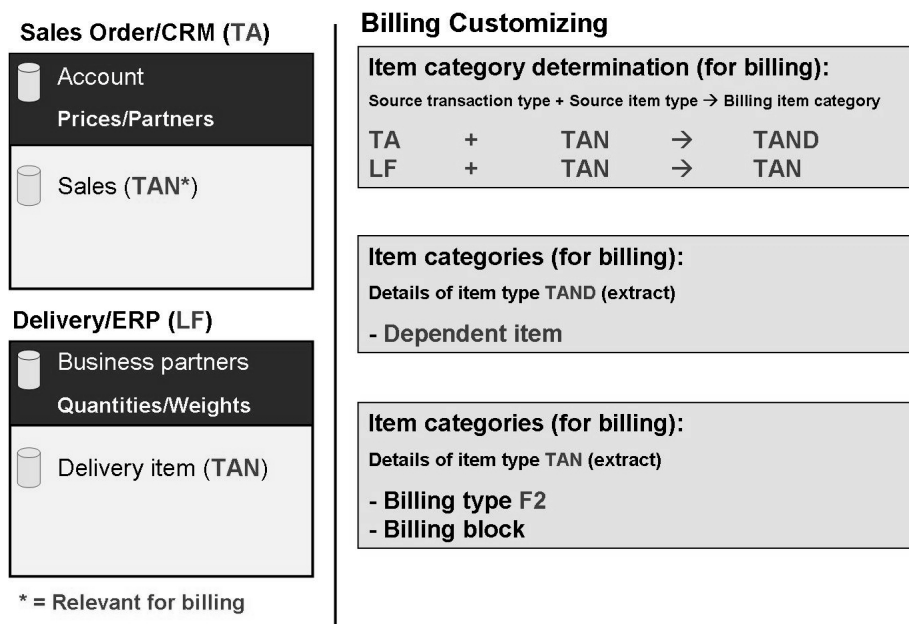


Figure 88: Example: Customizing of a Delivery-Related Sales Order

The example on this figure and the next illustrates a distribution-relevant CRM sales order (the replicated ERP sales order is not shown on this page) with delivery processing in the ERP system. Billing takes place in the CRM system.

Hint: Note: The **transaction types** and **transaction item categories** that are shown here are different from those in standard systems.

The transaction item category of the CRM sales order is set a relevant for (CRM) billing. Standard CRM systems contain the billing relevancies *Delivery-Related Billing [F]* and *Delivery-Related Billing – No Zero Quantities [G]*.

In this situation, an invoice requires **two entries** in billing item category determination. Note that the (first) billing item category that is found and which is generated by the CRM order item is flagged as a **dependent item**. This billing due list item cannot be selected in the billing due list.

After successful delivery processing (and goods issue posting), a second billing due list item is generated which may then be invoiced.

Note that the price determination settings and price conditions must be maintained in CRM when delivery-related CRM Billing is used.

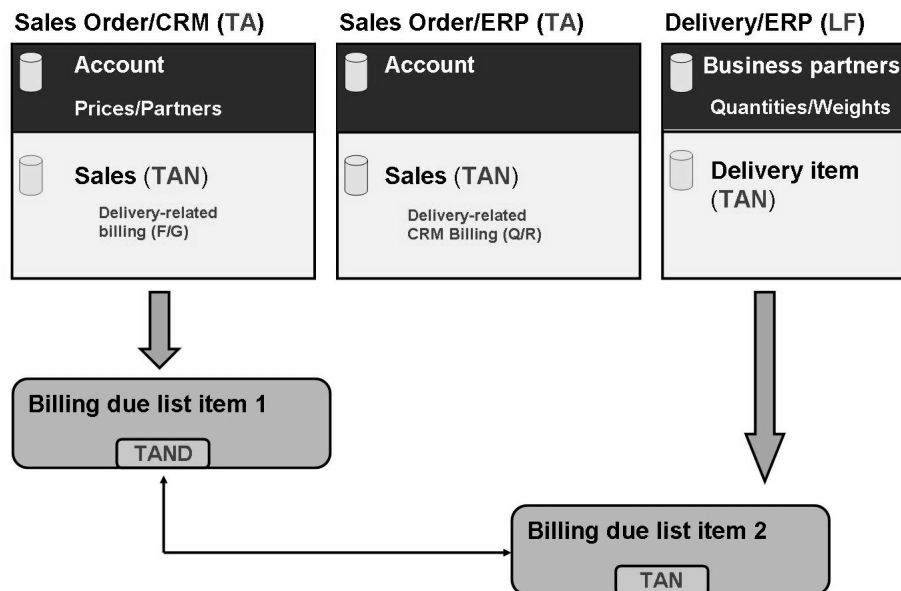


Figure 89: Billing Due List During Delivery-Related CRM Billing

The CRM sales order displayed above generates a (first) billing due list item.

After further processing in the ERP system, delivery processing generates a second billing due list item.

When you set the *Dependent Item* indicator in *Customizing for CRM Billing*, you can define billing item categories so that the billing due list items which they contain from the data transfer are dependent on another business transaction. Only the data of this business transaction that is transferred later can be billed.

So, for example, order item TAND is a dependent item which cannot be selected in the billing due list. If the delivery occurs in the ERP system and delivery item TAN is transferred to CRM Billing, item TAN can be billed.

Note: A special setting can be made to change the underlying system configuration of CRM. This setting is from Service Parts Management (SPM) and there are certain minimum system requirements for its use. When this setting is made, new sales orders are no longer transferred from SAP CRM to SAP ERP. Instead, unchecked deliveries are created immediately in SAP ERP. An unchecked delivery is a delivery document that contains requested delivery dates and quantities that were transferred from the sales order. In a subsequent program run in the background, SAP ERP converts the unchecked deliveries into checked deliveries.

Additional Customizing Settings: "Services"



Integration Settings

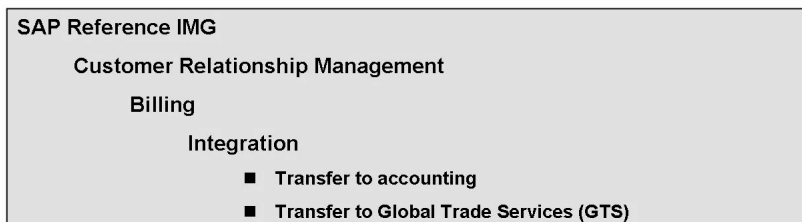


Figure 90: Additional Customizing Settings

In service-related Customizing, you make settings for the services in CRM Billing: pricing, partner processing, text processing, and action processing.

Under integration-related Customizing, you make settings for integrating billing with accounting applications. Settings regarding document types, accounts and tax codes for accounting documents are made here.

You can adjust the billing application

- Enhanced item category determination
- Enhanced account determination
- XIF connection to input processing
- Integration with Contract Accounting (FI-CA)
- Supplementary invoice
- Intercompany billing
- Multi-level intercompany billing
- Invoice split using conditions
- GTS integration
- Billing correction
- Retroactive billing
- Country-specific functions

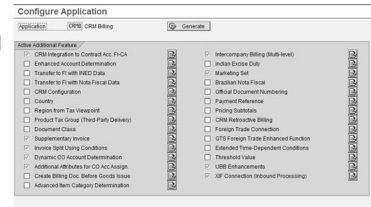


Figure 91: Configuring the Billing Application

The billing engine framework enables you to adjust the CRM Billing invoice application flexibly.

For details of the additional functions in the context of CRM Billing, see

SAP Implementation Guide → Customer Relationship Management → Billing → Configure Application

Unit 8

267

Introduction to CRM Middleware

The next couple of units focus on topic **CRM Middleware** . These units are rather technical so try to find a way to explain this to the participants, most of which will not be confronted to this in CRM projects.

Also note that the CRM Middleware topics (not all!) in this course are referenced from the standard course CR500 (CRM Middleware).

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- List and describe the various components of the SAP CRM architecture
- Describe the CRM Middleware architecture
- Describe typical Middleware bases scenarios

Unit Contents

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Lesson: Architecture Overview

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Lesson Duration: 45 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- List and describe the various components of the SAP CRM architecture
 - Describe the CRM Middleware architecture
 - Describe typical Middleware bases scenarios
-

Business Example

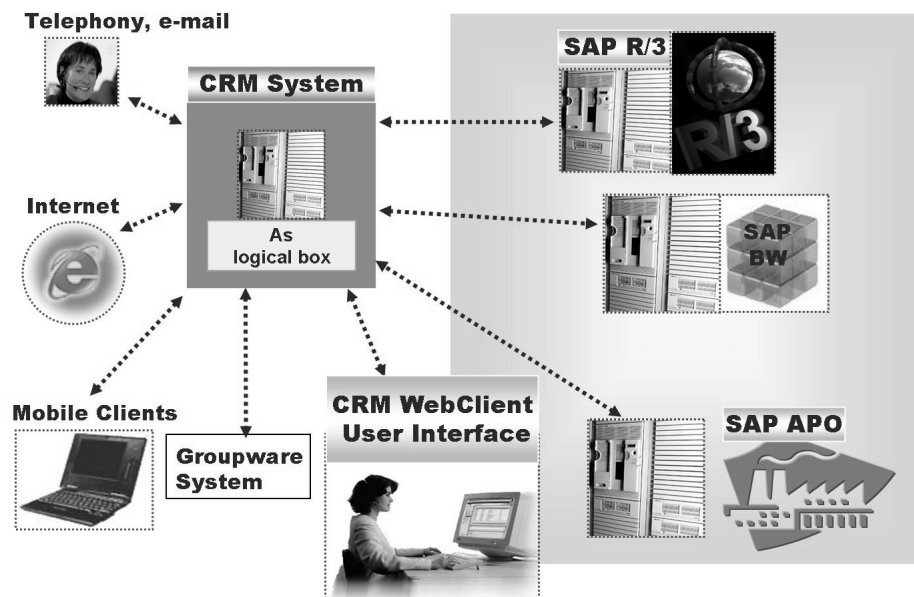


Figure 92: SAP CRM Architectural Concept

SAP Customer Relationship Management (SAP CRM), which is part of the SAP Business Suite 7.0, includes a central CRM server, which provides access to the system via various channels, and connection to other systems. The following capabilities are supported in SAP CRM:

- Interaction Center: The integrated Interaction Center enables customers to use phone, fax, or e-mail to contact sales or service representatives.
- Internet access: Users can configure and order products or services using the Internet components of SAP CRM.
- Mobile clients: The mobile sales force or mobile service engineers can connect to the SAP CRM system from their laptop computers to exchange the latest information with the central CRM server.
- Groupware Solution: Accounts, activities and tasks can be exchanged with a groupware system.

The SAP CRM solution offers the following fully integrated connections:

- The SAP CRM system as a central CRM server with its application components
- SAP R/3 as a back-end system with proven ERP functions
- The SAP BW system as a data warehouse solution with comprehensive statistical and analytical possibilities
- The SAP APO system as a global Available-to-Promise (ATP) check and demand planning solution
- The SAP CRM WebClient User Interface (UI) for the CRM business users.

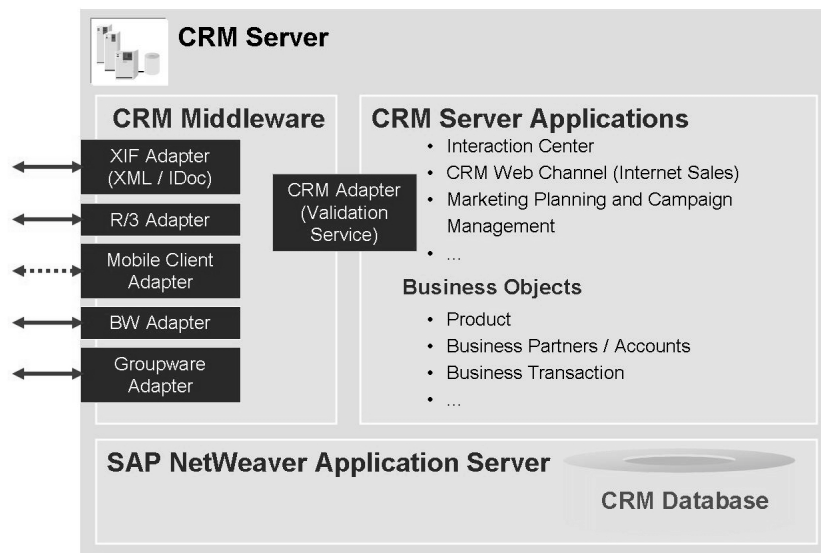


Figure 93: CRM Server Architecture

The data exchange between the CRM Middleware and **external systems** is performed via **adapters**. The adapters map and convert data between various formats.

The CRM System supports the handling of **CRM business objects**, like accounts (customers, prospects, etc.), activities and opportunities, products and product catalogs in a variety of CRM components like Internet Sales (CRM Web Channel), Service Interaction Center, Telesales, Campaign Management and various others. The CRM Server Applications exchange data with the CRM Middleware via the **CRM Adapter**.

The **SAP NetWeaver Application Server** is the successor of the SAP Basis System. SAP CRM 7.0 is based on SAP NetWeaver Application Server 7.0.

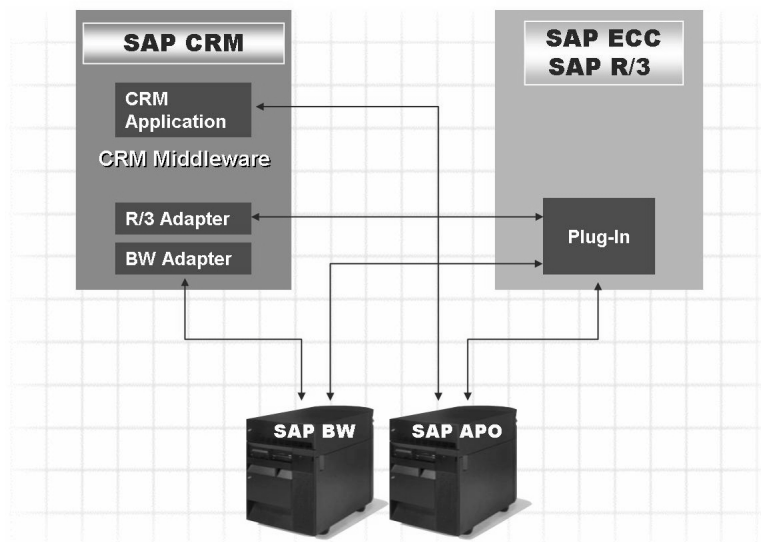


Figure 94: SAP CRM and SAP Backend Systems

Data is exchanged between the CRM system and a connected SAP R/3 backend system primarily via the CRM Middleware. A Plug-In (PI) installed on the R/3 system acts as a counterpart to the R/3 adapter in CRM, supporting the communication of data between the two systems. The data exchange includes an initial transfer of customizing, master, transactional and condition data to the CRM system, as well as delta data in both directions.

Note: New and extended interfaces for integrating SAP R/3, SAP R/3 Enterprise, and SAP ERP Central Component (ECC) will no longer be delivered with their own add-on (SAP R/3 Plug-In). As of SAP ECC 6.0, they will be contained directly in SAP ECC.PI 2004.1 is therefore the final separate delivered SAP R/3 Plug-In release.

Sales orders are entered in the Internet Sales application component (CRM Web Channel), Interaction Center, Mobile Client or using the CRM WebClient User Interface. To confirm whether the requested items can be delivered on time, you need to carry out the Available-to-Promise (ATP) check. The SAP Advanced Planner and Optimizer (SAP APO) performs these functions. SAP APO is used in SAP Supply Chain Management and can be integrated seamlessly with the SAP CRM solution.

The SAP Business Information Warehouse (SAP BW) is used as a data source for part of the SAP CRM solution, but also contains data for consolidation and analysis.

For SAP APO and SAP BW integration, the SAP Basis Plug-In is required: The SAP Basis Plug-In is a software component which was introduced to deliver BW Service API technology (SAPI), CRM Middleware, Supply Chain Event Manager and also Financial Basis functionality to SAP components in order to create a connection to these systems.

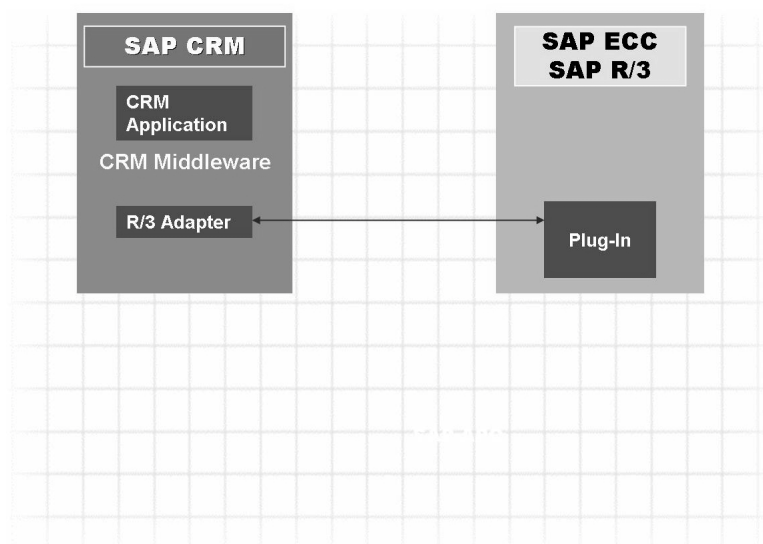


Figure 95: SAP CRM: Data Exchange with SAP Systems

Data is exchanged between the CRM system and a connected SAP ERP system primarily via the CRM Middleware. A Plug-In installed on the ERP system acts as a counterpart to the R/3 adapter in CRM, supporting the communication of data between the two systems. The data exchange includes an initial transfer of customizing, master, transactional and condition data to the CRM system, as well as delta data in both directions.

For details about the plug-ins use Quick Link “r3-plug-in” in Service Marketplace (<http://service.sap.com/r3-plug-in>).

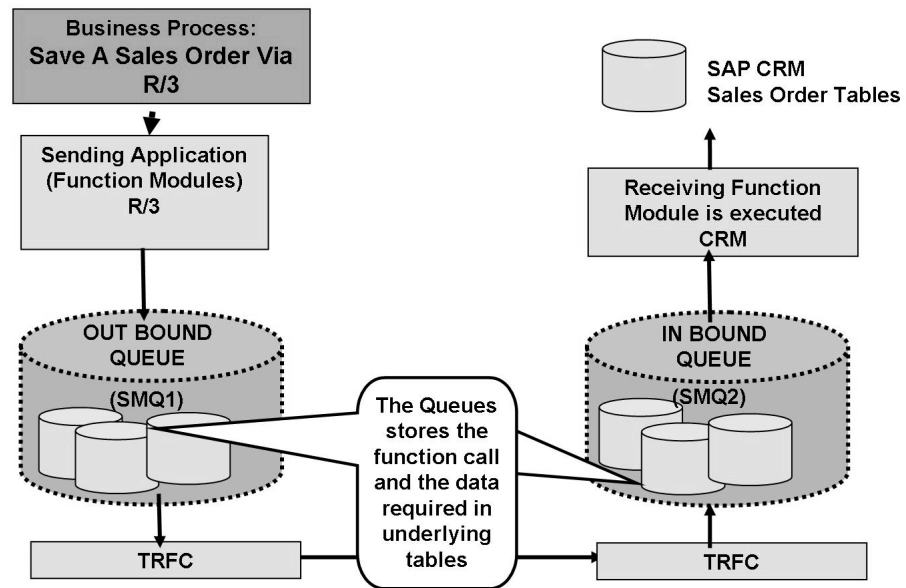


Figure 96: Underlying Technology QRFC

This page is a walk through the idea of queues. Explain that SAP Netweaver Technology is used here and three main underlying tables that store the actual data to be sent or the data that is waiting to be processed.

Optional Quick Demo of SMQ1 (Outbound Queue) / SMQ2 (Inbound Queue): Just go to these two transactions and show them. Keep it brief as you will address these later. Explain we will talk about these queues and use them in exercises soon.

The qRFC (**q**ueued **R**emote **F**unction **C**all) Technology is bi-directional. In some business scenarios the SAP ERP system will be the leading system and the outbound queues on the ERP system while the inbound queues on the CRM system.

Consider the example of qRFC with an inbound queue and outbound queue. CRM uses this qRFC with inbound and outbound queues. qRFC with inbound and outbound queues involves a **3-phase** processing and transfer model. All three phases are completely independent of each other. Separation of these phases ensures that asynchronous processing is as secure as possible.

- 1. In the first step, the application data is written to the database in the outbound queue. When the first step is completed, the data is saved in the database.
- 2. In the second step, the QOUT Scheduler transfers this data from the database of the client system, to the inbound queue in the database of the target system.
- 3. In the third step, the target system QIN Scheduler activates processing of the queue in the target system.

The technology works in both directions. CRM has an outbound Queue for sending function calls with data to SAP ERP and SAP ERP has an outbound queue as it is the leading system in some business scenarios.

Transactional Remote Function Call (tRFC) is the technology that sends the calls between systems. It is supported by the QOUT Scheduler which sends the data and function calls from the outbound Queue to the inbound Queue on the receiving system, and QIN, a scheduler that reads the Inbound queue and executes the stored function calls.

Transactions SMQ1 and SMQ2 are used to read the data in the inbound and outbound queues. It is possible to see the data and function calls waiting to be processed. Otherwise the data in the queues would be difficult to access in that it is stored in a network of tables.

To find out more about the queue technology please have a look at the SAP NetWeaver Library at help.sap.com under *Classical SAP Technologies (ABAP)* -> *RFC* or attend the SAP class BC415 (Remote Function Calls in ABAP) or BIT528 (SAP .NET Connector Programming)

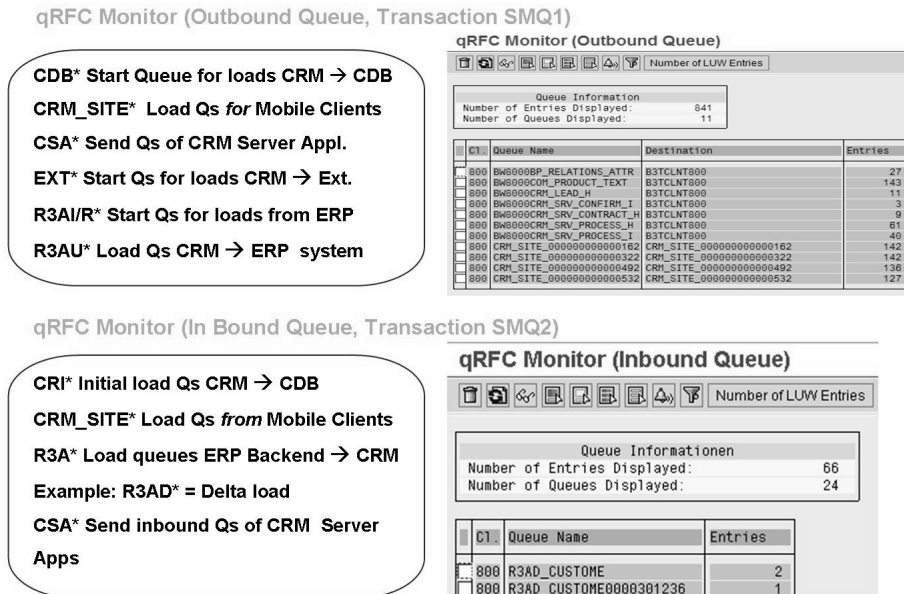


Figure 97: Naming Conventions for Primary CRM qRFC Queues

Start Queues are the queues that ask for the data to be transferred.

Load Queues contain transaction, master, customizing or condition data.

The CSA* queues are the ones CRM uses to validate the data by the CRM adapter before subsequent processing in other systems.

DIMA (**D**ata **I**ntegrity **M**anager) and BW queues also exist, but will be discussed separately.

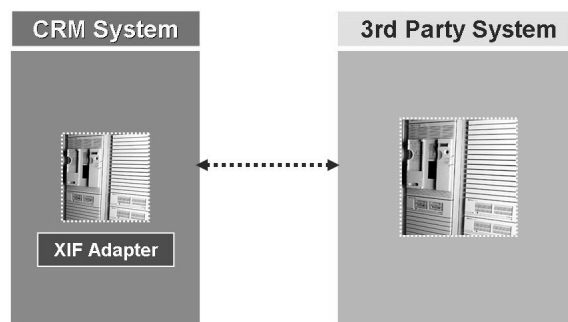


Figure 98: SAP CRM : Data Exchange with 3rd Party Systems

Data is exchanged between the CRM system and a connected 3rd Party system (SAP system, non-SAP system, legacy system, etc.) primarily via the CRM Middleware. The connectivity is realized through the XIF (eXternal InterFace) Adapter. The XIF Adapter transfers data from and to the external system usually via http(s), SOAP (Simple Object Access Protocol) and XML (EXtensible Markup Language) documents or via RFC and IDoc (Intermediate Documents) documents.

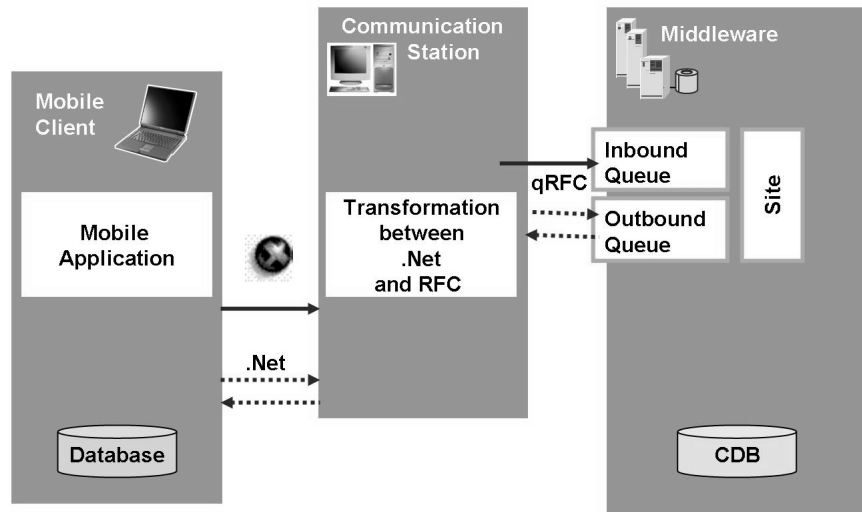


Figure 99: SAP CRM: Data Exchange with Laptops

CRM Server: The CRM Server contains the CRM Middleware, which handles the data exchange with internal applications and external major components, such as an SAP ERP Back-End, an SAP Business Information Warehouse or non-SAP systems. The CRM Middleware also synchronizes the databases of Mobile Clients with the CRM database. The CRM Server is built upon the SAP NetWeaver Application Server, formerly known as the SAP Basis.

Mobile Clients: usually laptops running the **Mobile Sales/Service Application**. Mobile Clients typically connect temporarily to the CRM Server for data exchange. They may also be permanently connected to the Server. The Mobile Clients are connected to the CRM Server via the **Communication Station**.



The CRM Server is built on top of the SAP NetWeaver Application Server that provides:

- Scalability
- Platform independence
- Full ABAP development environment
- Software logistics

The CRM Server contains:

- The CRM Server Applications
- The main parts of the CRM Middleware
- The CRM database

CRM Middleware functionality consists of:

- Data queuing and transport
- Replication and realignment
- Data exchange and mapping

Figure 100: The CRM Server

The **CRM Server** is scalable, since it is based on a SAP NetWeaver Application Server (formerly: SAP Basis System). The SAP NetWeaver Application Server provides SAP basis technology and the ABAP workbench as a development environment known to many application developers.

The CRM Server contains the **CRM Server Applications** and the main parts of the **CRM Middleware**. The **CRM database** is the central database for the CRM Server Applications.

The main parts of the CRM Middleware provide the following functionality:

- Data queuing and transport,
- Replication and realignment service, which ensures that Mobile Clients or external systems obtain the data they require
- Data exchange and mapping.

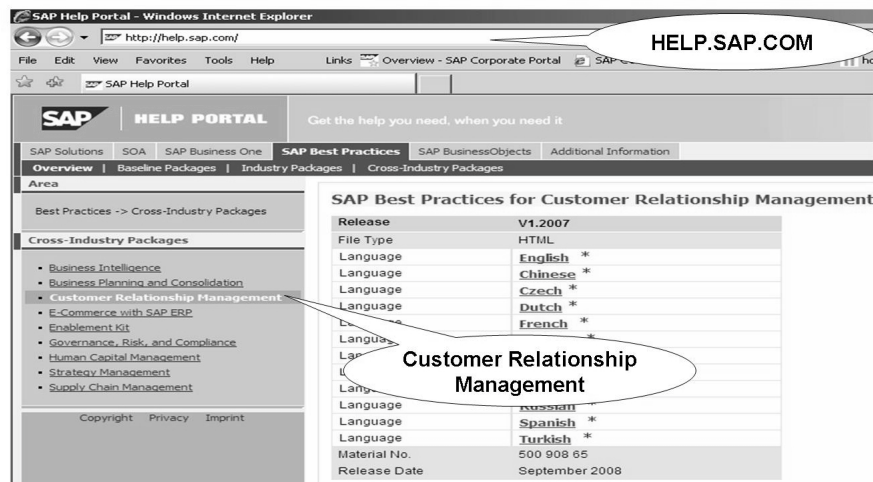


Figure 101: Best Practices I

You can show the Best Practice for CRM in the SAP Service Marketplace -> SAP Help Portal, <http://help.sap.com/bestpractices>. There you choose the Cross-Industry package CRM. Then in the menu *Technical Information* you find the building block library.

Best Practices are the best way to decrease implementation time for SAP projects. They lag behind the release level of the latest version by a few months, but even if the latest version is not available they are still quite helpful as most things stay the same.

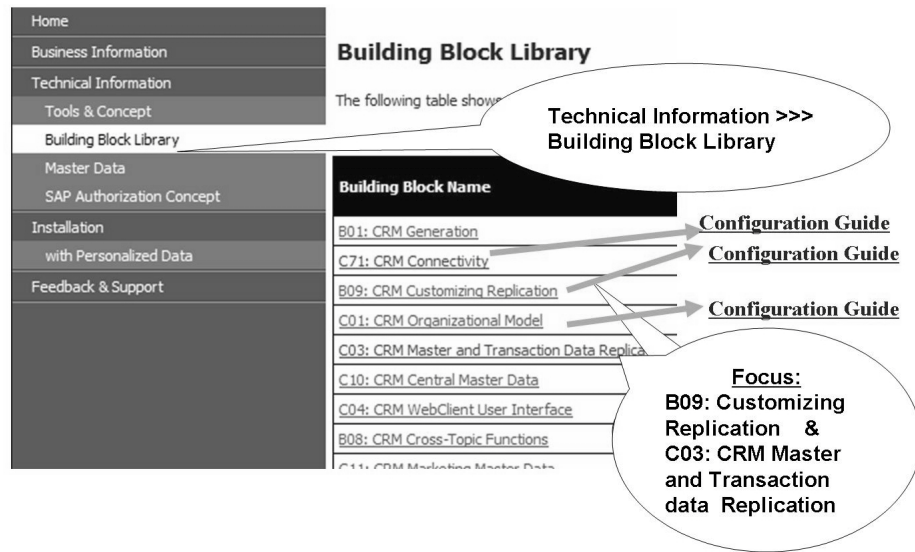


Figure 102: Best Practices II: Building Block Library (Focus on Replication)

The main Best Practice Components (Building Blocks) related to CRM Middleware are B09 (CRM Customizing Replication) and C03 (CRM Master and Transactional Data Replication). In this the latest version of CRM best practices available at the time the materials were created. This can change as new versions of best practices are created and updated.

Unit 9

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Data Exchange with ERP Backend

Unit Overview

This unit goes into detail of data exchange with ERP backend using CRM Middleware

Unit Objectives

After completing this unit, you will be able to:

- Describe the message flow for SAP R/3 backend
- Describe the connection between SAP CRM and SAP R/3
- Describe the synchronization scenarios for Customizing data
- Describe the synchronization scenarios for Business data and for Conditions
- Start data flow with CRM Middleware
- Describe the data exchange from CRM to SAP R/3

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Lesson: Introduction

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Lesson Duration: 45 Minutes

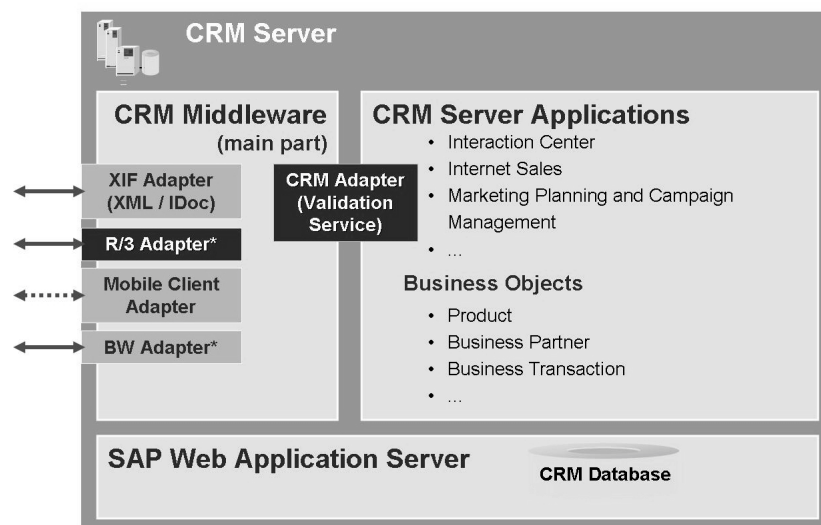
Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the message flow for SAP R/3 backend
- Describe the connection between SAP CRM and SAP R/3

Business Example



* R/3 and BW are the CRM adapter names and the names used through out CRM help and this class. Technically the current system names for these products are SAP ERP an SAP BI.

Figure 103: SAP CRM Server Architecture

The data exchange between the CRM System and **external systems** is performed via **CRM Middleware Adapters**. The adapters are mapping and converting data between various formats.

For Data Exchange with SAP Backend-Systems a R/3 Adapter is part of the CRM Middleware. The data exchange to the SAP backend is based on qRFC (queued Remote Function Calls). The R/3 Adapter converts the data into the CRM Data Container, the Business Document (BDoc).

The CRM System supports the handling of **CRM business objects**, like customers and prospects, activities and opportunities, products and product catalogs in a variety of CRM components like CRM Web Channel (Internet Sales), Interaction Center, Telesales, Campaign Management and various others. The CRM Server Applications exchange data with the CRM Middleware via the **CRM Adapter**.

The **SAP NetWeaver Application Server** is the successor to the SAP Basis System. The kernel release used with CRM 7.0 is SAP Netweaver 7.0.

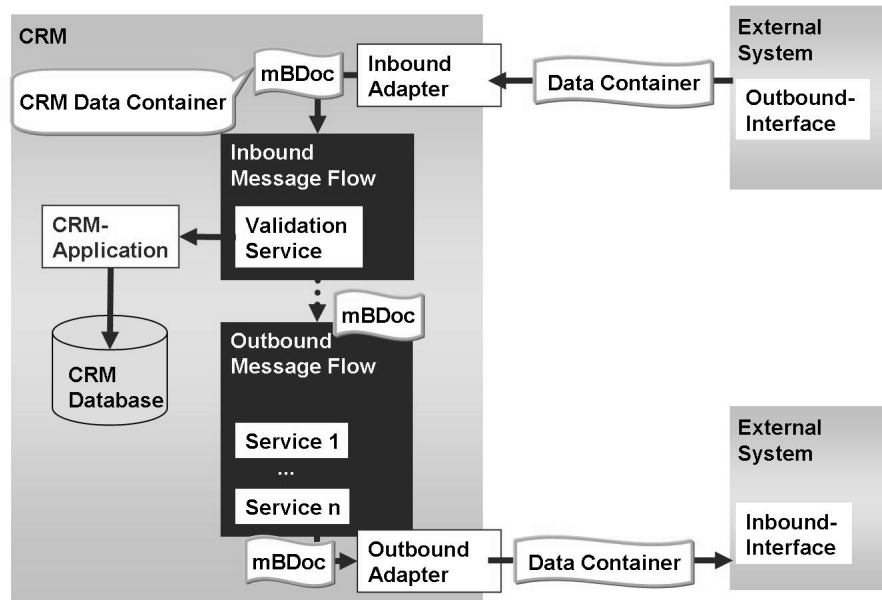


Figure 104: Message Flow Overview

Be aware that BDocs are used within the CRM Middleware and the data container used for the data transfer to and from an external system and CRM has a different structure. That was explained in a misleading way in former classes in the past. The dataflow for different examples will be explained in detail later in this unit.

Inbound processing: Incoming data of different formats, that is, BAPI structures from a SAP R/3 Backend, synchronization BDoc messages (sBDoc) from Mobile Client, XML/SOAP or IDocs from external system, are converted into messaging BDoc messages (mBDocs).

Validation: the integrity of incoming data is validated by the respective CRM application. In case of a successful validation, the data unit is passed on to outbound processing. In case the incoming data is not valid, the BDoc message will remain in the message flow with an error status.

Outbound processing: the receiving systems, for example, SAP R/3 Backend, external systems or Mobile Clients, are determined. Then the BDoc message is passed to the corresponding outbound adapter, which converts the message into the data formats of the receivers.

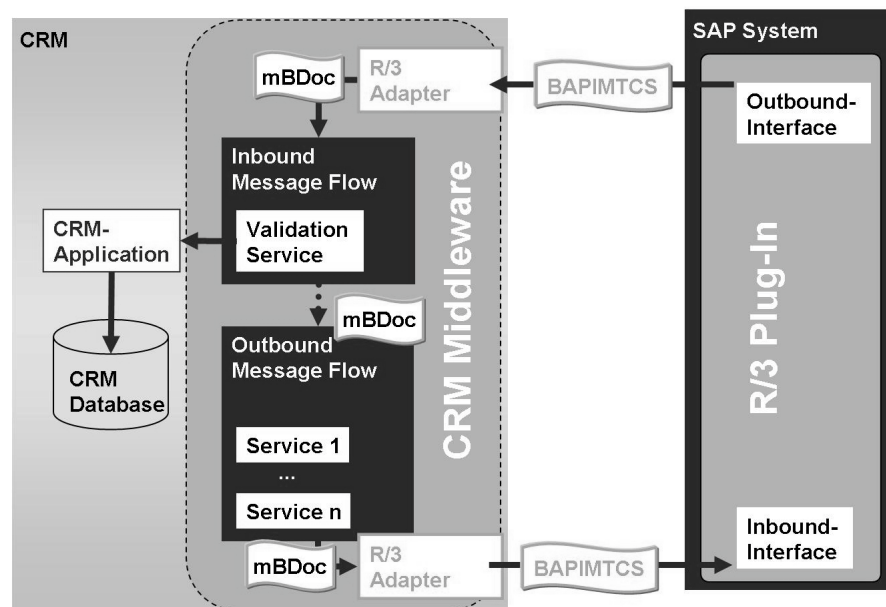


Figure 105: Message Flow for SAP R/3 Backend

Be aware that BDocs are used within the CRM Middleware and the data container used for the data transfer between R/3 and CRM has a different structure. This structure is the Business Application Programming Interface Middleware Transport Communication Structure (BAPIMTCS). That was explained in a misleading way in former classes. The dataflow for different examples will be explained in detail later in this unit.

Note: There has been a strategy change of SAP R/3 Plug-In and a new delivery strategy for Integration Interfaces:


New and extended interfaces for integrating SAP R/3, SAP R/3 Enterprise and SAP ERP Central Component (SAP ECC) will no longer be delivered with their own add-on (SAP R/3 Plug-In).

As of SAP ECC 6.0, they will be contained directly in SAP ECC.

PI 2004.1 is therefore the final separate delivered SAP R/3 Plug-In release.

For Systems lower than SAP ECC 6.0, the following applies:

The corresponding Plug-Ins (PI) have to be installed correctly in R/3 Backend systems. These Plug-Ins contain special extractors and ensure a correct data transfer even if there are different data models in R/3 and CRM.

They can check the Plugins via the menu path *System->Status* then with Icon  "Component Information". The current releases and their dependencies to the support package level can be looked up under <http://service.sap.com/r3-plugin-in>.

There exist two kinds of Plug-Ins:

1. SAP R/3 Plug-In
2. SAP Basis Plug-In

The SAP Basis Plug-In is a new software component which was introduced to deliver BW Service API technology, CRM Middleware, Supply Chain Event Manager and also Financial Basis functionality to SAP components in order to create a connection to these systems.

The SAP Basis Plug-In is an add-on which can be installed on a SAP Netweaver Application Server or any other product which is based on SAP_BASIS 620 and SAP_ABA 620 or higher.

Within SAP R/3 Enterprise, the SAP Basis Plug-In is a prerequisite for the SAP R/3 Plug-In, and both components always have to have the same release level, e.g. PI 2003_1 and PI_Basis 2003_1.

When planning an upgrade for the SAP R/3 Plug-In within SAP R/3 Enterprise, you have to upgrade the SAP Basis Plug-In as well.

When you upgrade the SAP Basis Plug-In in one system in your landscape, you do not have to upgrade the SAP Basis Plug-In in the other systems of your landscape.

The data exchange via the CRM Middleware requires that an **R/3 Plug-In (PI)** is installed on SAP R/3.

Note: New and extended interfaces for integrating SAP R/3, SAP R/3 Enterprise, and SAP ERP Central Component (SAP ECC) will no longer be delivered with their own add-on (SAP R/3 Plug-In). As of SAP ECC 6.0, they will be contained directly in SAP ECC.PI 2004.1 is therefore the final separate delivered SAP R/3 Plug-In release.

The **SAP R/3 Backend** (one or several SAP R/3 Backends) serves as

- Provider for customizing and business data (master data, transaction data, conditions, etc.)
- Receiver of business data for further execution (i.e. logistics execution)

The CRM release 7.0 can be used as a stand-alone system, that means that R/3 Backend is no longer required for the execution of CRM-related tasks.

In CRM, the R/3 Adapter communicates with the R/3 System via remote enabled functions (Remote Function Call) of the R/3 Plug-In.

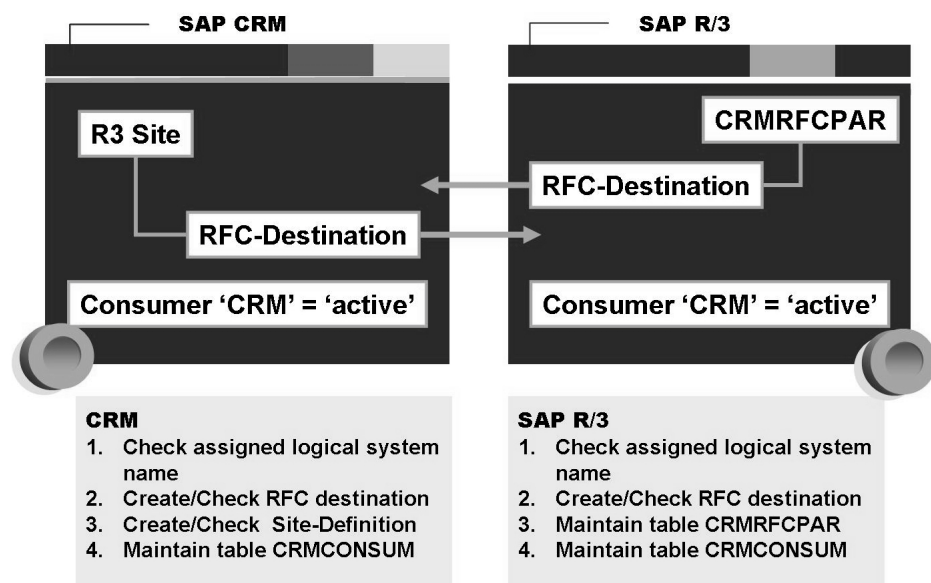


Figure 106: Connection: CRM - SAP R/3

Communication between CRM System and R/3 System is based on Remote Function Call (RFC).

On the **R/3 system** you have to create an RFC Destination to the CRM system. Then activate CRM as consumer in table CRMCONSUM and maintain the table CRMRFPCPAR. Through this table, the determination of the RFC destinations for the data transfer is connected with the consumer, client, object name and transfer type. For example, you can send data to a consumer in an initial download only, and not in a delta download.

In the **CRM system**, you have to create an RFC Destination to the R/3 backend and a R/3 Site with the tool Administration Console. The R/3 Site references the RFC-Destination. Activate R/3 OLTP as a consumer in table CRMCONSUM.

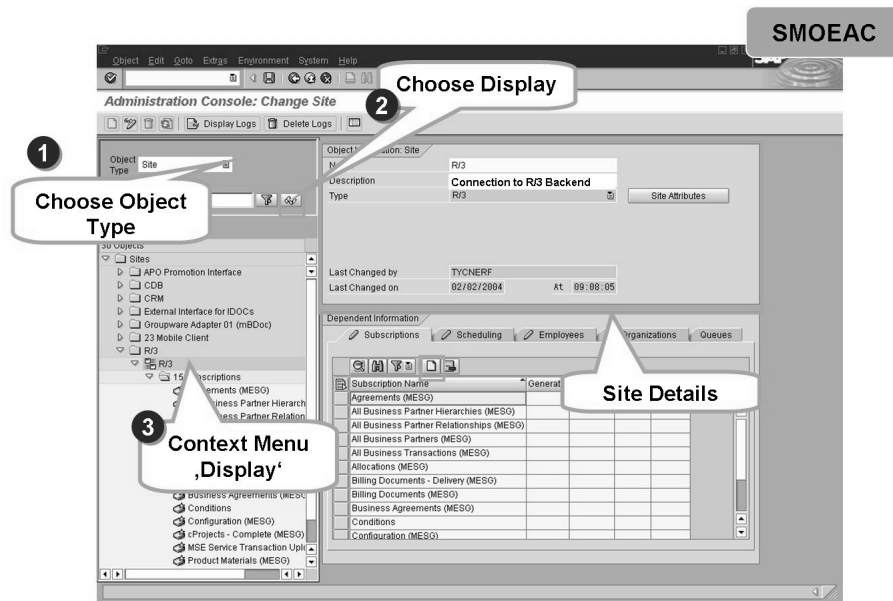


Figure 107: R/3 Site in Administration Console

The Administration Console may be accessed via the menu:

Architecture and Technology → *Middleware* → *Administration* → *Administration Console* (or via the transaction **SMOEC**).

The following steps are required to check a site within the Administration Console:

- Choose Object Type Site
- Choose Icon “Display”
- Expand node “R/3”
- Mark Site and choose the (Mouse) Context Menu “Display” or use double click to navigate to the detail view
- To find out the RFC Destination, choose icon “Site Attribute”.

The following steps are required to create a new **site**.

- Create / Check the RFC-Destination from the CRM system to the R/3 System with transaction SM59 in CRM. Test the RFC connection and ensure, the RFC User in the R/3 System has appropriate authorizations.
- Create Site in Administration Console:
 - Select the button Create
 - Provide the site details, such as: site name and a site description, select the site type “R/3”.
 - Specify the site attributes depending on the site type, for example, an RFC destination for R/3 Backends.
 - Finish the creation process by choosing the *Save* button

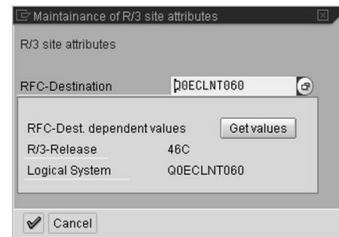
There are SAP roles that specify the authorization within the Administration Console:

- Role SAP_CRM_MWAC_ADMIN_ALL for full authorizations
- Role SAP_CRM_MWAC_SITE_CHANGE for maintenance of sites

- Sites are administered via the Administration Console (transaction SMOEAC)

- Creation of an R/3 site:

- ◆ Choose type R/3



- ◆ Site attributes for R/3 sites

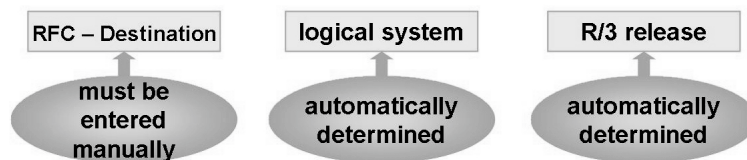



Figure 108: Site Attributes for R/3 Site

Show the existing site for the R/3 system. It's not possible to create the same site with the same parameters again.

R/3 Sites are determined by an RFC destination, a logical system, release of the R/3 Backend, the release of the Plug-In and the according Support Package (SP) of the Plug-In.

Four steps are required to create a new **site**.

- Find out name of RFC Destination to R/3 System and test the destination. Create a new destination if necessary.
- Start Administration Console and select the Create button .
- Provide the site details, such as
 - A site name and a site description,
 - Select the site type R/3 Backend,
 - Specify the site attributes depending on the site type, for example, an RFC destination for R/3 Backends.
- Finish the creation process by choosing the *Save* button.

There are two SAP roles that specify the authorization to create or maintain objects within the Administration Console:

- role SAP_CRM_MWAC_ADMINISTRATOR for employees, sites, organizational units and subscriptions and
- role SAP_CRM_MWAC_CUSTOMIZER for replication objects and publications.

Demonstration: Introduction

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Demonstrate how to check assigned logical system name: use transaction SM30, table T000 choose display and navigate to detail view of client 800. You may also find the corresponding entry when executing transaction SCC4.
 2. Display content of CRMCONSUM and CRMRFPCPAR with SM30, too.
 3. Logon to the CRM System. Explain, that the steps are identical to R/3 to check logical system name and CRMCONSUM. Navigate in Admin Console and display R/3 Site and the Site Attributes.
-

Lesson: Customizing Synchronization

298

Lesson Duration: 40 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the synchronization scenarios for Customizing data

Business Example

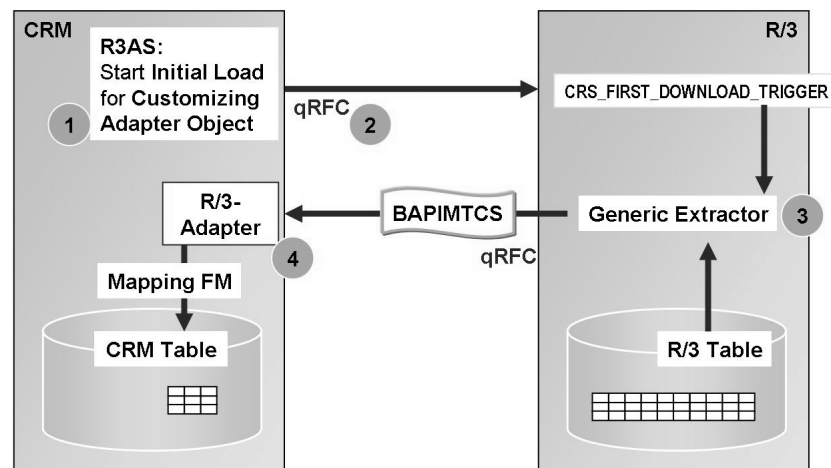


Figure 109: Initial R/3 to CRM Load of Customizing Data

For some Customizing Objects there is a Mapping delivered via R/3 Adapter and CRM Middleware. BDocs are involved, if the customizing data have to be distributed to mobile clients, only. Mention table SMOFTABLES in CRM in order to find a download object if you only know the R/3 table.

Hint: For most of the Customizing Objects there are no BDocs involved. The Customizing tables are synchronized within the mapping function module before the Middleware flow is started.

For several Customizing Objects, there is a predefined data transfer from R/3 to CRM available, even if the structure of the Customizing tables are different in R/3 and CRM. The data of one or more database tables are grouped in Customizing Adapter Objects. The data of a Customizing Adapter Object can be transferred from R/3 to CRM system with an initial load. Within this section, the Customizing Adapter Object will be explained in detail. You can use the download monitor (transaction R3AM1) to control the initial load.

Example: Customizing Adapter Object DNL_CUST_KTOKD

- R/3 Table T077D and T077X
- CRM Table CRMC_T077D and CRMC_T077X,
- Mapping Function Module CRM_BUPA_MAP_KTOKD_CI.

R/3: CRMSUBTAB: Name of the generic Extractor for Objects of Object class CUSTOMIZING: CRS_CUSTOMIZING_EXTRACT

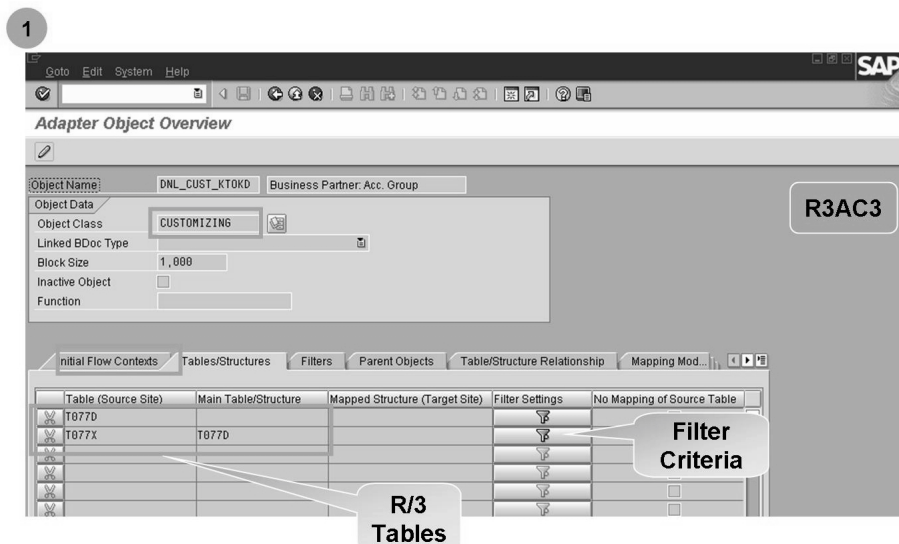



Figure 110: Customizing Adapter Object (1)

Use *Architecture and Technology* → *Middleware* → *Data Exchange* → *Object Management* → *Customizing Objects* or Transaction R3AC3 to display Customizing Adapter Objects in CRM.

All Customizing Adapter Objects are assigned to Object Class CUSTOMIZING.

In the *Initial Flow Contexts* tab, you find the supported CRM Middleware Flow Context with source and target Sites.

In the *Tables/Structures* tab, you find the names of the database tables to in the source system.

To create filter criteria, choose the Icon *Filter Settings*  in tab *Tables/Structures*. The next graphic explains how to create filter criteria.

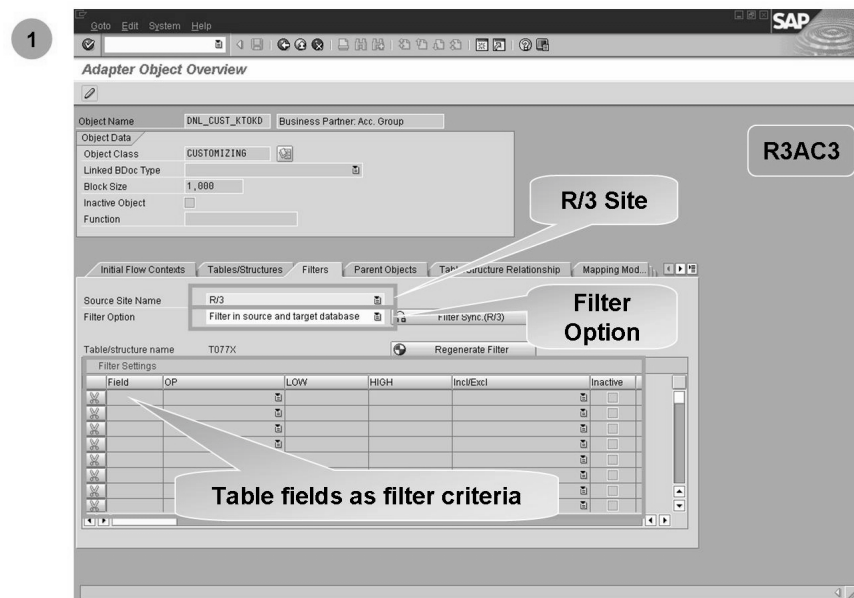


Figure 111: Customizing Adapter Object (2)

Specify the R/3 Site. The site has to be created beforehand in the Administration Console (SMOEC), because the corresponding RFC destination will be used for synchronization.

Specify the table fields for the where clause within the data extractor in R/3.

Specify the Filter Options (Options: Filter in source and target database, filter only in target database, filter only in source database).

Save the Filter criteria. The Filter criteria will be automatically synchronized with R/3.

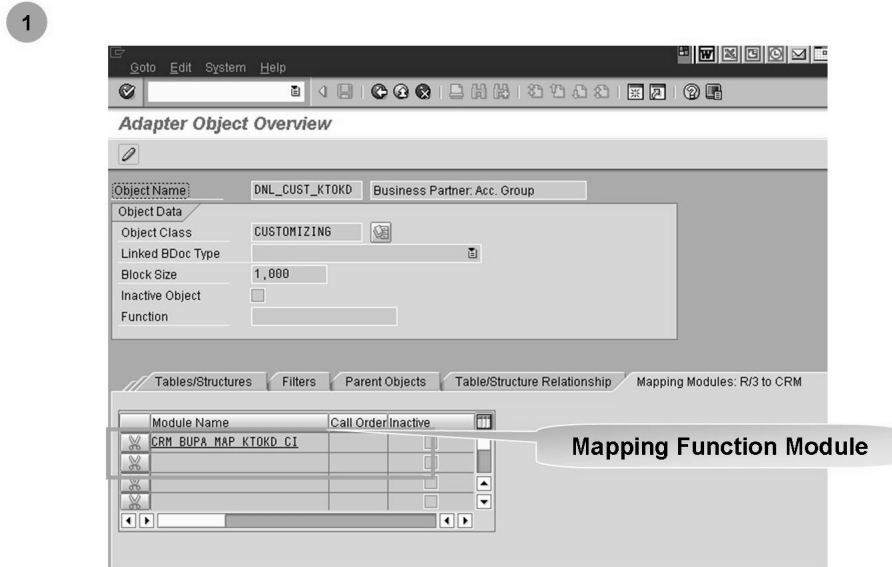


Figure 112: Customizing Adapter Object (3)

The Customizing data is transported to the CRM System via qRFC in generic structure BAPIMTCS. The Mapping Function Module maps this data to the structure of the CRM table and updates the CRM Table.

There is no mBDoc created and no Message Flow started.

The load of a Customer from R/3 to CRM failed due to missing "Terms of payment". Now what do I?

1. Find table in R/3 for the Associated data in the Customizing or in the Application.
The Customizing table is T052
2. In CRM access table "SMOFTABLES". Search for entries via the field "R3TABNAME" with the table value T052.

This table has all the adapter objects and the sending and receiving table names.

The result is the adapter object DNL_CUST_PRICE
3. Perform a Request Load for this object, using transaction R3AS.

Figure 113: Finding the Adapter Object Involved: SE16 on table SMOFTABLES

Demonstrate the exercise that follows at the end of this unit.

Show R3AM1. Show table in CRM.

Customizing tables do not always have SAP supplied adapter objects. For example the regions table does not have a supplied customizing object.

You can build your own adapter object to transfer data if you feel it is necessary. In your exercise you will transfer a custom table with a customized adapter object not supplied by SAP.

Using Best Practices, a list of adapter objects and when to execute them is provided.

In our training system, the ERP system has a payment term Z500. Z500 is not yet in the CRM system. Using a search for *Terms of payment* in transaction SPRO this can be shown. Please let your **instructor** demo the execution of the Initial Down Load of payment terms to pass this customizing data to CRM, using transaction R3AS.

In addition to the missing “Terms of Payment Z500”, you will have an exercise to find the adapter object for “Academic Titles”

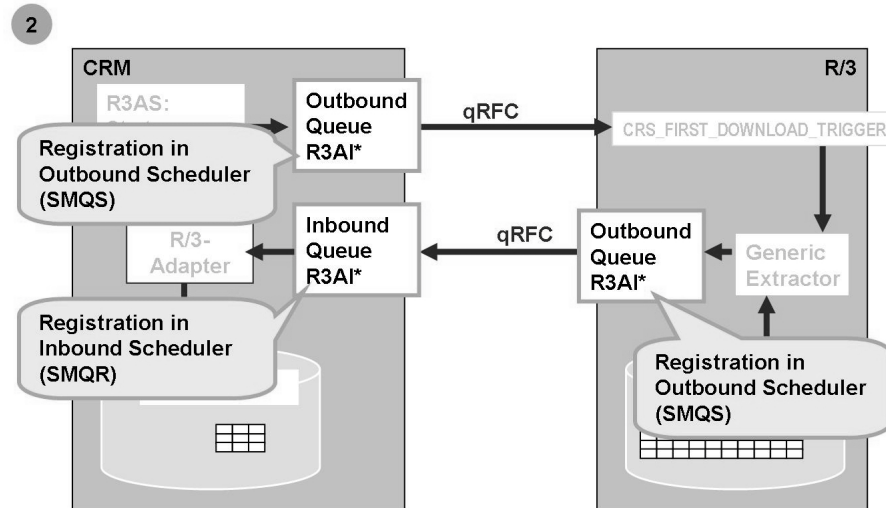


Figure 114: Inbound and Outbound Queues for Customizing Adapter Objects

When you start an initial load with transaction R3AS for a specific customizing adapter object, the data request is sent from the CRM system to the R/3 Backend via qRFC.

The naming convention for the qRFC queues used in initial load is R3AI_<Customizing Adapter Object> (R3A: R/3 Adapter; I: Initial Load)

Runtime behavior:

- You start the Initial Load for single Customizing Adapter Object in CRM System via transaction R3AS
- The started report transfers the data request to the R/3 system. The RFC Destination of the corresponding R/3 Site is used for the data transfer. For Customizing Data the data request contains the names of the R/3 Customizing Tables and the filter conditions
- Within R/3 the generic extractor for Customizing data selects the database tables assigned to the Customizing Adapter Object and triggers the data transfer per qRFC.
- The data is transferred to the CRM Server via qRFC (function module BAPI_CRM_SAVE)
- The R/3 Adapter converts the data to the structure of the CRM customizing table and stores the data to the database.

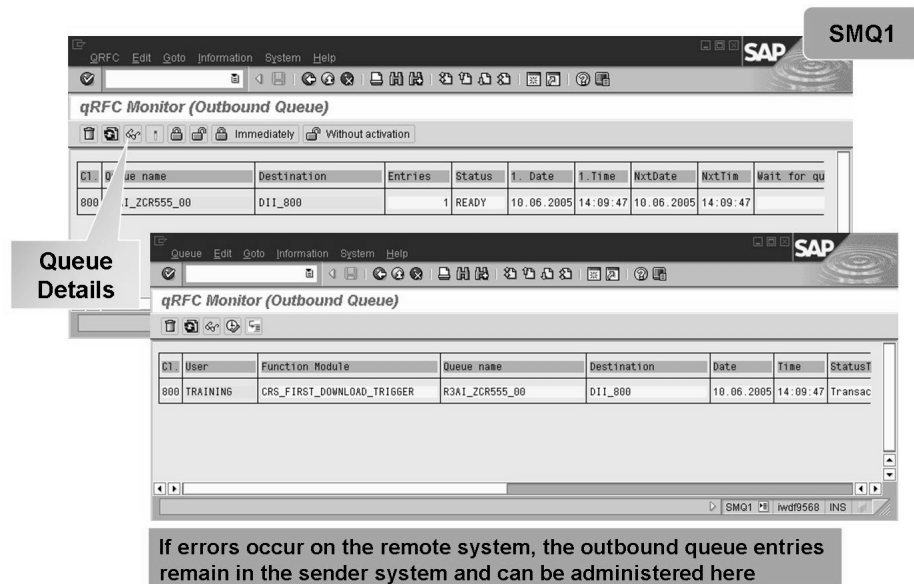


Figure 115: qRFC Outbound Queue Monitoring: SMQ1

To access the Outbound Queue Monitor, go to *Middleware* → *Monitoring* → *Queues* → *Display Outbound RFC Queues* or use transaction **SMQ1**.

Although the LUWs (Logical Unit of Work) belonging to a queue are stored in the tRFC tables ARFCSSSTATE and ARFCSDATA, you cannot maintain or display these LUWs using tRFC monitoring (Transaction SM58). You must use the outbound queue administration transaction **SMQ1**.

The outbound queue data (queue attributes and pointers to the relevant LUWs in the tRFC tables) is stored in table TRFCQOUT, which you can display and maintain using Transaction SMQ1.

The following functions are available:

- List queues
- Display queues, including a list of associated LUWs and function modules (with input data)
- Start/stop transmitting the queues
- Delete queues or queue entries (**Warning:** deleting queues might cause inconsistencies).

If an error occurs in a LUW on the remote receiver system, the function modules of the queue entries are rolled back there. The relevant LUW and all of the other LUWs in the queue remain in the queue and in the tRFC tables on the sender system. After correcting the error, you can use Transaction SMQ1 to transmit the LUW of the queue again (via *Edit* → *Execute LUW*).

You find detail information about qRFC status in note 378903.

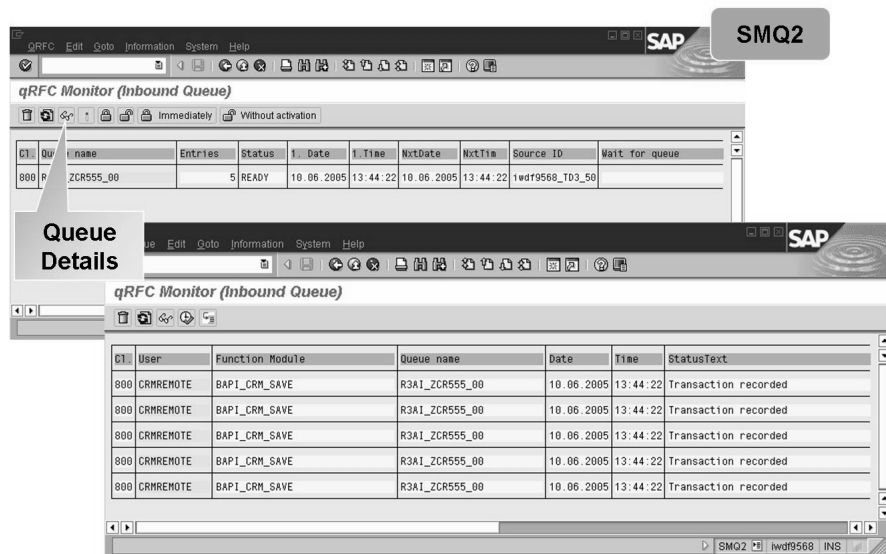


Figure 116: qRFC Inbound Queue Monitoring: SMQ2

To access the Inbound Queue Monitor, go to *Middleware* → *Monitoring* → *Queues* → *Display Inbound RFC Queues* or use transaction **SMQ2**.

The LUWs belonging to a queue are stored in the tRFC tables TRFCQIN, TRFCQSTATE and TRFCQDATA. However, you **cannot** maintain or display these LUWs using tRFC monitoring (Transaction SM58). You **must** use the inbound queue administration transaction **SMQ2**.

The inbound queue data (queue attributes + pointers to the relevant LUWs in the tRFC tables) are stored in table **TRFCQIN**. The status you can find in table **TRFCQSTATE**, the data in table **TRFCQDATA**. You can display and maintain the inbound qRFC using Transaction **SMQ2**. The following functions are available:

- List queue
- Display queues with a list of accompanying LUWs and function modules including input data
- Start/stop transmitting the queues
- Delete queues or queue entries (**Warning**: deleting queues might cause inconsistencies).

If an error occurs in a LUW, the function modules of the queue entries are rolled back there. The relevant LUW and all dependent other LUWs in the queue remain in the queue and in the inbound qRFC tables. After correcting the error, you can use Transaction **SMQ2** to transmit the LUW of the queue again.

You find detail information about qRFC status in note 378903.

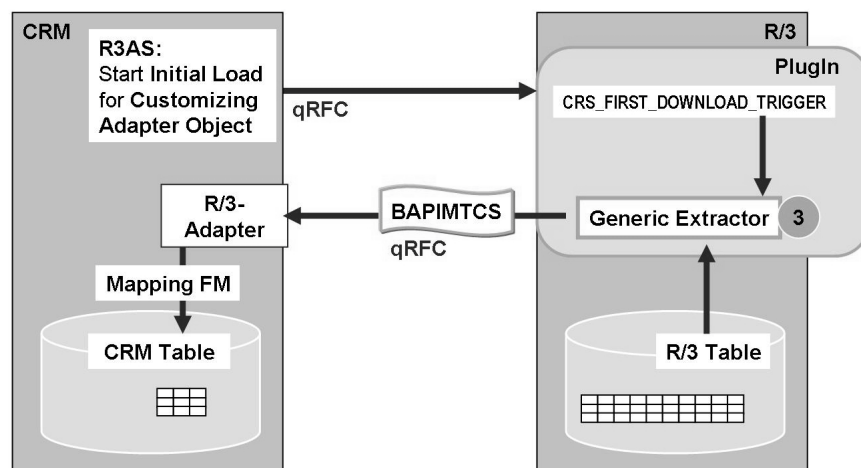


Figure 117: Generic Extractor for Customizing Data

You find the name of the generic Extractor in table CRMSUBTAB:

Start transaction SM30 in R/3.

- Choose table CRMSUBTAB.
- Search for Object Class CUSTOMIZING and Download.
- The Function module CRS_CUSTOMIZING_EXTRACT is assigned in column Function Name.

CRM will store the name of the customizing tables assigned to the customizing adapter object to the generic extractor. The generic extractor checks the filter criteria and selects the data from the customizing tables. The data will be converted to transfer structure BAPIMTCS. This data package will be transferred per qRFC to the R/3 Adapter of CRM.

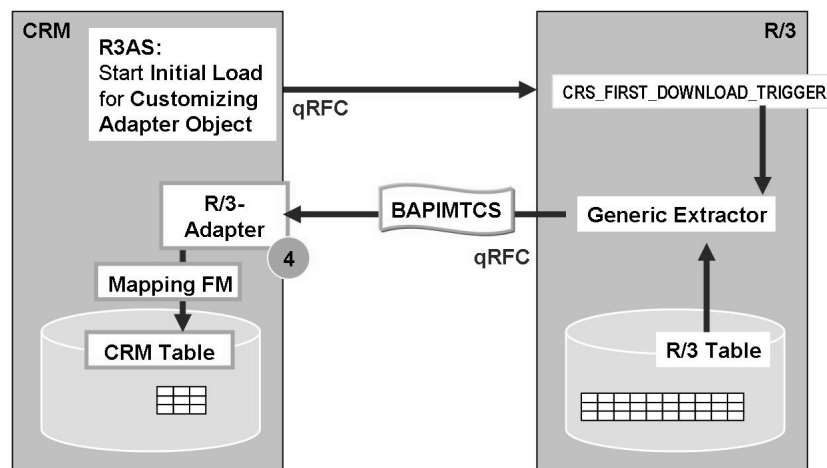


Figure 118: Inbound Processing in CRM System

Note: Perform demonstration “Initial Load of customizing data”

The R/3 Adapter calls the Mapping Function Module for the specific Customizing Adapter Object and passes the data container to the function module. The Mapping Function Module converts the BAPIMTCS data into the structure of the CRM customizing tables and updates the tables. The mapping rules are implemented within the Mapping Function Module.

- Conditions are used in sales and billing and tax processing.
- Examples of Condition types include: Gross Price “PR00” or Customer Discount “K007”.
- The conditions are stored in Condition Tables, for example table “007”.
- In the exercise, you entered a value for condition type K007 for your customer in this table.
- The pricing or billing or tax determination process works by “accessing” these tables looking for the appropriate condition types and their values. For example:
- Is there a discount for Product “X” and Customer “Y” ? Is there a “loyalty” discount for the customer “Y”? Should they be combined?

Best Practice Building Block: CRM Master and Transaction Data Replication (C03) has extensive information on conditions.

To view the ERP condition table customizing use transaction “V/05”.

For more information about the Customizing download of the condition technique, see SAP Help Portal under *SAP Customer Relationship Management* → *Components and Functions* → *Basic Functions* → *Pricing* → *Condition Technique* → *Data Exchange for Conditions*.

- There're Condition Customizing objects and Condition Master Data objects in the object management.
- The Condition Types, the Searching Rules (access Sequences) and Pricing & Tax Determination Procedures are customizable.

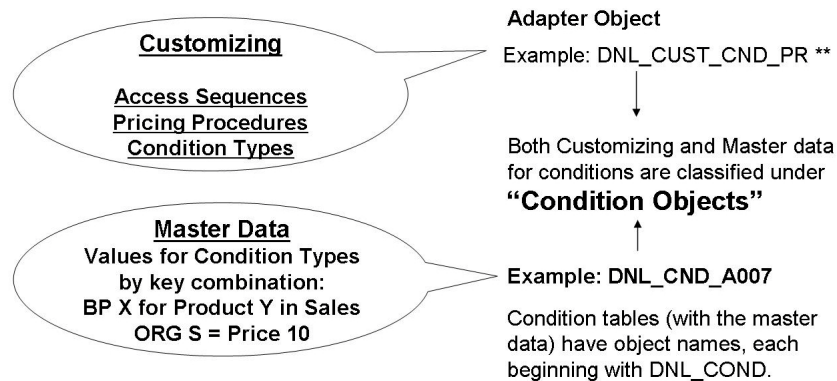


Figure 119: Transferring Conditions: II

Other adapter objects for customizing conditions also apply as the condition technique is used for much more than just Pricing (PR). For example **CUSTOMIZING CONDITION OBJECTS** include:

DNL_CUST_BON (Rebate usage: rebate agreement types, condition maintenance groups)

DNL_CUST_CAD (Campaign determination usage: condition type list, exclusion groups)

DNL_CUST_CND (Rebate, campaign determination, free goods, pricing, and product determination usages: maintenance control, metadata condition tables, access sequences, condition types)

DNL_CUST_CNDALL (Rebate, campaign determination, free goods, pricing, and product determination usages: maintenance control, metadata condition tables, access sequences, condition types, procedures, exclusion groups, pricing element upper/lower limits)

DNL_CUST_CND_BO (Rebate usage: maintenance control, metadata condition tables)

Lesson: Download from ECC to CRM

322

Lesson Duration: 90 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the synchronization scenarios for Business data and for Conditions
 - Start data flow with CRM Middleware
-

Business Example

Initial Load R/3 to CRM

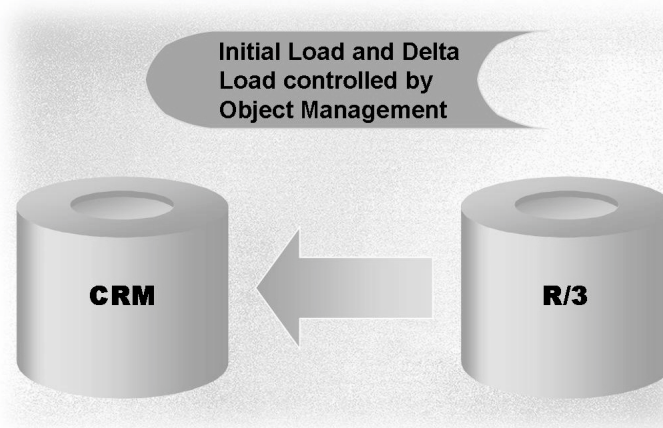


Figure 120: Data Exchange Between an R/3-Backend and CRM

Load Objects can be exchanged between a source and a target system, for example, between an SAP R/3 Backend and the CRM Server. Examples are business partner master data and product master data. They are grouped as follows:

- Business objects; transaction R3AC1
- Customizing objects; transaction R3AC3
- Condition objects; transaction R3AC5
- The objects are stored in the table SMOFOBJECT.

Please consider that the question of which objects are loaded to which target systems depends on the business process and has to be defined for each application. Generally, Initial Loads and Delta Loads may be performed from R/3 to CRM and vice-versa.

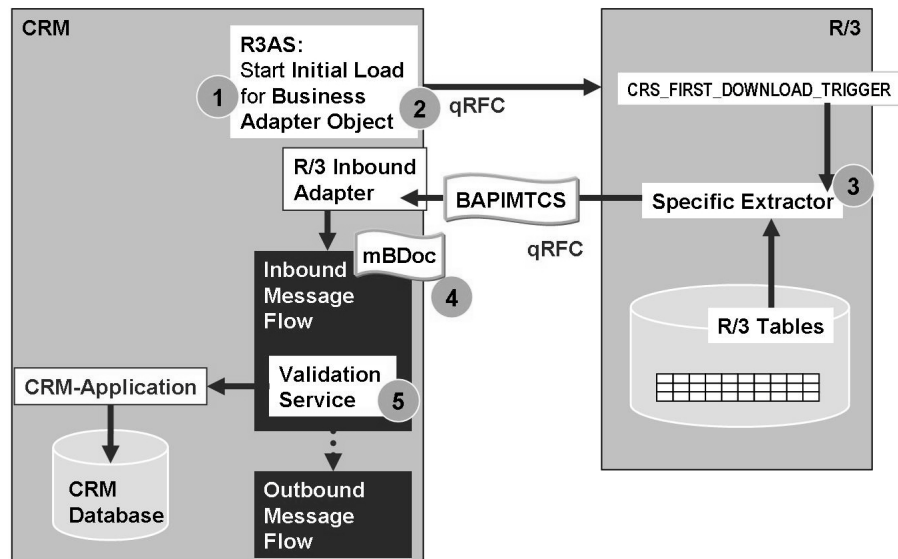


Figure 121: Initial Load R/3 to CRM for Business Data

The steps of the data flow and corresponding configurations are explained in the next slides in the order of the numbers on this slide.

The data flow for initial download consists of the following steps:

- With the CRM transaction R3AS, an initial download trigger is raised.
- The RFCs are queued and processed in a sequence (dependent or independent objects).
- In the back-end system, a function module call (object specific extractor module call) is used to extract the requested data.
- A BAPIMTCS data container is created with the selected data to be sent to the CRM Middleware server.
- The data is transferred to the CRM System using qRFC.
- In the R/3 Adapter, the data is mapped to a mBDoc and then passed to the Inbound Message Flow.
- The Inbound Message Flow triggers the validation service. The data is passed through the CRM Adapter to the CRM Application. The CRM Application validates the data and updates the relevant CRM database tables. After successful validation, the outbound message flow is triggered.

For information about initial download performance, see SAP Note 350176.

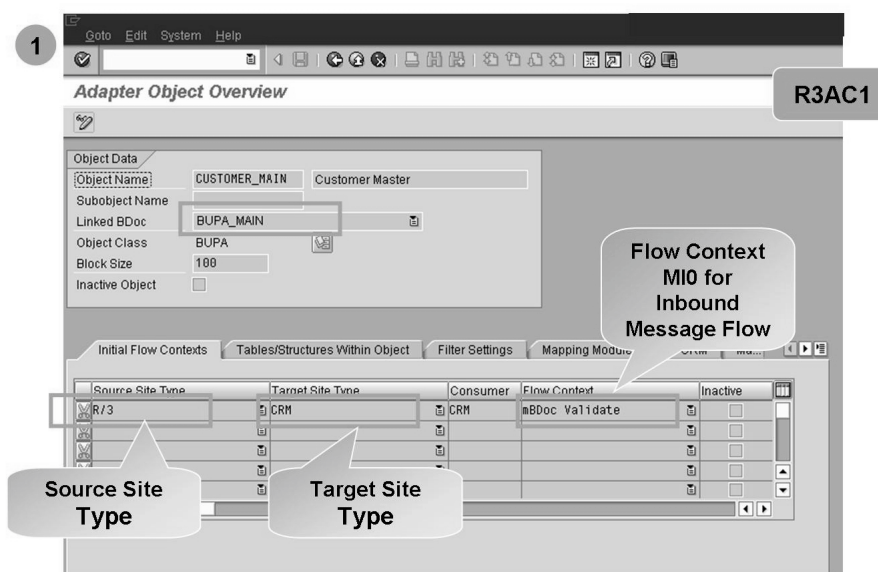


Figure 122: Business Adapter Objects (1)

Demonstrate in the CRM System directly. Take Solution to exercise Business Adapter Objects Delta load into account.

1. R3AC1, show adapter object CUSTOMER_MAIN for R/3 customer master data
2. Explain source/target site, linked BDoc type, tables, filters, mapping module
3. Set as filter condition on table KNA1, Field: KUNNR, Value: 000000255. Save and show that the filter conditions are written to table CRMFILTAB (either in SAP CRM or SAP ECC)

You can display and maintain Business Adapter Objects with transaction R3AC1. In *Initial Flow Contexts* tab, you find the supported source and target site types and the corresponding Flow Context.

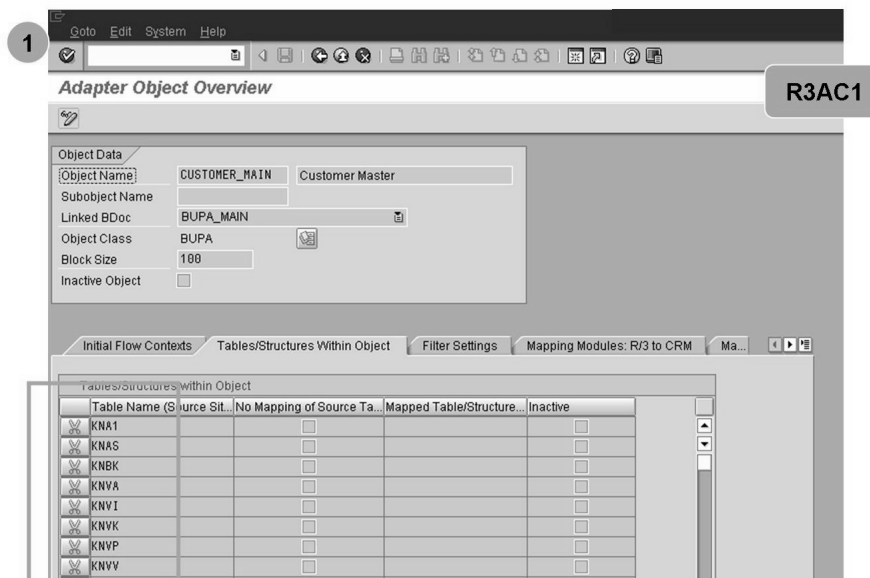


Figure 123: Business Adapter Objects (2)

In *Tables/Structures Within Object* tab, you find the names of some of the R/3 tables used by the extractor.

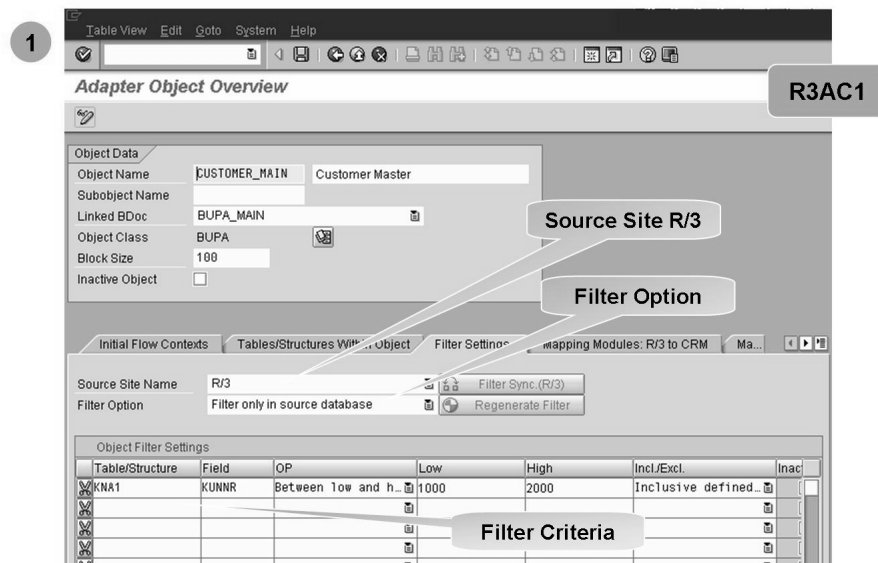


Figure 124: Business Adapter Objects (3)

Filter options are set in the CRM system and allow the filtering of business objects in the source system only, in the target system only or in both the source and the target system. However, business data is usually filtered in the source system to reduce the amount of data transmitted from R/3. In this case, the filter criteria is applied before the data is sent to the CRM Server.

Purpose:

- Reduce the data volume between the R/3 Backend and the CRM Server
- Keep the R/3 specific data within the R/3 Backend

Filter settings are part of customizing the system.

The transaction to specify the filter criteria can be found under: *Middleware* → *Data Exchange* → *Object Management* → *Business Object* (transaction R3AC1). Choose a business object and *Filter Settings* tab. You can use all predefined fields (stored in table SMOFFILFLD) .

Saving a filter entry triggers the automatic transfer to the Plug-In in R/3. The CRM system uses the RFC destination of the corresponding Site. Therefore a site to R/3 has to be maintained first (transaction SMOEAC). Filter settings are stored in table SMOFFILTAB and refer to table fields. Within R/3 the filter settings are stored to database table CRMFILTAB.

The filters are also used for Delta Loads (R/3 Backend to the CRM Server).

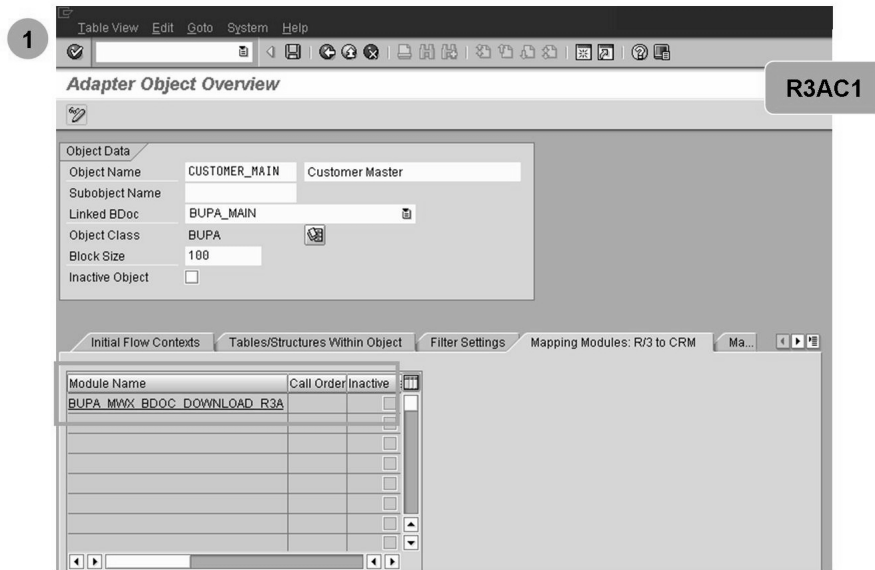


Figure 125: Business Adapter Objects (4)

In *Mapping Modules: R/3 to CRM* tab, you find the function module that converts the BAPIMTCS data into a messaging BDoc.

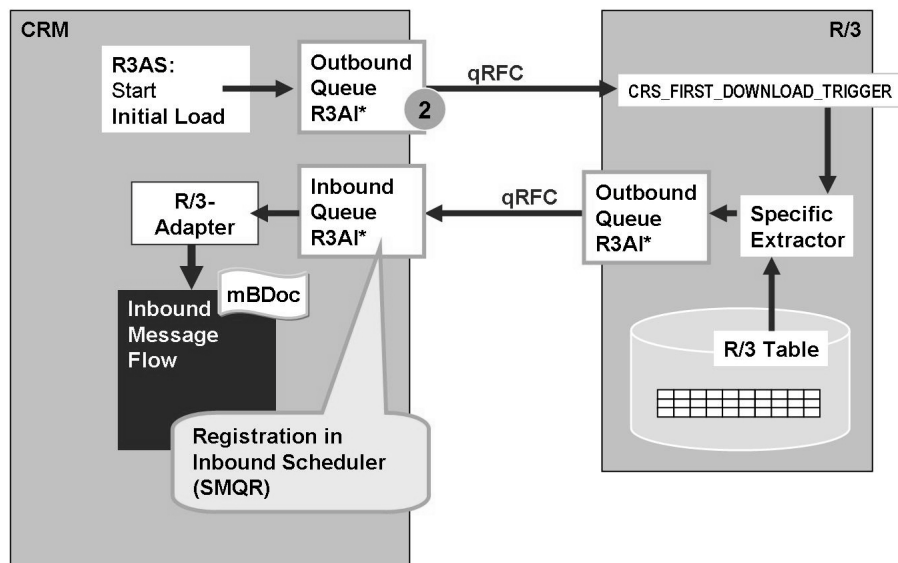


Figure 126: Inbound and Outbound Queues for Business Adapter Objects

Explain the data flow step by step

The data transport is based on qRFC technology.

The naming convention for the qRFC queues used in initial load is R3AI_<Business Adapter Object> (R3A: R/3 Adapter; I: Initial Load).

The specific extractor for business data selects the database tables assigned to the Business Adapter Object and triggers the data transfer per qRFC.

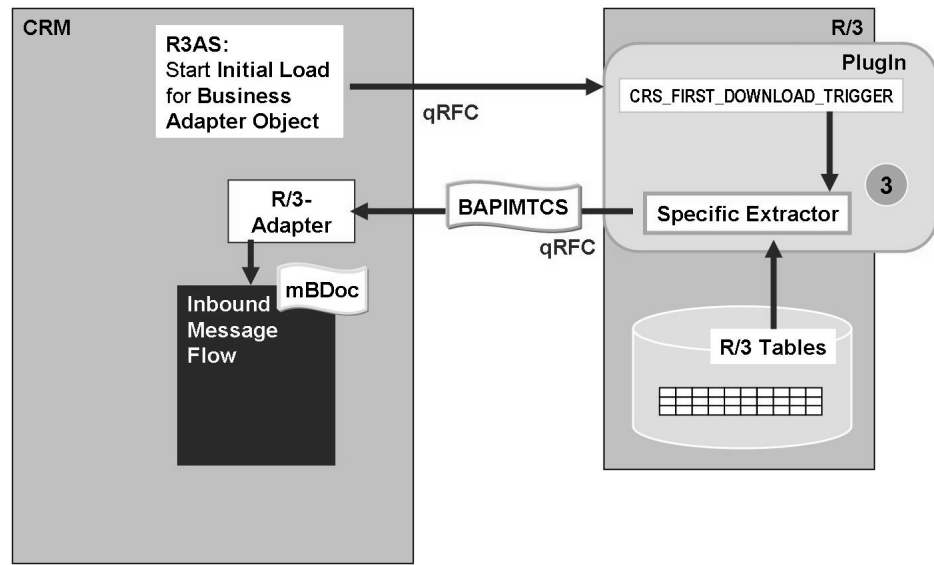


Figure 127: R/3 (Plug-In): Object Specific Extractor

Explain the data flow step by step

You find the name of the object specific extractor in table CRMSUBTAB in R/3.

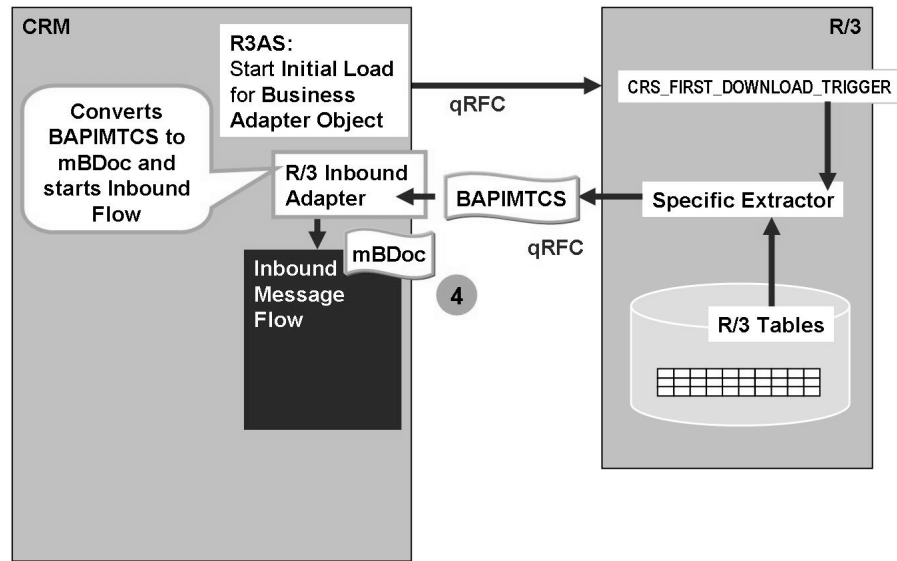


Figure 128: R/3 Inbound Adapter

Explain the data flow step by step

The R/3 Inbound Adapter creates a messaging BDoc (mBDoc) and converts the data from BAPIMTCS data container into the mBDoc structure. Then the Inbound Message Flow starts.

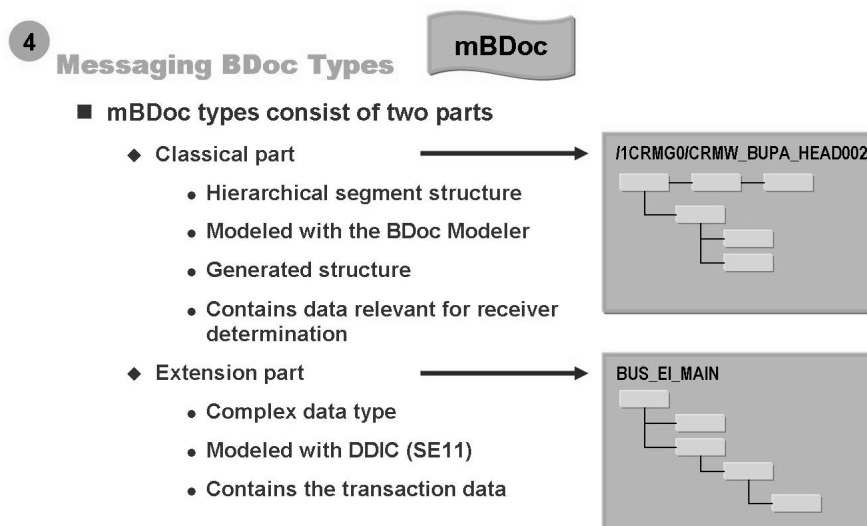


Figure 129: BDocs: Messaging BDoc Types (1)

Mention that an mBDoc is like an envelope, where the outside is like the classical part while the inside is hidden like the complex datatype is hidden for the Middleware.

A messaging BDoc consists of up to two parts:

Part 1: classical part

- This part is mandatory.
- The classical part consists of a BDoc header and segments, which may be arranged in a hierarchical fashion. The segments of the classical part are not mapped to database tables.
- This part is to be modeled with the development tool **BDoc Modeler** (Transaction SBDM).
- Only the classical part is used to determine the receivers of mBDoc messages.

Part 2: Extension part

- This part is optional.
- The complex data type is modeled with the Data Repository Tools (Transaction SE11, Data Dictionary).
- The extension does only exist for messaging BDocs.
- The extension part is used to hold delta or extract data intended to pass into the CRM Server application (inbound case) or to send to remote systems (outbound case).
- The extension part cannot be used for receiver determination.

When replicating data (for example, from CRM to R/3), a messaging BDoc type is like an envelope, with data inside the envelope (Extension part) which CRM Middleware cannot access, and data on the envelope (classical part), which the CRM middleware can access. Each application uses different address information, so that, for example, sales orders can be routed according to the sales organization to different back-end systems.

4

Messaging BDoc Types (continued)

- **Two simple replication types are supported**
 - ◆ Simple intelligent replication = by definition of replication rules
 - ◆ Simple bulk replication = everybody gets all or nothing
- **No storing of the replicated objects status**
- **No realignment supported (data cannot be redistributed here)**
- **No dependencies supported**

Figure 130: BDocs: Messaging BDoc Types (2)

Mention that an mBDoc is like an envelope, where the outside is like the classical part while the inside is hidden like the complex datatype is hidden for MW.

Replication characteristics are consistent with the transient nature of the mBDoc, that is, only the whole BDoc can be either distributed to all possible recipients (bulk replication) or to a few of them (simple intelligent replication). It is not possible to select certain parts of the mBDoc for replication and exclude others as is the case for sBDocs that are designed for the mobile world. In the mobile world, there is a large number of databases so that more sophisticated data distribution techniques - such as realignment - are useful. This is not valid for the data exchange for messaging BDocs (mBDocs) ; because of the simple replication, no distribution data are stored in tables and therefore, a realignment for messaging BDocs is not possible.

4 BDoc Modeler: Transaction SBDM

SBDM

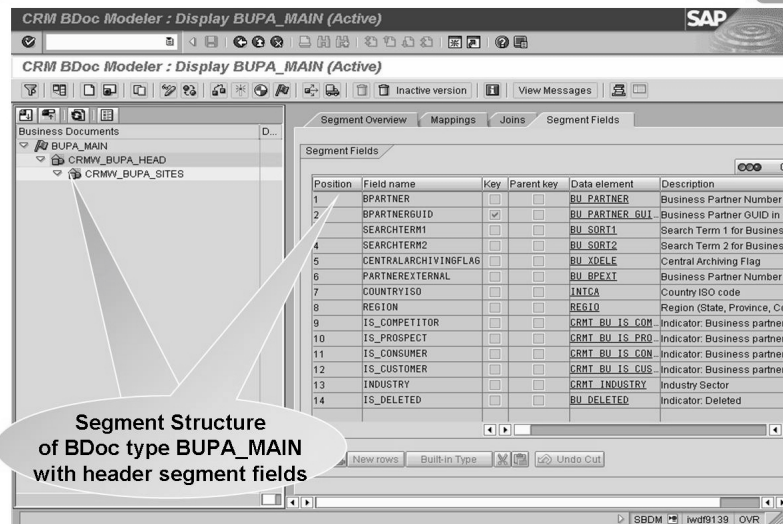


Figure 131: BDocs: Exploring a BDoc Type

The **BDoc Modeler** (Transaction SBDM) is a development tool used for displaying, creating, and enhancing BDoc types.

The existing BDoc types are listed in the BDoc overview (navigation tree) of the BDoc Modeler. Here you can select and expand a BDoc type to display its structure. The structure shows the hierarchy of the data segments.

Note: Note that the definition and enhancement of BDoc types require knowledge of the application. The CRM Middleware does not have the business logic to create or enhance BDocs. From this point of view, it is just a data container to transport and process BDoc messages.

BDoc modeling features:

- Modeling of messaging BDoc types
- Assignment of one or more synchronization BDocs type to a messaging BDoc type (n:1 relationship)
- Assignment of site types (see Data Exchange unit) to synchronization and messaging BDoc types.

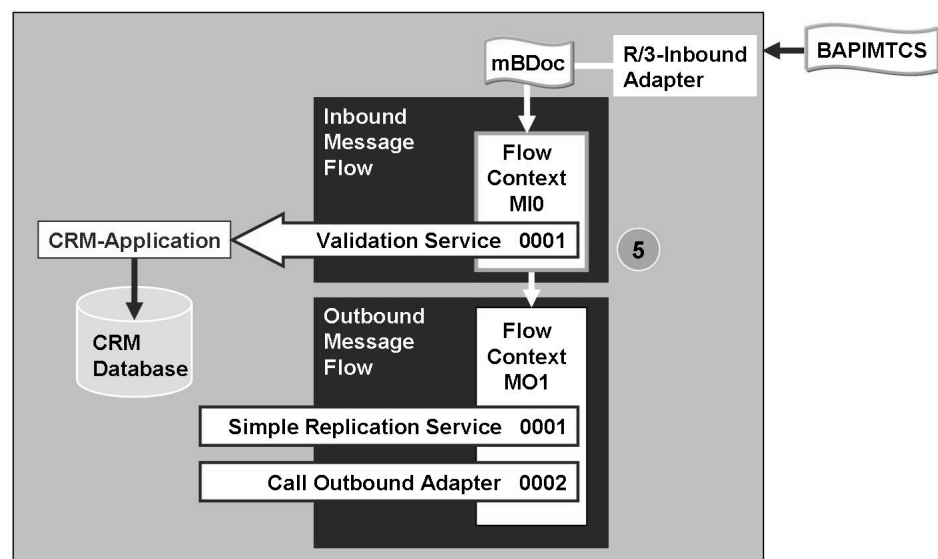


Figure 132: Flow Context for Inbound Message Flow: MI0

For the inbound message flow, there is only one service available: the validation service. We will explain the concept of flow context in detail with the outbound message flow.

You find the name of the validation function module per mBDoc Type in transaction SMW3FDIF.

For example: For mBDoc BUPA_MAIN (Object Business Partner) the validation service is implemented with function module CRM_BUPA_MAIN_VAL

After successful validation, the middleware starts the corresponding outbound message flow with flow context MO1 or MO2 in case of mass processing. Usually the flow context MO1 contains the following services:

- Simple Replication Service: This service is looking for valid receivers interested in the data. The configuration of subscriptions is explained in detail in *Business Data Upload* section.
- Call Outbound Adapters. This service is calling the adapter object and the outbound queue.

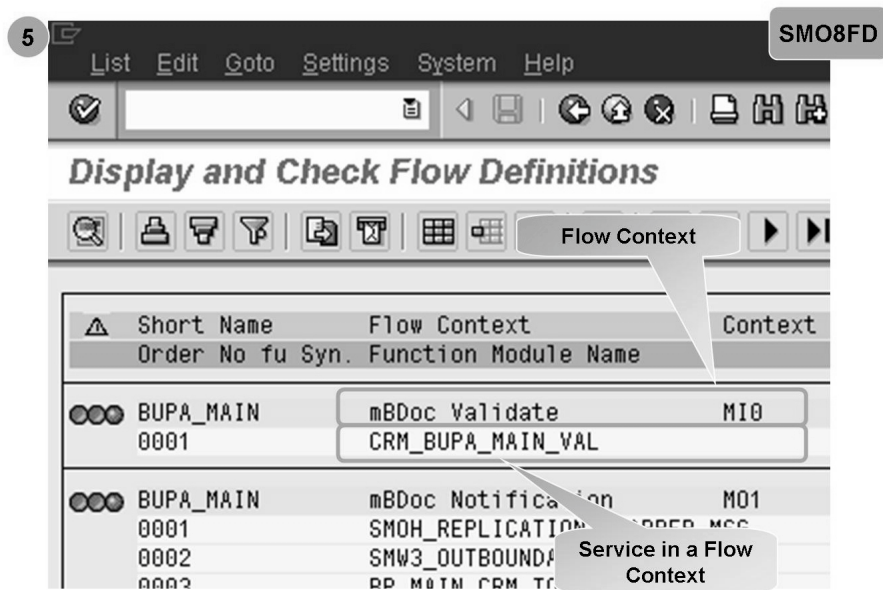


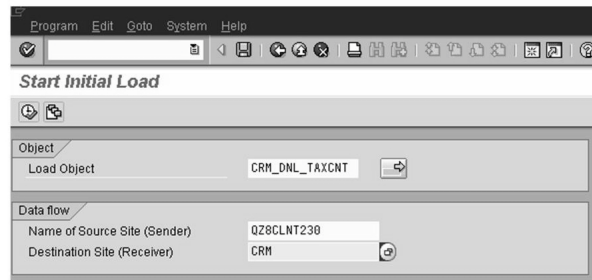
Figure 133: View Flow Contexts

The available flow contexts for a BDoc Type may be viewed via the transaction *Middleware* → *Message Flow* → *Display and Check Flow Definitions* (SMO8FD).

Each flow context consists of a sequence of services (function modules).

The messaging flow context:

- **M10 Validate** (MI: Messaging flow Inbound): Synchronization inbound flow, XML adapter, Groupware adapter and R/3 adapter pass data to the CRM database. For initial load from SAP R/3, the validate method is called before the notification method.



- Select the object(s) to be loaded from the R/3 backend or from the CRM database
- Select the source and target sites
- Start the initial load

Figure 134: Starting the Initial Load

Demo: Start the initial load for Adapter Object CUSTOMER_MAIN (keep in mind, that a filter condition is set, i.e. for one specific customer).

Demo of the transactions R3AM1 and SMW01.

The transaction to start the Initial Load can be found under:
Middleware → Data Exchange → Initial Load → Start (R3AS).

If the initial load does not finish successfully, consult SAP Note 429423, which gives useful advice for a **general error analysis**.

Monitoring the Initial Load: Monitoring tools:

- Monitoring Initial Load: **R3AM1**
- qRFC-Monitoring:
 - Outbound Queue Scheduler: **SMQS**
 - Outbound Queue: **SMQ1**
 - Inbound Queue Scheduler: **SMQR**
 - Inbound Queue: **SMQ2**
- BDoc Monitoring:
 - BDoc Details: **SMW01**
 - BDoc Summary: **SMW02**
- Middleware Trace: **SMWT**
- Middleware Monitoring Cockpit: **SMWP**

To **monitor the initial load** call:

Middleware → Data Exchange → Initial Load → Monitor Objects (R3AM1).

The data sent from SAP R/3 can be found in the **inbound queue** in the CRM Server (transaction code SMQ2). The data will only be saved in the **outbound queue** in SAP R/3 if the connection has been interrupted or the parameters have been set specifically to do this (transaction code SMQ1).

The *Middleware Trace Monitor* is a tool to track message flows, record events from this and provide information for evaluation. It can be accessed either from transaction *Display BDoc Messages* (SMW01), through menu path *Middleware* → *Monitoring* → *Message Flow* → *Display Middleware Trace* or directly with Transaction SMWT.

You may also use the **Middleware Monitoring Cockpit** to view the status of Initial Loads. The Middleware Monitoring Cockpit can be accessed via *Middleware* → *Monitoring* → *Central Monitoring* → *Monitoring Cockpit* (SMWP).

You can use this function to display BDoc messages in an aggregated view on the basis of various criteria.

SMW02

BDoc Type	State	Description	Context	Text	Site ID	Counter
BUPA_MAIN	E02	Partially send,	M01	mBDoc Notification		1
BUPA_MAIN	001	Sent to receive	M01	mBDoc Notification		7
BUPA_MAIN	001	Sent to receive	M04	mBDoc Direct Send		1
BUPA_REL	001	Sent to receive	M02	mBDoc Notification Multip		5
BUS_TRANS_MSG	001	Sent to receive	M01	mBDoc Notification		17
CAPGEN_OBJ_WRITE	F02	Confirmed (full)	S01	sBDoc Notification		1
CUST_HIERARCHY	F04	Confirmed (full)	S01	sBDoc Notification		1

From the aggregated view, you can call up the individual display of BDoc messages by choosing a BDoc Type.

Figure 135: Display BDoc Message Summary

There is also an overview function of BDoc messages: *Middleware* → *Monitoring* → *Message Flow* → *Display BDoc Message Summary* (Transaction SMW02). A list of BDoc messages aggregated according to BDoc types and message status displays. The *Counter* column displays the number of messages.

Mention the CRM Best Practice document C03 CRM Master and Transactional Data Replication

Remind them you talked about best practices before.

Detailed information about the parallel processing of the initial download can be found in the CRM Best Practices document *C03 CRM Master and Transactional Data Replication* and SAP Note 350176.

Delta Load R/3 to CRM

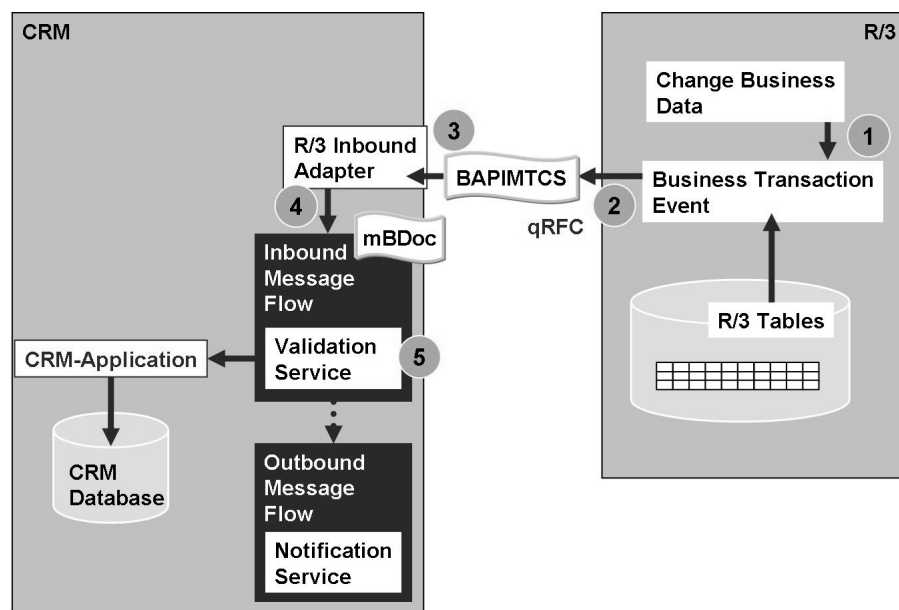


Figure 139: Delta Load R/3 to CRM: Data Flow

The steps of the data flow and the corresponding configuration are explained in the following slides in the order of the numbers.

The **delta loads** allow a continuous synchronization of predefined adapter objects (except customizing data) between R/3 backends and the CRM server, that means that data updates are sent to the CRM Server **immediately**. Received data is processed automatically. qRFC is used for the serialization.

The delta load is activated by the Middleware automatically after a successful started Initial Load.

More information about the general analysis of the delta load from the R/3 Backend to the CRM server consult SAP Note 430980. To analyze the Delta Load from the CRM Server to the R/3 Backend, refer to SAP Note 431345.

The data flow is best explained through an example (changing customer master data):

- After changing and saving a customer or contact within the R/3 dialog program, the business transaction event (BTE) 1321 is raised.
- The complex data structure is then translated into BAPIMTCS structures. The filter deletes all data that do not comply to the filter conditions maintained within CRM transaction R3AC1. Afterwards, the logical destination is determined from the customizing table CRMRFPCPAR.
- An outbound queue in R/3 with the queue name R3AD_* is created. Next the outbound scheduler sends the LUW data to the qRFC inbound queue of the CRM system.
- The R/3 adapter in CRM maps the BAPIMTCS structures into an mBDoc.
- The Middleware Flow calls the validation service. It looks in table SMW3BDOCIF for the application function module that validates and saves the BDoc data. Example, for BUPA_MAIN the validation function is CRM_BUPA_MAIN_VAL.

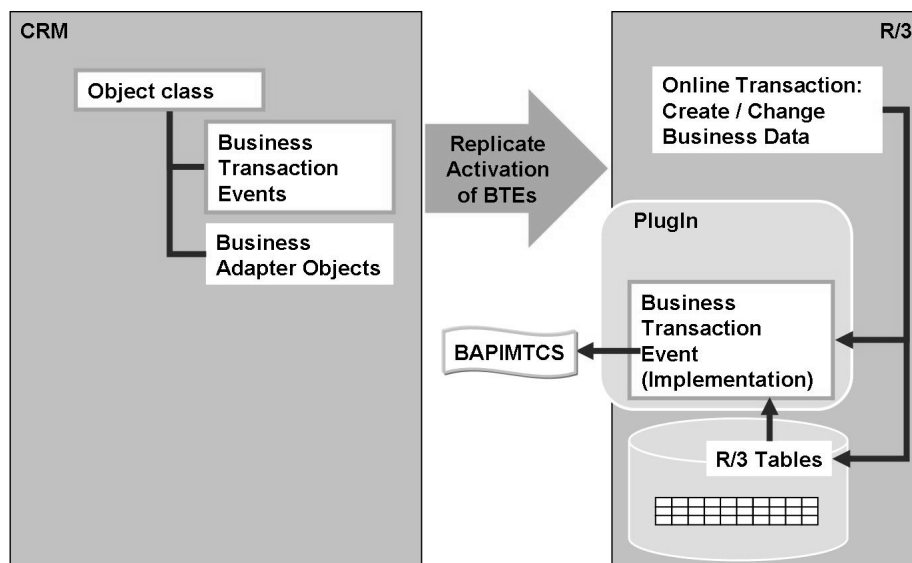


Figure 140: Object Classes

Demonstrate in the CRM System directly how to find out the Object Class for a special Business Adapter Object (transaction R3AC1) Show transaction **R3AC4** – mention that activation happens after an initial download automatically.

The object class controls the activation and deactivation of delta loads for groups of Business Adapter Objects. The Business Adapter Objects can be assigned to an object class. Additionally, names of Business Transaction Event (BTE) are assigned to the object class.

You can maintain object classes in transaction R3AC4.

The implementation of the Business Transaction Events is part of the R/3 Plug-In.

If a BTE is activated in R/3, the program to maintain Business Data will trigger the BTE when updating a database table. The BTE converts the data into BAPIMTCS structure.

You can see which BTEs are available in table TBE31 in R/3. This table can be accessed through transaction FIBF. Go to *Environment* → *Info system (P/S)* → *SAP Applications*.

You can check, whether the BTEs are activated for a single application in table TBE11. Choose transaction FIBF *Environment* → *Identification* → *SAP Applications*. CRM Extractors are usually assigned to application BC-MID.

You can deactivate Delta Load on Adapter Object Level in table CRMRFPCPAR in R/3 Backend.

Starting an Initial Load from an R/3 Back-End activates the Delta Load in the R/3 Plug-In (BTEs)

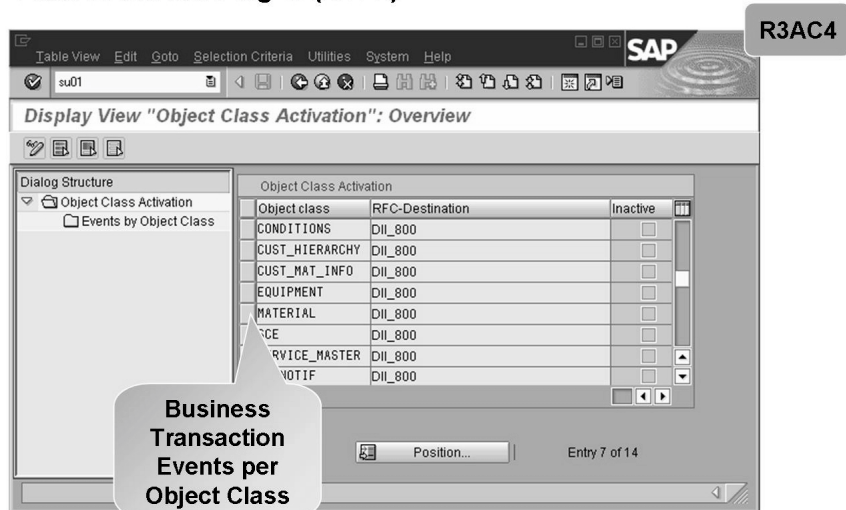


Figure 141: Activating the Delta Load

Demonstrate or explain the most important settings similar to exercise .

It is not necessary to demonstrate the data flow of the delta load, because the students will do this in the next exercise. 1. Check transaction R3AC4 for object class BUPA 2. Show table TBE31 in R/3 for object BUPA and use transaction FIBF, environment -> Infosystem (P/S), enter the numberof BTE with leading zeros, execute. It displays theactive components.

The delta load is automatically activated after a successful Initial Load. You can check the activated BTEs in R/3 with transaction SM30 in the database table TBE31.

Manual (de)activation of BTEs is possible with the transaction:
Middleware → Data Exchange → Delta Load from R/3 Back-End → Set Up Delta Load (R3AC4) in the CRM system.

Sometimes it can make sense to activate the delta load for certain objects without having performed an initial load first. For an Internet Sales scenario, for example, it may not always be necessary to load already processed sales orders from an R/3 backend to the CRM server. In this case, it is sufficient to manually activate the delta load for sales orders.

Deactivation of the delta load for an object class will be automatically synchronized with R/3 backend.

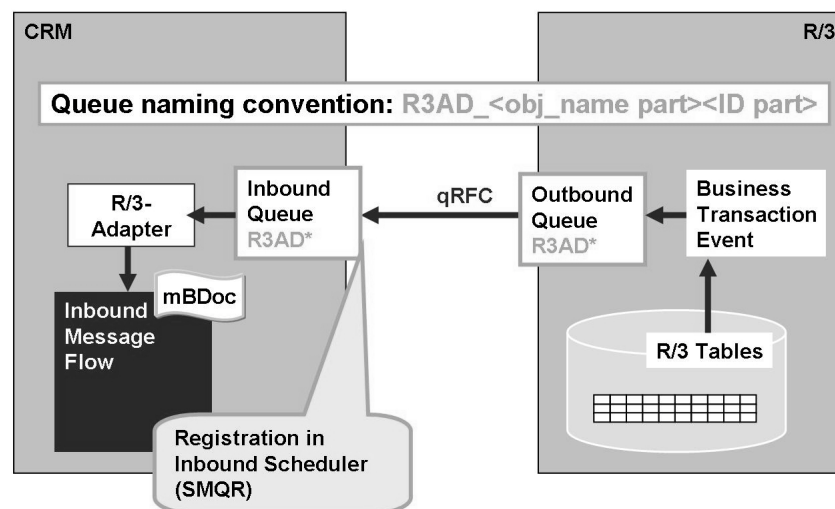


Figure 142: Delta Load R/3 to CRM: Data Transfer per qRFC

Lesson: Upload from CRM to ECC

355

Lesson Duration: 50 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the data exchange from CRM to SAP R/3
-
-

Business Example

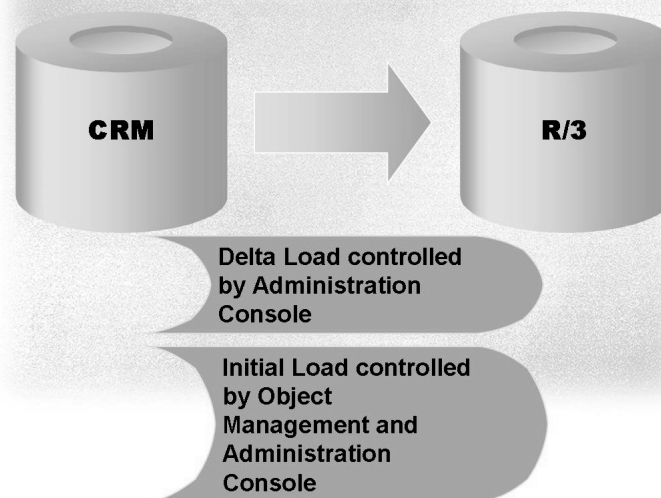


Figure 145: Data Exchange from CRM to R/3-Back-End

Load Objects can be exchanged between a source and a target system, for example, between an SAP R/3 Backend and the CRM Server. Examples are business partner master data, orders, and product master data. They are grouped as follows:

- Business objects; Transaction R3AC1
- Customizing objects; Transaction R3AC3
- Condition objects; Transaction R3AC5

The objects are stored in the table SMOFOBJECT.

Please consider that the question of which objects are loaded to which target systems depends on the business process and has to be defined for each application. Generally speaking, initial loads and delta loads may be performed from R/3 to CRM and vice-versa (and CRM to CDB in case of a mobile scenario). Examples:

- Conditions will only be loaded from the R/3 Backend to the CRM Server.
- Sales orders will usually be loaded from CRM Server to R/3 Backend for further execution. There is no initial load, only a delta load.
- The delta load from the CRM Server to the R/3 Backend is defined via the assignment of R/3 sites to subscriptions.

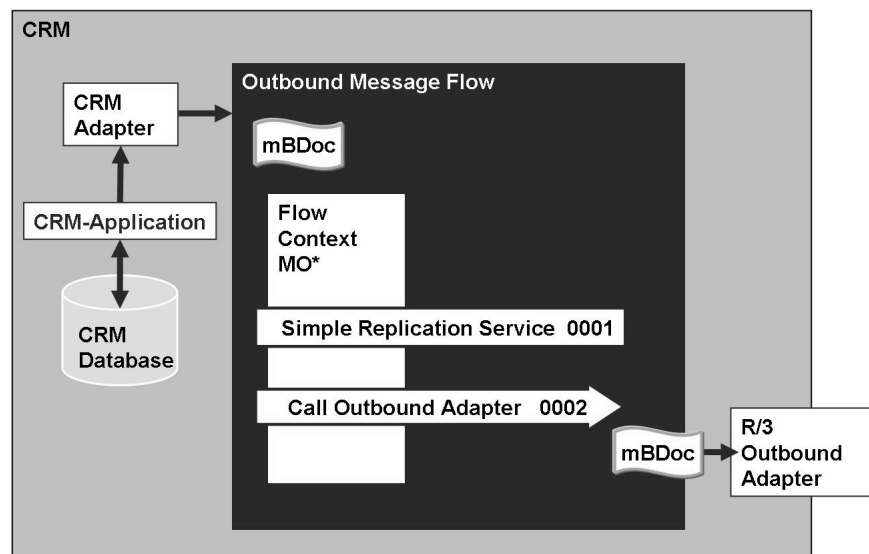


Figure 146: Outbound Message Flow

The simple replication service determines which systems should receive the message. This could be one or more R/3 or non-SAP systems.

Initial Load CRM to R/3

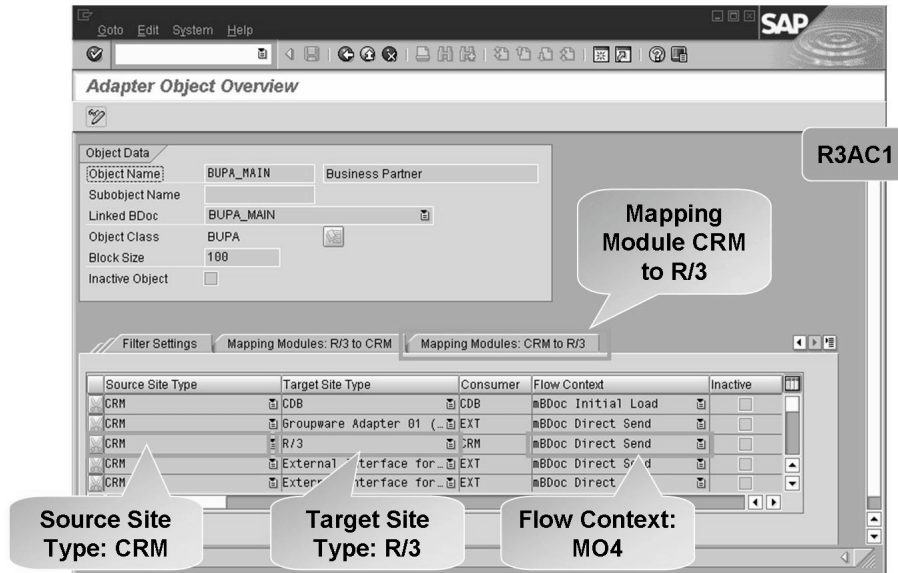


Figure 147: Business Adapter Objects

Demo: Business Adapter Object “BUPA_MAIN” in transaction R3AC1. You may want to show the initial upload for one business partner. Then set the filter conditions accordingly. Table: BUT000 Field: PARTNER Operator: Equality (=Low) Value: 0000000255

You can display Business Adapter Objects with transaction R3AC1.

The upload scenario is supported for a Business Adapter Object, if there is an initial flow context available with CRM as source site type and R/3 as target site type. The corresponding flow context is MO4.

In *Mapping Modules CRM to R/3* tab, you find the function module used for the transformation of the business data to the BAPIMTCS data container.

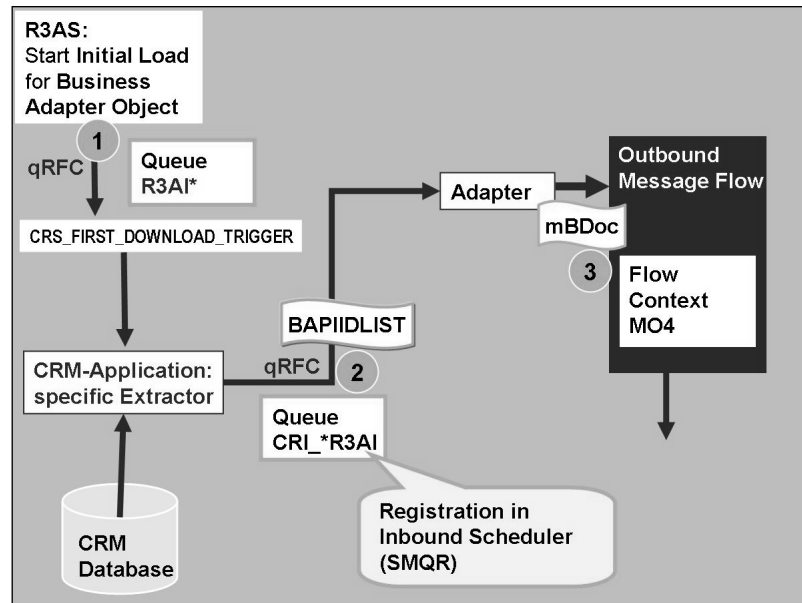


Figure 148: Initial load CRM to R/3: Data Extract in CRM System

You start the initial upload with transaction R3AS. Choose the business adapter object, CRM as source Site type and R/3 as target Site type:

- The Report for the initial load calls the function module CRS_FIRST_DOWNLOAD_TRIGGER per qRFC. The naming convention for the Queue is R3AI*
- The function module CRS_FIRST_DOWNLOAD_TRIGGER calls the Business Adapter Object specific Extractor. You can find out the name of the extractor from customizing table CRMSUBTAB. Search for the specific consumer and the name of the Adapter object in column OBJNAME.
- The Extractor function module selects the GUIDs of the relevant data and transfers the List of the IDs per qRFC to the Adapter. The name convention for the Queue is CRI*R3AI.
- As next step the mBDocs messages are created and passed to the Outbound Message Flow.

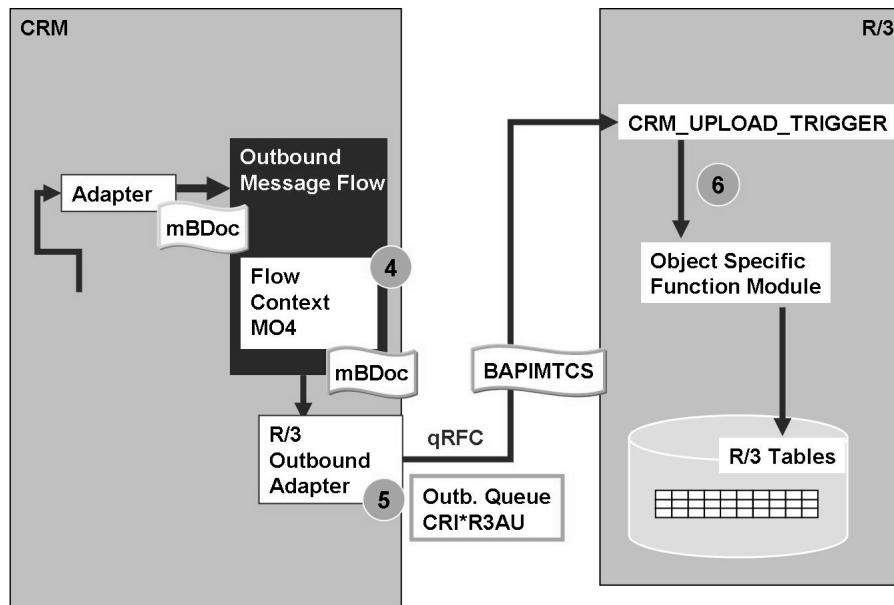


Figure 149: Initial load CRM to R/3: Data Flow

You start the initial upload with transaction R3AS. Choose the business adapter object, CRM as source Site type and R/3 as target Site type:

- Within the Outbound message flow, the flow context MO4 (mBDoc Direct Send) controls the services to be called.
- The R/3 Outbound Adapter converts the BDoc to the BAPIMTCS structure and transfers the data per qRFC to the SAP Receiver. The nameconvention of the Queue is CRI*R3AU
- In the target system the function module CRM_UPLOAD_TRIGGER controls the inbound processing. CRMSUBTAB contains the object specific function module.
- Storage of object references and record based key assignment.
- Error-free rollback in case of program abort or repeated data sending of identical data by checking the reference ID before creating the data on R/3 database.

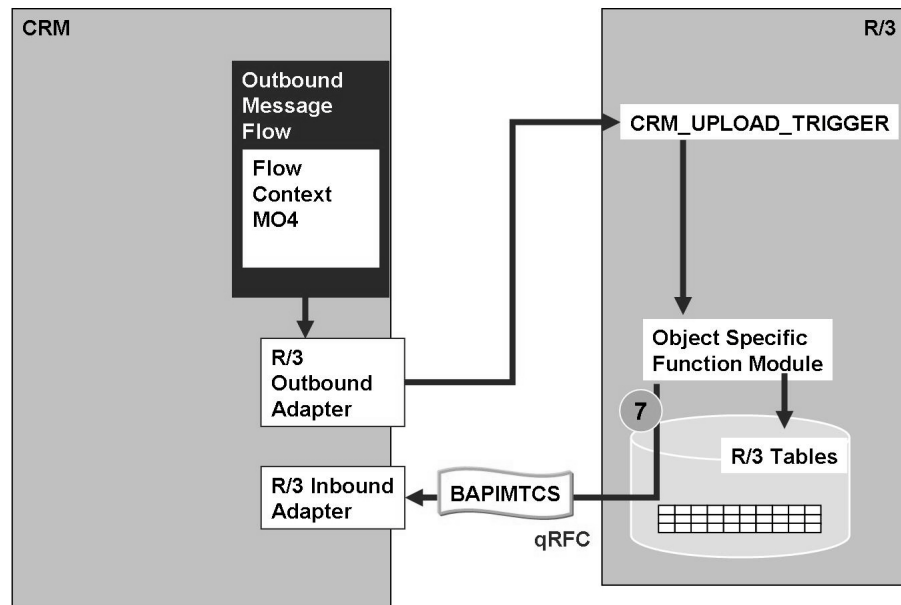


Figure 150: Initial load CRM to R/3 : Data Flow Acknowledgement

The object specific Function Module recognizes whether the same data has already been created by checking table CRMKEY. So unnecessary updates in the Backend can be provided. The Function module writes the data to the database (a delta event for the reply message will be automatically triggered).

A delta load message with the message ID, the status and error messages is created and send back to the CRM system.

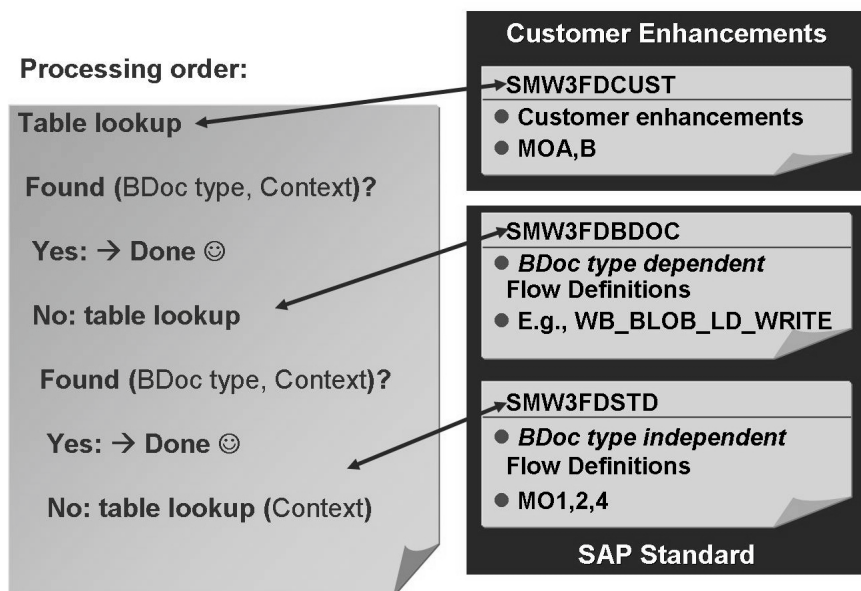


Figure 151: Customizing the Outbound Processing

Demo table (and also transaction) SMW3FDCUST and explain that standard flow definitions can be changed here.

The messaging flow contexts:

- **MO1 Notification (MO: Messaging flow Outbound):** Delta distribution of one instance to subscribed sites and additional consumers such as BW adapter or mobile bridge triggered by CRM Server Application.
- **MO2 Notification (multiple):** Delta distribution of more than one instance (multiple case) to subscribed sites and additional consumers such as the BW adapter.
- **MO4 Initial Load CRM → R/3:** Data extract starting at Admin. Console (from CRM to external sites R/3, XIF, Groupware Adapter).
- Table SMW3FDSTD contains the SAP standard flow definitions in the form of flow contexts. The SAP standard flow definitions are controlled by context entries in the BDoc type-specific and customer-specific tables. Table SMW3FDBDOC contains flow definitions that are BDoc type-specific but not customer-specific. If you want to override the standard flow, make the same entries for the same contexts as in the standard flow table SMWFDSTD. Table SMW3FDCUST contains the customer-specific and BDoc-specific flow definitions in the form of flow contexts. These entries override the BDoc type-specific flow and the standard flow. Additional definitions (for example, for the validation service, can be found in table SMW3BDOCIF).

Short Name	Flow Context	Context Description
Order No	fu Syn.	Function Module Name
Service ID	Short text for function module	
0001	mBDoc Validate	M10
0001	mBDoc Notification	M01
0002	SMOH_REPLICATION_WRAPPER_MSG	Replication Wrapper for Messaging Flow
0002	SMW3_OUTBOUNDADP_CALLADAPTERS	Flow Outbound Adapter (Dispatcher)
0001	mBDoc Notification Multip	M02
0001	SMOH_REPLICATION_WRAPPER_MSG	n Wrapper for Messaging Flow
0002	SMW3_OUTBOUNDADP_CALLADAPTERS	Flow Outbound Adapter (Dispatcher)
0001	mBDoc Initial Load	M03
0001	mBDoc Direct Send	M04
0002	SMOH_REPLICATION_WRAPPER_MSG	Replication Wrapper for Messaging Flow
0002	SMW3_OUTBOUNDADP_CALLADAPTERS	Flow Outbound Adapter (Dispatcher)
0001	mBDoc Post Request	M05
0001	SMW3_OUTBOUNDADP_CALLADAPTERS	Outbound Adapter (Dispatcher)
0001	mBDoc Post Rejection	M06
0001	SMW3_OUTBOUNDADP_CALLADAPTERS	Outbound Adapter (Dispatcher)

Figure 152: View Flow Contexts for BUPA_MAIN

Demo transaction SMO8FD in the CRM System directly and show the flow definitions. Explain the meaning of the flow contexts MO1, MO2, MO4

The complete definition a specific BDoc can be checked using transaction SMO8FD: *Middleware* → *Message Flow* → *Display and Check Flow Definitions*.

Delta Load CRM to R/3

Replication = Message forwarding to one or more sites

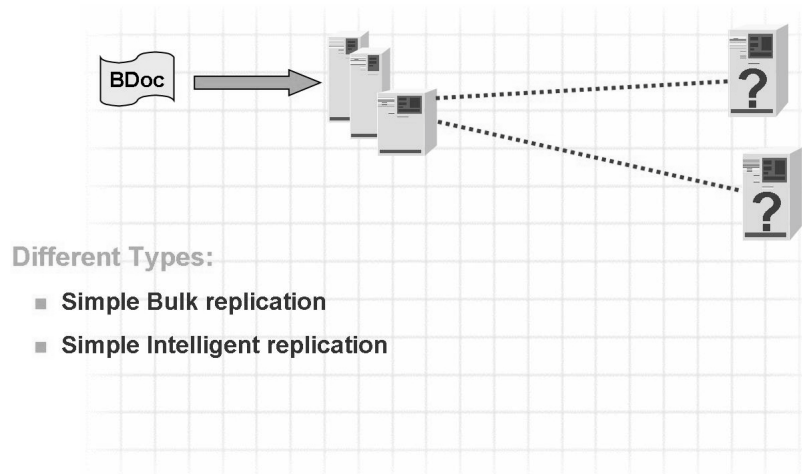


Figure 153: Different Types of Replication

BDoc messages are replicated to **Sites**.

Messaging BDoc types are used within the CRM Middleware and passed to the R/3 Adapter.

Two different replication types can be distinguished:

- **Simple bulk replication:** If the site is subscribed, messages are replicated for all instances.
- **Simple intelligent replication:** Replication depending on field values (filter criteria).

However, every BDoc type can only be replicated via one replication type.

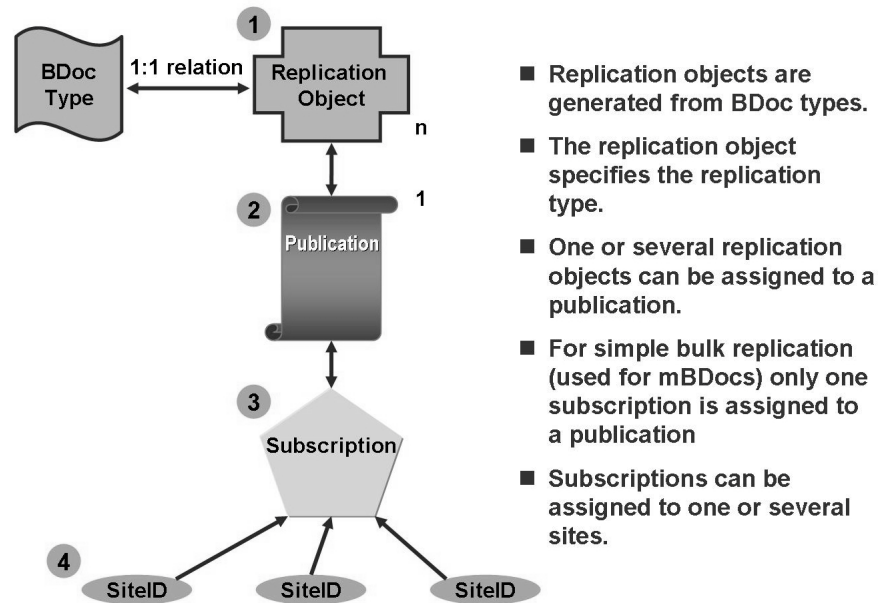


Figure 154: Simple Bulk Replication: Replication Modeling

This is the main standard replication type for Upload from CRM to R/3

The data exchange between the CRM Server and the sites is defined in a replication model. Business object types are represented technically by means of BDoc types. One single replication object is generated from a BDoc type using the Administration Console (1:1 relation).

Sites can then subscribe to one or more publications to receive the data relevant for their work.

The simple bulk replication is the simplest replication type.

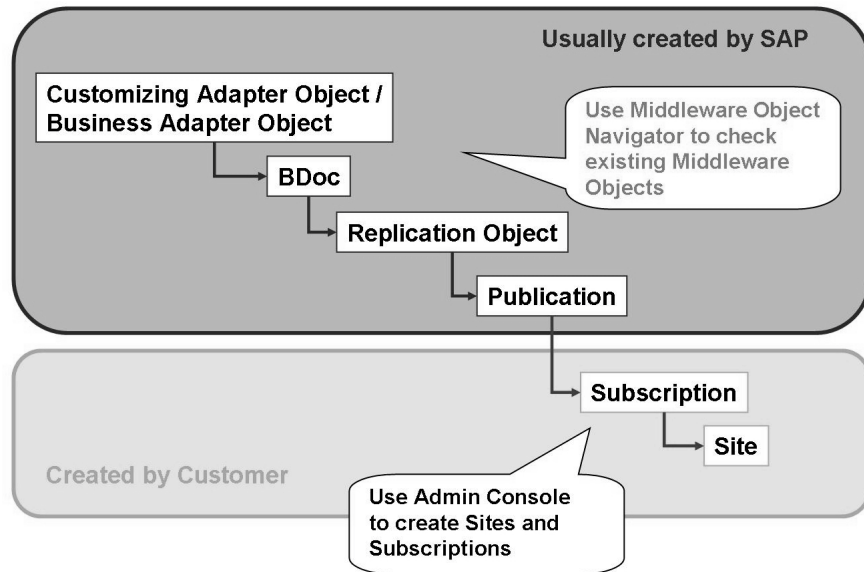


Figure 155: Middleware Objects

Demo: Transaction CMWMON (Middleware Object Navigator)

Use Middleware Object Navigator (Transaction CMWMON) to check existing Middleware Objects and their relations.

Use Admin Console (Transaction SMOEAC) to create customer specific objects like Sites, Replication Object, Publication and Subscriptions.

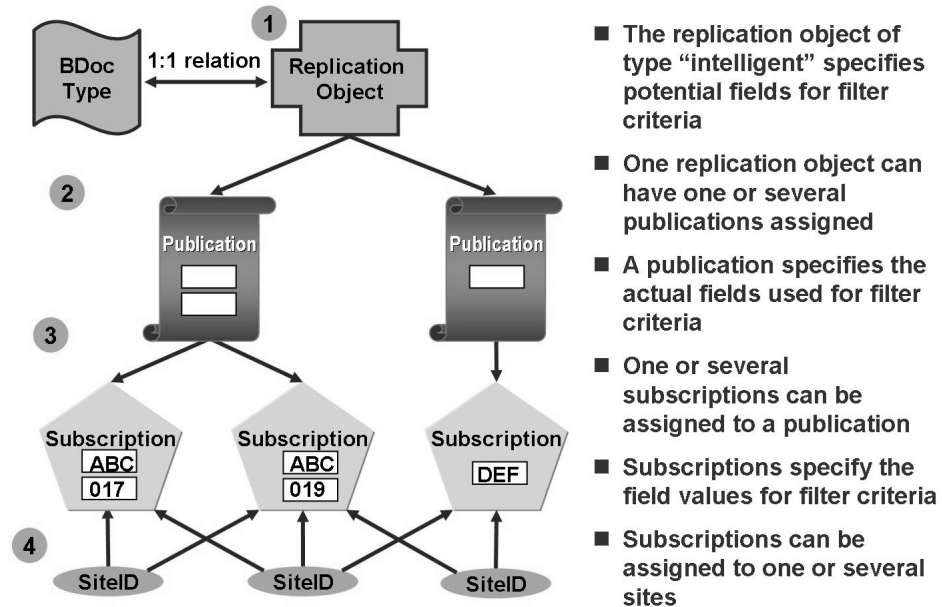


Figure 156: Simple Intelligent Replication: Replication Modeling

There are not too many standard objects available with ‘Simple Intelligent Replication’ for Upload from CRM to R/3 (this is rather an exception when filtering on Middleware level is required, e.g. if you use Multiple Backends)

Simple Intelligent Replication:

- Specification of **criteria fields** may be used to select the business objects of a particular logical type (for example, all customers in a particular postal code area). A certain basic set of publications is delivered in standard, but can be extended.
- Example: The replication object **Business Partner (BUPA_MAIN)** contains the replication criteria field **IS_CUSTOMER** which describes a Business Partner has been maintained with the role Sold-To. On the basis of the contents of this field, the objects are made available to the various sites. The region is another distribution criterion for the replication object **customer**. A value has to be defined for it in the criteria fields.

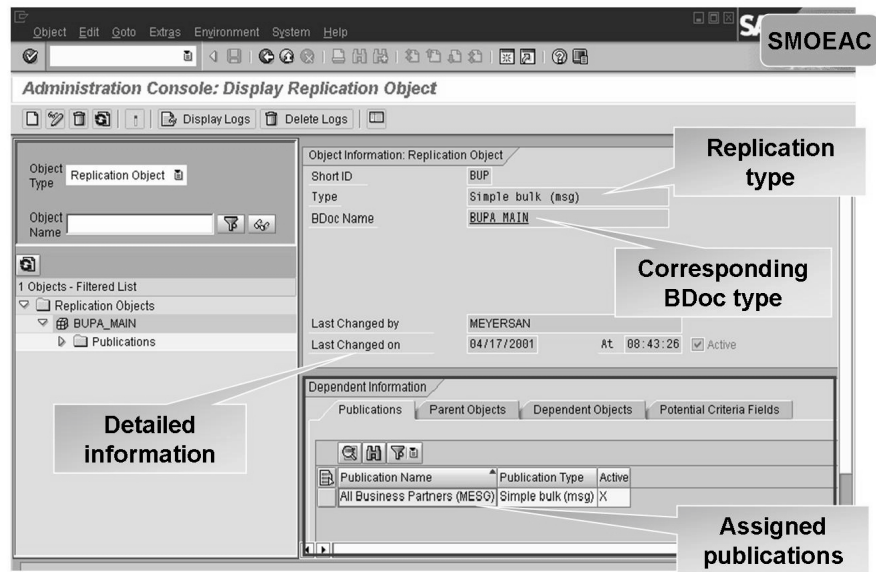


Figure 157: Admin Console: View Replication Objects

Demonstrate transaction SMOEAC in the CRM System directly

Replication Objects can be viewed via transaction SMOEAC (Administration Console). Choose Object Type *Replication Object*.

Unit 9: Data Exchange with ERP Backend

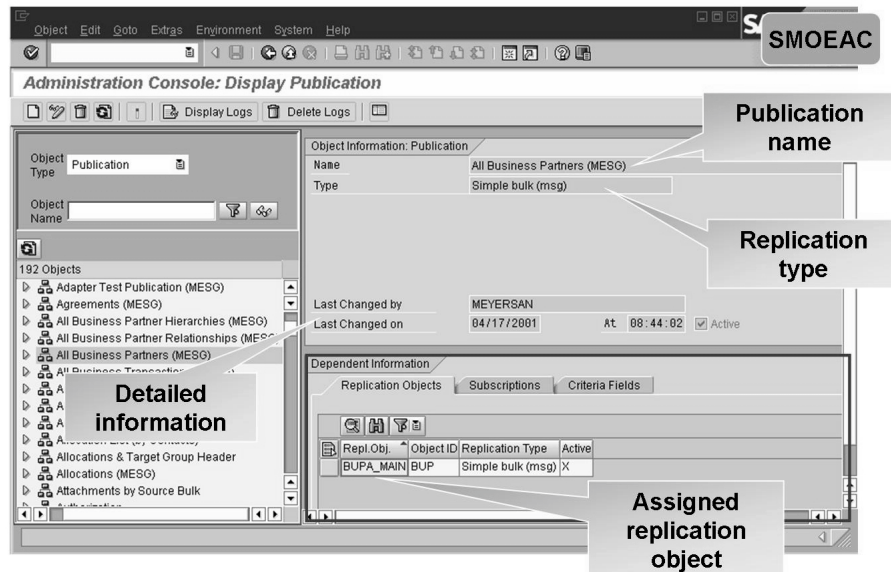


Figure 158: Admin Console: View Publications

Demonstrate in the CRM System directly

Publications can be viewed via transaction SMOEAC (Administration Console). Choose Object Type *Publication*.

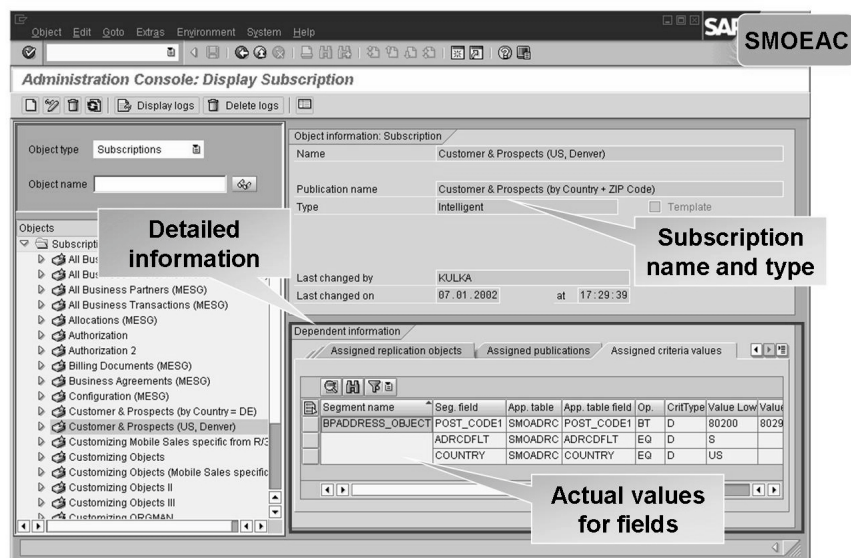


Figure 159: Administration Console: Viewing Subscriptions

Demonstrate in the CRM System directly

Subscriptions can be viewed via transaction SMOEAC (Administration Console). Choose Object Type *Subscriptions*.

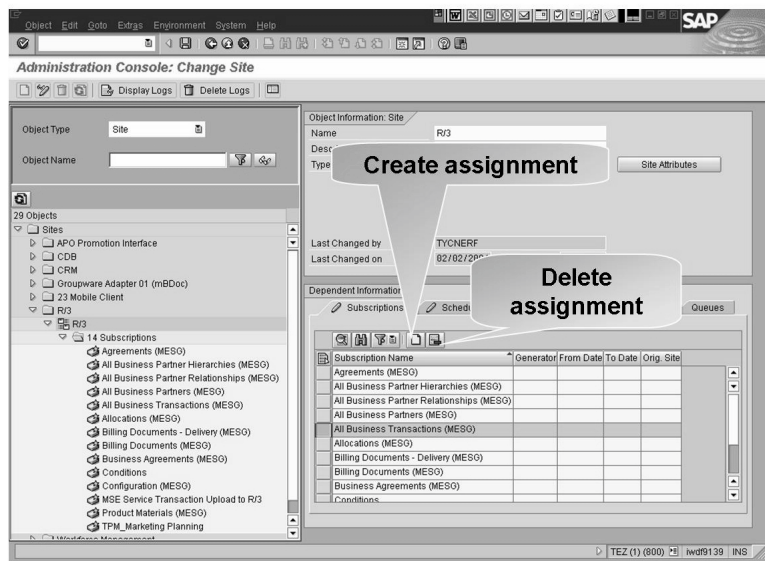


Figure 160: Admin Console: Assign Subscriptions to a Site

Demonstrate in the CRM System directly

A subscription can be assigned to a site. Choose Object Type *Site*. Select the site you want to assign a new subscription. Go into change mode (F9) and select tab strip *Subscription* in the information area. Here you can assign or delete a subscription.

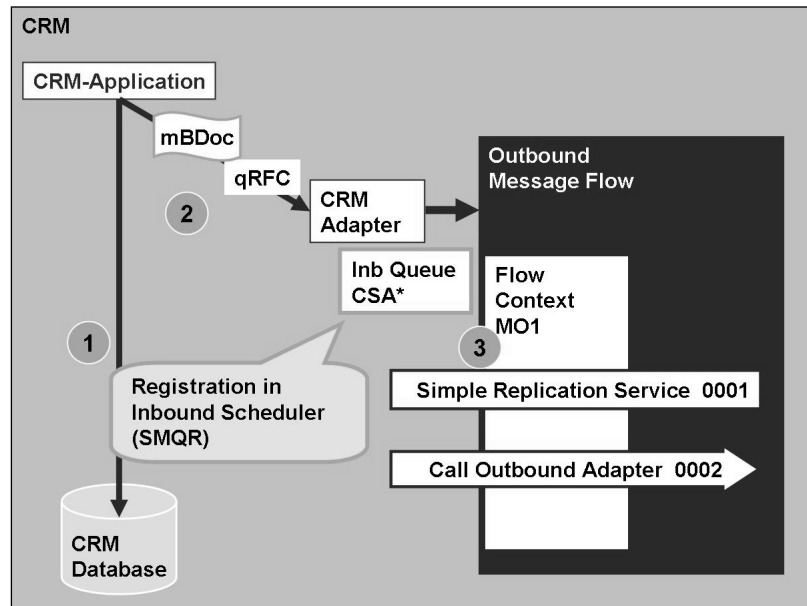


Figure 161: Delta Load CRM to R/3: Data Flow

The CRM Application creates data on database and creates an BDoc within one LUW. The BDoc is passed to the Outbound Flow via qRFC. The name convention for the Queue is CSA*.

For single data the Flow Context is MO1. For multiple data MO2.

Within these Flow Contexts the Replication Service is called to find out the subscribed receivers. For each Receiver the Outbound Adapter is called.

In our case the data is to be transferred to the R/3 System.

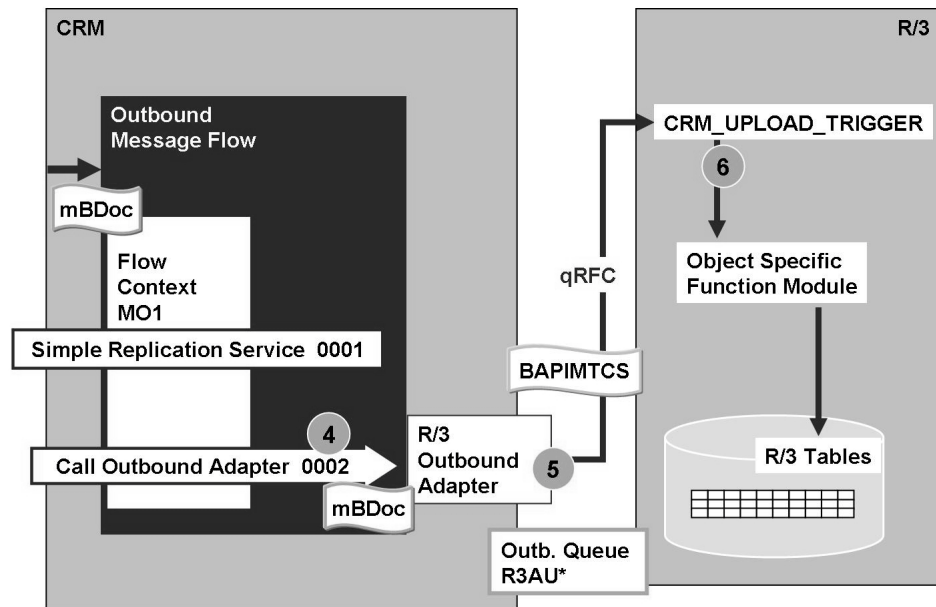


Figure 162: qRFC: Delta Load CRM to R/3

In our case the data is to be transferred to the R/3 System. The R/3 Outbound Adapter is called to convert the BDoc into a BAPIMTCS datacontainer.

The BAPIMTCS datacontainer is transferred to the receiver via qRFC. The name convention for the Queue is R3AU*

Unit 10

373

CRM Middleware Operations

Unit Overview

This unit describes the possibilities to monitor data loads, requests, Data Integrity Manager and troubleshooting.

Unit Objectives

After completing this unit, you will be able to:

- Utilize Monitoring Tools
- Set up Error handling Features
- Understand the tools available to compare and synchronize objects across systems.
- Troubleshoot errors Initial Load from R/3 to CRM
- Troubleshoot errors Delta Load from R/3 to CRM
- Troubleshoot errors load from CRM to R/3

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Lesson: CRM Middleware: Monitoring

374

Lesson Duration: 30 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Utilize Monitoring Tools

Business Example

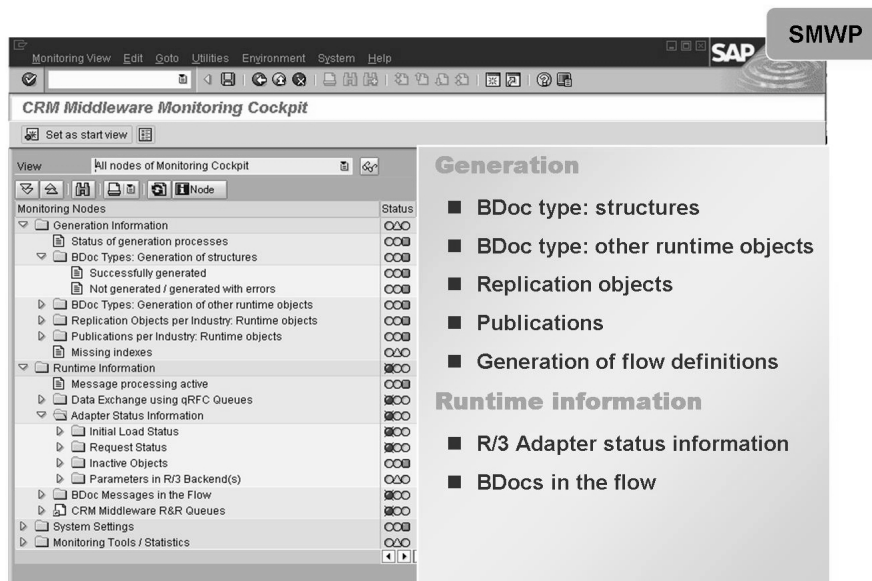


Figure 163: CRM Middleware Monitoring Cockpit

This will be part of a debugging exercise later.

Explain that for an overall monitoring of the CRM Middleware, the Monitoring Cockpit is the best entry point. You can jump from the monitoring nodes directly into the analysis transactions.

There is also a direct integration of certain Monitoring nodes with the CCMS (Computing Center Management System) Monitor. CCMS is a tool used by the Netweaver people to monitor all aspects of system performance, for example memory availability, background jobs and a lot more. This is just one more thing they can monitor.

The **CRM Middleware Monitoring Cockpit** provides status information and also serves as a navigation platform to access important administration and monitoring tools. Traffic lights indicate the status of the individual entries. The field in the right-hand column contains the date of each status determination.

The CRM Middleware Portal can be accessed through the menu:
Middleware → *Monitoring* → *Central Monitoring* → *Monitoring Cockpit* (SMWP).

Prerequisites for running the Monitoring Cockpit:

- The background processes has to be scheduled
 - SAP_MW_COCKPIT_COLLECTOR_<Client> .

This job will be started after the transaction SMWP is called the first time by a user.

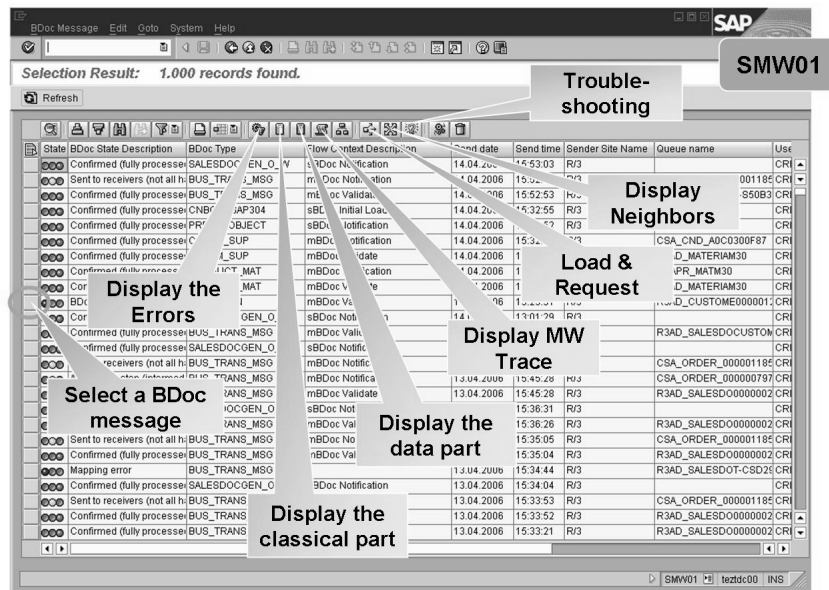


Figure 164: Display BDoc Messages

The function *Display BDoc Messages* lists all BDoc messages (transaction SMW01): *Middleware* → *Monitoring* → *Message Flow*). It displays:

- The BDoc ID and BDoc type, the BDoc state, the flow context, the queue name, the date and time when the BDoc message was sent.
- The flow control trace, the data and error segments, the service in which the error occurred (last service reached), and the recipient list.

Successfully processed messages appear with a green light, those still in progress with a yellow light, and those with a terminal error condition appear with a red light.

If a message is in process and does not get processed within a reasonable amount of time, it is possible to restart the message, view the message content, or discard the message. A BDoc message may be processed in one of the following ways:

- Mark as deleted
- Retry processing.

Note: Deleting BDoc messages can cause data inconsistencies.

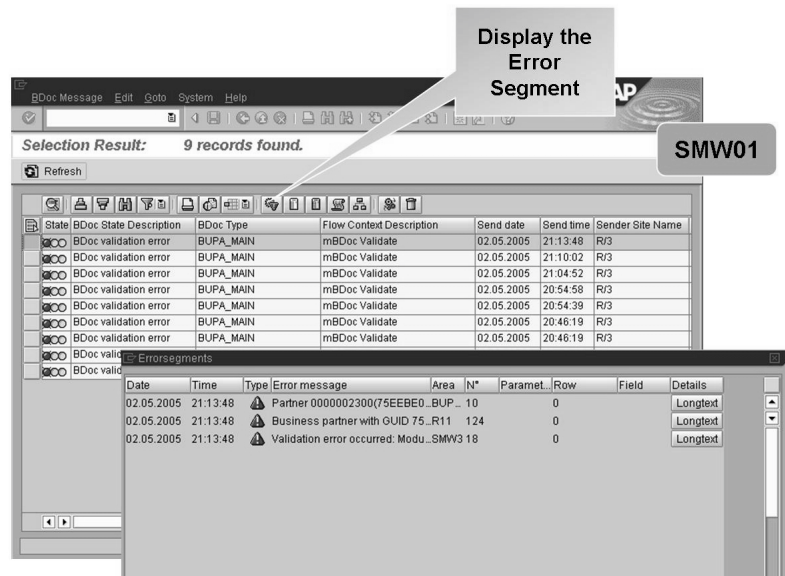


Figure 165: Bdoc Messages: Error Analysis

Use transaction SMW01 to display the reason for an error in the BDoc processing. Select the BDoc, then you choose the errors button. Any errors within the BDoc message state display. If the processing in the middleware did not result in an error nothing displays. In that case, you have to choose the button receivers, as the error occurred because the receiver had problems with processing the data.

To display only the BDoc messages that had errors: In the selection screen mark the flag BDoc state: Errors or choose a selection for each status E01, E02, E03, E04 or any combination thereof.

More information about BDoc error solving will be published in a Best Practice document. See also SAP Note 768503.

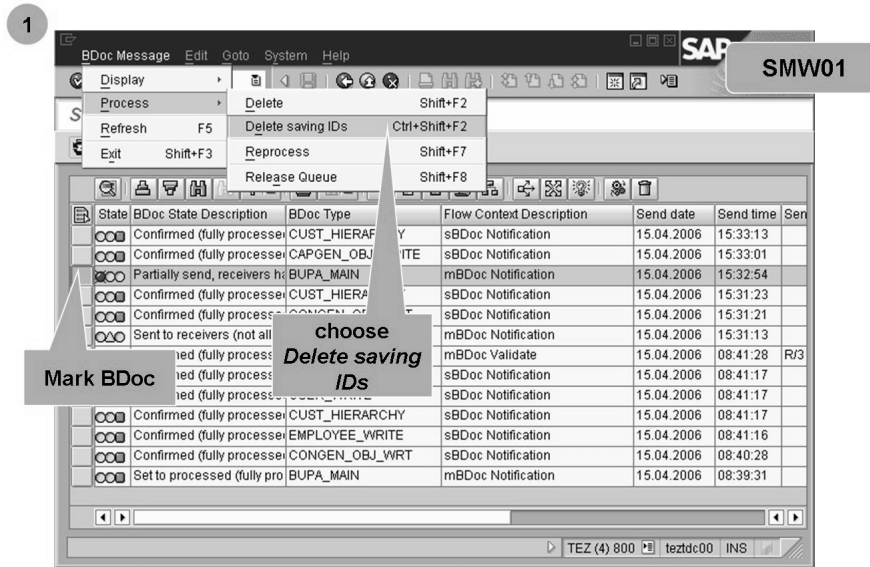


Figure 166: BDoc Recovery Framework (1)

This is a new feature since CRM 5.0 and allows to delete and save BDocs in the error status to a work list for later error analysis.

BDoc Message recovery mechanism improves error handling.

- BDocs in Error status should be marked as “deleted” to avoid re-processing that might lead to inconsistencies.
- By marking the BDoc as deleted “saving its IDs” the object ID is added to the BDoc Recovery Work List which allows for further analysis in transaction SMW3RC.

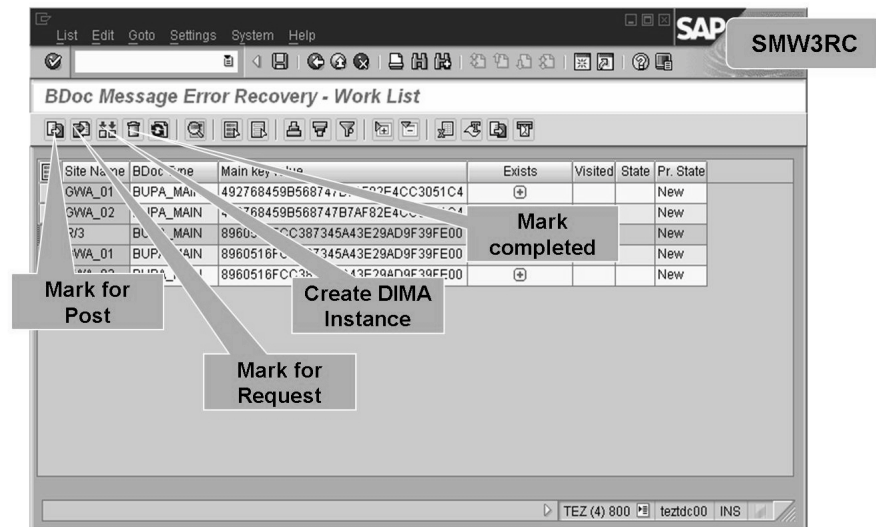


Figure 167: BDoc Recovery Framework (2)

Demo BDoc Recovery Framework, transaction SMW3RC

Two main selection options are possible from transaction SMW3RC: Displaying the work list and displaying the process list.

The work list is the list of BDoc messages which needs to be recovered. As soon as a BDoc message is deleted in transaction SMW01 by saving the identifiers, it is stored into that work list.

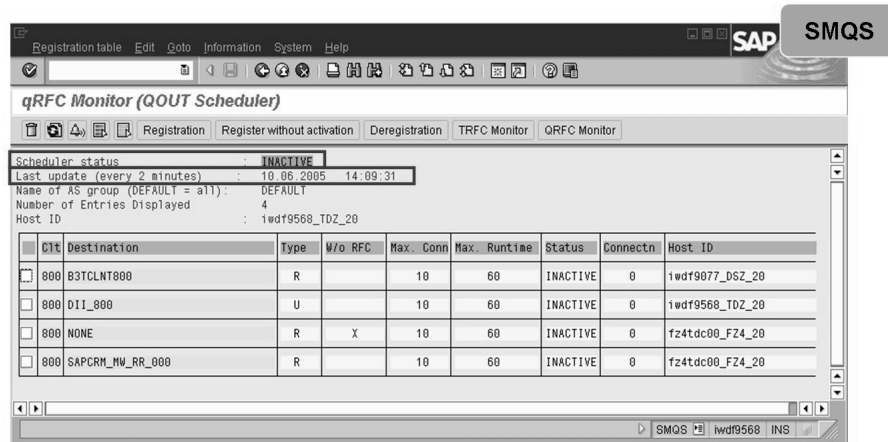
This list can be analyzed by the administrator who must decide which operation is adequate for processing the data. Possible operations are:

- Extracting the data from CRM (Post)
- Create a Request from R/3
- Create a DIMA (Data Integrity Manager) comparison
- Mark the BDoc message as completed.

As soon as the administrator has selected the desired operation, the entries are removed from the work list and stored into the process list.

From the process list, it is possible to start the desired operation.

For mass processing of the process list use transaction SMW3RCW.



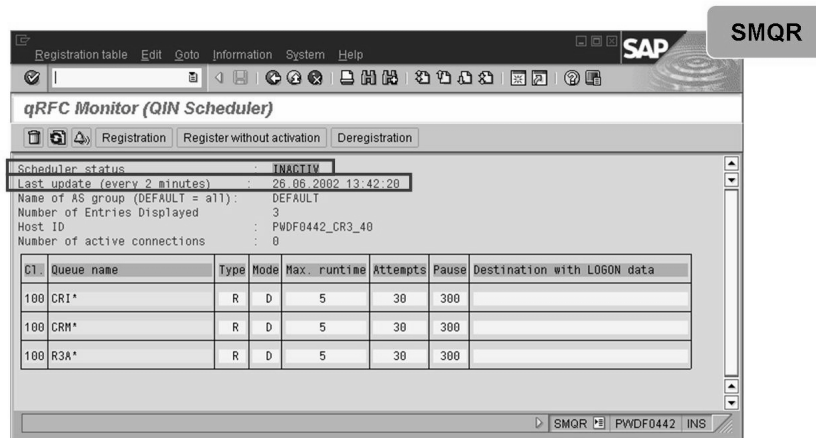
- INACTIVE is the normal status
- Check Last update to see if the outbound scheduler is running ok
- Check whether the required destinations (e.g. for the R/3 system) are registered

Figure 168: qRFC Outbound Scheduler Monitoring

The outbound scheduler is usually not constantly working. Therefore, its status is usually shown as **INACTIVE**.

- It only starts working if new entries are stored in the outbound queue.
- To find out if it is running, check row Last update. To update the display, choose the *Refresh* button.
- If the outbound scheduler is processing a quantity of qRFC-LUWs, its status shows as WAITING.

Note: Only registered queues can be processed. You can stop outbound processing by deregistering the RFC destination (for maintenance only).



- INACTIV is the normal status
- Check *Last update* to see if the inbound scheduler is running ok
- Check whether the required queue names (e.g. R3A*) are registered

Figure 169: qRFC Inbound Scheduler Monitoring

The inbound scheduler is configured based on queue names (which is different from the outbound scheduler SMQS which handles destinations). This means that if new queues are used, they have to be configured otherwise these entries will not be processed.

In SM59 there should exist an internal destination called NONE

- (RFC connection type “I”). However, you cannot maintain a user here.

Furthermore in SM59 there should be for each queue (e.g. R3A*, CSA*, CRM*) a logical destination (RFC connection type “L”), which contains in field “Reference entry” the internal destination NONE. In the tab strip “Logon/Security” you can maintain the logon information for the CRM-internal RFC user (user type “Communications”). Later on the RFC requests are processed with this dedicated user. By using even several logical destinations as proposed above you can later distinguish by the user stamp from which queue a business document was created or changed.

Now you can register the corresponding inbound queues in SMQR (R3A*, CSA*, CRM*, etc.) per transaction SMQR. At registration the created logical destination is entered into the field USERDEST, and is afterwards visible in the column “Destination with LOGON data”. This causes now that every inbound queue is processed with its specific logical destination (and therefore with a dedicated user).

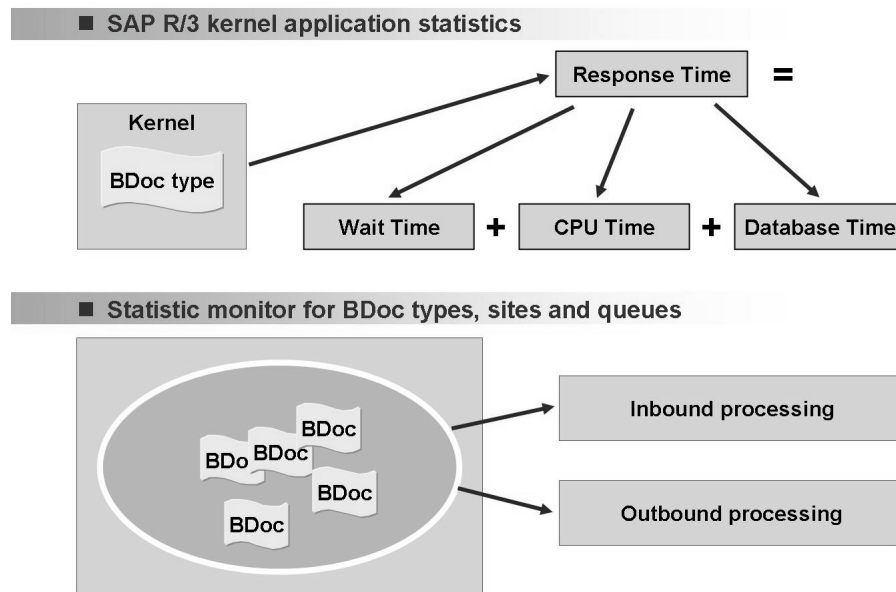


Figure 170: Message Flow Statistics

The **message flow statistics** are launched via:
Middleware → *Monitoring* → *Message Flow* → *Display Message Flow Statistics* (SMWMLFLOW).

To activate Message Flow Statistics, choose *Goto* → *Activate Statistics*. Here the *Kernel application statistics* and the *Middleware message flow statistics* can be individually activated. Additional information on how to activate the monitors can be found in the SAP Library.

The time to process BDoc messages in the CRM Middleware can display using the Message Flow Statistics for BDoc types, sites, and queues. This monitor shows the total execution time for a BDoc message, which consists of the time it was waiting in an inbound queue plus the processing time. The processing time is the sum of the time the BDoc spent in the inbound adapter and in the two Flows. This monitor displays either the average execution time for all BDoc messages of one type or the execution time for only one single BDoc message.

The kernel application statistics provide the CPU time and the database time that was used to process all BDoc messages of a BDoc type. The response time includes the CPU time and the database time. Note that the database time also includes some CPU time, so that these two times not necessarily sum up to the response time (compare SAP Note 351207). It is also possible to display the executed times for the various services that were called with the selected BDoc type by selecting the *Per service* button.

The SAP R/3 kernel application statistic monitor requires definition of the standard CCMS batch jobs.

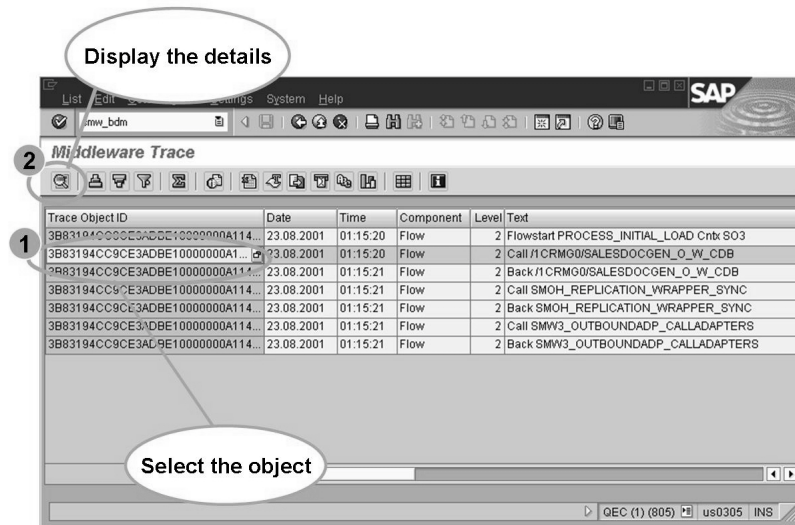


Figure 171: Middleware Trace

From Display BDoc Messages, you can access the middleware trace.

An alternative menu path is to the middleware trace with additional information is: *Middleware* → *Monitoring* → *Message Flow* → *Display Middleware Trace* (SMWT).

You need to perform settings via *Middleware* → *Monitoring* → *Message Flow* → *Set up Middleware Trace* (SMWTAD) to use the function Display Middleware Trace.

The *Display BDoc Message Summary* function lists the same BDocs as *Display BDoc Messages* but grouped according to site, message type (Exx, Ixx, Fxx), and BDoc type.

An alternative menu path is to the Bdoc Message Summary is: *Middleware* → *Monitoring* → *Message Flow* → *Display BDOC Message Summary* (SMW02).

Unit 10: CRM Middleware Operations

Display Summary of Unprocessed BDoc Messages

CL	Short name of BDoc type	Description	Is: nBdoc Type	Is: sBdoc Type	Is: Deleted/Inconsistent	Unprocessed Messages
771	BEABILLDOCIPMO	YMINA ZPRAV BDOC "BEABILLDOCII	X			4
750	BUAG_MAIN		X			6
770	BUAG_MAIN		X			412
771	BUAG_MAIN		X			1,046
800	BUPA_REL		X			5
781	BUS_TRANS_MSG		X			1
800	BUS_TRANS_MSG		X			19
771	CANSEM_WRITE	Campaign SEM write Object	X	X		1,211
710	PRODUCT_MAT	CRM Product/ Material	X			7
771	BEABILLSTAIPMO	YMINA ZPRAV BDOC "BEABILLSTAI	X			1
710	BUPA_MAIN		X			39,670
730	BUPA_MAIN		X			2
731	BUPA_MAIN		X			49
800	BUPA_MAIN		X			9
710	BUPA_REL		X			12
740	BUPA_REL		X			
770	BUPA_REL		X			
710	BUS_TRANS_MSG		X			
770	GWA_CUST_PERS3	Title and Address customizing (X			
770	GWA_CUST_PRI0	Groupware Priorities Customizi	X			
710	PRODUCT_INDOBJ	messaging BDOC for Individual I	X			
781	PRODUCT_MAT	CRM Product/ Material	X			
770	SI_CONNOBJ		X			
770	SI_P00		X			
771	BEABILLDOCIPM1	YMINA ZPRAV BDOC "BEABILLDOCII	X			
740	BUPA_MAIN		X			
750	BUPA_MAIN		X			
770	BUPA_MAIN		X			
781	BUPA_MAIN		X			
730	BUPA_REL		X			
770	BUS_TRANS_MSG		X			
731	CHARVAL_MSG		X			
751	CND_M_SUP		X			
770	GWA_N01	Metadata of BDocs and others f	X			
770	GWA_STAT_CUST	Groupware Status Customizing I	X			
731	MKTPROF_MSG		X			

Display the total number of unprocessed BDoc messages, grouped by BDoc type and client. You can use this information to check the system status for monitoring purposes, or before you install a support package (SP) or an enhancement package (EhP).

Figure 172: Unprocessed BDoc Messages

This transaction may help to find out all unprocessed BDoc Messages in all clients before an upgrade, a new Support Package stack or an enhancement package (EhP).

From the menu, choose *Architecture and Technology* → *Middleware* → *Monitoring* → *Message Flow* → *Display Unprocessed BDoc Message Summary*.

- Check Display BDoc Messages including the middleware trace information
- Check the outbound queue of the CRM System
- Check the outbound queue of the SAP R/3 System
- Check the inbound queue of the CRM System

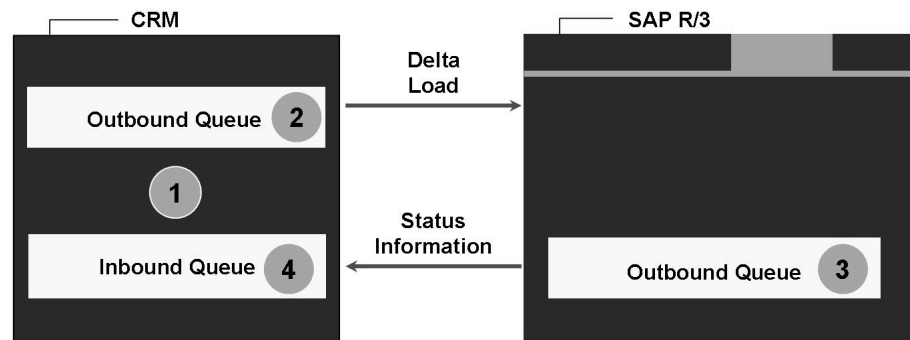


Figure 173: Hints for an Error Analysis (Load Example)

Explain this. It will be part of a debugging exercise later. Notice that there's no inbound queue on R/3

Possible error situation: A business object has been changed in a CRM Server Application, but the change (delta load) is not received in SAP R/3.

In case of errors or missing data updates in the target system, you may perform the following steps:

- Check Display BDoc Messages including the middleware trace information
- Check the outbound queue of the CRM system
- Check the outbound queue of the R/3 system
- Check the inbound queue of the CRM System.

Furthermore, verify the RFC destination and the logical system assigned to your site (in the Admin Console) and the CRM Middleware parameter settings in the CRM System and SAP R/3 (for example, CRMRFPCPAR).

More information about BDoc error solving will be published in a Best Practice document. See also SAP Note 768503.

Unit 10: CRM Middleware Operations

CRM Server Monitoring Activities /Functions	Monitoring Type	Monitoring Frequency Periods and Events
Middleware Monitoring Cockpit	SMWP	<ul style="list-style-type: none">• Several times daily depending on business process• Upon error
BDoc Messages/Summary	SMW01/SMW02	<ul style="list-style-type: none">• Several times daily depending on business process• Upon error
Message Flow Statistics	SMWMFLOW	<ul style="list-style-type: none">• Daily• Upon error
Middleware Trace	SMWT	<ul style="list-style-type: none">• Upon error
Summary of unprocessed BDoc messages	SMW03	<ul style="list-style-type: none">• Upon error
qRFC Monitoring	SMQ1+SMQ2	<ul style="list-style-type: none">• Several times daily and upon error
Check Flow Definitions	SMO8FD	<ul style="list-style-type: none">• Upon error• After Bdoc changes or changes in services or flow

Figure 174: Message Flow Monitoring: Task Sheet for Administrator

Lesson: Error Handling

393

Lesson Duration: 20 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Set up Error handling Features

Business Example

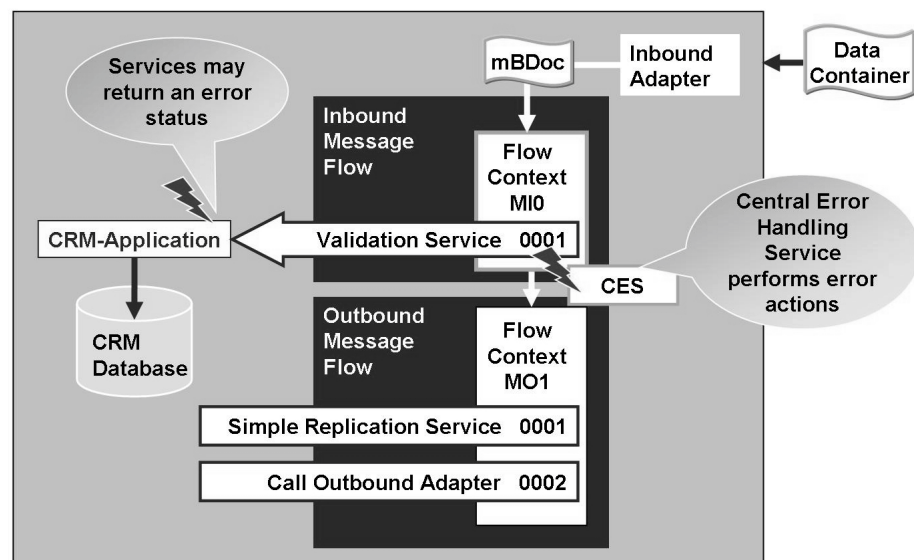


Figure 176: Integration of the Central Error Handling Service

The central error handling service (CES) is started by Flow Control after receiving internal or external error conditions, for example, if a service returns the error code Exx (E01, E04, etc.).

Each service uses the CES for error handling. The information about the subsequent service is kept in the flow definition.

The central unit of all error information is the error segment, which is part of all BDoc messages and contains, for example, the:

- Message type
- Service return code
- Last service

Depending on the error segment information, the CES starts CES actions. Possible CES Actions include Workflow, Mail.

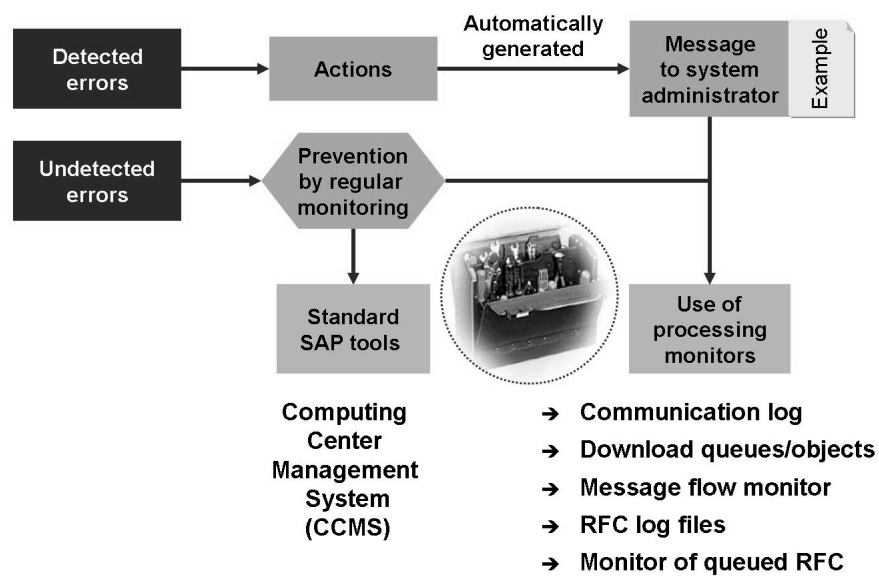


Figure 177: Error Handling Strategy

General strategy: The modular architecture of the middleware server allows central error handling, where each service or adapter can return error messages or codes to the overall process control. Depending on these codes, different error actions can be triggered, leading to a resolution of the problem.

In addition, regular monitoring by the system administrator prevents or detects other error conditions.

The CCMS can be started with transaction RZ20 (CCMS Monitor Sets).

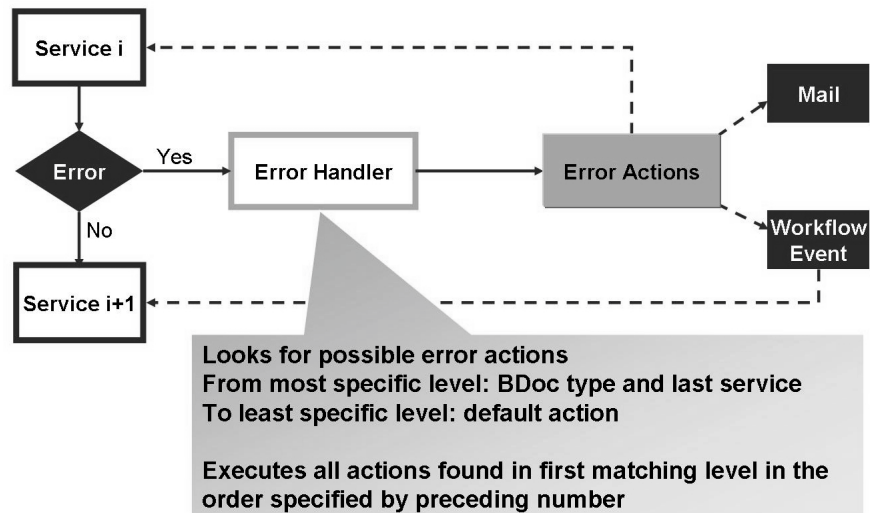


Figure 178: Error Handling: Flow Control

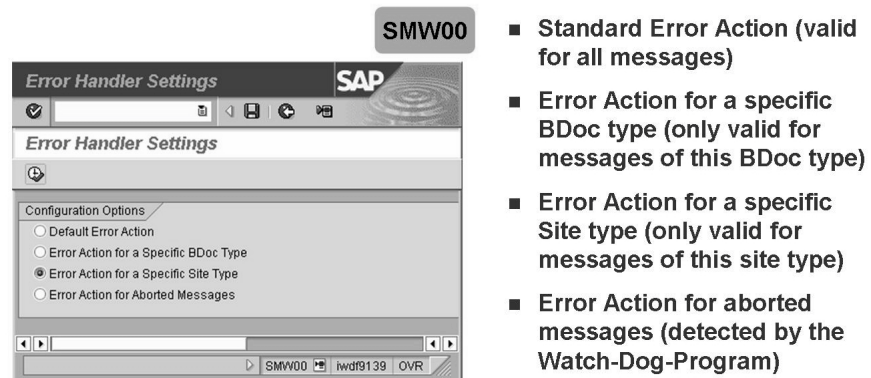
By definition, an error has occurred when a service returns an error code Exx (E01, etc.).

WORKFLOW EVENT: A standard event is preconfigured and appears by default in the inbox of the user who has created or changed the data in CRM. For data coming from R/3 the inbox of the user maintained in the RFC destination receives the workflow event. When the event is executed, you can view the message and decide whether to:

- Delete the message
- Resume the message
- Resume processing with the next service

MAIL: An e-mail message is sent to a specified user. This e-mail may contain the BDoc message and processing information.

Different assignment of error actions are possible:



The following error actions are possible: Workflow Event, E-Mail.

Figure 179: Error Handling Configuration

Different assignments of error actions are possible:

- Standard Error Action (valid for all messages)
- Error Action for a Specific BDoc Type
- Error Action for a Specific Site Type
- Error Action for Aborted Messages

These four logical levels are used in reverse order to determine the error actions to be carried out. If no specific error action has been assigned to a message, the least specific action (this means the default action) starts.

You can choose the following actions for a message:

- Workflow event: the start event SERVICEERROROCCURRED of object type MIDMESSAGE has been prepared (the end event is SERVICEERRORFINISHED). This event triggers a work item of standard task TS75110000 (MIDMESSAGE.ShowMessage). As the event is executed, you can view the message and decide on what to do with it (Deletion, Resubmission, Resume Processing with the next service).
- E-mail function.
- Use transaction SMW3WD to find aborted BDoc Messages.

Lesson: Data Integrity Manager & Requests

398

Lesson Duration: 30 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the tools available to compare and synchronize objects across systems.
-

Business Example

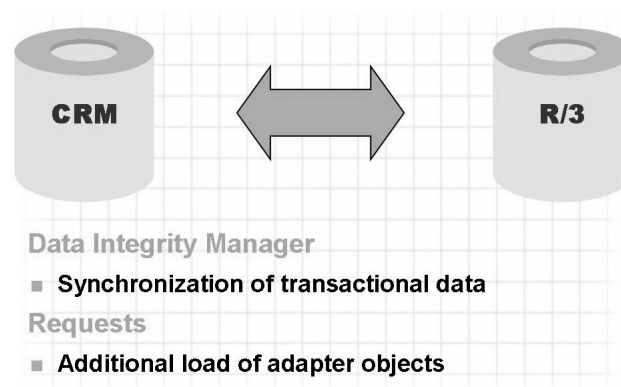


Figure 180: Data Consistency

In certain cases, you need tools to correct data inconsistency, for example, after you have to reset one system (incomplete recovery). SAP provides tools to detect inconsistencies and repair inconsistencies.

The **Data Integrity Manager** is a tool within CRM (transaction SDIMA) and can be used to repair inconsistent customizing settings between CRM and the R/3 Backends.

The **Request** loads selected data from SAP R/3 System to the CRM database or from an CRM database to an R/3 system. Both are triggered on the CRM system with Transaction R3AR4. The request overwrites entries for customizing objects

and business data. Therefore, it behaves like an initial load. The request filters complement the adapter object filters, by further narrowing the data load and therefore permitting more refined filtering. Requests are used to synchronize data with no delta load capability like customizing.

Cross-component data integrity

Functions at a glance

- Framework for comparing and re-synchronizing databases
- Comparison of business objects
 - ◆ At object instance level
 - ◆ At field level
- Synchronization of business objects
 - ◆ Loading of missing objects
 - ◆ Synchronization of object details

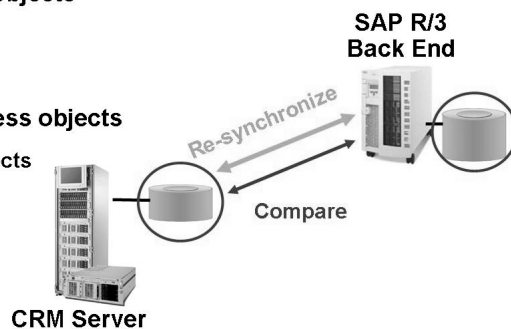


Figure 181: Enhanced: Data Integrity Manager

Demo: Execute Transaction SDIMA and create a Dima Instance (e.g. for DIMA Object Material), Start Compare (not Detailed Compare, because of the long runtime). Show that you could fetch material which is stored in R/3 but not in CRM (DIMA creates a Request).

With the Data Integrity Manager (DIMa), you can detect and repair inconsistencies between objects across components within the SAP CRM system landscape.

An SAP CRM system landscape usually consists of more than one database. Every SAP CRM system has a CRM database. In most cases, data exchange with one or more SAP R/3 back-end systems is necessary. A **consolidated database** is the basis for data exchange with mobile clients. It is very important to keep the objects in the different databases or datasets synchronized.

The Data Integrity Manager compares data in different components and displays inconsistencies. The data comparisons are always carried out for the CRM database and an R/3 back-end database, and the CRM database and the consolidated database.

For many objects, it is also possible to synchronize the data via the Data Integrity Manager.

There are two compare types available in the Data Integrity Manager: header compare and detail compare.

- A header compare checks if an object instance exists in both databases.
- A detail compare compares all data of an object instance found in both databases.

Some objects may not allow a header compare. The detail compare is then carried out.

With a Request, selected data can be downloaded from the R/3 backend to the CRM database (or vice versa).

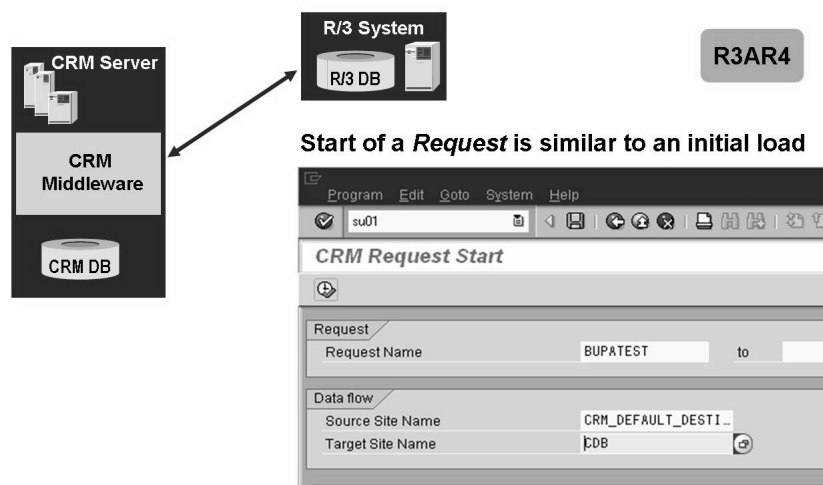


Figure 182: Explicit Requests for Individual Data

Requests may be started using the menu *Middleware* → *Data Exchange* → *Synchronization* → *Start Requests* (R3AR4).

The Request loads selected data from SAP R/3 to the CRM database or from an CRM database to R/3. Both are triggered on the CRM system with Transaction R3AR4. The request overwrites entries for customizing objects and business data. Therefore, it behaves like an initial load. The request filters complement the adapter object filters, by further narrowing the data load and permitting therefore more refined filtering.

The request filters are merged with the general Adapter Object filters.

Caution: General Adapter Object filters **for** the table fields are ignored during a Request, if the filters of that request are defined for the same table fields. The reason for this is that the extractors, that is, the modules that extract the data from the database, combine filters for the same table

fields with an **or** statement. If the filter of a request is also combined with an **or** statement, the result would be the entire data volume of the initial load. Please keep this in mind, if you define filters for Requests.

Requests can also be scheduled using background jobs (report SMOF_REQUESTN).

With a dedicated request, the possibility exists to repair a BDoc error. Mark the faulty BDoc as deleted in Transaction SMW01 and start the request for the object (for example, BUPA_MAIN) with the special filter settings.

Caution: This workaround should only be used if the object has not been changed after the change you want to redo. Otherwise, data inconsistencies could occur. Check carefully with the application consultants before using this method!

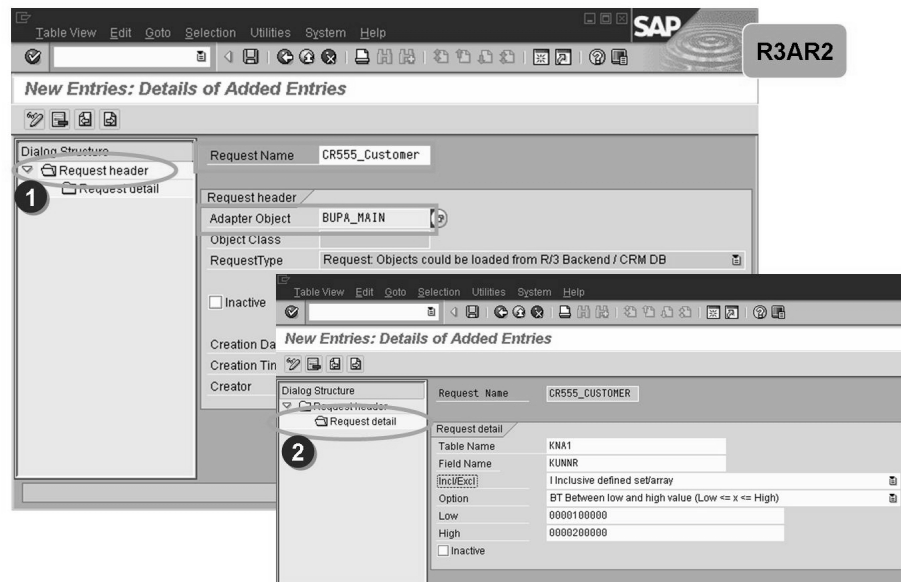


Figure 183: Create Request

To create a new request, start transaction R3AR2.

Switch to change mode and choose *New Entries*.

Enter a request name and the corresponding adapter object. Choose Enter to actualize the object class and the other attributes.

You can navigate to the maintenance of the selection criteria by double-clicking *Request Detail*. Choose *New Entries* and enter the table name and field name of the source table in sender system. Choose the value or the interval for the database selection.

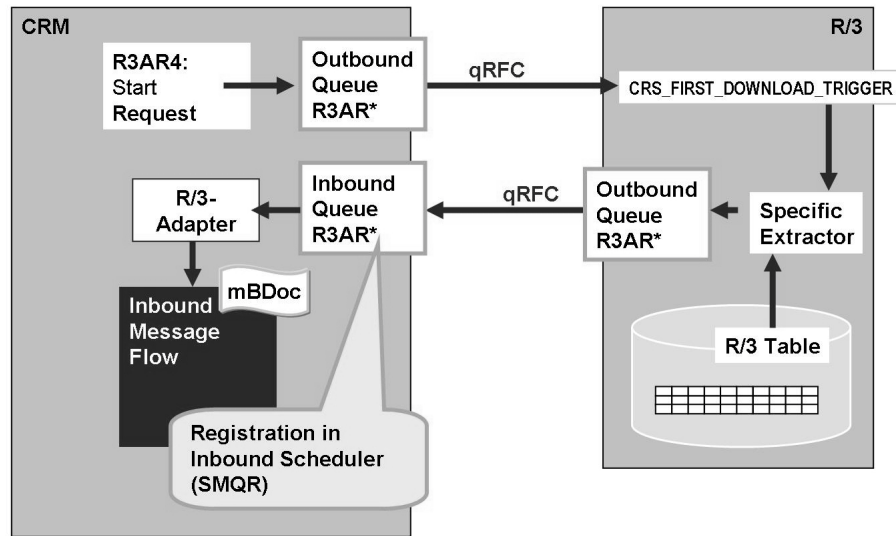


Figure 184: qRFC: Request for Business Adapter Objects

The naming convention for the queues of the qRFC is **R3AR_<Business Adapter Object>** (R/3 Adapter Request) for explicit requests for individual data.

The BDoc monitor, transaction SMW01 gives the status of single BDoc messages. To find out which BDoc type is used for a Business object, check the object management (transactions R3AC1, R3AC3 or R3AC5). You will find the corresponding BDoc in the details of a Business object.

To check if the data is complete, check the corresponding application transactions or tables where the data is stored.

Request and DIMA problems can be checked in the same way as Initial loads with a few exceptions:

- The monitor is not R3AM1 but R3AR3 for the request and contained in transaction SDIMA for DIMA Instances
- The queue names are different: R3AR* for Request and R3AH* or R3AT* for DIMA.

Loads from CRM to CDB can be checked in the same way as loads from R/3 to CRM with a few exceptions:

- Everything that has to be checked in R/3 for loads from R/3 should be checked in CRM instead
- The queue name is is different, it starts with CRI or CDB
- Usually, no specific destination is used but destination NONE.

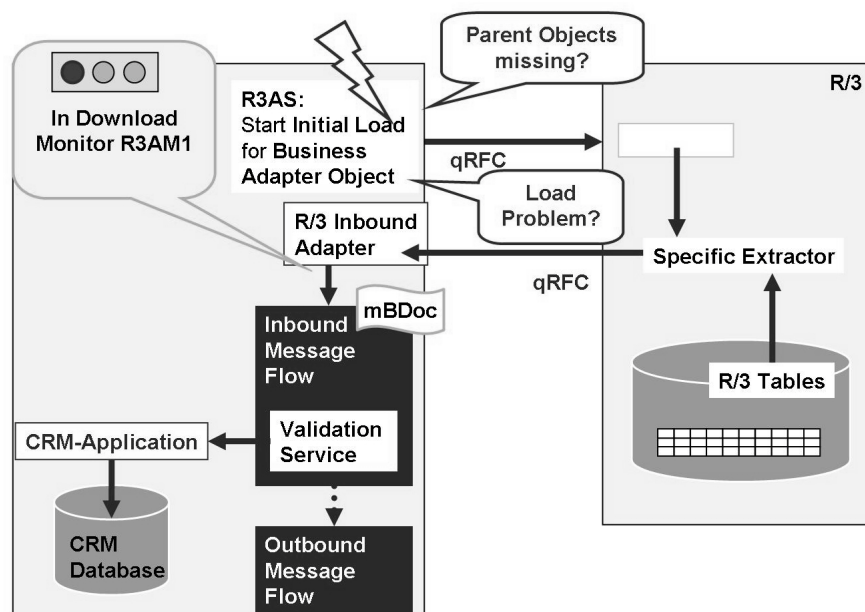


Figure 186: Load Has Not Been Started

Check, if object has parent objects:
 Parent objects are stored in table SMOFOBJPAR and can be viewed in the object management (transactions R3AC1, R3AC3 or R3AC5).

Check, if parent objects have been loaded successfully.

Check, if number of running Initial loads, Requests and DIMA Instances is higher than SMOFPARSFA parameter MAX_PARALLEL_PROCESSES.

- Check the download monitor (R3AM1), the request monitor (R3AR3) and DIMA (SDIMA). The corresponding tables are SMOFDSTAT, SMOFRSTAT and SDIMASTAT. All entries in those tables with status running have to be added to give the total number of processes.
- If there are not enough free processes, the order in which the loads are started is as follows:
 - Start Initial Load for objects which do not have any parent object at all.
 - Start Initial Loads for objects that have parent objects that have green status.
 - Start Requests.
 - Start DIMA instances.

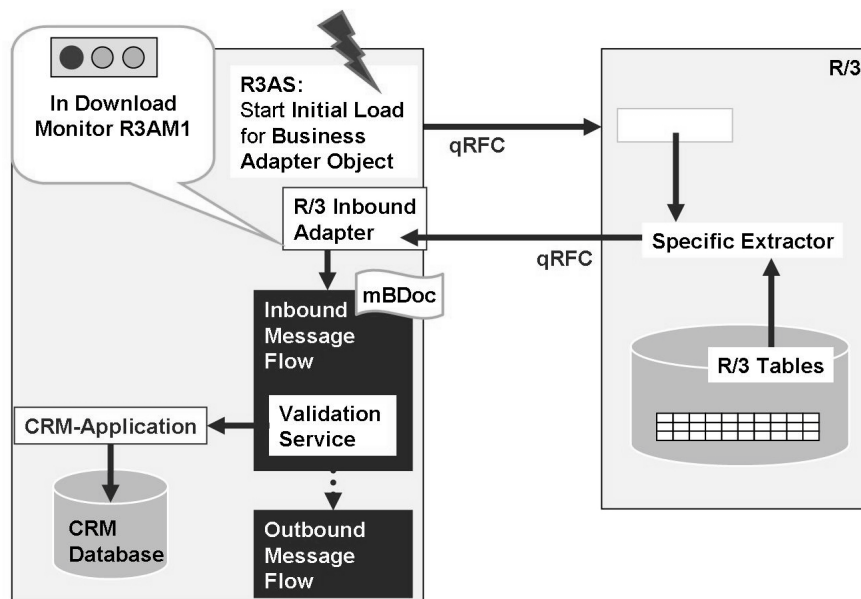


Figure 187: Load Has Been Aborted

Load has been aborted manually. Restart the Initial Load.

Load has been aborted automatically. The Load of data from CRM to R/3 has not been successful, check as for Upload.

Aborting an Initial load:

- If you need to abort an Initial Load, aborting the load in the download monitor, transaction R3AM1,, will not be sufficient. Follow these steps:
 - Abort the Initial Load in transaction R3AM1.
 - Check for the correct process in R/3 or CRM transaction sm50 and cancel it. Make sure that you cancel the correct process to avoid data loss. The user of the process should be the user maintained in the RFC destination in sm59.
 - Delete the queue entries in transaction SMQ1 and SMQ2. There can be queue entries in both queues.
 - It is dangerous to delete Initial loads and you should be certain of what you are doing!

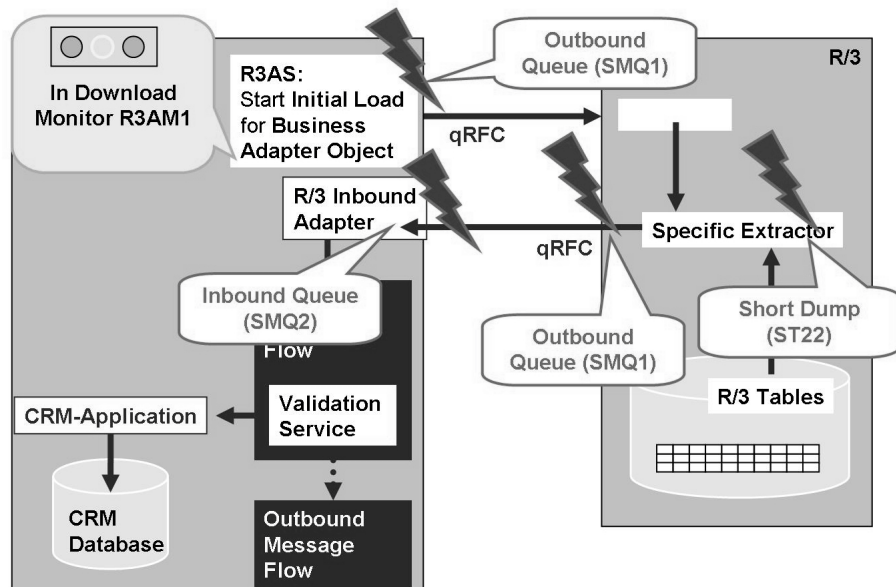


Figure 188: Load is running

Check in the download monitor, transaction R3AM1, if the number of blocks that have been processed increases. If so, the load is still running and you have to wait. If the block number does not increase or even is “0”, check the following:

Has the data request reached SAP R/3?

- Check for queue entries in CRM Outbound queue (SMQ1).
- If the block number in the Download Monitor (R3AM1) shows 0 blocks:
- Check the destinations for R/3 (in CRM) in transaction SM59 (RFC Destination).

Has the data been extracted in R/3?

- Check for short dumps in ST22 (ABAP Runtime Error) in R/3.

Has the data been sent to CRM?

- Check for queue entries in qRFC Outbound queue (SMQ1)
- If the block number in the Download Monitor, transaction R3AM1) shows 0 blocks:
 - Check the destinations for CRM (in R/3) in SM59 (RFC-Destination)
 - Check which consumer is used for the object in the object management
 - Check table CRMCONSUM in R/3 if the consumer is active
 - Check for the given consumer in table CRMRFPCPAR in R/3 if an entry exists for the object
- Has the data reached CRM?
 - Check for queue entries in CRM Inbound queue (SMQ2)
 - Check in the flow trace, transaction SMW01, if there are BDoc Messages in error state
 - Check for short dumps in transaction ST22 (ABAP Runtime Error) in CRM
- Table CRMRFPCPAR:
 - Table CRMRFPCPAR is valuated in the way that an entry for a specific object will always be taken if it exists. If no specific entry exists, an entry with objectname “*” will be taken. The same goes for the load type. If no entry exists, the Initial load will roll back to transaction SMQ1 in CRM with a SYSFAIL, saying that no CRM is connected.
 - If the flag DISCARD DAT (dicard data, ignore data) is set to “X”, no data is sent.
- Status of queue entries:
 - Queuenames for an Initial load start with R3AI.
 - If Queue entries exist in status READY, check transactions SMQS (for SMQ1) or SMQR (for SMQ2) . If Queue entries exist in status SYSFAIL, analyse the error, correct it and restart the queue. SYSFAILS often are the cause of dumps. If you get a SYSFAIL in the outbound queue in CRM, check the R/3 system for dumps and vise versa.
 - If Queue entries exist in status RUNNING, wait for the Load to finish.
 -

Caution: NEVER DELETE A QUEUE ENTRY MANUALLY.

- RFC Destination:

- Check, if the RFC destination points to the correct system. If an Initial load is started in system A and selects data in system B and the RFC destination is called SYSTEM A but points to system C instead, the data will be send to system C where they are not processed. System A will never get an answer and the Load will remain in status running with 0 blocks loaded.

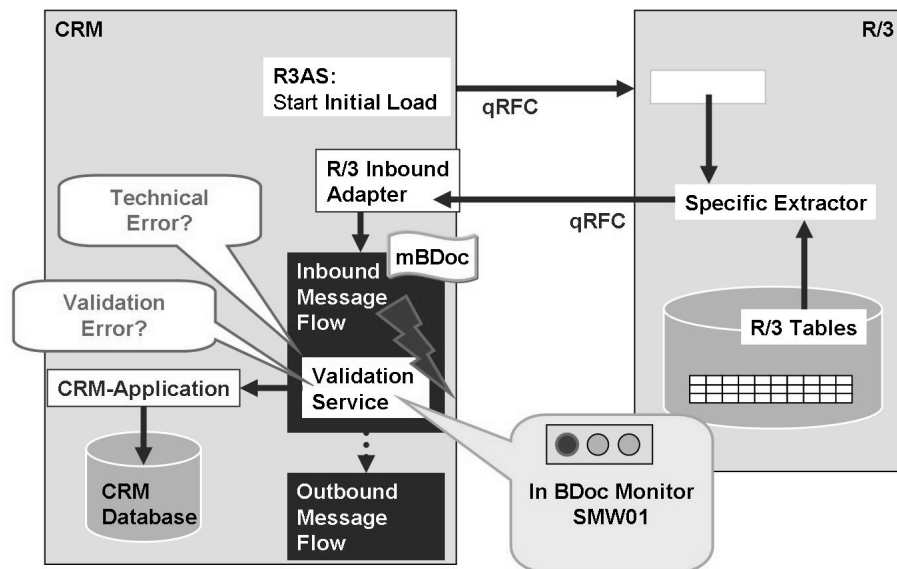


Figure 189: BDoc Error

Check in the BDoc Message Monitor, transaction SMW01, if it is a technical error or a validation error.

For technical errors, check if there are corresponding short dumps in transaction ST22 (ABAP Runtime Error).

For validation errors, check the error messages and correct the problem.

Note: Restarting an erroneous BDoc may cause data inconsistency if changes to the Business object have been done afterwards. If you are not sure if the Business object was changed in the meantime, compare the two objects and check which one is correct. Then define a Request for the Business object and start it. You can then set the erroneous BDoc message manually to completed. If you are sure that no changes have been made, you can restart the erroneous BDoc message.

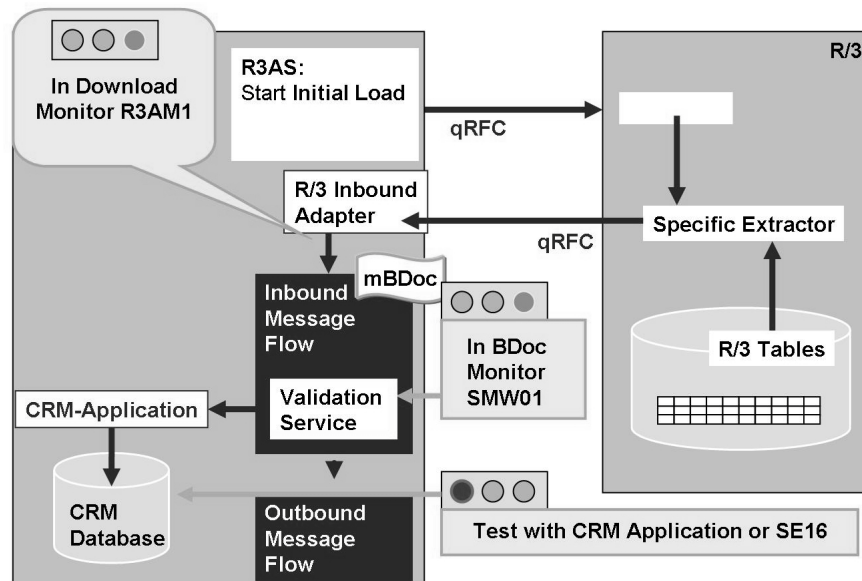


Figure 190: Data Is Not Complete

Check Business Adapter Object (transaction R3AC1):

- Check the filter criteria: Is a filter condition reason for missing data?
- Check Tab Tables / Structures in Object : is the flag inactive marked for a needed table?

Check Middleware Trace (transaction SMWT) for messages.

How do combined filters work?

- If more than one filter condition is maintained, filters are combined so that filter conditions on the same field of the same table are combined using the logical OR while filters on different tables or fields are combined using the logical AND.
- Example:

Tablename Fieldname Operator Value

- KNA1 KUNNR EQ 0000012345
- KNA1 KUNNR GE 0000020000
- KNA1 BRSCH EQ ABC
- KNVV VKORG EQ 1000

This will result in all Business Partners of branch ABC and sales organization 1000 which have the customer numbers 0000012345 OR a number greater or equal to 0000020000.

-

Note: You cannot create filter conditions like (Field A equal 1 and field B equal X) OR (Field A equal 3 and field B equal Y).

Lesson: Troubleshooting Delta Load from R/3 to CRM

418 Lesson Duration: 10 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Troubleshoot errors Delta Load from R/3 to CRM

Business Example

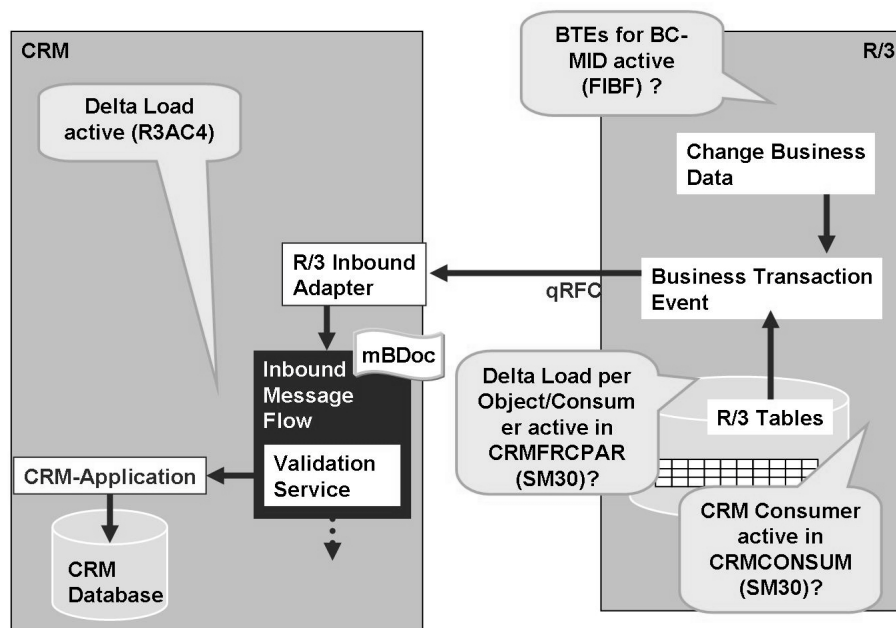


Figure 191: Delta Download: Check Customizing

Is the Delta Load active?

- Check, if the applications BC-MID and NDI are active in table TBE11 in the R/3 back-end
- Check, if the Business Transaction Events (BTEs) are active
 - In CRM go to transaction R3AC4 and check for the events
 - In R/3 check, if those events can be found in table TBE31.

Event handling

In transaction R3AC4 all events are listed that are needed for the different objects. These events are automatically activated if an Initial load is started. You can use transaction R3AC4 to manually activate or deactivate events. Events are client independent, therefore it is not possible, to deactivate the event if it shall be deactivated for one client in R/3. If you want to deactivate it completely, you have to do that manually. Deactivating an Event in transaction R3AC4 leads to an entry in CRMRFPCPAR that has the flag “Discard data” set to “X” and thus prevents the data from being sent to CRM.

Table CRMRFPCPAR:

Table CRMRFPCPAR is valuated in the way that an entry for a specific object will always be taken if it exists. If no specific entry exists, an entry with objectname “*” will be taken. The same goes for the load type. If no entry exists, no answer will be send.

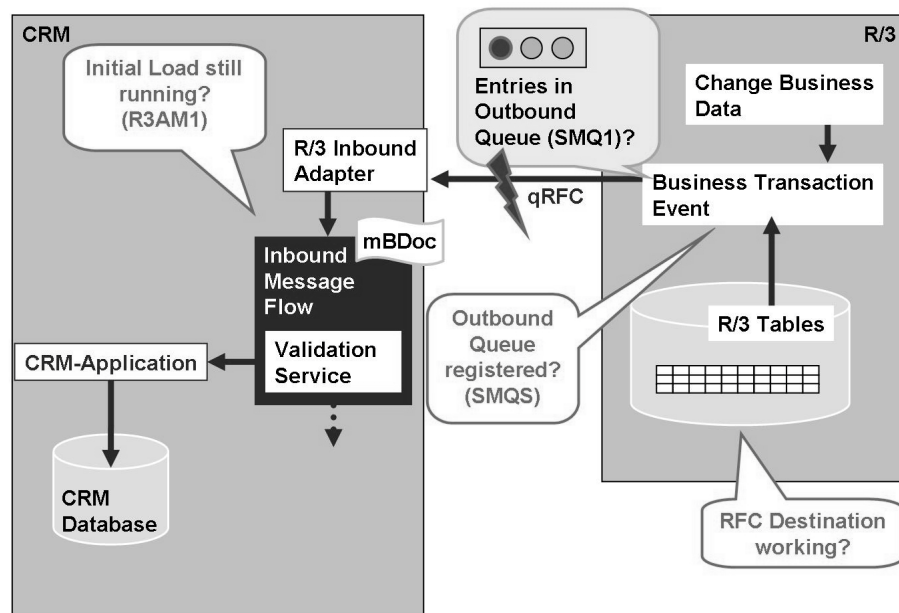


Figure 192: Delta Download: Error Within SAP R/3

Has the data been send to CRM?

- Check for queue entries in R/3 Outbound queue (SMQ1)
- Check the destinations for CRM (in R/3) in SM59
- Check table CRMCONSUM in R/3 for all active consumers
- Check for all active consumers in table CRMRFPCPAR in R/3 if an entry exists for the object
- If the queue is stopped, check if an Initial Load or Request is running
- Check the filter definitions.

Status of queue entries:

- If there is a STOP entry for a queue beginning with R3AD and a “*” at the end, this usually is set due to a running Initial Load or Request. These have to be finished before any Delta Load is allowed to be processed.
- For more details about the structure of queue entries, refer top previous slide on load is running.

Where to check the filter definition:

- You can check the filter definition in CRM in the object management (R3AC1, R3AC3 or R3AC5). Check, for which consumer the filter has been set. Check, if the consumer used in R/3 table CRMRFPCPAR matches the consumer of the filter criteria.

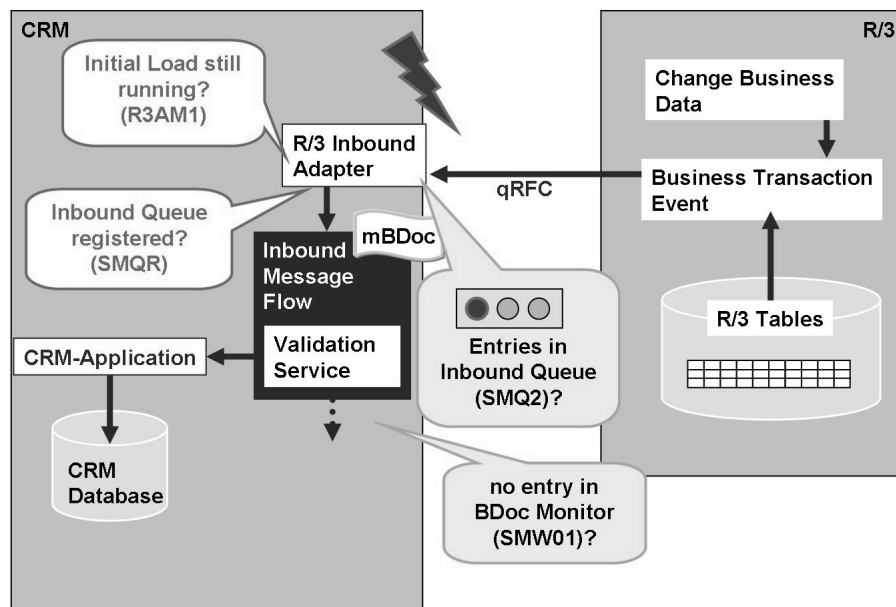


Figure 193: Delta Download: Error in CRM (1)

Has the CRM received the data?

- Check for queue entries in CRM Inbound queue (SMQ2)
- Check in the CRM Middleware flow trace, transaction SMW01,, if there are error messages for the BDoc message.
- Check for short dumps in transaction ST22in CRM.

If too much data gets to CRM

- Check note 788822.
- Implement all the notes referred to in that note
- Check all customizing settings described in that note.

Status of queue entries:

- For more details about the structure of queue entries, refer top previous slide on load is running.

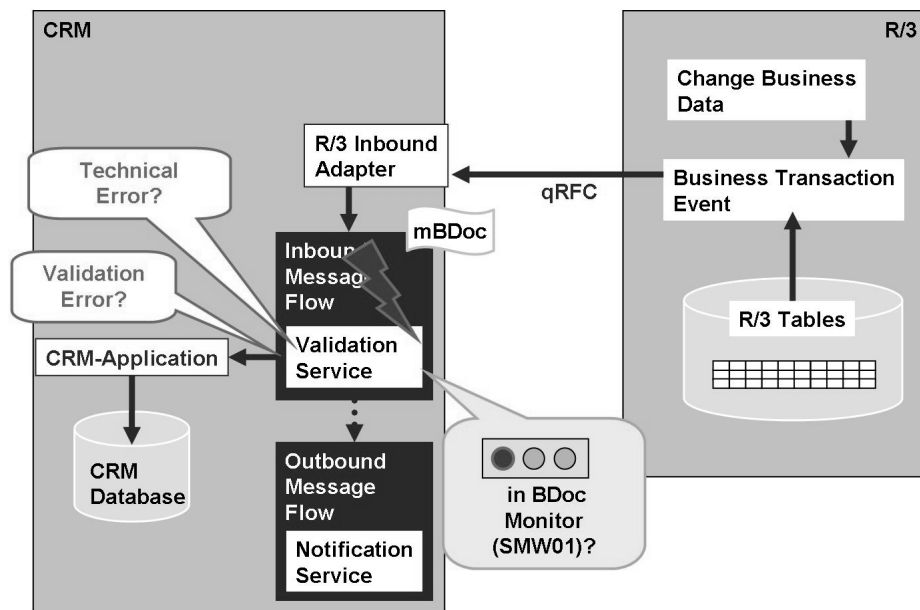


Figure 194: Delta Download: Error in CRM (2)

This slide shows the point where errors in validation happen

Lesson: Troubleshooting Load from CRM to R/3

423

Lesson Duration: 10 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Troubleshoot errors load from CRM to R/3
-
-

Business Example

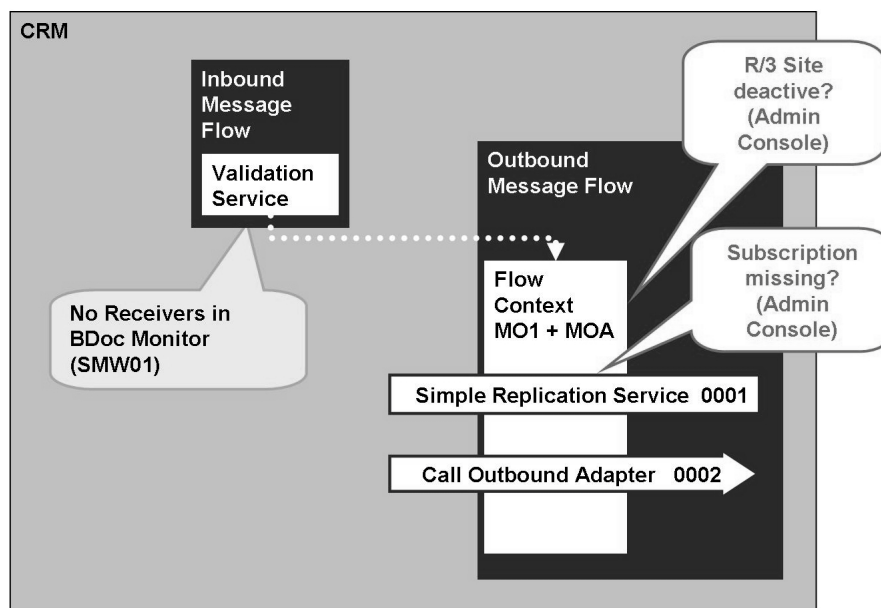


Figure 195: No Data Replication to R/3 Site

Is the R/3 site receiver of the data?

- Does an R/3 site exist with the correct RFC Destination. Check in the Administration Console (Transaction SMOEAC)
- Check, if there is a corresponding subscription for the object and the R/3 Site in the Administration Console (Transaction SMOEAC).

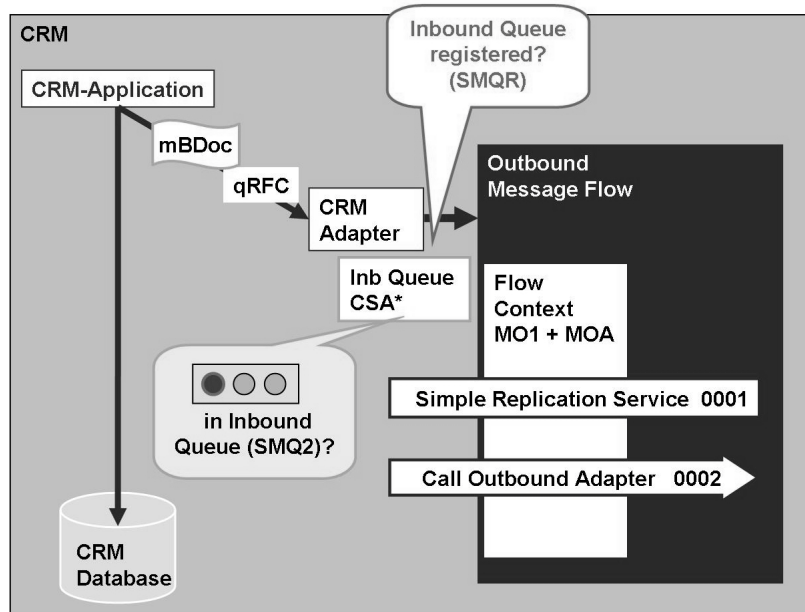


Figure 196: No Data Replication to R/3 Site: Delta Load

The CRM Application creates data on database and creates an BDoc within one LUW. The BDoc is passed to the Outbound Flow via qRFC. The name convention for the Queue is CSA*.

For single data the Flow Context is MO1. For multiple data MO2.

Within these Flow Contexts the Replication Service is called to find out the subscribed receivers. For each Receiver the Outbound Adapter is called.

In our case the data is to be transferred to the R/3 System.

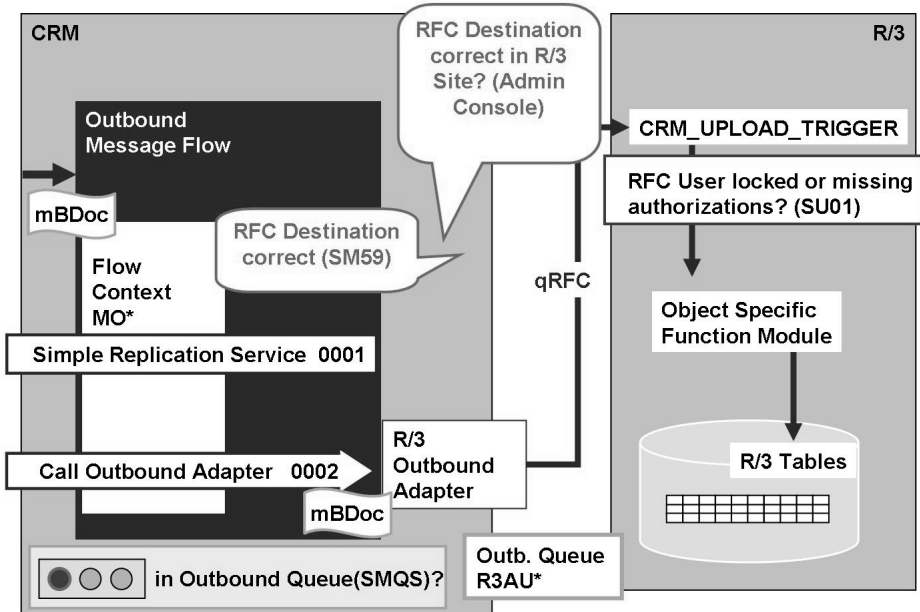


Figure 197: No Data Transfer

In our case the data is to be transferred to the R/3 System. The R/3 Outbound Adapter is called to convert the BDoc into a BAPIMTCS data container.

The BAPIMTCS data container is transferred to the receiver via qRFC. The name convention for the Queue is R3AU*

Has the data been sent to R/3?

- Check for queue entries in CRM Outbound queue, transaction SMQ1
- Check the destinations for R/3 (in CRM) in transaction SM59.

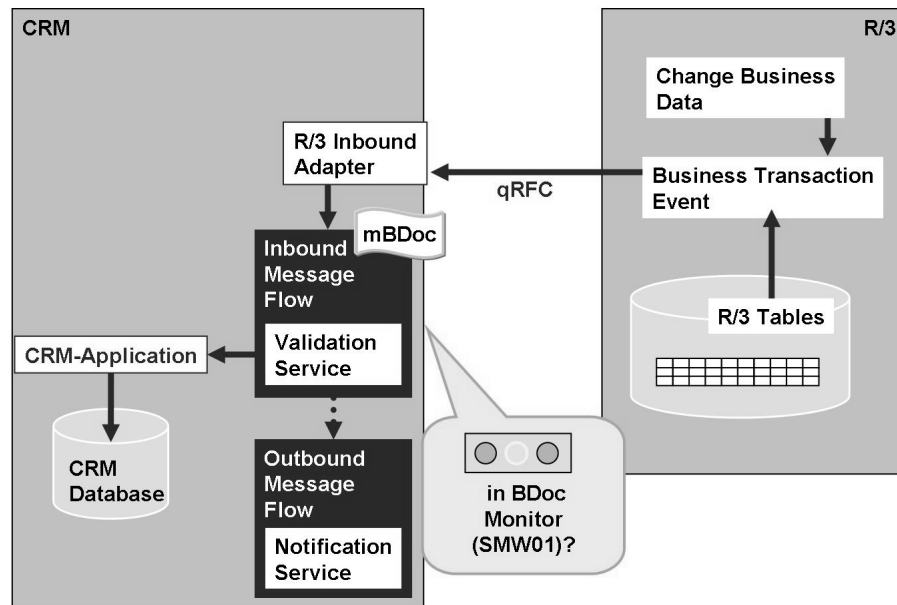


Figure 198: No Answer from R/3

This slide shows the points where errors in validation happen

The BDoc monitor will show if the R/3 has not sent an answer yet; the status will be "Send to receiver, not all have responded". Check the receivers for errors.

Has the CRM received an answer?

- Does the Delta load work – check as for Delta Loads
- Check for queue entries in R/3 Outbound queue (SMQ1)
- Check the destinations for CRM (in R/3) in SM59
- Check table CRMCONSUM in R/3 for all active consumers
- Check for all active consumers in table CRMRFPCPAR in R/3 if an entry exists for the object
- Check for queue entries in CRM Inbound queue (SMQ2)
- Check in the flow trace, transaction SMW01, if there are error messages for the BDoc
- Check for short dumps in transaction ST22 in CRM.

Unit 11

437

Data Exchange with 3rd Party Backend

Unit Overview

This unit goes into details of data exchange with 3rd party backends using CRM Middleware.

Unit Objectives

After completing this unit, you will be able to:

- Describe data exchange via the XIF (EXternal Interface Adapter).

Unit Contents

Lesson: External Interface Adapter (XIF).....	500
Demonstration: XIF Adapter	508
Exercise 33: External Interface for IDocs	511

Lesson: External Interface Adapter (XIF)

438 Lesson Duration: 30 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Describe data exchange via the XIF (EXternal Interface Adapter).
-

Business Example

SAP CRM is a standalone product that can be implemented without an R/3 backend system. To enable this, SAP is providing open message-based XML and IDoc interfaces. This enables you to use non-SAP systems for back-office applications.

The External Interface Adapter

- It can be used for:
 - Initial load of data objects
 - Continuous data exchange of data objects in real time
- It works bilaterally: Business objects (data) can be sent and received:
 - From SAP CRM to external systems
 - From external systems to SAP CRM
- It uses two standard formats:
 - XML/SOAP (Extensible Markup Language / Simple Object Access Protocol)
 - ALE/IDoc (Application Linking and Enabling / Intermediate Document)
- It is extensible without modifying the program code

Business data objects such as orders or business partners can be sent in SOAP/XML or IDoc format using external interfaces (XIF).

- From the CRM system to external systems
- From external system to the CRM system

Data objects can be loaded initially via file transfer using the DX/LSMW (Data Exchange/ Legacy System Migration Workbench) Workbench and they can be sent permanently to the CRM system.

Data objects can be loaded initially using the CRM Middleware adapter framework in external systems, loaded in a data file, or be sent permanently by CRM in external systems via appropriate application transactions.

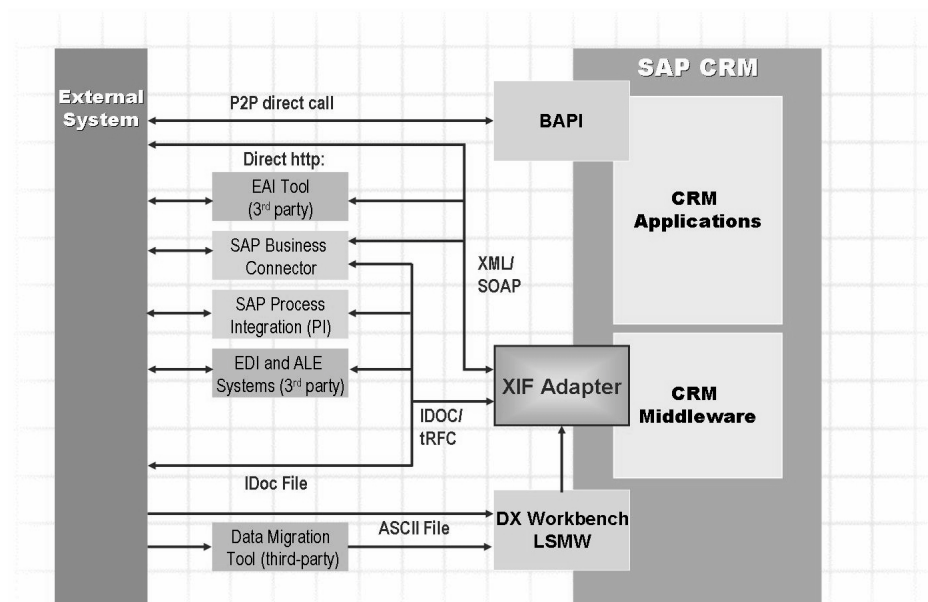
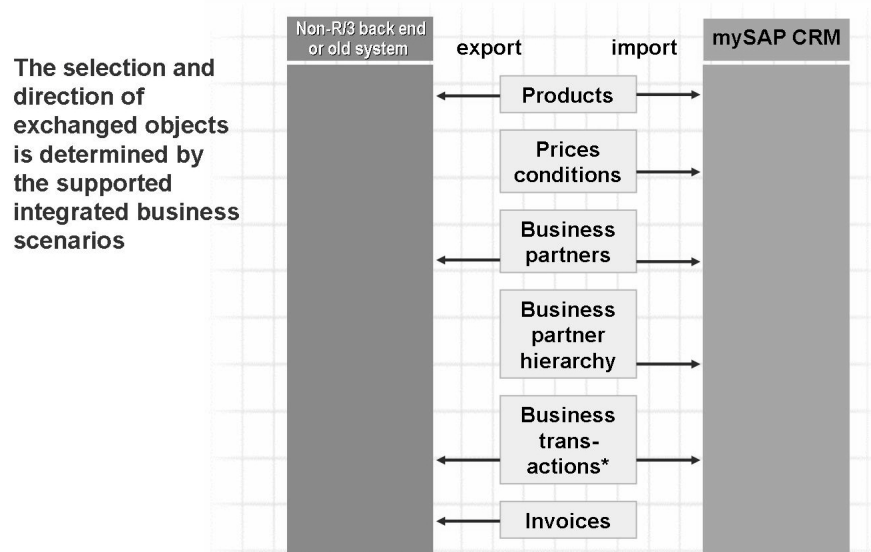


Figure 199: Back-End Integration Overview with the XIF Adapter

Just explain the technology here, do not go into detail of the DX Workbench, The SAP Business Connector or the SAP Exchange Infrastructure. These SAP products are not part of this course!

- All interfaces are linked to CRM Middleware and have an XML adapter and an IDoc adapter. The Middleware is replicated, which enables subscriptions to be created with the distribution information. Middleware also includes monitoring and error handling tools.
- The XML adapter is implemented in the form of an XML SOAP Call. Initial extracts and separate direct transfers are possible for each CRM object. The interfaces are published in the Interface Repository.
- Interfaces using SAP's ALE/IDoc technology offer one or more of the following options:
 - Data Transfer Workbench (together with the Legacy Migration Workbench), a tool for file-based import of data to a system (similar to initial data transfer). This tool offers mapping functions you can use to group data from several files and map them in the CRM message structure.
 - 12 certified third-party vendors of ALE message handling systems (including BEA, IBM MQSeries, NEON and TIBCO)
 - 55 certified third-party vendors of ALE converters (including CrossWorlds, Harbinger, Mercator, Oberon and Sterling)
 - 55 certified third-party vendors of EDI sub-systems (including Actis, Harbinger, Premenos, Seeburger and Sterling)

-
- SAP Business Connector is freely available for customers at <http://service.sap.com/connectors>.
 - CRM includes DX Workbench and a mapping tool for file-based initial data load.
 - 15 certified third-party ALE message handling systems (BEA, IBM MQSeries, NEON, TIBCO)
 - 58 certified third-party ALE converters (CrossWorlds, Harbinger, Mercator, Oberon, Sterling)
 - 57 certified third-party EDI subsystems (Actis, Harbinger, Premenos, Seeburger, Sterling)
 - 14 certified third-party migration interface partner tools (Artuad, ETI*Extract, NSX, SOPRA)
 - Details of certified third-party products can be found at <http://www.sap.com/csp>.



(*) Lead, opportunity, sales order, service order, and so on

Figure 200: The XIF Adapter: Exchanged Business Objects

The External Interface (XIF) Adapter provides:

- A service in the message flow
- IDoc and XML interfaces for external systems

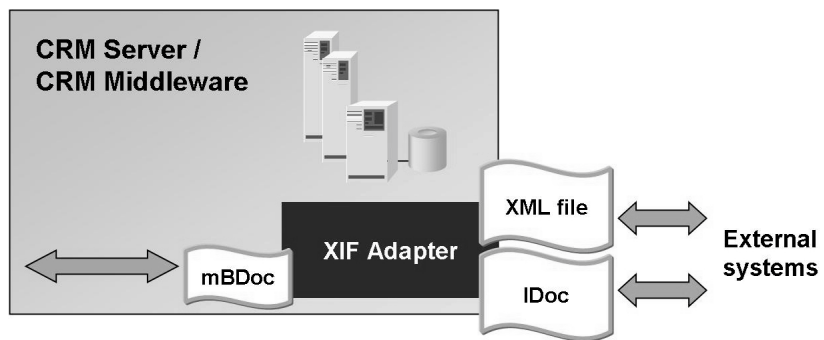


Figure 201: The XIF Adapter: Overview

Mention that Data Exchange via IDocs is faster than via XML, since IDocs don't contain metadata (tags).

The XIF Adapter provides:

- Services in the CRM Server messaging flow
- Bulk-message-capable IDoc and XML interfaces for external systems.

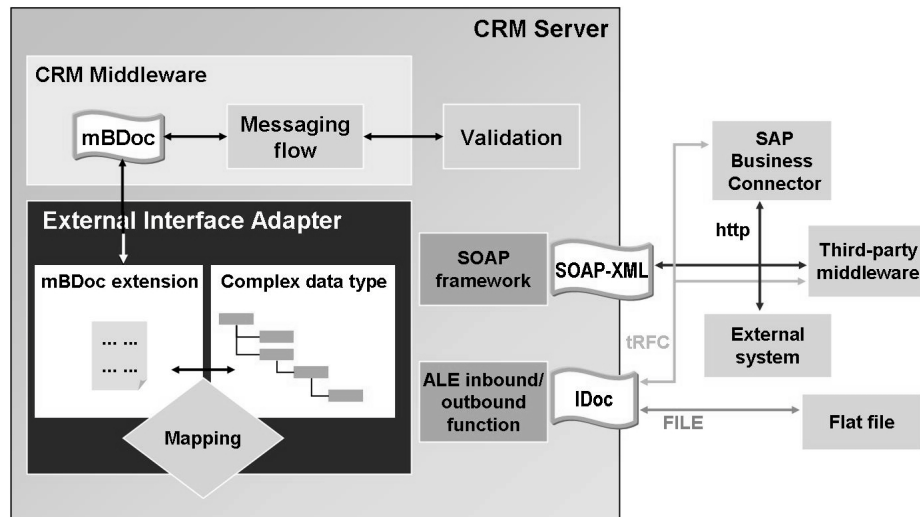


Figure 202: External Interface Adapter

In outbound transactions – for example, creating or changing a data object within an application transaction – an mBDoc is created and transferred to the CRM Middleware. Possible external receivers for the mBDoc are determined within the CRM Middleware and are transferred to the XIF Adapter together with the mBDoc. The data in the mBDoc is converted in the XIF Adapter into an XML-like complex data structure and an appropriate basic service (SOAP, ALE) is started that sends the data object to the external receiver, for example, via a third-party Middleware tool.

In inbound transactions, incoming messages in XML or IDoc format are received by the XIF Adapter via the basic services (SOAP, ALE) and are converted into the structures in the mBDoc. The CRM Middleware then starts, calling an appropriate application validation service that updates the application after successful checks on the message.

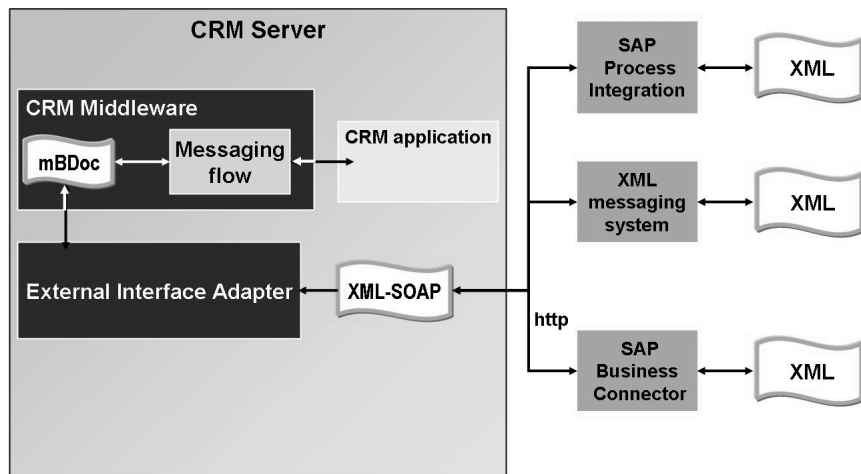


Figure 203: The External Interface Adapter: SOAP/XML

More detailed overview of SOAP/XML processing:

- SOAP/XML messages can be sent to the SAP Netweaver Process Integration (SAP Netweaver PI), where the XML message can be mapped into other XML schemas. The XML messages can be routed to other business systems.
- SOAP/XML messages can be sent to XML messaging systems that convert the XML into other XML schemas based on mapping rules and send these messages to other applications based on routing rules.
- For CRM to SAP Business Connector communication, IDocs should be used. An IDoc transfer is quicker in comparison to SOAP/XML because the IDoc document contains no metadata information (tags) and, therefore, the size of document sent down the line is substantially smaller in comparison.

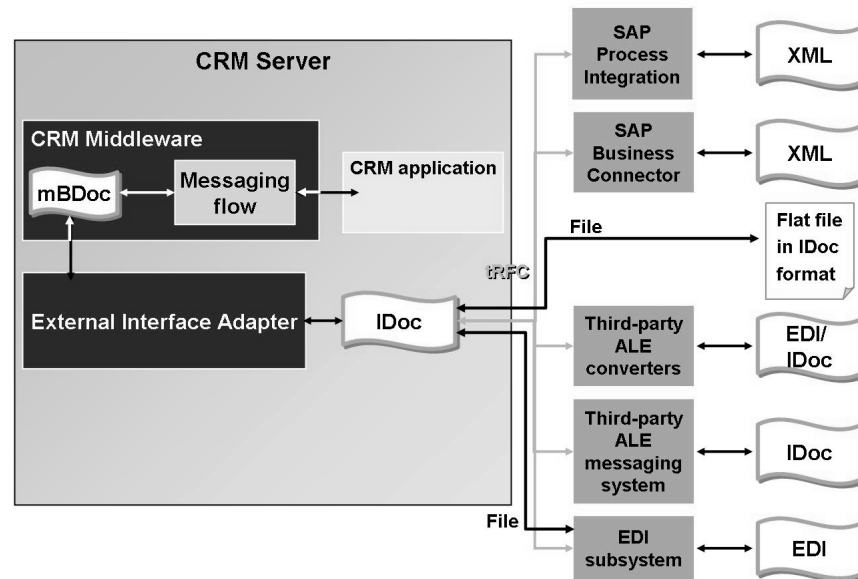


Figure 204: The External Interface Adapter: IDoc

More detailed overview of IDoc Processing.

- IDocs can be used to send messages to the SAP Netweaver Process Integration (PI), where an IDoc XML document will be established and mapped into other XML schemas. The XML messages can be routed to other business systems.
- IDocs can be used to send messages to the SAP Business Connector, where an IDoc XML document will be established and mapped into other XML schemas.
- IDocs can be used to send messages to a flat file.
- IDocs can be used to send messages to an ALE converter, where IDocs are mapped into standardized message formats (EDI communication).
- IDocs can be used to send messages to an ALE messaging system. In contrast to an ALE converter, the message handler will not perform any conversion or mapping, but instead receives IDocs and sends them to applications for processing.
- IDocs can be used to send messages to an EDI subsystem. In contrast to an ALE converter, the EDI subsystem does not use direct program-to-program communication to transfer IDocs.

Create an RFC destination

- Transaction SM59: TCP/IP Connection

Create a logical system

- Transaction SALE: for example Logical System "XIF-SYSTEM"

Create a Receiver Port

- Transaction WE21: Transactional RFC or File

Create a partner profile

- Transaction WE20: Partner Type *LS* with created logical system, Maintain Message Type for Outbound Parameters

Enter outbound parameters

- Transaction WE20: for example, Transfer IDocs at once, Basis Type *CRMXIF_*_SAVE_M01*, Message Type *CRMXIF_*_SAVE_M*, Receiver Port as maintained

Create a site

- Transaction SMOEAC: Site with site type *External Interface for IDocs* with maintained partner profile

Maintain subscriptions for publications

- Transaction SMOEAC: Object Type *Subscription*, assign maintained site to subscription

Assign maintained site to interface type

- Transaction *CRMXIF_C1*: Maintain BDoc Type and Interface Type (*CRMXIF_*_SAVE*) for the new site

Figure 205: Customizing IDoc Outbound Processing

After explaining the customizing steps, you may demo them using exercise "External Interface for IDocs". Note: there are 4 customizing scenarios to set up

1. XIF CRM – external System (XML)
2. XIF external System – CRM (XML)
3. XIF CRM – external System (IDoc)
4. XIF external System – CRM (IDoc)

The exercise just explains the scenario XIF CRM – external (IDoc), but after the demo, the participants will understand that the other scenarios are similarly set up.

When using IDocs for outbound processing, the settings displayed above must be made.

Create an HTTP destination

- Transaction SM59: HTTP Connections to external systems

Create a site

- Transaction SMOEAC: Site with site type *External Interface for XML* and assign HTTP destination

Maintain subscriptions for publications

- Transaction SMOEAC: Object type *Subscription*, assign maintain site to subscription

Assign maintained site to interface type

- Transaction CRMXIF_C1: maintain BDoc Type and Interface Type (*CRMXIF_*_SAVE*) for the new site

Figure 206: Customizing SOAP/XML Outbound Processing

When using SOAP/XML for outbound processing, the settings displayed above must be made.

Customizing IDoc inbound

- Create logical system via *SALE* → *Prepare Sender- and Receiver Systems* → *Setup Logical Systems* → *Name Logical System*.
- Create a partner profile via transaction WE20 (Partner Type *LS*).
- Enter a suitable message type *CRMXIF_*_SAVE_M* (*CRMXIF_*_SAVE_S*) in the inbound parameters.

Customizing SOAP/XML inbound

- No Customizing is required in the CRM system for receiving SOAP/XML documents.
- CRM HTTP port setting via transaction SMICM → *Goto* → *Services*.

Figure 207: Customizing Inbound Processing

Note: Perform demonstration “XIF Adapter”

When using IDocs or SOAP/XML for outbound processing, the settings displayed above must be made.

Demonstration: XIF Adapter

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Show Logical System, Transaction SALE
 2. Show TCP/IP connection, Transaction SM59
 3. Show Port, Transaction WE21
 4. Show Partner Profile, Transaction WE20
 5. Create a new Site (BE CAREFUL: site name must be in capital letters !!!), in the AdminConsole with Site Type: External Interface IDocs. Use the Logical System XIF System and the Subscription for the Business Partner (BULK).
 6. With the transaction CRMXIF_C1 assign the Site to the Interface Type for BUPA_MAIN. (New entry crmxif_partner_save).
 7. Show BDoc messages, transaction SMW01, button “receivers”.
 8. Create a Business partner, and display the generated IDoc with Transaction BD87 (IDoc-Monitor). In the segment E101CRMXIF_PARTNER_KEYS CRMXIF_PARTNER_KEYS
-

Unit 12

455

BW (BI) Adapter Overview

This unit is not intended to teach BI to CRM people nor is it intended to explain the whole process of BI integration.

It is just a quick overview focusing on what BI needs from a sending system (like CRM or ERP) which is a flat layout of fields called an extract structure (part of a BI related object called a Data Source) and how the BW adapter takes a BDOC and writes it to this structure.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Understand the purpose and technology of the BI Adapter
- Understand roles and responsibilities for typical projects involving BI and CRM.

Unit Contents

Lesson: Overview of the BI (Business Intelligence) Adapter.....	520
Exercise 34: BW Adapter Overview	529

Lesson: Overview of the BI (Business Intelligence) Adapter

456

Lesson Duration: 40 Minutes

Lesson Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the purpose and technology of the BI Adapter
- Understand roles and responsibilities for typical projects involving BI and CRM.

Business Example

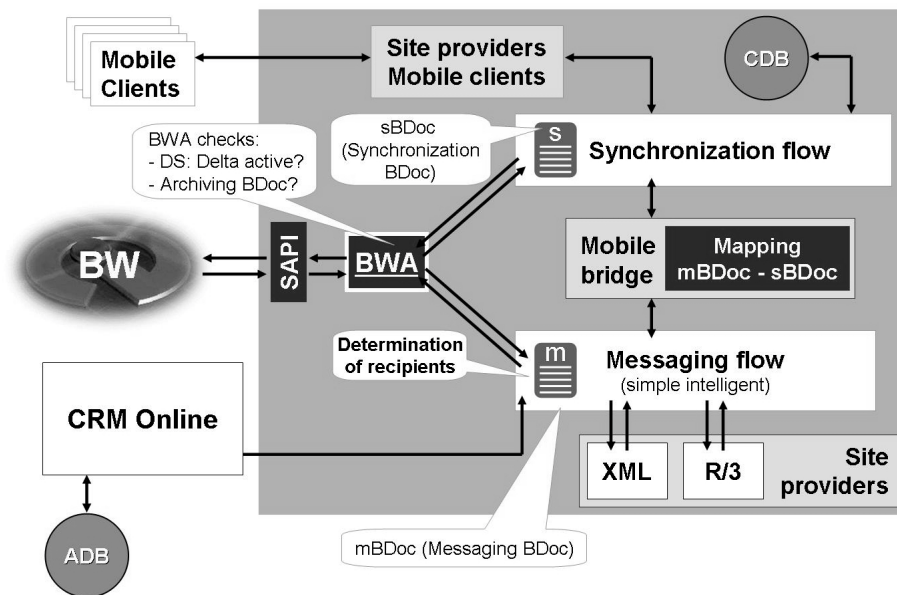


Figure 208: Landscape for Delta Extraction

Due to time constraints we are just focusing on the important BW data sources on CRM that use the BW Adapter (for example orders or activities) not all data coming from CRM uses the BW Adapter. Some less dynamic data is extracted using generic BI tools available in ERP or other SAP products.

Also, we are only focusing on how delta is extracted, as full loads are not as difficult to follow for BI people. The major actions are Delta related using the BW adapter.

- BWA: BW Adapter
- mBDoc: Messaging Business Document
- sBDoc: Synchronization Business Document
- CDB: CRM Consolidated Database (Mobile Sales/Service)
- ADB: CRM Application Database
- The BW Adapter is called most of the time by the middleware messaging flow. Only in very rare situations does the synchronization flow invoke the BW Adapter. In a manner similar to the function of the R/3 adapter (where the R/3 adapter converts a BDoc into a BAPIMTCS layout), the BW adapter converts the BDoc to a layout (structure) expected by the BW system.

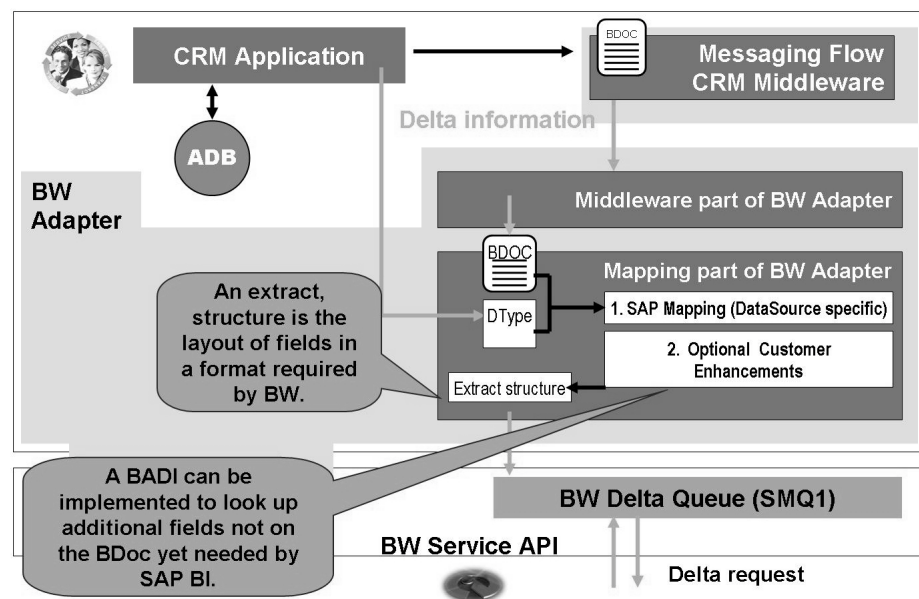


Figure 209: CRM Extraction Framework: Delta Processing

This is just a blown up version of the prior slide focusing on Messaging flow and the guts of the BW adapter.

For the R/3 adapter, the task was to convert an mBDoc to the flat structure BAPIMTCS that could be placed in the outbound queue and then sent to R/3.

Similarly the BW Adapter (it *should* now be called the BI adapter) has the task of taking a BDoc and converting it to a structure that BI can utilize. This structure is called an Extract Structure.

The Extract structure (a collection of related business fields) plus the technical extraction methodology from a functional perspective is referred to as a BI data source. An example of a data source is CRM_OPPT_H

Since the same BDoc (like the mBDoc for transactions: BUS_TRANSACTION_MESSAGE) can be used to process many different documents (orders, quotes....) the Document type (Dtype) and the BDoc together are used to identify the appropriate BW Adapter meta data. This meta data consists of the mapping logic between the BDoc and the appropriate BI data source (extract structure).

Step 2 shows the option of looking up additional fields during customer specific **Business Add Ins** (BAI).

The middleware flow calls the BW adapter, then the BW adapter writes to the Outbound Queue. The BI people call this queue the BW Delta Queue (transaction RSA7). The BW Delta Queue is just a BW specific program that reads the outbound queue of CRM for just the BW data sources and no other queue entries. It also has the ability to show the data contained in the queue in an easy to read way.

One main difference between R/3 and BI when it comes to the outbound queue is that the queue demon does not process the BI queues automatically. The data are staying in the outbound queue (known to BI as the Delta Queue) until the BI team asks for the data via a BI object called an Info Package.

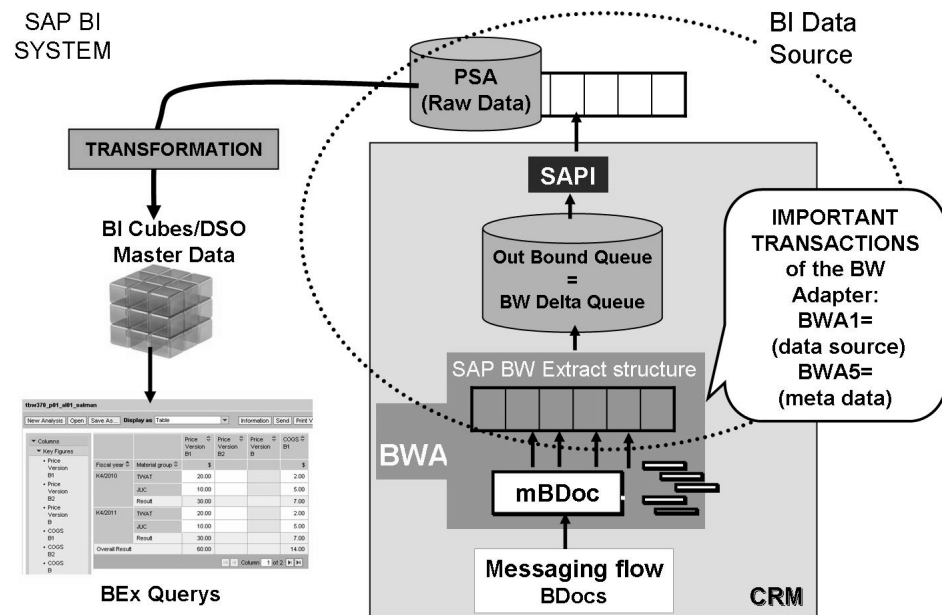


Figure 210: BW Adapter (BWA) Basic Function

The BW Adapter just takes the BDoc, does some field mapping and like the R/3 adapter writes it to a structure and puts it in the outbound queue.

The structure is not the generic structure used by the R/3 adapter but rather a specific layout for each different business set of data called a BI DATA Source. The name of the structure is the “extract “structure, but it is a different layout of fields for an order versus an activity.

Optional: Demo the transactions on the slides or parts of the optional exercise.

Definitions:

- Data Source (A BI term for a collection of raw data fields that are related from a source system (CRM) and a technical means to extract these fields. The collection of fields is defined as an ABAP structure called a BW Extract structure. The PSA is a physical table on BI to temporarily store the raw data for efficient processing by BI and for data back up purposes).
 - Example: The CRM data source **0CRM_SALES_ACT_1** includes an extract structure that will contain fields from the CRM activity (Activity Partner, From and To dates, Reason Codes and other fields relating to CRM activities).
- BI Transformations are mapping and cleansing rules for data in route from a RAW format (CRM BDoc fields) to a BI reporting target, for example a BI Cube. A BI cube is a multi dimensional collection of tables joined relationally to provide a robust and efficient object for queries.

- The BW adapter (BWA) is called as a part of the messaging flow most of the time and only in rare cases called by the synchronization flow. Once activated, the BW adapter is tasked with converting the hierarchical BDoc object to the flat structure required by BI.
- The main reason for the BW adapter in CRM is to capture delta (change or new records) and prepare it to be retrieved by BI. As part of the processing the BW adapter checks to see delta is activated (a BI function) for a specific set of data (called a data source). If it is active then the records contained in the BDoc are written to the outbound queue using the name of the data source to uniquely identify it. To reduce confusion and hide unneeded data, the BI Delta Queue is a functional name given to the out bound qRFC queue. The data in this queue is not immediately sent to BI, but rather waits in the queue until a specific request is made for the delta data of a specific source, using an BI object called an InfoPackage. The transaction RSA7 is used to see the data in the queue (Outbound Queue), identified as a BI datasource.
- The Service API (SAPI) is a generic interface that processes the InfoPackage and coordinates data transfer to BI. The Service API (SAPI) is installed as part of the “Plug in” software component and it is the same on both R/3 or CRM.
- The transaction BWA1 allows the review of the meta data, used by the BW adapter (the mapping rules between the DataSource (extract structure) an the BDoc). The transaction BWA5 is used to activate the BW Adapter functionality for a specific BI DataSource. It must be executed for each Business Content data source in addition to the standard transaction RSA5 currently used by your BW team. However, if BI content is activated using the normal tools included in BI, the CRM components (RSA5/BWA5) will be activate automatically.
- - **Note:** Not all CRM to BI transfer is done via the BWA. In many cases, for low data volume data sources, the extraction process is exactly like that of R3 and the CRM specific BW adapter is not needed.
- The activation via BWA5 is not necessary, it is performed automatically when the BI DataSource is activated.

Check and Display Flow Definitions Transaction SM08FD

Display and Check Flow Definitions

Short Name	Flow Context	Context Description		
Order No	fu Syn.	Function Module Name	Service ID	Short text for function module
0001	SMW3_OUTBOUNDADP_CALLADAPTERS	Flow Outbound Adapter (Dispatcher)		
CO01	BUS_TRANS_MSG	mBDoc Validate	MI0	
0001	CRM_DOWNLOAD_BTHBDOC_VAL			
CO01	BUS_TRANS_MSG	mBDoc Notification	MO1	
0001	SMO4_REPLICATION_WRAPPER_MSG	Replication Wrapper for Messaging Flow		
0002	SMW3_OUTBOUNDADP_CALLADAPTERS	Flow Outbound Adapter (Dispatcher)		
0003	CRM_UPLOAD_BW_SRV			
0004	CRM_UPLOAD_BEA_SRV	Middlewareanbindung: Adapter für Billing Engine		
0005	CRM_UPLOAD_BEA_SRV_R1	Middlewareanbindung: Adapter für Rebate Engine		
0006	CRM_IPM_UPLOAD_BEA_SRV	Middlewareanbindung: Adapter für Billing Engine		
0007	CRM_UPLOAD_STATUS_CONTROL_SRV	Validierungsservice für Vorgänge		
0008	CRM_UPLOAD_MCA_SRV			
0009	CRM_CM_BUSTRANSMG_LISTENER			
0010	CRM_UPLOAD_MCA_PRJ	Outbound Flow Service für Mobile Clients		
0011	CRM_CHANGE_HISTORY			

The CRM_UPLOAD_BW_SRV is the call for the BW adapter.

Figure 211: The BW Adapter as a Part of the Messaging Flow

In most cases the Messaging Flow is the part of the process that invokes the BW adapter. Remembering the information from the previous slide, the BW Adapter then converts the BDoc structure to a flat “extract structure” containing fields for a specific business purpose. This data is then written to the outbound queue.

BW Adapter: Maintain DataSource Transaction BWA1

Repository Access

DataSource: CRM_OPPT_H

Display Change Create Copy

There is a different mapping logic executed by the BW adapter for each BW data source.

Meta Data	Extract Structure	Selection Conditions	Mapping
ACTIVITY_PARTNER	PARTNER		PARTNER_NO
ACTIVITY_CATEGORY	ORDERADM_H		PROCESS_TYPE
ACTIVITY_DIRECTION	ACTIVITY_H		DIRECTION
ACT_REASON_CAT	SRV_SUBJECT		KATALOGART
ACT_REASON_CODE	SRV_OSSET		GUID
ACT_REASON_CODE	SRV_SUB		
ACT_REASON_GROUP	SRV_SUB		GRUPPE

BI (BW) Requires Extract Structure fields

Segment Name and Fields come from the CRM BDoc

Figure 212: The BW Adapter and its Meta Data

The Data Source is a collection of fields defined by an extract structure. The BDoc has different fields in many cases, the BW adapter has the mapping meta data.

A BI Data Source is a BI specific object which defines a collection of fields to be extracted (for example an Extract Structure).

A small list of examples of BI Data Sources (each having their own extract structure) include:

- 0CRM_OPPT_H = Opportunity Header
- 0CRM_OPPT_I = Opportunity Items
- 0CRM_SRV_CONFIRM_H = Service Confirmations
- 0CRM_SALES_ACT_1 = Activities

The BW Adapter has the task to take a specific BDoc and Document, then select the appropriate Meta Data (In the above example 0CRM_OPPT_H) and execute the assigned mapping logic.

The data in the structure is then written to the outbound queue (known to BI people as the delta queue)

The instructor will explain that this is not the CR900 Analytics class focusing on BI and CRM. That said, the meta data for the BW adapter is automatically activated for use when the associate BI data source is activated by the functional BI team.

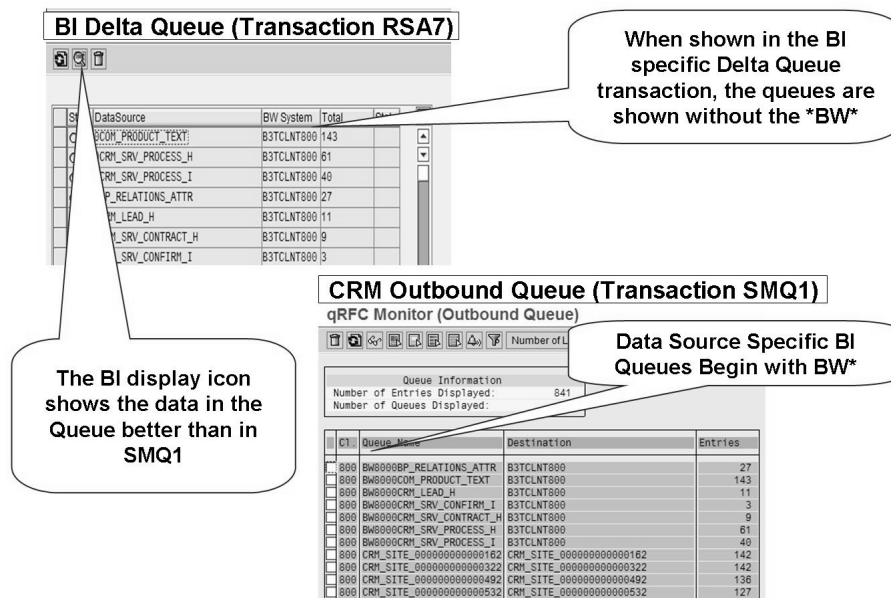


Figure 213: BI Delta Queue (RSA7) vs. the Outbound Queue (SMQ1)

As BI data sits in the outbound queue and is not automatically transferred until requested by BI, we need an easy way to see and read the data in the Queue. Transaction RSA7 reads the outbound queue and displays the data much better than transaction SMQ1.

Notice that the BI specific transaction RSA7 shows just the BI related queues corresponding to the BI Data Source name, while the generic SMQ1 transaction shows all the CRM outbound queues even the ones headed R/3 or Mobile sites or other systems.

Both RSA7 and SMQ1 read the same qRFC tables.

One big difference is that the BW related queues are not processed automatically by the Queue Out demon. Rather the data is designed to stay in the out bound queue until the BW application team executes a BI Info Package.

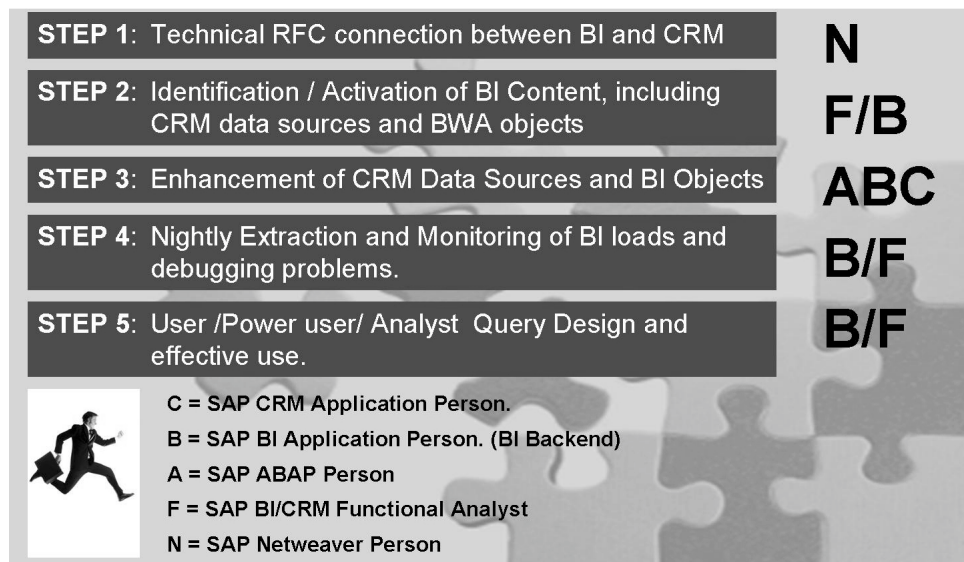


Figure 214: Basic Project Tasks and Responsibilities CRM >> BI

In step one the Netweaver person is responsible for maintaining the appropriate RFC connections between BI and the sources systems including CRM.

Business Content Consists of: BI Queries, Cubes and data sources and in the case of CRM, the BW Adapter objects for BDoc Mapping.

Unit 13

471

Groupware Adapter Overview

Unit Overview

This unit describes Groupware and how it can be used to transfer contacts and activities between groupware (lotus/outlook) and SAP CRM.

Unit Objectives

After completing this unit, you will be able to:

- Understand the purpose and basic technology of the Groupware Adapter.

Unit Contents

Lesson: Overview of the Groupware Adapter.....536

Lesson: Overview of the Groupware Adapter

472 Lesson Duration: 45 Minutes

Lesson Overview

This lesson covers Groupware integration.

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the purpose and basic technology of the Groupware Adapter.

Inform participants that this unit should just be treated as an overview, the appendix contains more detailed information to be used when this functionality is being implemented. This lesson doesn't cover the Groupware Client-side integration.

Note: It will not be included as part of the certification test.

Business Example

Overview of the Groupware Adapter

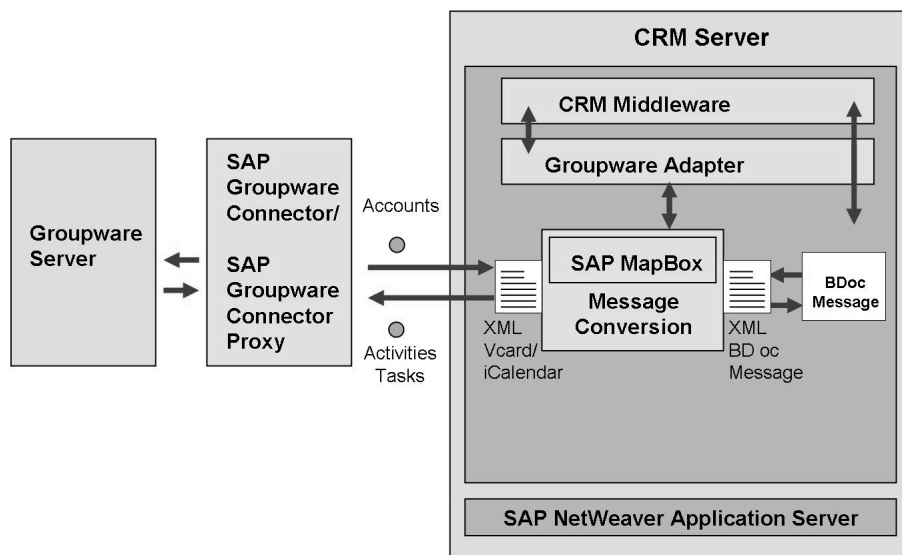


Figure 215: Landscape for Groupware Adapter

Data such as accounts, activities and tasks can be exchanged between SAP CRM and the Groupware solution in both directions. The accounts, activities and tasks are provided to Groupware users as contacts, appointments and tasks and vice versa.

The diagram illustrates the data flow in Groupware integration.

The data Exchange between CRM and Groupware is performed via a Groupware Adapter and Groupware Connector. The Groupware adapter is called as part of messaging flow of CRM Middleware. On subsequent slides each component will be discussed in a little more detail.

Various notes that are related to the Groupware adapter:

- General Groupware integration
- Note Number Short Description
- **1071992**ABAP MapBox Fixes for CRM 5.0 SP09
- **1096187**Fixes for CatsList.xml - ABAP MapBox
- **1096928**ABAP MapBox Fixes for CRM 5.0
- **1097065**CRM ABAP MapBox changes to 5.2
- SAP Groupware connector notes
- **843407**Installation Guide
- **957409**Groupware Exchange Connector Troubleshooting Guide
- **959294**Groupware Adapter Customizing and User Guide. This SAP Note describes the Customizing settings for the Java-based MapBox. You can also use it for settings in the ABAP-based MapBox, because the only difference is the way in which the data is saved.

Groupware Integration Architecture

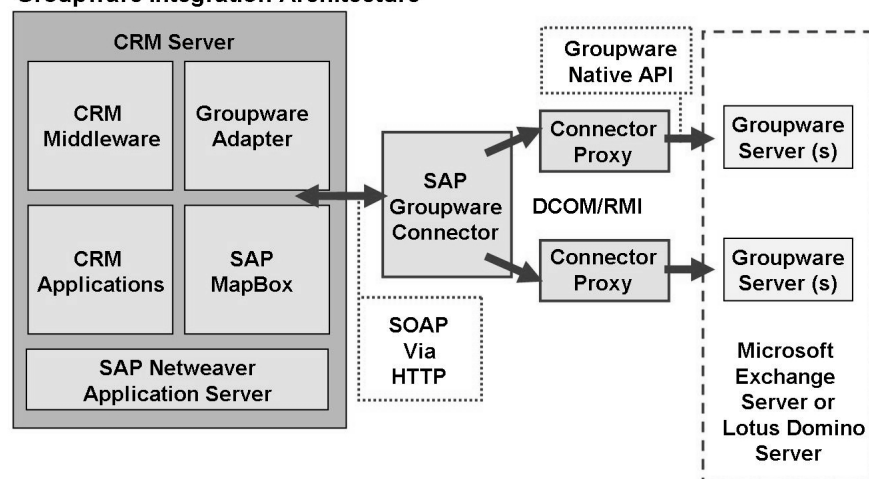
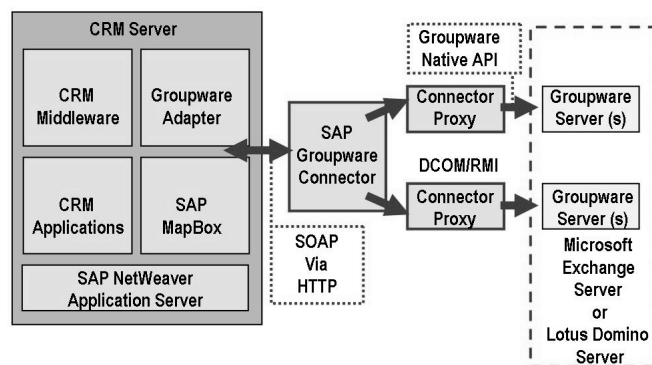


Figure 216: Integration Architecture: Groupware Adapter.

Groupware Adapter:

- The *Groupware Adapter* on the CRM server supports the conversion of messages. It is based on the SyncPoint technology. BDoc messages are converted to standard Groupware formats (iCalendar and vCard). A mapping framework is used here, the MapBox and the payload interface (SOAP-based messaging interface for the exchange of data between the CRM server and the Groupware Connector). iCalendar and vCard are the Internet standards for the display of Groupware calendar objects and contacts. Predefined mappings are delivered for Groupware integration.
- The vCard or icalendar XML data is sent from the Mapbox via the internet standard HTTP protocol, as a SOAP message. The Groupware connector provides a response that the item was or was not processed.
- It is the job of the Groupware server (Lotus Domino or Microsoft Exchange) to communicate the new contacts, activities or tasks to the employee the next time they log in. The process also works in reverse.



MapBox:

- Converts the XML BDOC format to the more standard iCalendar and vCard XML formats.
- Now delivered as an ABAP Based program. As part of the Netweaver Application Server.

SAP Groupware Connector:

- Executes message synchronization between the CRM server and the Groupware server.
- Syncs calendar and contact information by linking to the specific Groupware server (Lotus Domino or Microsoft Exchange) using the communication technology and API provided by each vendor. Downloaded from SAP Service Marketplace.

Figure 217: Integration Architecture: MapBox and SAP Groupware Connector.

For CRM 2005 after Service Package 09 and later releases you must make a setting to use the ABAP version of the Mapbox instead of the Mapbox Java Version:

The below steps may already be done but check to make sure.

- Step 1.) Go to Transaction SM30.
- Step 2.) Enter the View name as ISPCFG as below:
- Step 3.) Click on New Entries.
- Enter the value “CRM_MAPBOX” in Parameter name and “X” in Parameter Value. *

Hint: Do NOT delete the other entry in the ISPCFG Table.

In addition if you want to log the MapBox functions in the Application Log (transaction SLG1), you need to add an “X” to the “parameter value” 2 field. To review the logs entries generated by the mapbox, access SLG1 and enter CMW_MBX in the Object field, then execute.

Groupware Adapter Set up I: Sites in Administration Console

- You must create sites for the groupware adapter using site types below:
 - **1) Groupware Adapter 01 (mBDoc)**


This site enables exchange of Activities and Tasks between CRM Activity Management / Workforce Management and groupware. In addition, it enables bidirectional exchange of account master data with the public contact folder of Groupware.
 - **2) Groupware Adapter 02 (sBDoc)**

This site enables the transfer of account master data into the private folder of each Groupware user.

Procedure:

1. Log on to the *CRM server* and choose *Architecture and Technology* → *Middleware* → *Administration* → *Administration Console* (Transaction SMOEAC).

The Administration Console: Object Navigator screen appears.

2. Select *Site* from the *Object Type* drop-down list.
3. Choose *Object* → *Create*  from the application menu or the corresponding symbol from the application toolbar.

The Administration Console: Add Site screen appears.

4. Under *Object Information: Site*, enter the following details:
 - **Name:** Indicates the name of the new site. Enter a name for the site.
 - **Description:** Specifies the description of the site. Enter a description for the site.
 - **Type:** Indicates the site type. Select the *Groupware Adapter 01 (mBDoc)* site type from the drop-down list.
5. Save the site.
6. To create the site based on *Groupware Adapter 02 (sBDoc)* site type, repeat steps 3 to 5. However, in step 4, select the *Groupware Adapter 02 (sBDoc)* site type.

Subscription	Publication
Groupware Adapter Customizing (MESG)	Groupware Adapter Customizing (MESG)
Groupware Adapter Messages (by object = GWA_APPLN_MSG) (MESG) Segment Name = GWA_MSG_CLASSIC Segment Field Name = ARBGB Operator = EQ Criteria Type = D Criteria Value Low = GWA_APPLN_MSG	Groupware Adapter - Generic Messages (by object) (MESG)
Groupware Adapter Metadata for all BDoc Types (MESG)	Groupware Adapter Metadata for all BDoc Types (MESG)
Groupware Object Master Category List (MESG)	Groupware Object Master Category List (MESG)
Groupware Object Selection Filter Fields and Values (MESG)	Groupware Object Selection Filter Fields and Values (MESG)
All Business Partners (MESG)	All Business Partners (MESG)
All Business Transactions (MESG)	All Business Transactions (MESG)
Create the following subscriptions only if the workforce management application is used in Groupware integration:	
WFM Groupware Integration Customizing (MESG)	WFM Groupware Integration Customizing (MESG)
WFM Groupware Integration (MESG)	WFM Groupware Integration (MESG)

Figure 218: Groupware Adapter Set up II: Req. Subscriptions

- The list of the objects is also listed in the document “Groupware Integration Guide” in the SAP Service Marketplace/SAP Support Portal/Installation and Upgrade Guides.

Groupware Adapter Set up III: Initial Processing

- To implement groupware successfully many steps are needed:
 1. Preparing for Customizing Download
 2. Customizing Data download to the MapBox Repository
 3. Loading Accounts to the MapBox Repository
 4. Public Folder Contact Synchronization
 5. Private Contact Folder Synchronization
 6. Activity Synchronization
 7. Task Synchronization

Hint: The steps identified above are beyond scope and the time period allowed for this class. A step-by step guide is attached in the appendix of this class, CR500.

The Mapbox must take the key of information in the BDoc (example country 01) and pass the text for this to the vCARD XML output. This requires a lot of information about the customizing and metadata of activities and customers.

Another major prerequisite is E-mail address maintenance. All the accounts in CRM that take part in Groupware Integration and will be part of the business activity must have a valid SMTP e-Mail address maintained in the Account Management application.

Accounts are synchronized as contacts to the Public contact folder or Private mailbox contact folder irrespective of whether an e-mail address is maintained in the Business Partner Master Data or not.

But for integration with Activity Management to work, the partners who wish to have their Business Activities in CRM synchronized to Groupware as an appointment or task must have a valid e-mail address maintained in the Account Master Data.

- Make sure no two Accounts have the same e-mail address maintained.
- “e-mail address” must be maintained in the **Main Address and Communication Data** of the Account.

Unit 14

481

Introduction to CRM WebClient UI

The next couple of units focus on topic **CRM WebClient UI** and its configuration. Also note that the CRM WebClient UI topics (not all!) in this course are referenced from the standard course CR580 (SAP CRM User Interface)

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- List the terminology of the different screen elements
- State what functions the different UI elements have
- Personalize the different UI elements

Unit Contents

Lesson: UI Elements	548
Exercise 35: Starting the CRM WebClient UI.....	573
Lesson: Personalization	578
Exercise 36: Personalizing the CRM WebClient UI.....	585

Lesson: UI Elements

482

Lesson Duration: 75 Minutes

Lesson Overview

This lesson explains the main elements of the CRM WebClient UI.

Lesson Objectives

After completing this lesson, you will be able to:

- List the terminology of the different screen elements
- State what functions the different UI elements have

This lesson intends to introduce the CRM WebClient UI elements and generic CRM WebClient UI framework features from a business user perspective.

Business Example

You want to get an overview of the SAP CRM User interface (CRM WebClient UI) with the terminology of the different screen areas and elements.

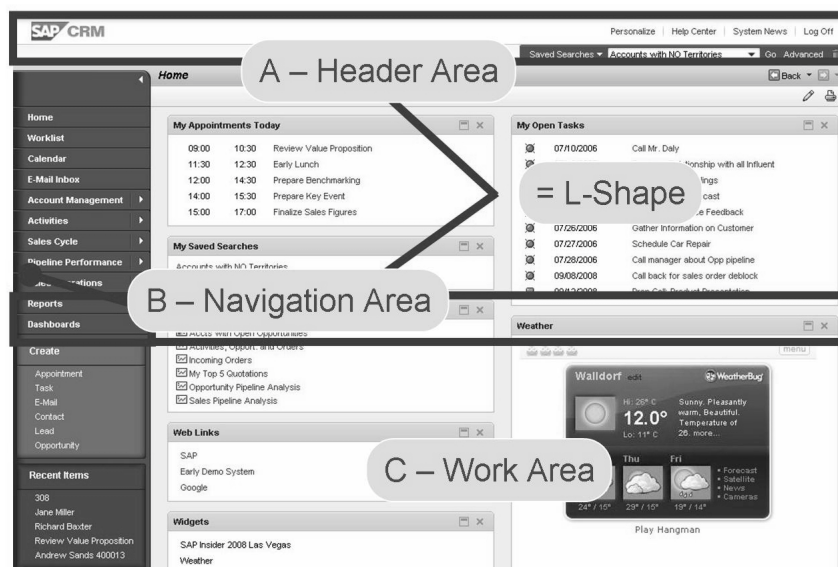


Figure 219: Main Screen Areas

The main screen areas are

- the Header Area
- the Navigation Area
- the Work Area

The combination of header and navigation area are called L-Shape.

The L-Shape always stays fix, so the user always has access to common functionality and never gets lost.

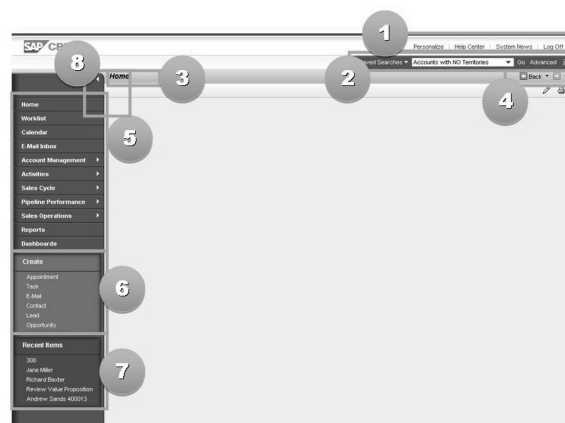
The Work Area changes its content based on the navigation or functions a user executes.

The L-shape provides easy global navigation throughout the entire SAP CRM application. Generic shortcuts for fast data entry, access, and other information are also included. The L-shape consists of a header (top) and navigation (left-hand) area.

The position and size of the L-shape is static and its content can be configured as business-role dependent.

Corporate branding can generally be applied to all areas via the CSS files, while the upper area is often used to place corporate images or color schemes.

The L-Shape provides easy global navigation through the entire SAP CRM application. It includes generic shortcuts for fast data entry or data access. The L-Shape consists of the header (top) and navigation (left) area



L-Shape characteristics

- Upper area static regarding position and size
- Navigation bar can easily be configured per role and collapsed

L-Shape contains

1. System links
2. Saved searches
3. Work area title
4. History back/forward
5. Navigation Bar – Work Center
6. Navigation Bar – Quick Create
7. Navigation Bar – Recent Items
8. Open/close Navigation Bar

Figure 220: UI Element: L-Shape

Explain the shape and elements.

Recent Items is a new feature within SAP CRM 7.0

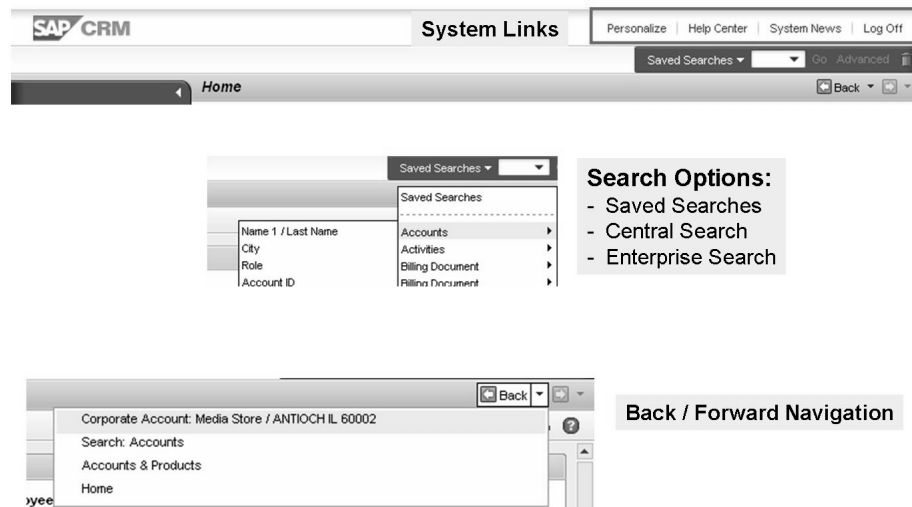


Figure 221: Header Area

-
- Saved Searches will be overwritten when using the same name twice.
 - Quick create links can be extended in order to launch transactions in other systems.
-

The Header Area system links provide the following functions:

- Personalize: Generic personalization options for the user: Examples: Change Password, Change keyboard shortcuts.
 - Help center: Offers direct access to Business User Documentation.
 - System news: Provides access to general system messages, such as those set and published by an administrator.
 - Central Search: Possibility to use Saved Searches and/or Simplified Advanced Search and/or Simple Search.
 - Log Off: Log off possibility.
-

This feature is now also available for Interaction Center WebClient users.

The definition of saved searches is user-specific and cannot be predefined by the administrator.

The navigation bar allows direct navigation to all entry pages and the most important searches. It provides a maximum of two levels in navigation. Click on the triangle area to open the second-level navigation area.

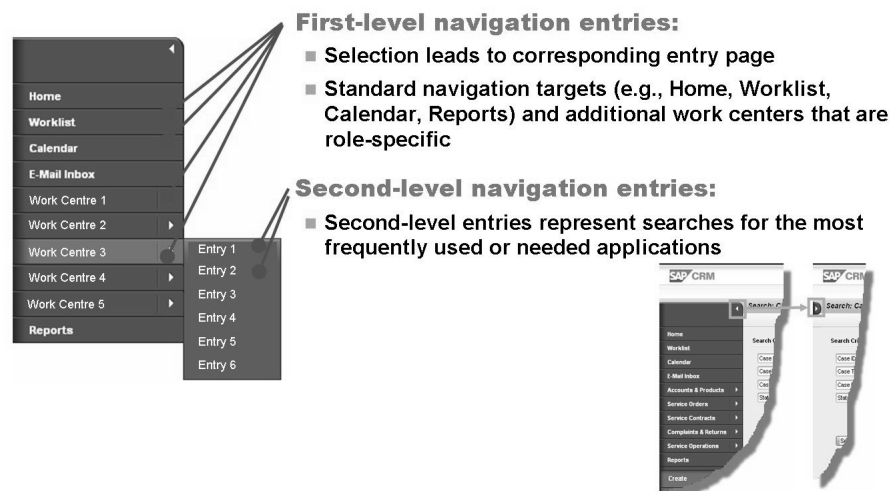


Figure 222: Navigation Area: Navigation Bar

The navigation bar can include:

- Application search launches
- A URL link
- SAP NetWeaver BI reports and analysis
- Transactions in other systems

In the second level entry the SAP standard delivery only shows links to SEARCH pages, even though technically any kind of link can be embedded here.

The navigation bar is controlled via a corresponding profile in customizing.

A Work Center is a flexible grouping of applications and information that logically belong to each other from the viewpoint of a business role

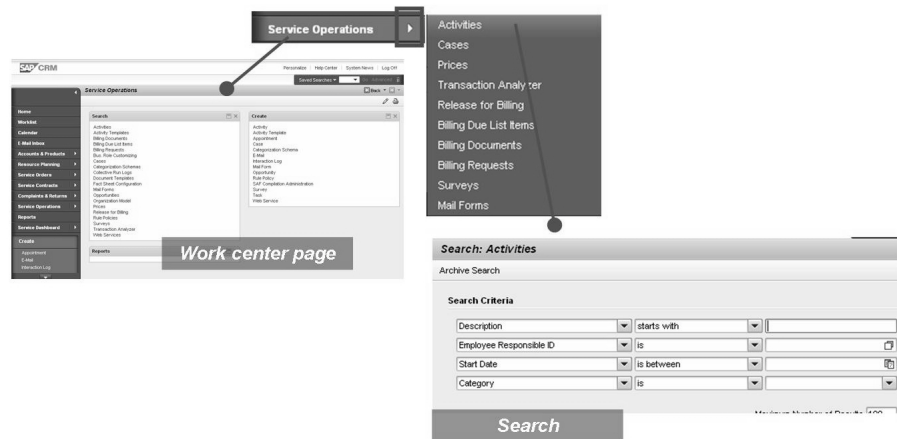


Figure 223: Navigation Area: Navigation Bar - Work Centers

There are two options to click a work center button

1. Using the little arrow opens **Search page** for respective object
2. Not using little arrow opens **Work center page**

Note: Show this feature in the WebClient UI and click on **Service Operations**

Work centers:

-

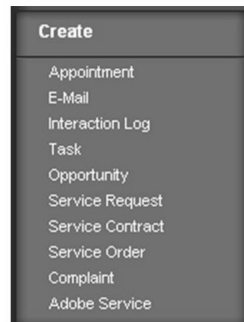
Example: Various functions that service employees need are grouped together under the Work Center *Service Operations*.

In the second-level menu search pages can be accessed directly.

Additional application searches, direct creation options, and links to related reports are available on the work center page.

The grouping of work centers and the content of a work center page are configurable per business role.

The Create Area allows users to start creation of an object quickly, no matter where the user is located in the SAP CRM application at the moment



Create options:

- Links in the create area navigate to the corresponding standard create pages
- This area is freely configurable per role
- This area can be personalized by the user

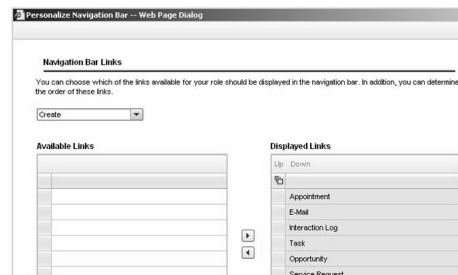


Figure 224: Navigation Area: Quick Create Area

Quick create an E-Mail or activity no matter what you are doing at the moment. System will display a pop-up to save current information.

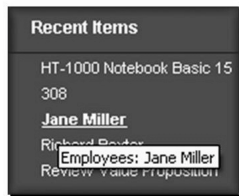
The main idea behind the Quick Create area is to provide the user with quick links for creation of the most frequently used applications.

This area thus contains only the entries needed multiple times a day, rather than the ones needed once every two weeks.

In the standard delivery, the create area contains only the most important create links (Appointment, E-Mail, Task, and Sales Call) plus role-specific links.

Personalization of the Create Area can be found under the general Personalization (Personalize Navigation Bar).

The Recent Items area allows the user to navigate to the items that he has worked on most recently.



Recent Items options:

- Links in the recent items area navigate to the corresponding objects.
- This area is configurable per role
- This area can be personalized by the user

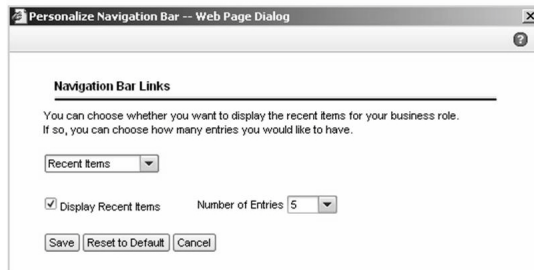


Figure 225: Navigation Bar - Recent Items

The recent items area allows users to easily navigate with one click to the topics they have worked on recently.

The personalization settings can be done by the user via *Personalize* → *Personalize Navigation Bar* → *Recent Items*.

The number of entries can be changed up to ten.

The HOME page is the starting point for every user in daily business. It contains the most important personal information and access to the most frequently used tools.



- A quick, direct overview of the current day
- Hyperlinks to more detailed information
- Predefined content for
 - Appointments and tasks
 - Reports
 - Alerts and workflow tasks
 - CRM Links, Widgets, Web Links
- Web 2.0 like visualization and personalization
 - Tray design
 - Rearrange content on page
 - Open/close blocks on page
 - Remove content from screen
- Possibility for graphical icons (see SAP Default skin)
- Available content configurable per role

Figure 226: Entry Page: HOME

The HOME page contains several different blocks of information. It can be personalized by the user.

In the standard delivery there are different HOME page prepared for users in Marketing, Sales and Service. It is possible though to create and use a single HOME page layout for all CRM WebClient users, independent of business role assignment.

The HOME page provides:

- A quick, direct overview of the current day
- Hyperlinks to more detailed information
- My appointments today
- My tasks today
- Reports
- Alerts
- Workflow tasks

The HOME page can be configured per business role. Available content and screen structure can be personalized by the user, e.g. via Drag & Drop.

The Worklist provides a complete overview of information pushed to the user. It is divided into alerts workflow tasks and business transactions.

Decision	Due	Subject	Send Date	Due Date	Priority	Associated Business Object
		Create Opportunity from Lead Must Win...	09.02.2009		5 Medium	Must Win
		Create Opportunity from Lead Big Chanc...	09.02.2009		5 Medium	Big Chance
		Create Opportunity from Lead Hot Lead...	09.02.2009		5 Medium	Hot Lead

Alerts

Workflow Tasks

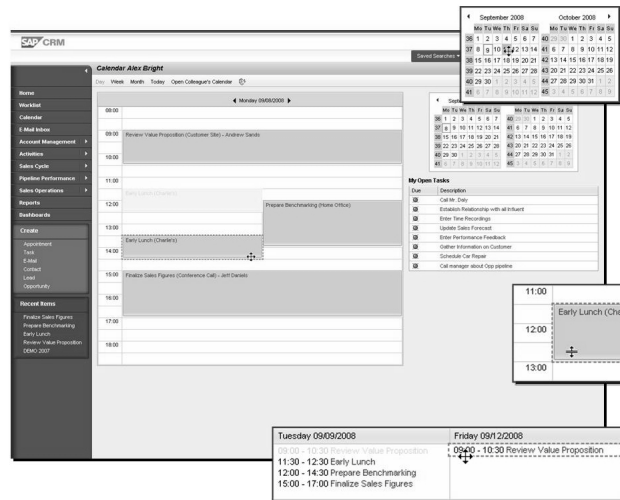
Business Transactions

Figure 227: Entry Page: Worklist

The Worklist contains information about alerts and workflow tasks pushed to the users.

Several predefined alerts and workflows are delivered with SAP CRM (campaign approval workflow, accept lead workflow, lost opportunity alert etc).

The Calendar page provides a graphical overview of appointments for today and of open tasks as well as rescheduling capabilities via drag and drop.



Use **Drag&Drop** to:

- Extend or reschedule an appointment within the current day as you would do e.g. in Outlook.
- Move appointments from one day to another day using the daily view and the two month preview in the top right
- Move appointments in the weekly and even monthly view to different dates

Figure 228: Entry Page: Calendar

The Calendar:

- allows a graphical overview of today's appointments
- allows switching between daily, weekly, and monthly views
- allows switching to a colleague's calendar
- provides an overview of the next two months
- provides a list of open tasks
- provides a option to directly create an appointment from the daily view.

Client-based Groupware Integration allows to synchronize appointments with Groupware solutions. Therefore it is necessary to install software locally. Details can be found in the general personalization options.

The E-mail Inbox is an SAP CRM–specific view of the e-mail inbox of the current user that allows triggering the transfer of e-Mails to SAP CRM

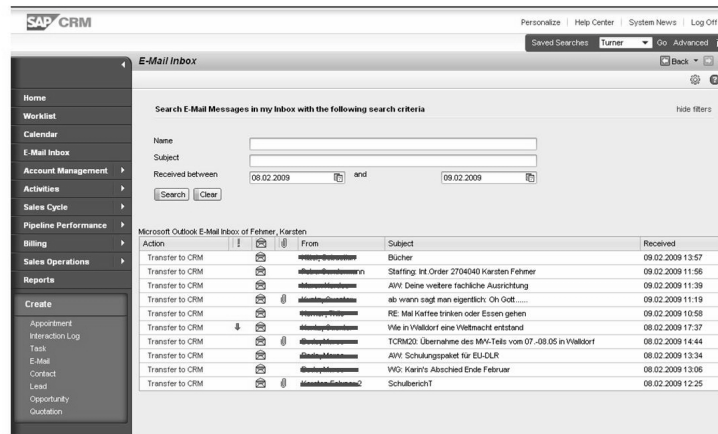


Figure 229: Entry Page: E-Mail Inbox

When Groupware settings have been made, it is possible to display the Groupware (e.g. Outlook) Inbox here.

Local software on your PC is necessary to connect from SAP CRM to Groupware.

It is possible to select single e-mails and transfer/convert them to CRM activities.

Caution: Make sure that you don't run the CRM WebClient UI in full screen mode (F11). Once clicking on **E-Mail Inbox** a pop-up is displayed asking for groupware access.

The E-mail Inbox is a temporary view of the current users groupware inbox. By opening this page, no e-mail is replicated from groupware to SAP CRM; it is only a real-time view. The user can choose selected e-mails and transfer (copy) them to SAP CRM.

It is not possible to “browse” through different Inbox folders when accessing the E-Mail Inbox via the CRM WebClient UI. Only one (typically the **Inbox** folder is displayed.

The is Online Help available which explains details of both Server-based and Client-based Groupware Integration.

The following path should be available when opening <http://help.sap.com>: *SAP Business Suite* → *SAP Customer Relationship Management* → *SAP CRM 7.0* → *Application Help* → *SAP Customer Relationship Management* → *Data Exchange and Mobile Technologies* → *CRM Integration Services* → *Groupware Integration Guide*.

Transferring an e-mail will trigger a user interaction dialogue to add information needed by the SAP CRM application.

On the entry page **Home** Groupware Integration settings can be displayed.

▶ Every first-level menu item has an individual work center page. It contains a set of shortcuts and access to all work center–related SAP CRM components

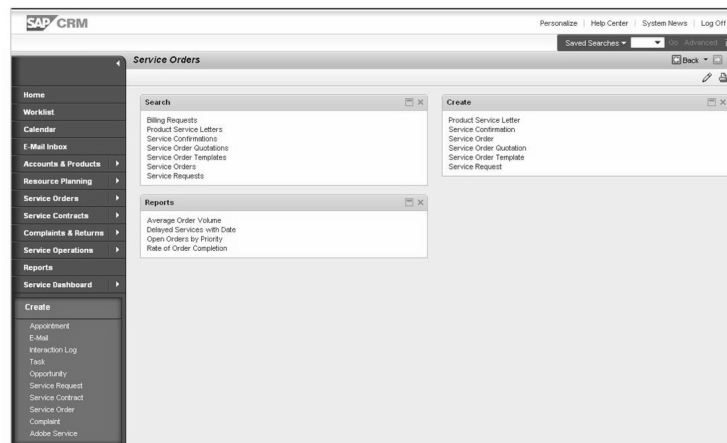
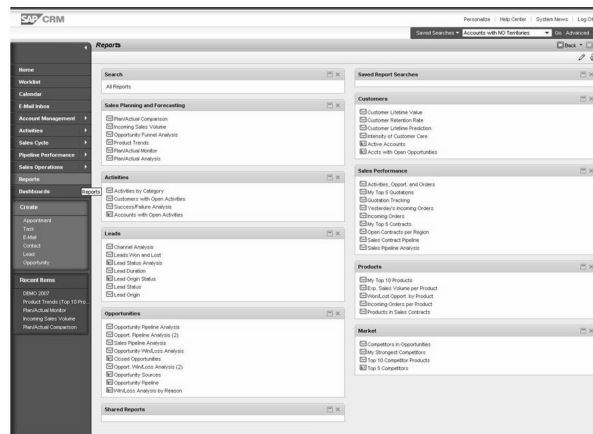


Figure 230: Entry Page: Work Center

The work center page is opened by choosing the first-level navigation entry directly, without selecting a specific second-level entry. It includes important content regarding the current SAP CRM area (indicated by the name of the work center in first-level navigation). It also includes all searches belonging to this work center as well as direct links for the creation of new objects.

The Reports page is the central entry page to access all reports available for a specific role, grouped by business area



The reports page:

- Provides a list of reports and analysis grouped by business topic
- Examples:
 - Account analysis
 - Campaign analysis
 - Pipeline analysis
- Following a link will call the full page of the analysis
- It can have second-level navigation entries providing direct access to important analysis or dashboards
- Content and grouping are configurable per role
- Standard content based on SAP BI and CRM reporting

Figure 231: Entry Page: Reports

In SAP CRM there are two kinds of reports available.

1. The **BI Interactive Reports** that rely on standard extraction processes within the CRM Analytics mind set.
2. The **CRM Interactive Reports**

You can create, edit and view reports in SAP CRM. These CRM-based reports retrieve data in real-time and are called "CRM interactive reports". You create these reports in the CRM WebClient using a guided wizard. You can then publish these reports to a selection of users. You can display reports in tables and charts. Using the reports, you can analyze data in ample ways, including drilldown to individual documents. The report data is retrieved in real-time. You can export report data to Microsoft Excel and print reports.

To use CRM interactive reports, you **do not need a separate BI system**. You do need an additional SAP NetWeaver Business Intelligence client to be installed on the CRM server. The existing Business Role ANANALYTICSPRO has the feature to create new reports!

The Reports page provides a linked list of reports and analysis grouped by business topic.

Report examples:

- Active Accounts analysis
- My Top 5 Quotations
- Campaign Analysis
- Opportunity Funnel Analysis

CRM Analytics offerings enable you to:

- Monitor, understand, and influence customer behavior and focus limited resources on your most valuable customers.
- Analyze information concerning markets, competition and past marketing initiatives to understand how well the marketing campaigns and programs are performing and to influence the success of future marketing initiatives and campaigns during planning.
- Understand sales results and plan future sales by comparing plans with actual sales and analyzing the performance. Gain insights to all important perspectives of service activities performed, the drivers behind them and the financial performance of the service organization.
- Understand the performance of each interaction channel to optimize resources.

BI Content is a preconfigured set of role and task-related information models that are based on consistent metadata in SAP Business Intelligence. BI Content provides selected roles within a company with the information they need to carry out their tasks. This information model includes integral roles, workbooks, queries, InfoSources, InfoCubes, DataStore objects, key figures, characteristics, update rules, and extractors for SAP applications.

SAP CRM also provides so called CRM Interactive Reports. To use CRM interactive reports, you do not need a separate BI system. You do need an additional SAP NetWeaver Business Intelligence client to be installed on the CRM server.

Optional Demo: Log on to the WebClient UI with business role Analytics Professional (ANALYTICSPRO).

Choose **Create Report**

Choose a Report name and description. Choose Business Role **Sales Professional** and Report Area **Activities**.

Choose **Next**.

From the available fields choose Account, Category, Contact, Number of Activities, Status

Choose **Next**.

Skip the Define Filter by choosing **Next**

Choose **Next** two times

In the Share Report area add the employee that is related to your log on user (e.g. TRAINING)

Choose **Finish**.

Log on with business role **Sales Professional**

Choose Work Center **Reports**. Scroll down until you see **Shared Reports** area.

Launch the report you created.

Search Pages provide the user with comprehensive, flexible, and easy-to-understand search capabilities individually for every SAP CRM application

Search criteria area

Search result list area

Description	Closing Date	Exp. Sales V...	Curr...	Chance	Main Contact	Sales Stage
New HPPath 4000 for Headqu...	04/02/2007	140,000.00	USD	50 %	Andrew Sands / Seattle WA 98155	Quotation
Lead from Customer Growth ...	05/31/2007	1,500,000.00	USD	20 %	Andrew Sands / Seattle WA 98155	Solution Development
Notebooks 113	06/30/2007	5,500,000.00	USD	0 %	Andrew Sands / Seattle WA 98155	
New Office Deal	01/31/2008	2,750,000.00	USD	80 %	Andrew Sands / Seattle WA 98155	Decision Making
POA Campaign	08/02/2008	3,000,000.00	USD	40 %	Chris Robertson / GLENVIEW IL 60025	Develop Value Proposi...
Big Laptop Deal	08/31/2008	5,750,000.00	USD	40 %	Andrew Sands / Seattle WA 98155	Develop Value Proposi...
Easy Hand Deal	09/02/2008	2,000,000.00	USD	80 %	Andrew Sands / Seattle WA 98155	Decision
New Servers for ADCOM	09/07/2008	1,000,000.00	USD	50 %	John Taylor	Quotation
All in One Printer Deal	09/10/2008	5,500,000.00	USD	80 %	Chris Robertson / GLENVIEW IL 60025	Decision
Big Notebook Opportunity	09/18/2008	4,080,000.00	USD	50 %	ALPHA Center / MINNEAPOLIS MN 55427	Quotation

Figure 232: Search Pages

This slide shows a standard search page

Demonstrate this in parallel in the system.

The search pages allow the definition and saving of search models.

The search result list is optimized for quick overview and easy navigation to detailed information. It offers options such as create, delete, mass update, and XLS export.

The available search criteria as well as their arrangement can be predefined for all users via UI configuration means.

The layout of the result list can be predefined for all users via UI configuration.

Accounts & Products

Work Center

Search

Accounts
Account Hierarchies
Contacts
...

Name 1 / Last Name starts with Media + -

Territory ID is not TID0815 + -

Role is Competitor + -

Date of Birth is between 06/07/1965 + -

12/10/1966 + -

Figure 233: Work Center Page - Search Links

Standard Work Center pages contain a **Search** section. This section contains a number of Search links which can be used to call a search application.

Accounts & Products

Accounts
Account Hierarchies
Contacts
...

Work Center Group Link – Second Level

Name 1 / Last Name is Mil* + -

City is New York + -

Role is Consumer + -

Date of Birth is 06/07/1965 + -

Save Search As MyName [Save Icon]

Figure 234: Work Center - Searching via second-level navigation

This slide shows that standard navigation bars can contain second-level entries which can be used to directly call a search application.

Standard Search pages also allow to create a Saved Search.

**For every table:
display its content in a
graphical chart**

- Facilitate the overview of table contents
- Select key figure and chart type
- Key figures are based on visible table columns – automatically reacts on personalization
- Filter table content by selection in graphic (see filter icon in column header)
- Zoom in and out
- Example shows the search result list as use case



Figure 235: Table Graphics

The Table Graphics feature is new in SAP CRM 7.0

The table graphics is a feature available for every table, but especially in the search result list it provides a perfect facilitation option to understand patterns and schemes behind the found search results in a graphical manner.

Via Customizing it is possible to enable or disable the usage of charts in tables in the CRM WebClient.

SAP Customizing Implementation Guide → *Customer Relationship Management*
→ *UI Framework* → *Technical Role Definition* → *Define Parameters*

Define a profile and choose Parameter **ENABLE_FTG_USAGE**

Possible parameter values are: ASSIGNMENTBLOCK; SEARCHRESULT;
ALL and NONE

Caution: Adobe™ Flash™ Player version 9 is required.

Before trying to demonstrate the table graphics feature, please test in advanced. Depending on local settings or WTS restrictions it might not possible to show it in class.

If possible demonstrate the following:

- Search for Accounts in **Country = US**
- **Select all** entries in the result list (icon top left)
- Click the **Open Chart** icon (icon top right)
- The chart is generated below the table
- Click one of the pieces (e.g. Illinois (IL)) and observe that the table above is updated

Another interesting Table Graphics demo could be a list of Opportunities with a chart “by Sales Stage”.

Central Search – Saved Searches

Saved Searches ▼ MyName ▼ Go Advanced Delete

↓

Result List: 3 Accounts Found

ID	Name	City
284622	Miller	New York
934586	Milton	New York
482175	Minetti	New York

Figure 236: Central Search - Search Option Saved Searches

A user can store search patterns by means of **Saved Searches**. Once created, Saved Searches can be started via the HOME page or via the drop-down list box in the central search area.

Saved Searches should have a unique name.

From the central search area, Saved Searches can be triggered, changed or deleted by the user.

Demonstrate the creation of a Saved Search.

Central Search – Simplified Advanced Search

Search for Accounts by City ▼ New York ▼ Go



Result List: n Accounts Found

ID	Name	City
284622	Churcher	New York
934586	Luongo	New York
482175	Cullmann	New York

Figure 237: Central Search - Search Option Simplified Advanced Search

The **Simplified Advanced Search** allows the user to specify one search criteria of the selected object to further narrow down the search result.

For example a user can directly search for Accounts in a specific city without necessarily using the advanced search of the Account application.

The available search criteria can be controlled via customizing *SAP Customizing Implementation Guide* → *Customer Relationship Management* → *UI Framework* → *Technical Role Definition* → *Define Central Search*.

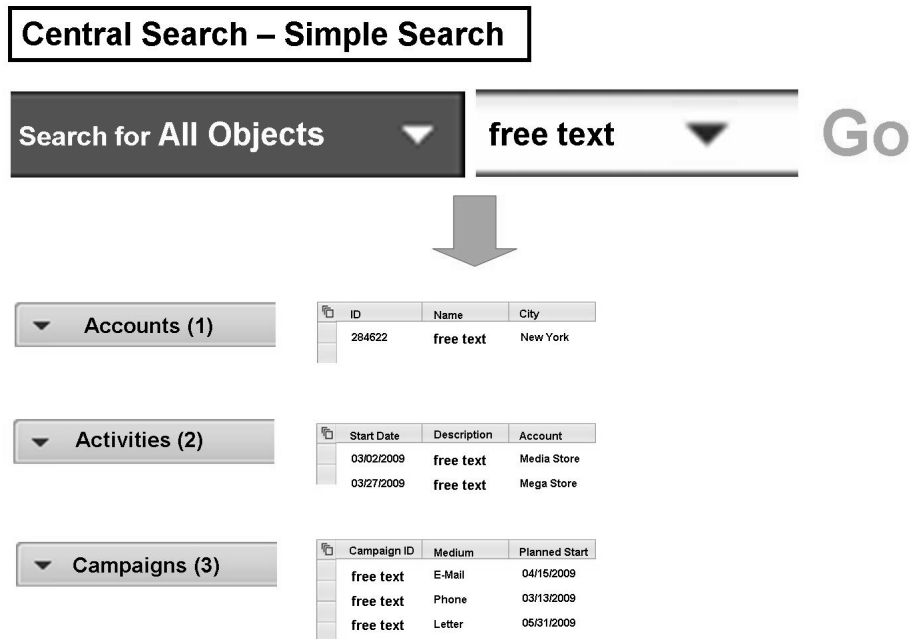


Figure 238: Central Search - Search Option Simple Search

Check if the training system supports this feature.

SAP CRM has been integrated in Enterprise Search (ABAP). The main goal of the Enterprise Search integration is to provide SAP CRM with a search function based on keywords and free text. This means that you can enter keywords, IDs, or free text in the search field, and search across all business objects that belong to a business role.

To use the simple search, you need to install Search and Classification TREX 7.1 for SAP NetWeaver 7.01.

You can use the *CRM ES Modeling Workbench* to connect CRM business objects to SAP NetWeaver Enterprise Search. You can use the workbench to model templates for CRM business objects and technical objects. These templates are used by SAP NetWeaver Enterprise Search to search for business objects.

You can access the CRM ES Modeling Workbench via *SAP Menu* → *Architecture and Technology* → *Enterprise Search Integration* → *Tools* .

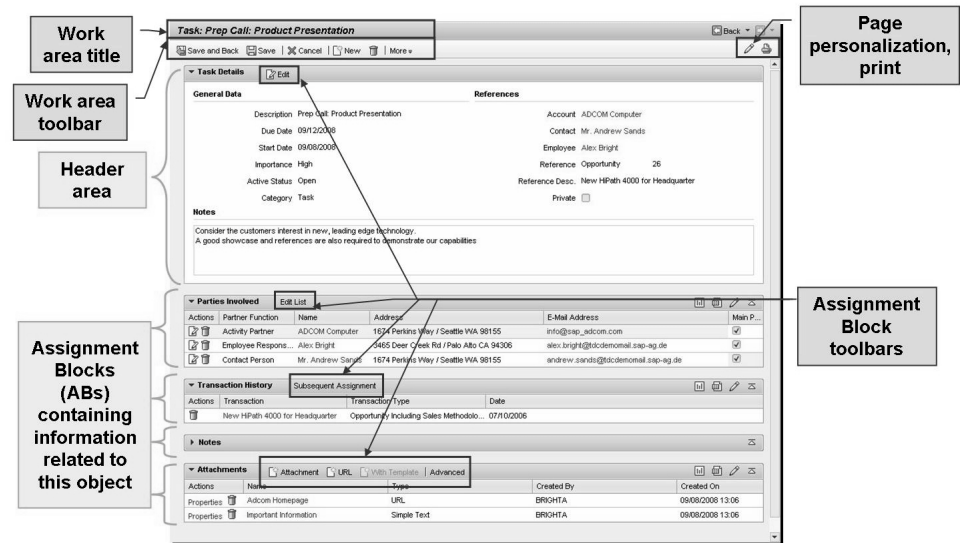


Figure 239: Overview Page: Main UI Elements

The overview page (OVP) provides an overview of all important information regarding a single object in display mode. It is structured in assignment blocks (AB) which can be configured and personalized. In an assignment block form views, tables and hierarchies can be displayed.

The OVP consists of header information that allows detailed object identification and a set of related information. A scrollable format showing the most important information in the first assignment block and all related information on the assignment block below has been chosen as due to the internet most users are very familiar with the concept of scrolling and retrieving more information on a page by scrolling down.

The OVP contains the hyperlinks for cross navigation to related information.

Assignment block capabilities are available in single column and tile layout

1. AB title: identify the content of the AB
2. Column personalization (also via *Drag&Drop*)
3. Comprehensive sorting and filtering in tables
4. One-click actions for fast and easy deletion or editing of an object
5. Expand – appears if default number of visible rows is exceeded; opens up to 50, then it shows pages
6. Less important ABs are first shown closed; the content is displayed on request

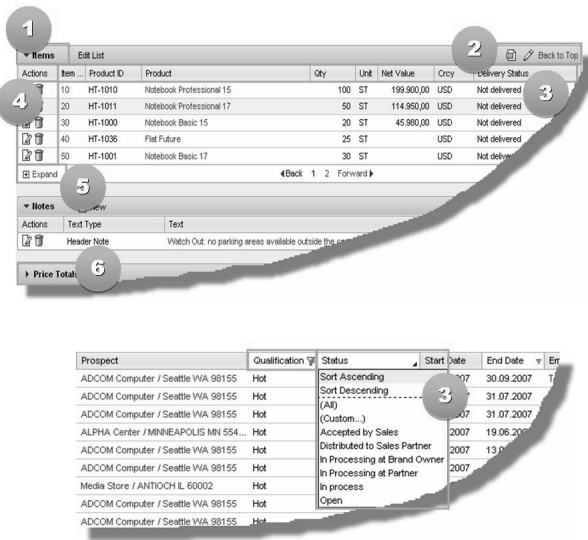


Figure 240: Overview Page Elements

Demonstrate this in parallel in the WebClient UI

Depending on the system settings, a user is allowed to personalize the number and arrangement of assignment blocks.

The maximum number of available Assignment Blocks for a Business User can be adapted in the UI Configuration Tool.

In the UI Configuration Tool it is possible to define whether an Assignment Block is displayed already opened up (direct load).

It is for performance reasons that the SAP CRM WebClient UI applications do not show all Assignment Blocks directly.

As alternative to the single column layout – which is mostly the default layout for SAP CRM roles – a single object can also be visualized in a tile layout.

- The tile layout page consists of several tiles while every tile can contain one or several assignment blocks
- The general structure of the tile layout i.e. how many tiles, how shall they be shaped can be flexibly defined in customizing and the UI configuration
- The possible information and visualization in tiles is based on the same logic as in assignment blocks
- The tile layout page is used in the Interaction Center Agent role based on the specific needs of this user group

The screenshot shows the SAP CRM 'Channel Lead' overview page in a tiled layout. The page is titled 'Channel Lead: 31, 100 Handhelds, ADCOM Computer'. It features several distinct tiles:

- Lead Details:** Contains fields for General Data (Type: Channel Lead, ID: 31), Dates (Start Date: 03/13/2007, End Date: 05/13/2007), Prospect (ADCOM Computer), Main Contact (Mr. Andrew Sands), Employee Respo (Mr. Eric Luckins), Campaign, Classification (Priority: Very important, Origin: Trade fair, Group: New Customers), Qualification (Level: High), and a Notes section.
- Parties Involved:** Organizational Data table listing parties like Actions, Employee Respo, Contact Person, Sales Prospect, Channel Partner, and Employee Resp. at C.
- Products:** Transaction History table with columns: Actions, Item, Product ID, Product, Category, Quantity, LINE.
- Private notes:** A section for personal private notes.

Figure 241: Overview Page in Tile Layout

Demonstrate this in the training system.

In the training system the Overview Page of the Service Contract application has been “registered” in customizing and a UI configuration has been prepared. This is just an example. Don’t focus too much on the actual configuration but point out the option of tile layouts for overview pages.

Log on with business role **CR580 Service Professional**

Choose *Service Contracts* → *Create* → *Service Contract*

Choose **Service Contract** (transaction type ZSC1)

With SAP CRM 7.0 it is generally possible to configure a non Interaction Center WebClient application in a tiled layout design. Therefore this application has to be registered via IMG activity *SAP Customizing Implementation Guide* → *Customer Relationship Management* → *UI Framework* → *UI Framework Definition* → *Register Overview Pages for Tile Layout*. This will offer the administrator a new button in the UI configuration of the overview page that allows the switch from single column to tile layout. After selecting to switch the administrator can choose from several tile schemes. Finally the available assignment blocks for an object can be moved to the provided tiles, while one to several assignment blocks can be put to one tile.

Hint: Only Interaction Center WebClient pages are delivered pre-defined in tile layout by SAP.

Content is edited directly in place on the overview page. In some use cases – where more complex interaction screens are needed for editing – a separate edit page is displayed.

The screenshot shows a CRM WebClient UI window titled 'Sales Methodology: 26. New HPPath 4000 for Headquarter, ADCOM Computer'. The main area is an 'Opportunity Details' form with sections for 'General Data', 'Dates', 'Forecast', 'Notes', 'Business Hours', and 'Sales Teams'. A red arrow points to the 'Description' field with the label 'Editing in place'. A red arrow points to the 'Business Hours' section with the label 'Editing on separate edit page'. The 'Business Hours' section includes a 'Range of Recurrence' table and 'Exceptions'.

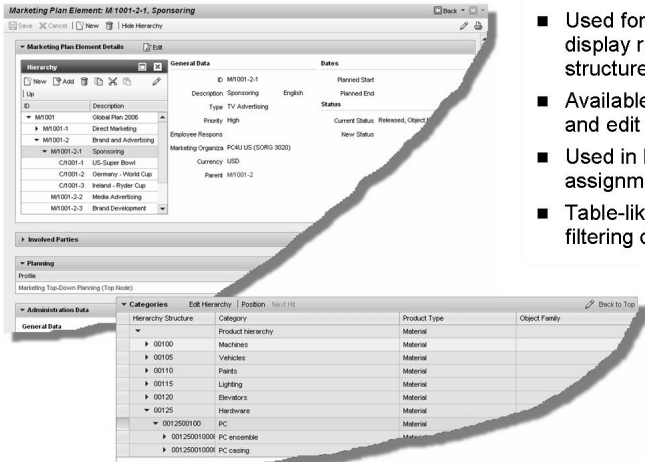
- The content of an object can be edited in place on the overview page
- Editing in place is used for form and table views
- A new entry in a table can be added via the NEW or ADD button available in the AB toolbar
- Table-based maintenance:
 - single-select or multi-select
 - single-edit or multi-edit (based on the corresponding use case)
- For ease-of-use reasons some content is edited on separate pages to allow a more flexible screen layout
- Central SAVE / CANCEL possibilities in the work area toolbar

Figure 242: Editing an Assignment Block (AB)

There are use cases where the display of information on an overview page is simplified to facilitate reading and understanding the information, while the maintenance of the information provides rich flexibility (e.g. call hours for an account). In those cases the editing of content visible in an assignment block on an OVP is done on separate edit pages, where the user navigates from the OVP to the edit page, focuses on the maintenance possibilities and then returns to the OVP where is entered/changed information is directly visible.

Editing an assignment block can be triggered in different ways.

Hierarchies are used to visualize special “parent-child” relationships between different objects. With this UI element, the position of an object within a hierarchical structure can easily be displayed and understood.



The screenshot shows the SAP Marketing Plan Element details for 'M1001-2-1 Sponsoring'. It features a 'Hierarchy' tree on the left and a 'Categories' table at the bottom. The hierarchy tree shows a path from 'Global Plan 2008' to 'Direct Marketing' to 'Brand and Advertising' to 'Sponsoring' to 'M1001-2-1'. The 'Categories' table lists various product types and their object families.

Hierarchy Structure	Category	Product Type	Object Family
00100	Machines	Material	
00105	Vehicles	Material	
00110	Paints	Material	
00115	Lighting	Material	
00120	Stoves	Material	
00125	Hardware	Material	
0012500100	PC	Material	
001250010000	PC ensemble	Material	
001250010000	PC casing	Material	

- Used for navigation or simply to display related information in a structured format
- Available on search, overview, and edit pages
- Used in header area or in a related assignment blocks
- Table-like behavior, but no sorting or filtering due to its nature

Figure 243: Hierarchies

Hierarchies are used for navigation or simply to display related information in a structured format

Hierarchies are used only for display of information in a special structured manner, like in the record assignment block of a service object (see screenshot on next slide). No further functionality lies behind the hierarchy, it simply facilitates the understanding of the represented information.

Hierarchies are used in addition as navigation element, where the remaining assignment blocks on a page change their content based on the entry the user has chosen in a hierarchy. A good example is the marketing area, where a marketing plan can exist of marketing plan elements and campaigns and even campaigns elements. These are grouped hierarchically below the marketing plan. A user wants to understand and flexibly navigate through the elements of a marketing plan, directly seeing the related information.

Examples for Hierarchies:

- Organizational Model
- Installed Base
- Product Hierarchies
- Account Hierarchies

Unit 14: Introduction to CRM WebClient UI

Demonstrate a hierarchy.

Choose *Accounts & Products* → *Search* → *Installed Bases*

Search for Installed Base ID 3296 and show the details, especially the component structure.

Lesson: Personalization

507

Lesson Duration: 15 Minutes

Lesson Overview

This lesson covers the personalization features of the CRM WebClientUI.

Lesson Objectives

After completing this lesson, you will be able to:

- Personalize the different UI elements

Sometimes participants get “nervous” when the variety of personalization options are presented. Typically when thinking of support activities, end-user personalization can be hindering. Mention that it is possible to deactivate all personalization options easily by using a special parameter within business role customizing.

Demonstrate this by logging on to the CRM WebClient UI with business role **CR580 Service Professional**.

Both system and work area personalization options are not available! Drag & Drop is not possible anymore.

Business Example

You want to get an overview of the SAP CRM User interface (CRM WebClient UI) personalization features available to the user.

Users can tailor the application according to their needs via multiple personalization options.

The screenshot shows the SAP CRM WebClient interface for a 'Task: Prep Call: Product Presentation'. The interface is divided into several sections:

- 1. Saved Search Models:** Located at the top right, it shows a dropdown menu with 'Accounts with NO Territories' and an 'Advanced' link.
- 2. Overview Page:** The main content area displays 'General Data' and 'References' for the task. The 'General Data' section includes fields for Description, Due Date, Start Date, Importance, Active Status, and Category. The 'References' section lists related accounts and employees.
- 3. Tables:** The 'Parties Involved' table lists participants with columns for Actions, Partner Function, Name, Address, and E-Mail Address. Below it, the 'Transaction History' table shows subsequent assignments.
- 4. General Settings:** Located in the top right corner, it includes links for 'Personalize', 'Help Center', 'System News', and 'Log Off'.

Figure 244: End User Personalization

The SAP CRM WebClient UI offers different personalization options. A user can

- create Saved Searches
- personalize the layout of Overview Pages (available assignment blocks; direct, lazy, hidden)
- personalize the layout of tables (available fields)
- make general personalization settings (user data).

Demonstrate different Personalization options.

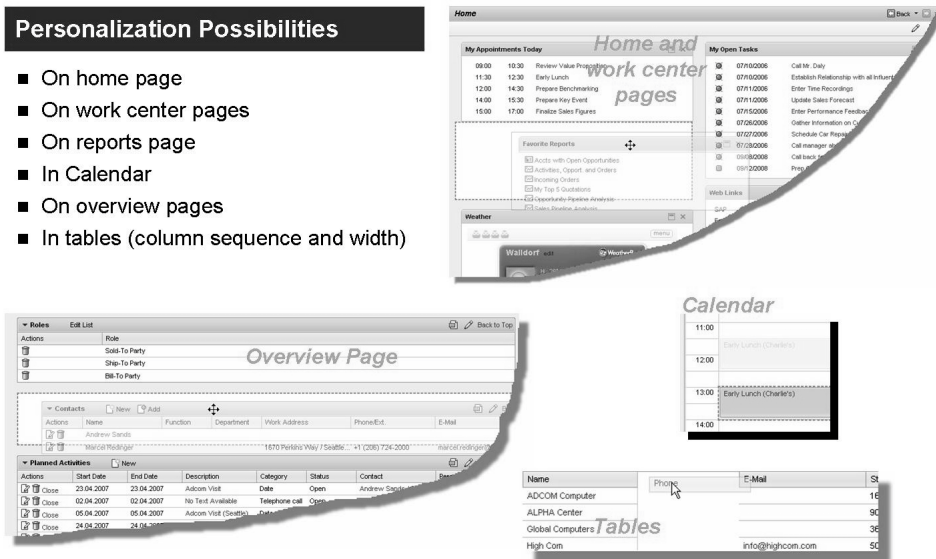


Figure 245: Drag and Drop Personalization

In many screen areas drag and drop functionality is supported.

Via **PERSONALIZE** the user can change several settings influencing the appearance of as well as the work with the SAP CRM Solution.

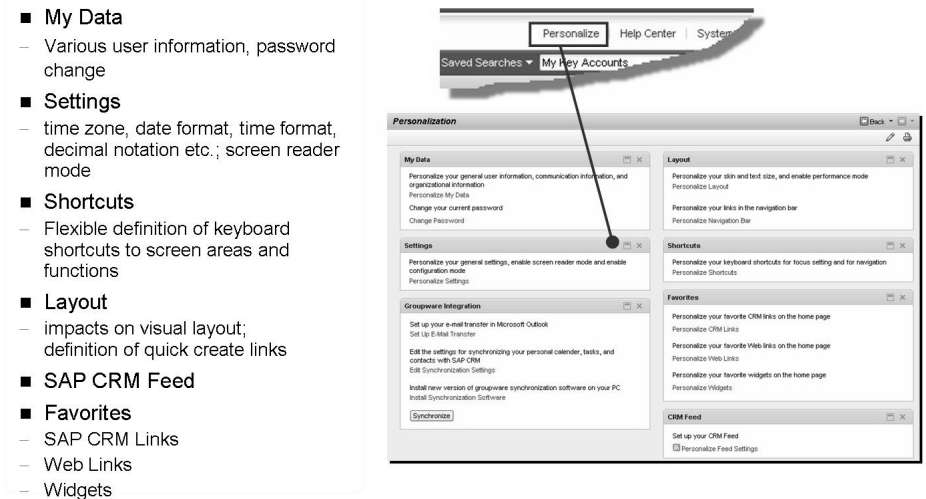


Figure 246: Personalize Page - General Settings

The Personalize area provides a central place where the user can make generic settings that are not screen specific. Some of these options are dependent on the implementation at the customer site, e.g. groupware integration.

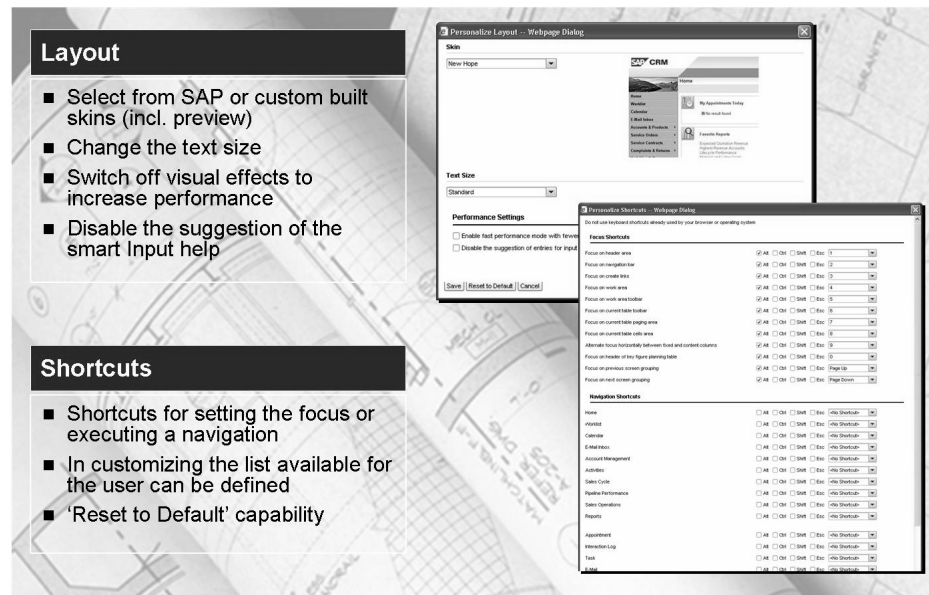


Figure 247: Personalize Page - Layout and Shortcuts

It is possible to enable a so-called Fast Performance Mode. The following features are not available when using this mode:

- Highlighting of UI elements: If you place the mouse pointer over an element, it is not highlighted; for example an entry in the navigation bar, a colored entry in a table, or an underscore under a hyperlink.
- Drag and drop in tables, on home pages, work center pages, and overview pages: You cannot use drag and drop to change the column width of tables, or the sequence of columns.
- Fixed header row in tables: You cannot fix the column header at the top of the table when you use the vertical scrollbar in tables.
- Exact sizing of tables with vertical scrollbar: The table size cannot be exactly determined, which means that table rows can be cut off.

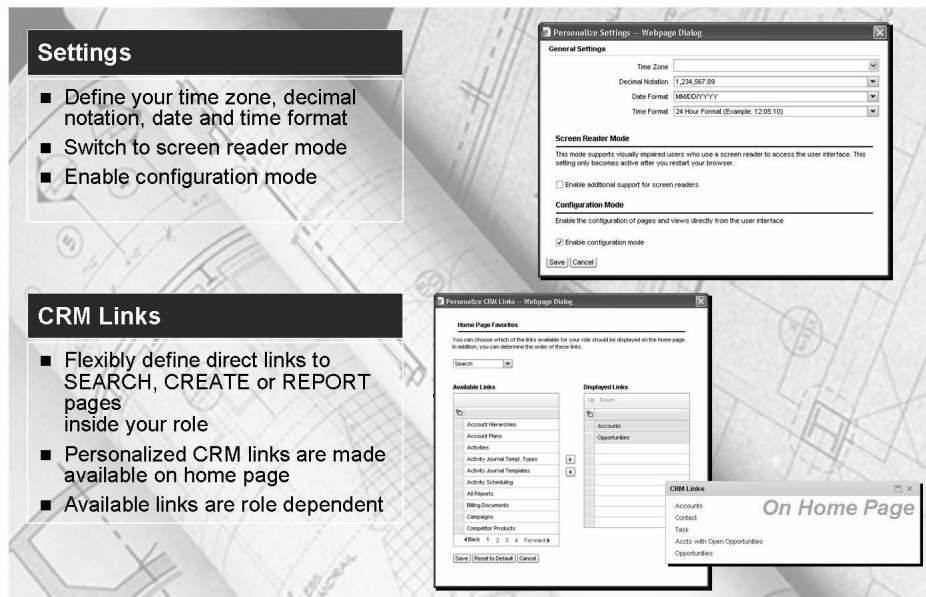


Figure 248: Personalize Page - Settings and CRM Links

To enable the **Configuration Mode** the user needs a specific (administration) authorization. Using the configuration mode it is possible to start the view configuration and the fact sheet configuration directly from the CRM WebClient UI.

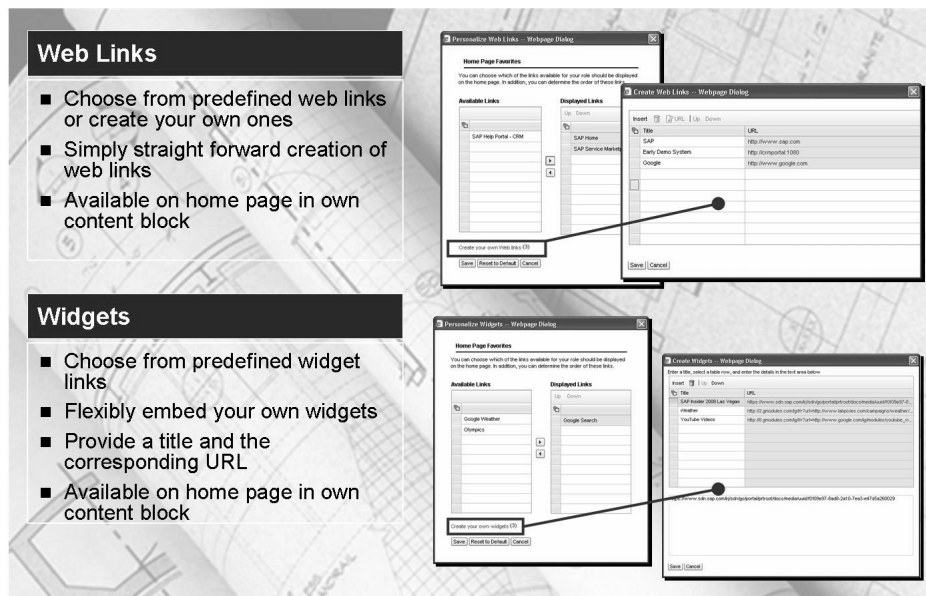


Figure 249: Personalize Page - Web Links and Widgets

Demonstrate how to include a Widget to the HOME page

Log on with business role **Service Professional**

1. Choose **Personalize**
2. Choose **Personalize Widgets**
3. Choose **Create your own widgets** (tiny link at the bottom!)
4. Insert Title “SAP CRM”
5. Mark the entry and add a widget link into the free text field.

Hint: One the Youtube home page search for any kind of nice video. Observe that there is an object link that can be embedded via copy and paste.

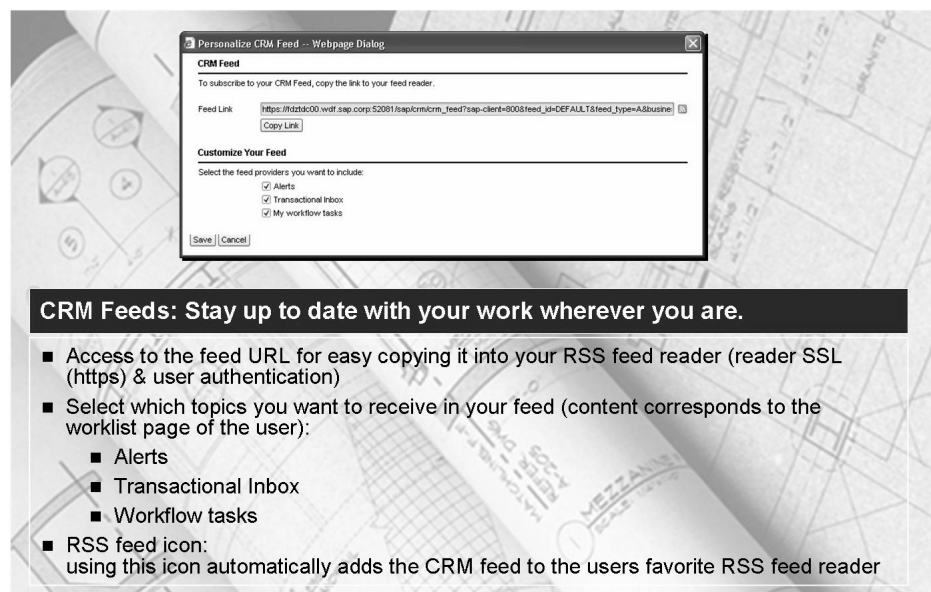


Figure 250: Personalize Page - CRM Feeds

Unit 15

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Create and/or change business roles
- Assign business roles to the organizational model
- Explain the authorization concept

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Demonstration: Show customizing of Business Roles	596
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Lesson: Business Role Overview

520

Lesson Duration: 45 Minutes

Lesson Overview

This lesson explains the concept of business roles.

Lesson Objectives

After completing this lesson, you will be able to:

- Create and/or change business roles
- Assign business roles to the organizational model

This Lesson introduces CRM WebClient UI Business Roles and the customizing thereof. A business role is the key to the look and feel of the CRM WebClient UI application.

Customers who are familiar with older CRM releases might know the IC WebClient or IC WinClient application. You can mention that business roles are the successor of IC WebClient / IC WinClient profiles.

Business Example

You are responsible to adapt the existing Business Roles according to the different requirements of the user groups in your company. You want to learn about business roles and how to modify them.



Figure 251: Business Role

Explain the principle behind the business roles by the example of some predefined business roles as Sales Professional, Service Professional, Marketing Professional or Interaction Center Agent.

All content displayed to a user can be influenced by the role configuration. Role configuration can be done in the IMG in SAPGUI as well as via the CRM WebClient User Interface.

A report is provided where SAP CRM roles can be uploaded into the SAP NetWeaver Portal environment for the usage of CRM content inside the portal. During this upload it can freely be decided which CRM navigation level should map on which portal level.

SAP CRM Implementation Guide → Customer Relationship Management → UI Framework → Portal Integration → Upload Business Role

The following are standard business roles delivered with SAP CRM standard customizing:

- SALESPRO (Sales Professional)
- SERVICEPRO (Service Professional)
- MARKETINGPRO (Marketing Professional)
- ECO-MANAGER (Web Channel)
- IC_AGENT & IC_MANAGER (Standard Interaction Center Agent & Manager)
- IC_SSC_AGENT (Shared Service Center Agent)

Transaction Code to directly define Business Roles: /NCRMC_UI_PROFILE

Demonstration: Demo standard business roles SALESPRO and SERVICEPRO

Purpose

Demo content of standard business roles

System Data

System:

Client:

User ID: training

Password: <weekly password>

Set up instructions:

1. Start the CRM WebClient UI, e.g. using transaction code /ncrm_ui.
Choose Business Role Sales Professional (SALESPRO)
Show the “content” of this user.
Log off.
2. Start the CRM WebClient UI, e.g. using transaction code /ncrm_ui.
Choose Business Role Service Professional (SERVICEPRO)
Show the “content” of this user.
Log off.
3. Start the CRM WebClient UI, e.g. using transaction code /ncrm_ui.
Choose Business Role **CR580 Service Professional (ZCR580SERIVC)**
Show the “content” of this user. It differs from the content of the standard Service Professional. E.g. Personalization has been switched off. Also a special Work Center **Administration** has been included. Therein you’ll find a link that allows find and maintain business roles via CRM WebClient UI application.
Log off.

Depending on your confidence you can show other business roles. You could mention that in the SAP standard delivery you will not find an “all content” business role. Users coming from SAPGUI might be used to “see everything” in the Easy Access Menu.

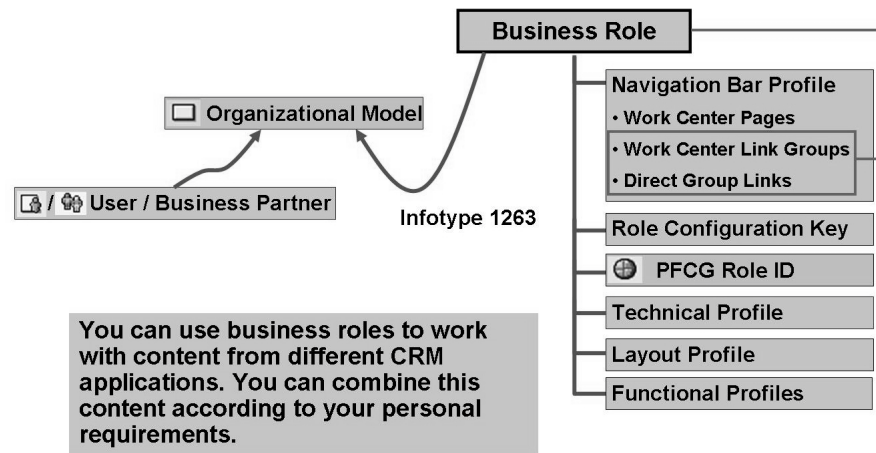


Figure 252: Business Role Assignment

Mention that functional profiles can be linked to a business role. Most of the existing functional profiles are related to Interaction Center specific business roles. Quite a few of those profiles are discussed in the course CR410.

The Business Role is assigned to an Organizational Unit / Position in the Organizational Model and the User/Business Partner (Employee) is assigned to a Position.

There are several options how to maintain the organizational model.

- Use SAPGUI.
SAP menu → Interaction Center → Supporting Processes → IC Structure → Change Organization and Staffing
- Use SAPGUI
SAP Customizing Implementation Guide → Customer Relationship Management → UI Framework → Business Roles → Define Organizational Assignment
- Use CRM WebClient UI.
Log on with business role **Service Professional** (SERVICEPRO)
Choose Work Center **Service Operations**

It is possible to assign a user to more than one Positions in the Organizational Model.

For test purposes it is possible to use the User Parameter CRM_UI_PROFILE in order to assign a Business Role directly. In this case, the assignment within the Organizational Model will not be taken into account.

Use transaction code /NSU3 to maintain the user parameter.

In SAP CRM 7.0 it is possible to set the user parameter CRM_UI_PROFILE to“*”.
As a result **all** business roles defined in customizing will be displayed after logon.

Hint: One needs debugging authorization in order to make use of the “*”.

Demonstration: Show customizing of Business Roles

Purpose

Introduce the IMG activity *Define Business Roles*

System Data

System:

Client:

User ID: training

Password: <weekly password>

Set up instructions: Open SAPGUI

1. /nspro

In SAP Implementation Guide choose *Customer Relationship Management*
→ *UI Framework* → *Business Roles* → *Define Business Roles*.

Show the details of business role **SERVICEPRO**

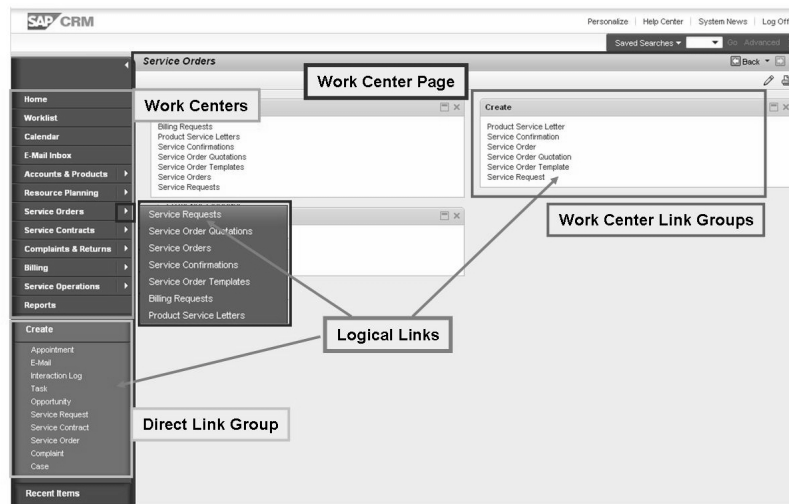


Figure 253: Business Role / Navigation Bar: Terminology

Introduce the navigation bar profile as sub profile and explain the terminology of the menu and link groups.

Point out that all links, work centers etc. are maintained in the navigation bar profile and can be limited in the business role

Note: Show the customizing path and give an overview of the business role and its details. Copy Business Role **SAP_CRM_UIU_SRV_PROFESSIONAL** and the related **PFCG** role (see exercise).

In the Business Role customizing you can hide the Work Center Pages or links that you do not need.

Additionally you can define which frequently used links should appear in the second level navigation.

If you need additional Work Centers that are not available in the navigation bar profile linked to the business role you have to change the navigation bar profile.

Within the navigation bar customizing you have access to shared lists of all logical links, work centers, work center link groups and direct link groups.

The navigation bar profiles are collections of logical links, work centers, work center link groups and direct link groups and is assigned to a business role.

Work center group links and direct group links can be activated and deactivated within the business role. So you can assign the same navigation bar profile to different business roles and have different screen appearances though.

Demonstration: Copy an existing Business Role

Purpose

Create a new business role and assign it in the Organizational Model. You will use this role later on in class in order to demonstrate features and functions of the UI configuration.

System Data

System:

Client:

User ID: training

Password: <weekly password>

Set up instructions: Go the IMG activity *Define Business Roles*

1. Using the magnifier icon show the details of this role.
Mention that the profiles will be explained later.
 2. Copy the role SERVICEPRO to Z40SERVICE
In the Copy-Dialog enter a new Description, e.g. **40 Service**.
In the Copy-Dialog enter PFCG-Role
Z40_CRM_UIU_SRV_PROFESSIONAL
Choose ENTER, confirm the next dialog and save the data.
 3. Assign the newly created business role in the organizational model
In IMG choose activity *Define Organizational Assignment*.
Find Position 40Position
Assign your CRM user TRAINING to this position
Choose the *Goto* → *Detail object* → *Enhanced object description*
Mark Infotype *Business Role*
Choose **Create**
Enter **Z40SERVICE**
Save the data.
-

Adjust Work Centers						
WorkCenter	Inactive	Deleted	WC Pos.	WC Pos.	Work Center Title (Nav. B...	Work Center Title (Role)
CT - CALENDR	<input type="checkbox"/>	<input type="checkbox"/>	30		Calendar	
CT - WORKLST	<input type="checkbox"/>	<input type="checkbox"/>	20		Worklist	
SRV - BILL	<input type="checkbox"/>	<input type="checkbox"/>	90		Billing	
SRV - COMPL	<input type="checkbox"/>	<input type="checkbox"/>	70		Complaints & Returns	
SRV - CONTR	<input type="checkbox"/>	<input type="checkbox"/>	60		Service Contracts	
SRV - EMAIL	<input type="checkbox"/>	<input type="checkbox"/>	35		E-Mail Inbox	
SRV - HOME	<input type="checkbox"/>	<input type="checkbox"/>	10		Home	
SRV - MD	<input type="checkbox"/>	<input type="checkbox"/>	40		Accounts & Products	
SRV - OPERAT	<input type="checkbox"/>	<input type="checkbox"/>	95		Service Operations	
SRV - ORD	<input type="checkbox"/>	<input type="checkbox"/>	50		Service Orders	
SRV - REPORT	<input type="checkbox"/>	<input type="checkbox"/>	100		Reports	
SRV - RPA	<input type="checkbox"/>	<input type="checkbox"/>	45		Resource Planning	

Home
Worklist
Calendar
E-Mail Inbox
Accounts & Products ▶
Resource Planning ▶
Service Orders ▶
Service Contracts ▶
Complaints & Returns ▶
Billing ▶
Service Operations ▶
Reports

- Mark those entries as 'Inactive' that you do not need in your navigation bar
- Position or rename Work Centers

Figure 254: Customizing Work Centers

Explain how to remove work centers from the navigation bar by de-activating them in the business Role customizing. Show this in parallel in your demo.

In business role customizing one can not add work centers or links that are not part of the assigned navigation bar profile.

It is possible to create one (big) navigation bar profile containing several Work Centers. One could define several business roles referencing to the same navigation bar profile.

In Business Role Customizing mark those Work Center entries as “Inactive” that you do not need in your navigation bar.

New entries need to be created in the Navigation Bar profile.

Demonstration: Deactivate Work Centers

Purpose

Hide work centers that are not needed.

System Data

System:

Client:

User ID:

Password:

Set up instructions: Go to IMG activity *Define Business Roles*

1. Deactivate work centers for business role Z40SERVICE

In the structure tree navigate to the *Adjust Work Centers* dialog.

Inactivate work center CT-CALENDR, SRV-EMAIL and SRV-REPORT

Observe that the work center SRV-MD has description *Accounts & Products*

Save your changes and demo the changes by logging in with this role.

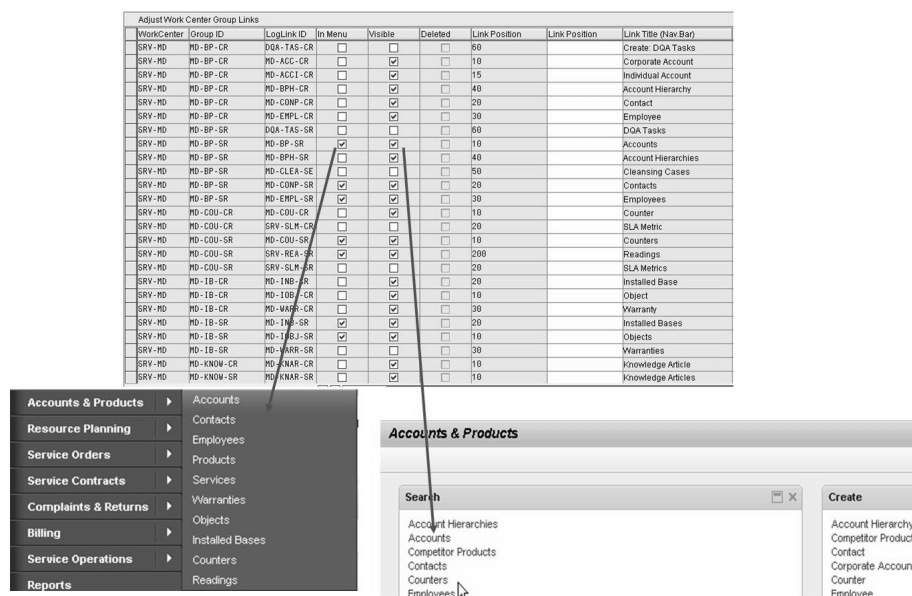


Figure 255: Customizing Work Center Group Links

Explain how to enable and disable links in the work centers. Demonstrate in parallel how to mark single links that should appear in the second level navigation.

In Business Role Customizing mark those Work Center Group Link entries as “Visible” that you need as links in the specific Work Center Group

Entries marked as “In Menu” will appear in the second level navigation of the specific Work Center

New entries need to be created in the Navigation Bar profile.

Demonstration: Deactivate Work Center Group Links

Purpose

Hide work center group links that are not needed, e.g. creation and search for counters

System Data

System:

Client:

User ID:

Password:

Set up instructions: Go to IMG activity *Define Business Roles*

1. Deactivate work center group links *Create Counter* and *Search Counters* for business role Z40SERVICE

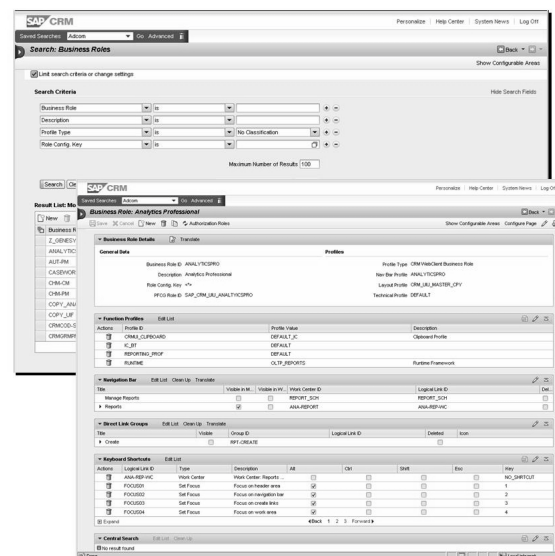
In the structure tree navigate to the *Adjust Work Center Group Links* dialog.

Position on Work Center SRV-MD; Group ID MD-COU-CR

Make logical link entry MD-COU-CR invisible

Repeat this step for other logical links, e.g. MD-COU-SR

Save your changes and demo the changes by logging in with this role.



Configuration

- Assign logical link CT-BR-SR to a Work Center or a Direct link group
- The organizational model can also be maintained via the CRM Web Client UI:
Logical Link: MD-ORG-SR
- Create/change/copy/delete business roles

Figure 256: Business Role Maintenance in CRM WebClient UI

Demonstrate this functionality.

Log on with business role **CR580 Service Professional**.

Choose *Administration* → *Search Bus.Role Customizing*

Search for a business role and navigate to the details.

One can see that this WebClient application matches with business role customizing activity. One can decide which way is easier for business role maintenance!

An administrative user can maintain business role customizing using a specific CRM WebClient UI application.

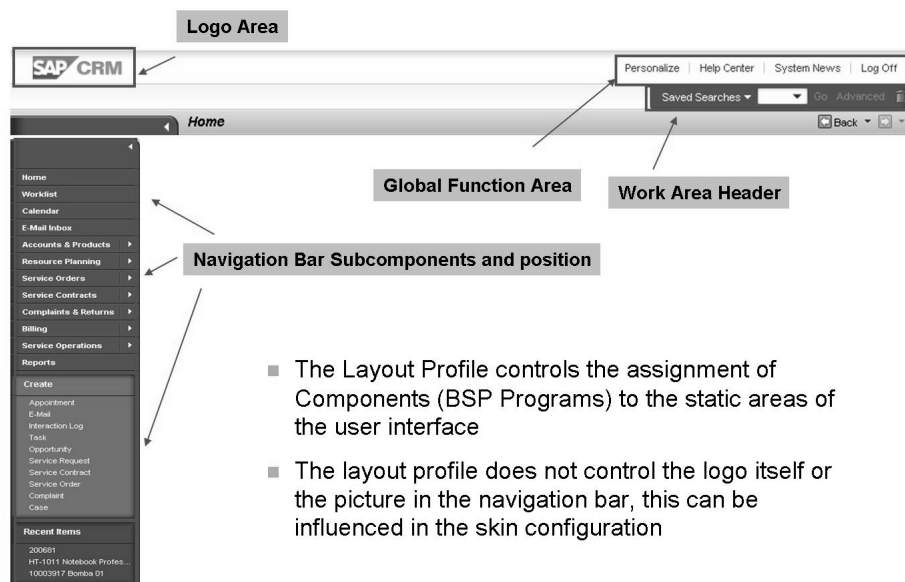


Figure 257: Layout Profile

Show the customizing of the layout profile.

Display the profile **CRM_UIU_MASTER** but don't change anything.

SAP IMG Path: *Customer Relationship Management* → *UI Framework* → *Business Roles* → *Define Layout Profile*.

The header area is a static, non-scrolling area of the application that is only rendered once per session. It is located at the top of the screen and consists of different header components e.g. Logo area, Global function area and others.

This layout of header components is the default header implementation for the header frame.

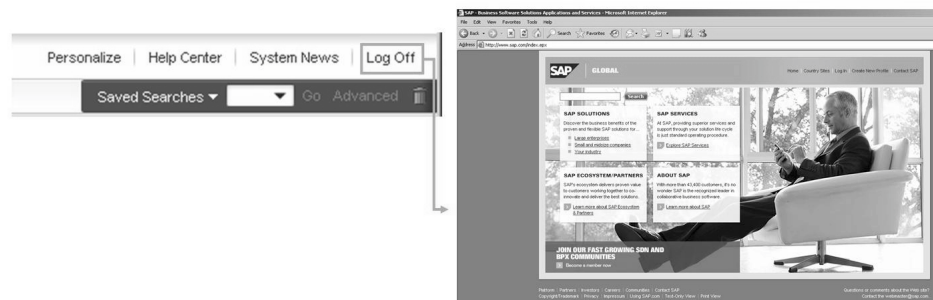
The footer area is a non-scrolling area at the bottom of the screen that is only rendered once.

The work area has a work area header and a work area subheader. The work area header is a non-scrolling area that spans the width of the application. The work area subheader is a non-scrolling area that spans only the width of the work area.

The navigation bar contains sub areas or components defined in the layout profile. The navigation bar can consist of 1 to n subcomponents. The DEFAULT layout profile provides the following subareas:

- Picture area
- Menu area
- Shortcut area

SAP Implementation Guide → Customer Relationship Management → UI Framework → Technical Role Definition → Define Layout Components



- The Technical Profile contains some browser related settings and other technical information
- Example:
 - ◆ When you log off from the SAP CRM System the SAP Homepage <http://www.sap.com> is called per default
 - ◆ You can change this setting by entering a different URL in the technical profile.

Figure 258: Technical Profile

Show the customizing of the technical profile. Customers can influence some browser related settings. You can determine an own web site which is displayed after the user has logged off.

Caution: Be careful with changing the default technical profile!

SAP IMG Path: Customer Relationship Management → UI Framework → Technical Role Definition → Define Technical Profile

Unit 15: Business Roles

The technical profile controls some browser related settings as:

Enable or disable the following functions:

Disable P-R-G (Post-Redirect-Get), which enables the use of the browser's Back button.

Disable Frame Swap, which reduces noticeable screen flickering.

Disable AJAX (Asynchronous JavaScript and XML), which reduces full screen server round-trips.

Disable Server Optimization, which optimizes server performance.

Control the memory threshold that determines when a new session is started.

This value represents the server memory footprint in megabytes (MB). The restart mechanism checks if the current memory consumption is higher than the threshold specified in the technical profile of the business role. If the consumed memory is higher than the threshold, the current session is finished and a new session is started.

Specify the dialog delay in milliseconds.

With this value you define how long it takes until the Please wait... dialog is displayed if the Disable Fields checkbox is activated.

Definition of a URL like <http://www.company.com>.

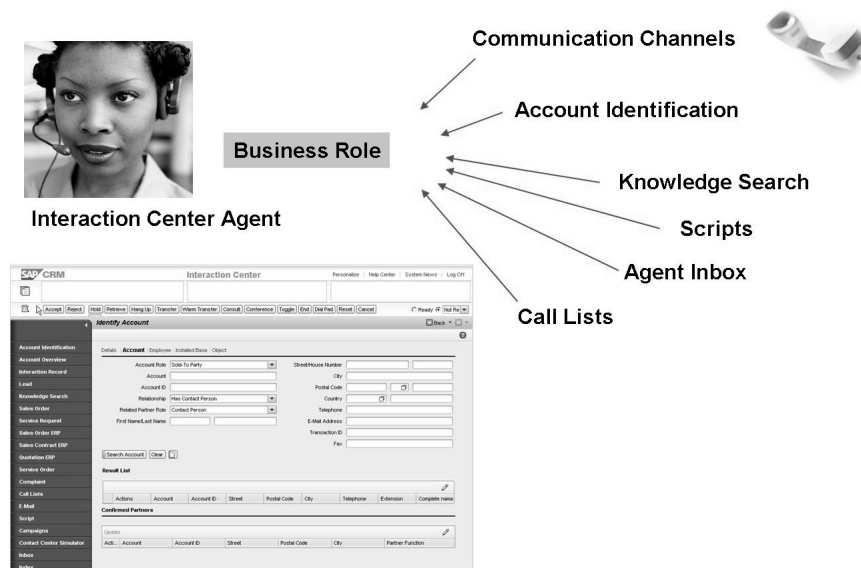


Figure 259: Functional Profiles

Interaction center is not part of the course, but if participants are familiar with IC WebClient in former releases just demonstrate how the old IC WebClient profile was transferred into the business role.

Some Business Roles are special in the way that they need more technical settings and infrastructure. This is the case for all Interaction Center related Business Roles, e.g. IC_AGENT or IC_SSC_AGENT.

The Interaction Center Agent Business Role uses a different Layout and a different Technical profile. It uses a different application (determined in the technical profile) running in the CRM Framework.

Most functional profiles are related to IC WebClient business roles. But here are also a *generic* functional profiles, e.g. the profile PERSONALIZATION which allows to deactivate personalization options per business role.

Demonstration:

In the training system you can show the effects of the PERSONALIZATION profile which has been assigned to business role ZCR580SERVIC. No personalization possible.

Demonstration:

In the training system you can show the effects message replacement profile. Therefore create a service order (Service Process [ZSE1]. Enter **Account 3271**. In the **Items** AB change the drop-down list box to **Sales Item**. Enter R-1130 with quantity 1. Save the order. This will trigger replication. Immediately try to change the order (Edit). Observe the self-made error message text.

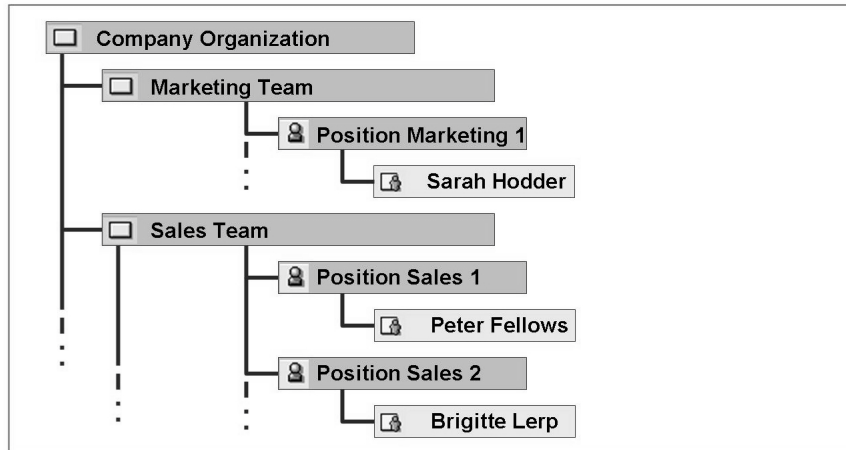
Another generic functional profile is called MSG_REPLACE. Using this profile it is possible to replace typical SAP messages with customer specific ones. In order to use this profile do the following:

- Use transaction code SM30 and maintain View **BSPWDV_MSGREPL_P** in order to create a new message replacement profile
- Use transaction code SM30 and maintain View **BSPWDV_MSGREPL_C** in order to create message replacements for your new profile.
- Assign the message replacement profile to one or more your business roles

Functional profiles are defined in customizing.

Choose *Customer Relationship Management* → *UI Framework* → *Technical Role Definition* → *Define Functional Profile*

Hint: If you open this IMG activity, scroll to the right until you can see the column **Func. Type** Here you will see that the majority of profiles are IC WebClient specific!



1. Select required organizational unit or position
2. Choose menu: *Goto* → *Detail object* → *Enhanced Object Description*
3. - 5. see next slide

Figure 260: Assigning the Business Role to an Organizational Unit (I)

Demonstrate how to assign a user to an organization in the organizational model.

IMG Path: *Customer Relationship Management* → *UI Framework* → *Business Roles* → *Define Organizational Assignment*

The final step in the business role configuration and assignment is to assign the Business Role to an organizational level, either an organizational unit or a position in the Organizational Model (OM).

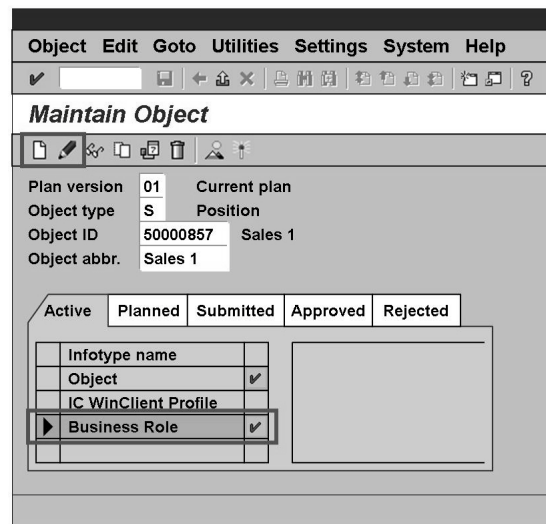
Business Roles can only be assigned to organizational units and positions. Assignment to user level is not possible.

Each Position can have exactly one “Business Role” assigned to (Infotype 1263).

User / Business Partners can be assigned to multiple Positions. In case the user is assigned to multiple positions with different business roles her well get a screen to select the business role when he logs in to the CRM User Interface.

A Business Role assigned at:

- Organizational unit level means all user within the organizational unit use the same Business Role.
- Position level means users assigned to the same position use the same Business role.



3. Select infotype *Business Role*

4. Choose icon *Create/Change Infotype*

5. Use F4 help to select the required *Business Role*

Figure 261: Assigning the Business Role to an Organizational Unit (II)

Demonstrate how to assign the business role an organization or position. Point out that this assignment is inherited down the hierarchy unless a deeper unit has a different assignment.

Optional Demonstration:

Log on with business role **CR580 Service Professional**. Choose *Additional Functions* → *Search* → *Organization Model* Find **CR580*** Position and show business role assignment.

Scroll down in the list of Infotypes and select *Business Role*.

Choose the

- *Create* icon in case no Business Role has been assigned (the Exists flag is not displayed!)
- *Change* icon in case a Business Role already has been assigned and should be changed (Exist flag is displayed).

In the next screen, use F4 for the field *Business Role* to display a list of available profiles.

Select the required Business Role and choose *Enter/Save*.

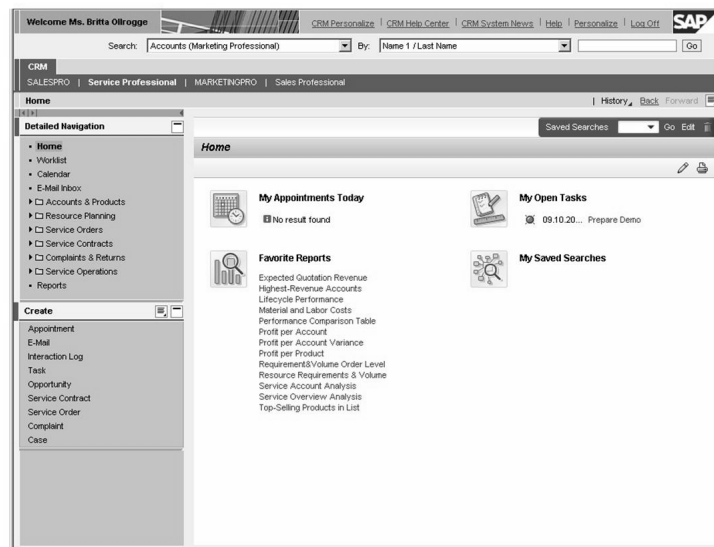


Figure 262: Portal Integration

The portal integration is supported for CRM WebClient business roles. The portal integration of CRM On-Demand business roles and IC WebClient business roles is not supported.

Hint: If you want to integrate the CRM WebClient UI as an external BSP application in SAP NetWeaver Portal, see SAP Note 1175127. If you want to integrate the IC WebClient in SAP NetWeaver Portal, see SAP Note 1175590.

The following features are available with Portal integration:

- **Aligned Session Management:** When you first navigate to SAP CRM from the portal, a logon to SAP CRM starts; when a portal session is finished, all open CRM sessions are closed; a data loss dialog box informs the users that they first need to save their changes.
- **Portal navigation with navigation highlighting:** The portal highlights the navigation target if you navigate from the portal navigation frame to SAP CRM, from SAP CRM to portal content, or from one CRM iView to another (cross-component navigation).
- **A tool to export role definitions to XML:** You can use the upload tool to generate an XML file of your business role. This XML file can be imported into SAP NetWeaver Portal to generate a portal role.
- **Central search:** You can search for CRM applications in the central search, which is located in the header area of the CRM portal desktop
- **Mapping of a portal theme to a CRM skin:** To align the look and feel of SAP NetWeaver Portal and SAP CRM, you can map a portal theme to its most similar CRM skin. You can select the additional CRM skin Follow Portal Theme, to display the CRM skin mapped to the portal theme in the mapping table.

For more details see IMG documentation under *Customer Relationship Management* → *UI Framework* → *Portal Integration*

Lesson: Business Role & Authorization Concept

540

Lesson Duration: 20 Minutes

Lesson Overview

This lesson explains the concept of authorizations as it relates to business roles.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the authorization concept

This lesson explains the relation between CRM WebClient UI business roles and Authorization (PFCG) roles.

Caution: Users need authorizations in order to work with SAP CRM. Those authorizations need to be linked to the User master (SU01). It might be confusing for participants to see a field PFCG-Role (= Authorization Role) in business role customizing. An extended but optional Demonstration in this lesson sheds light on this matter. One can say that this PFCG-Role entry in business role customizing helps to generate an appropriate authorization role.

Business Example

You are responsible to adapt the existing Business Roles according to the different requirements of the user groups in your company. You want to learn about the security aspect of business roles and authorizations.

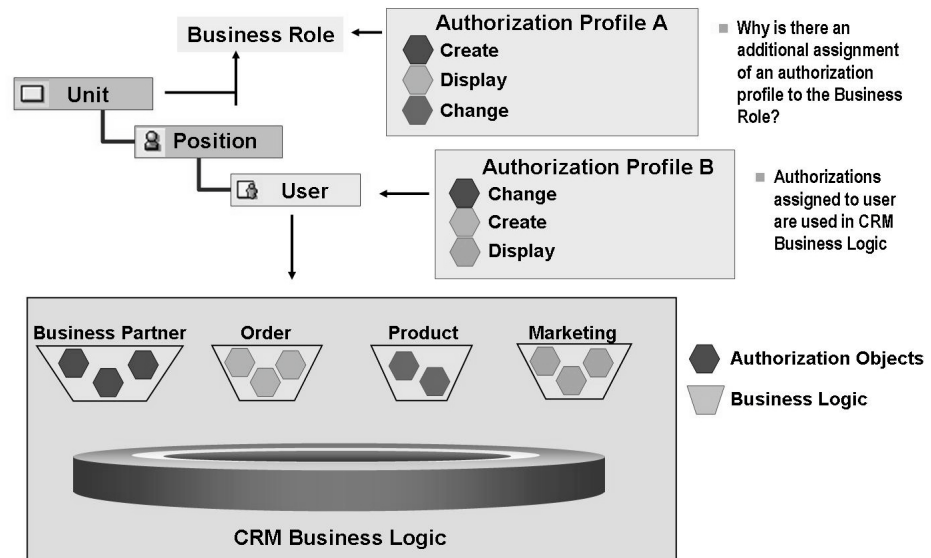


Figure 263: Business Role & Authorization Concept - Overview

First give a short explanation about authorization objects and that they already exist in the application logic in the former releases of SAP CRM.

Security concepts for business objects such as SAP Business Partner or SAP Product focus on standard authorization objects and data storage security.

Each authorization references an authorization object and defines one or more permissible values (e.g. display, change, create) for each authorization field contained in the authorization object.

Authorizations are combined in profiles, which are entered in a user's master record.

Transaction PFCG is used to maintain the authorization profiles.

Authorizations are assigned to Users in the user master data (Transaction SU01).

For each Business Role SAP delivers a PFCG Role with the required authorization objects.

These roles can be copied and adjusted to your needs.

The standard SAP CRM Business Role names are SAP_CRM_UIU_*

The Authorizations assigned to the user are the ones that are checked during the processing of the business logic.

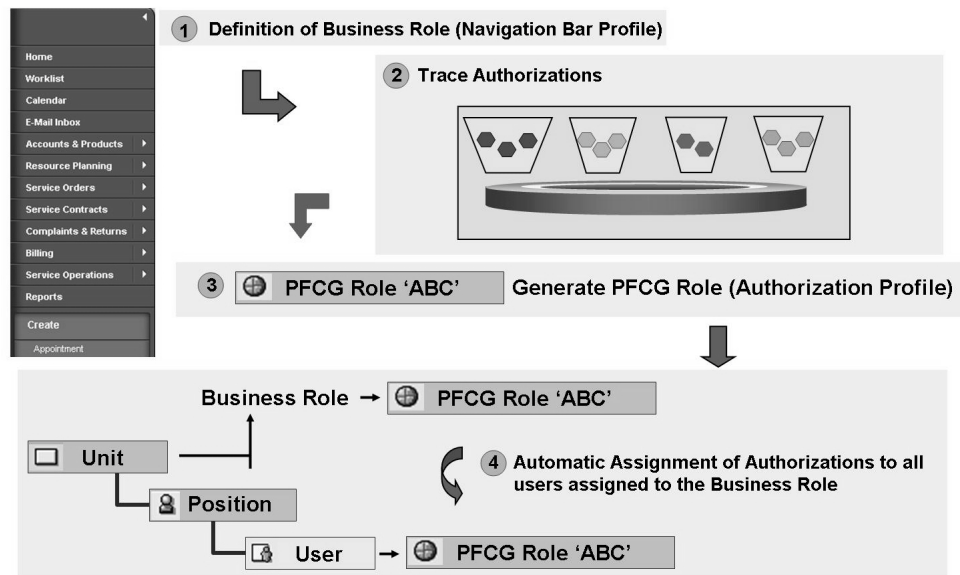


Figure 264: Business Role & Authorization Concept - Features

The assignment of the PFCG Role to the business role is a helping construct in order to use the system based tools and reports for easier maintenance. Mention the report to assign the PFCG role to all users that are assigned to one business role.

If the delivered authorization (PFCG) roles are not sufficient, because your own Business Roles contain different applications / business objects, several features are provided to create easily authorization roles / profiles and assign them to the users

Users are created with transaction SU01.

The trace to determine all authorization objects can be switched on. More information on this trace can be found in SAP notes 551478 and 449832.

Default values can be maintained in SU24, if the default values delivered by SAP don't fit your needs

Use report **CRMD_UI_ROLE_PREPARE** and transaction PFCG to assign all required authorizations to the related PFCG role.

Use transaction PFCG to define the authorization values and to generate the authorization profiles.

Use report **CRMD_UI_ROLE_ASSIGN** to make the user assignment easier:

This report determines the Business Roles a user is assigned to. Based on the Business Role the authorization (PFCG) Profiles are determined and assigned.

If necessary add some special authorizations manually to your users (SU01).

For more details see the IMG documentation *Customer Relationship Management*
→ *UI Framework* → *Business Roles* → *Define Authorization Role*

Demonstration: Optional: Generation and Assignment of authorization (PFCG) role

Purpose

This demonstration explains why there is an assignment of an authorization role to a business role

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Create a new user **ZNEWUSER** using transaction code SU01 or corresponding Easy Access Menu entry

Only maintain a Name and an initial password.

Save the user.
2. Create a new authorization (PFCG) role **ZNEWPFCG** using transaction code PFCG.

Only enter a description.

Save the data.
3. Create a new CRM WebClient business role **ZNEWROLE** using transaction code CRMC_UI_PROFILE.

Copy an existing role, e.g. SERVICEPRO and assign the newly created PFCG role to the new business role.

Save the data.
4. Execute report **CRMD_UI_ROLE_PREPARE** using transaction code SE38.

Enter your newly created business role **ZNEWROLE** and language EN.

After you have executed the report a text file **ZNEWROLE.TXT** has been created.

5. Change the authorization (PFCG) role **ZNEWPFCG** using transaction code PFCG.
 - Choose tab *Menu*
 - Choose *Import from file*.
 - Select the local file **ZNEWROLE.TXT**
 - Choose tab *Authorizations*.
 - Choose the *Change* icon.
 - Enter Plan Version 01 in the upcoming pop-up and save.
 - Choose *Generate*
 - If you receive an information message that values for object **S_SERVICE** were not entered, inactivate this object. Therefore choose menu *Edit* -> *Find*
 - Again try to generate the authorization role.
 - If successful, save the data.
6. Change the Organizational Model
 - Assign the newly created user **ZNEWUSER** e.g. to the position **39Position**
 - Assign the newly created business role to the **39Position**
7. Execute report **CRMD_UI_ROLE_ASSIGN** using transaction code SE38.
Enter your newly created user **ZNEWUSER**.

Hint: Observe that the CRM WebClient specific authorization role **SAP_CRM_UIU_FRAMEWORK** will also be added to the user. It is important to know that this or a similar role must have been generated beforehand!

Unit 16

545

Navigation Bar

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- List the terminology used in the context of the navigation bar
- Maintain the navigation bar profile with the different types of application links
- Explain the Transaction launcher functionality
- Use the Transaction launcher to integrate “external” applications into the CRM WebClient User Interface

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Lesson: Navigation Bar Customizing

546

Lesson Duration: 45 Minutes

Lesson Overview

This lesson explains the terminology associated with the navigation bar and also how to customize the navigation bar.

Lesson Objectives

After completing this lesson, you will be able to:

- List the terminology used in the context of the navigation bar
- Maintain the navigation bar profile with the different types of application links

The Navigation Bar Profile together with Business Role Customizing controls the number of available Links (Functions), a user will see once logging on to the WebClient UI.

Business Example

You need to understand how to setup the Navigation Bar.

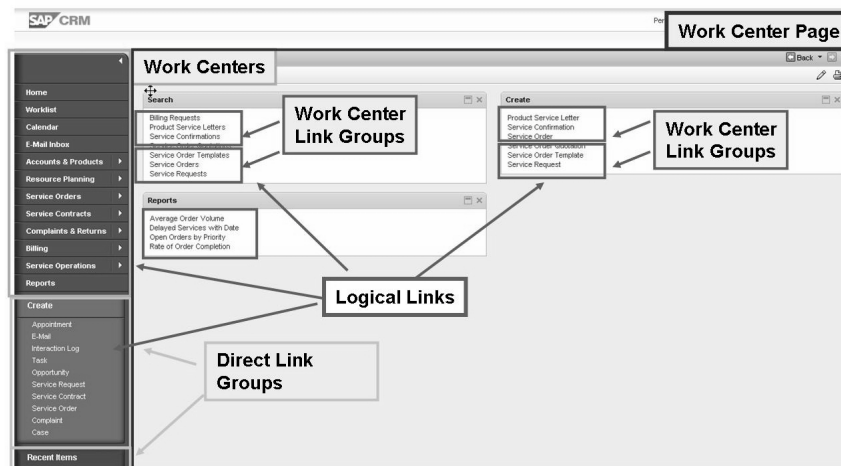


Figure 265: Navigation Bar: Terminology

A similar slide was already presented in the business role chapter, this one focuses on the navigation bar related items. This lesson explains where the entries come from that have been “adjusted” using business role customizing. One can say that the navigation bar profile contains the maximum number of Work Centers and Link Group (Work Center and Direct). Depending on adjustments within Business Role Customizing most likely fewer Links will be made available to the user.

The Navigation Bar contains links to all work centers that belong to a role. The work centers contain links to the search pages of the business objects that belong to each work center. It also contains direct links to the user’s calendar or work list.

A work center describes and provides access to business content. The work center page is a collection of logical links for business content and grouped in link groups.

Direct link group is part of the navigation bar and provides direct access to specific business content with one click.

Logical links can be used in direct link groups, second level navigation or on work center pages.

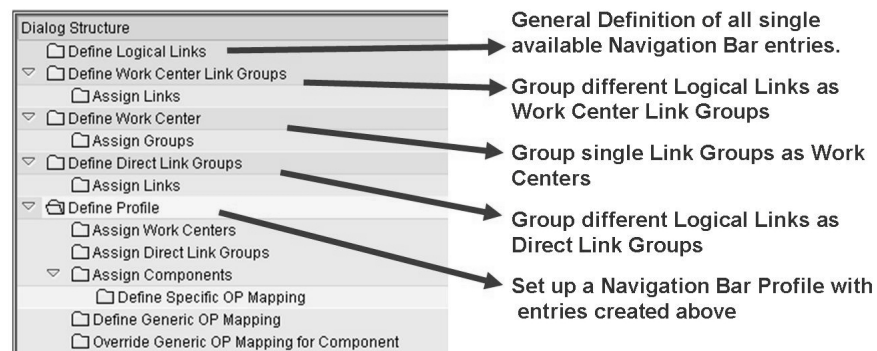


Figure 266: Navigation Bar Customizing

The navigation bar customizing follows some kind of hierarchical structure. The basis is a repository of logical links that will be used in work center link groups or direct link groups. Work center link groups will be composed to form work centers. Work centers and direct link groups will be assigned to a navigation bar profile.

Note: Show the customizing path for the navigation bar customizing. Demonstrate the content of the following slides.

Demonstration:

Explain the origin of the link “Create Service Order”.

Open the CRM WebClient UI and show where to find this link. It is on Work Center “Service Orders”.

Open a SAPGUI mode and go to IMG activity **Define Business Roles**. Choose business role, note the navigation bar profile and go to **Adjust Work Centers**. You can observe the technical name **SRV-ORD**.

You could also show the Adjust Work Center Group Links and find the actual technical name of the Link Group containing the link to create a service order.

Open another SAPGUI mode and go to IMG activity **Define Navigation Bar Profile**

Choose the corresponding navigation bar profile and optionally again show the assigned Work Center SRV-ORD (actually this is redundant information)

Choose **Define Work Center** and find **SRV-ORD**.

Mark it and choose **Assign Groups**.

Observe Work Center Link Group **SRV-ORD-CR**.

Choose Define Work Center Link Groups and find SRV-ORD-CR. Mention that the Group Type **Create** is responsible for the fact that those links are listed in the Create section of the work center page.

Mark the group and choose **Assign Links**.

Observe the logical link **SRV-ORD-CR**.

The Navigation Bar profile is the main object to control the available business content and links for a user.

The Navigation Bar profile is assigned to a Business Role.

The assignment should be done in the details and not in via a functional profile!

SAP Implementation Guide → Customer Relationship Management → UI Framework → Technical Role Definition → Define Navigation Bar Profile

Transaction code for direct access of navigation bar profile customizing:
/NCRMC_UI_NBLINKS

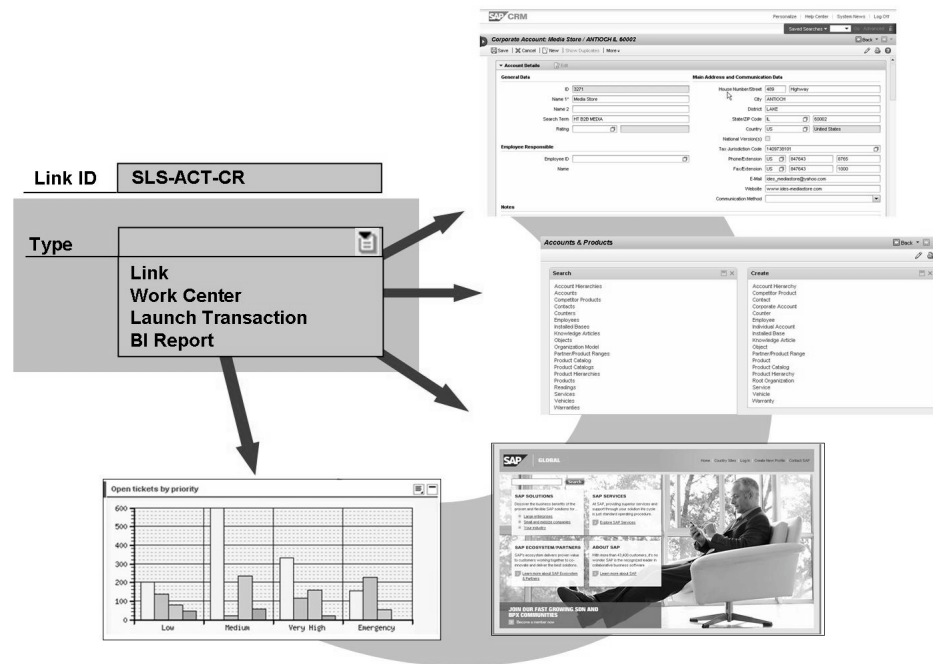


Figure 267: Logical Links

Explain the difference between the link types. Work centers and Links point to a target ID which represents a BSP Page in a UI component (will be explained in Chapter ‘Architecture’. Launch transactions always use the same target ID but have different parameter. Refer to the later example for the transaction launcher. BI Reports as well use one target ID for all entries. The difference is the parameter, which is an ID that is defined in customizing for the specific BI Report. Definition of BI Reports will not be explained in detail. In case of questions refer to the IMG Documentation of the specific customizing action.

There are four different types of links that can be integrated to the Navigation Bar

Link: opens a CRM application, which can be a search or a creation page.

Work Center: opens a work center page.

Launch transaction: Via the transaction launcher you can integrate other web based applications such as BSPs, BOR Objects or any page that can be accessed via a URL.

BI Report: You can define logical links for any existing BI Report.

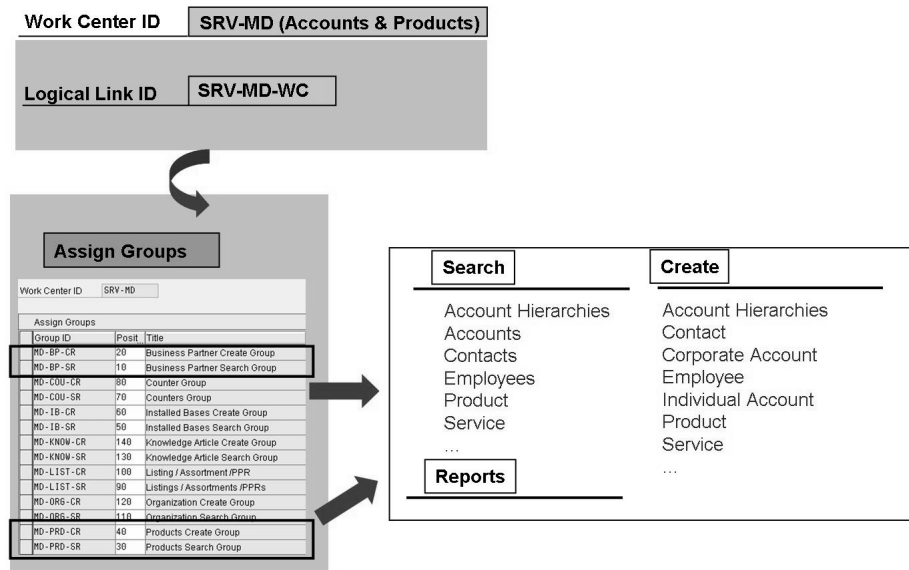


Figure 268: Work Center

Of course it is possible to create a navigation bar profile which contains work centers of the different “standard roles” like Sales-, Service- or Marketing Professional.

Examples of Work Centers:

- Marketing
- Activities
- Sales Cycle
- Complaints & Returns
- Billing

Work centers are displayed at the first level. The work centers are displayed in the order defined by the navigation bar profile.

Work Centers contain one or more Work Center Link Groups.

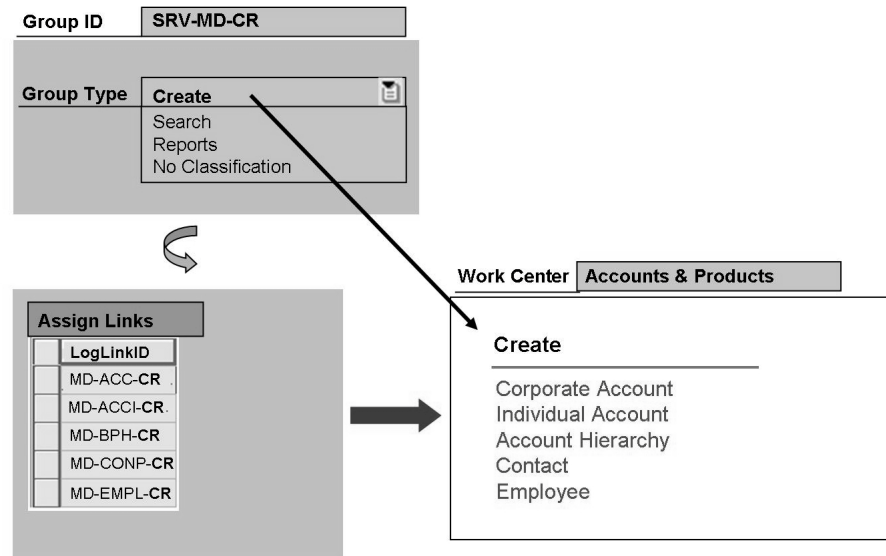


Figure 269: Work Center Link Groups

All work center link groups of the same type (Create, Search, Reports) will be collected and appear together as a list of links in the specific section. When maintaining Link groups for a work center you can specify a position.

Explain how single logical links can be grouped to Work Center link groups. When maintaining new links in a link group you can specify a position. These positions are not displayed in the link group overview.

After creation of logical links the links need to be grouped into work center link groups.

The groups are structured in three types:

- Create
- Search
- Reports

The group type controls where the links of the group will be displayed.

To create a new Group choose an ID, a Group type and assign the logical links that should be available in this group.

Demonstration: Work Center and Work Center Link groups

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Create your own Navigation Bar profile **Y##NBPROF (## Service Professional)** by copying the existing Navigation Bar profile **SRV-PRO** incl. all dependant objects.
 2. Create your own Work Center **YWS_OP_## (## Sales)** by copying the existing Work Center **SLS_OP_ALL**.
 3. Add the newly created Work Center **YWS_OP_##** to your newly created Navigation Bar profile **Y##NBPROF**.
 4. In order to test your settings, you have to replace the original Navigation Bar profile within Business Role Customizing. Go to the Customizing of your Business Role and exchange the Navigation Bar profiles.
 5. Before you are able to use the links belonging to Work Center **YWS_OP_## (## Sales)**, you need to change Business Role Customizing (Visible Work Center Group Links).
 6. Restart the CRM Web UI and observe the changes.
 7. Show the link groups **SLS-QUT-CR** and **SLS-QUT-SR** with their logical links in the customizing. Add the link groups to your work center.
 8. Go to the Customizing of your Business Role and make the new links visible.
 9. Restart the CRM WebClient UI and observe the changes.
-

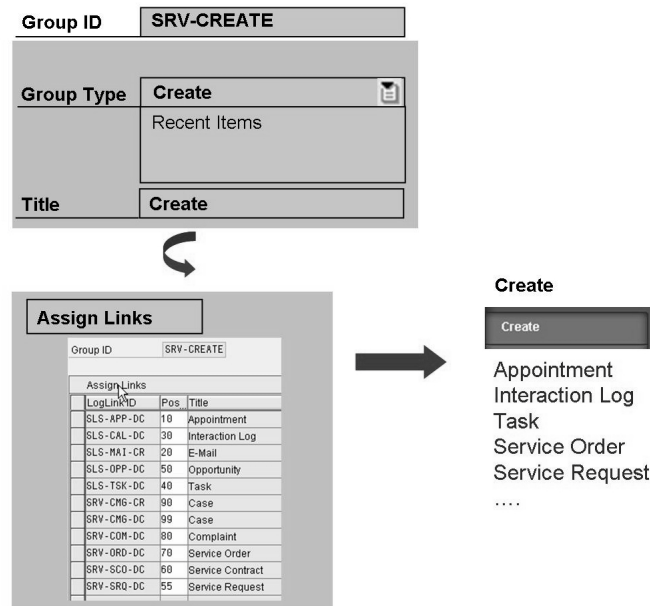


Figure 270: Direct Link Groups

You can have different number of direct link groups for different purposes, e.g. quick creation, web transactions etc. Within the direct link group you can specify the position of each link.

Note: Perform demonstration “Direct Link group”

Direct Link Groups contain Logical Links.

Direct Link Groups can be used to provide

Quick Create links

Links that call external applications (e.g. via Transaction Launcher)

Demonstration: Direct Link group

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Create a direct Link group as copy of an existing one.
 2. Add the link groups to your work center.
 3. Go to the Customizing of your Business Role and make the new links visible.
 4. Restart the CRM WebClient UI and observe the changes.
-

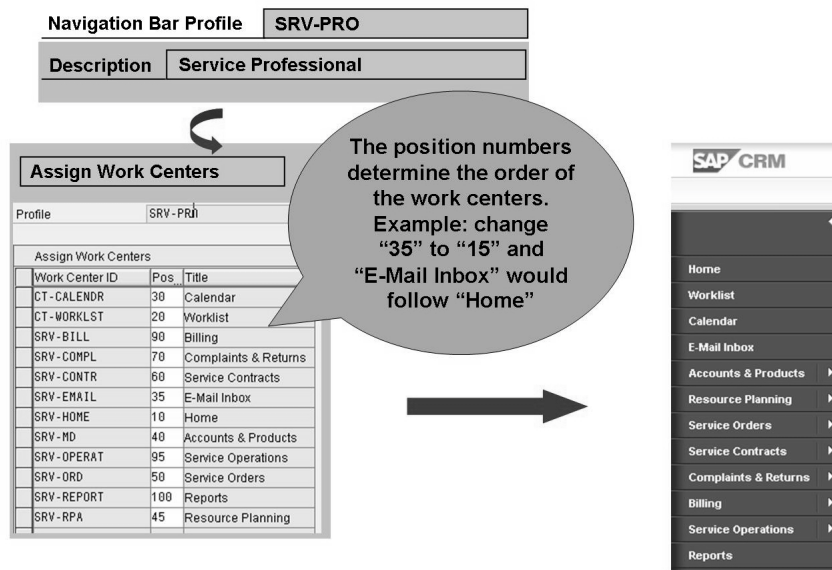


Figure 271: Navigation Bar Profile - Assign Work Centers

When maintaining the work center assignment for the navigation bar profile you can specify a position which is the order of the work centers.

A Navigation Bar profile usually contains several Work Centers.

In Business Role Customizing it is possible to deactivate a number of Work Centers.

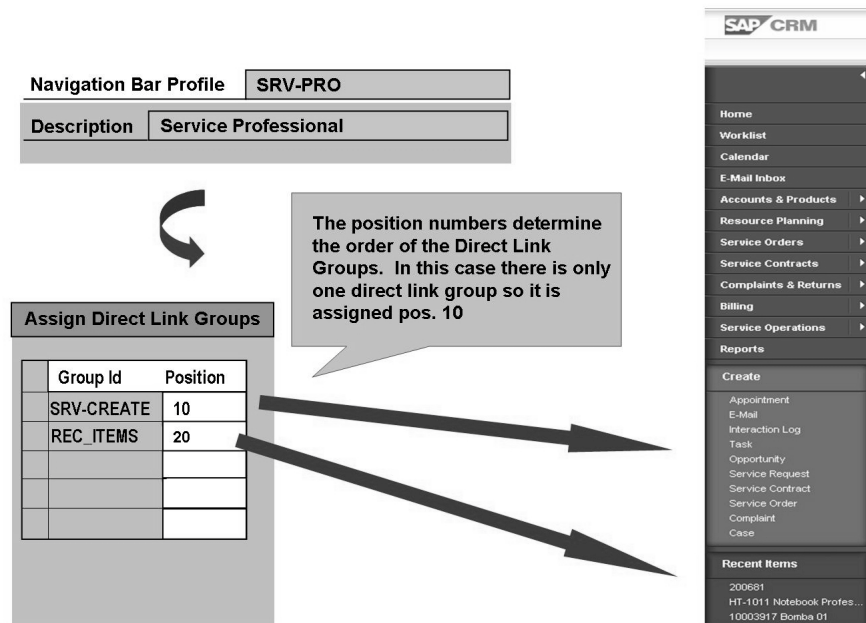


Figure 272: Navigation Bar Profile - Assign Direct Link Groups

When maintaining the direct link group assignment for the navigation bar profile you can specify a position which is the order of the direct link groups.

Direct Link Groups usually are of type **Create** and contain one or more Logical Links.

An exception are the recent items which are controlled by a direct link group of type **Recent Items**. This kind of direct link group does not contain logical links.

It is possible to define the order in which Direct Link Groups should be displayed.

Lesson: Transaction Launcher Customizing

563

Lesson Duration: 30 Minutes

Lesson Overview

This lesson explains the function of the transaction launcher and how it can be used to integrate external, SAPGUI based applications into the CRM WebClient UI.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the Transaction launcher functionality
- Use the Transaction launcher to integrate “external” applications into the CRM WebClient User Interface

The transaction launcher functionality together with the Internet Transaction Server (ITS) allows to call standard transactions in SAP systems. It is possible that a CRM business user calls a transaction directly from the CRM WebClient UI navigation bar.

Business Example

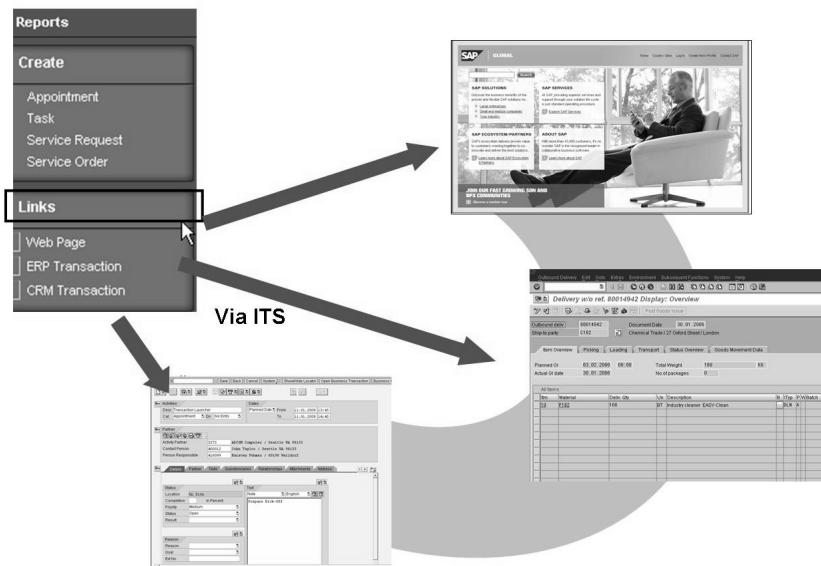


Figure 273: Transaction Launcher

Give some examples when to use the transaction launcher. E.g. a customer wants to include a SAPGUI based transaction into the CRM WebClient UI.

Setting up the Internet Transaction Server can be considered a basis administration task.

Usage of transaction launcher functionality requires an ITS up and running.

In the training system both CRM and ERP system ITS are working properly which means that you can demo calling also an ERP transaction.

Caution: The BOR Object you should use when calling ERP is **ZTSTC** (method EXECUTE)

The Transaction Launcher function allows to access business transactions directly from the CRM WebClient UI. The main benefit of using launch transactions is to save agents from logging into multiple systems and repeating data entry.

Installed the Internet Transaction Server (ITS) to provide access to the local SAP CRM system or to another SAP system.

Prerequisites for ITS usage (e.g. calling transactions in ERP backend system):

- Define Transaction Launcher Logical Systems and URLs (e.g. via transaction code /ncrms_ic_cross_sys)

Hint: In standard the entries you maintain here are considered Customizing and are tracked accordingly. Depending on the setup of your system landscape, entries made in a development system will not work in a test- or productive system.

- Defined your logical systems using transaction BD54
- Defined your Remote Function Call (RFC) destinations using transaction SM59
- Assigned RFC destinations to logical systems using transaction BD97

SAP Menu → Interaction Center → Interaction Center WebClient → Administration → System Parameters → Define Transaction Launcher Logical Systems and URLs

SAP Implementation Guide → Customer Relationship Management → UI Framework → Technical Role Definition → Transaction Launcher → Configure Transaction Launcher

Hint: See OSS notes **888931** and **990216** including related notes for further information.

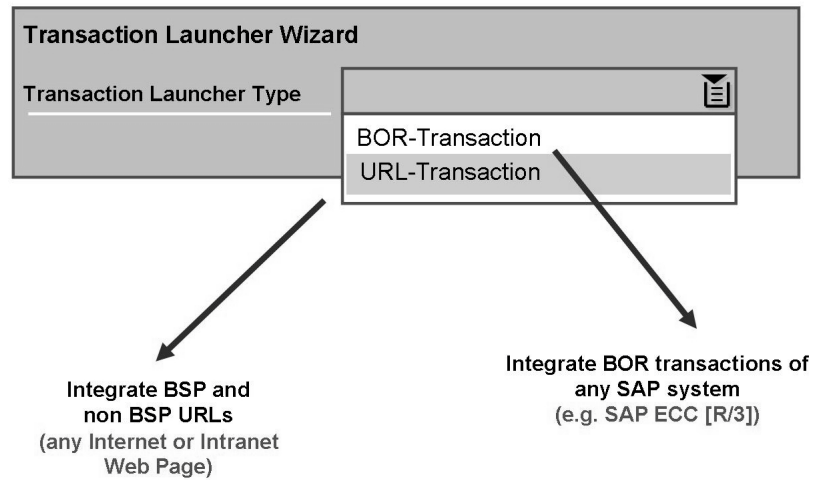


Figure 274: Transaction Launcher Types

Introduce BOR Objects and give some examples when to use BOR Objects in other systems.

With SAP CRM 2007 the generic BOR object **TSTC_UIF** has been introduced. It can be seen as a generic BOR object to start transactions. When using this objects (method EXECUTE) it is possible to enter a transaction code as Object Key (see transaction launcher wizard and/or exercises).

In SAP ERP systems the generic BOR object to call transactions is called TSTC. It is a prerequisite to be able to call the EXECUTE method **synchronously**. Therefore this object need to be adapted via SWO1.

The transaction launcher supports two general types of transactions:

Launching BOR transactions of the CRM system or any remote SAP system: Objects like the CRM business partner, SAP ERP customer master or SAP ERP sales order can be called by BOR transactions. BOR stands for Business Object Repository. It is a list of all kinds of business objects that exist in SAP systems. They can be called and integrated as SAP GUI transactions into the CRM User Interface. In this case an ITS (Internet Transaction Server) is required to use the SAP GUI for HTML.

In CRM systems you can use BOR object TSTC_UIF and method EXECUTE in order to directly enter CRM transaction codes.

In ERP systems you have to adapt BOR object TSTC in order to directly enter ERP transaction codes.

You can as well integrate any BSP or non BSP URL into the CRM User Interface via transaction launcher and navigation bar customizing.

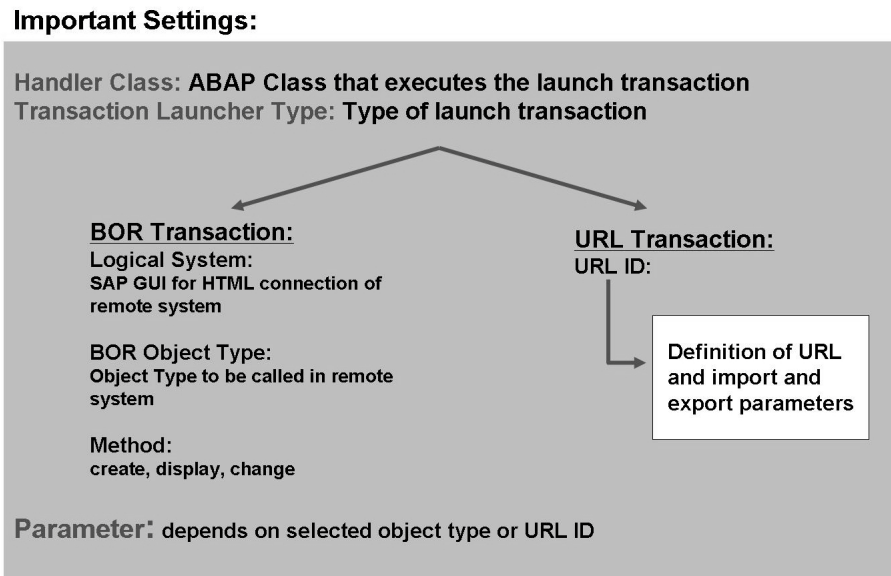


Figure 275: Create New Launch Transactions using the Wizard

The principle of the wizard is that an ABAP class is generated using the information provided in the wizard. This ABAP class looks different for URLs and BOR objects as different settings are mandatory.

You can pass parameters to the external web page or BOR Object. The formal parameters can be defined in the definition of the URL ID. The actual parameters can either be defined ‘hard coded’ in the transaction launcher wizard or can be taken from the context at runtime. The context (F4 help for parameters in the wizard) is only available in the IC Web Client. Additionally you can manually add coding in the generated ABAP class.

Note: Perform demonstration “Use the transaction launcher wizard ”

Open the IMG documentation *Configure Transaction Launcher* and scroll to the bottom of this documentation. In the subsection Include Launch Transaction in Business Role it is mentioned which target id and which parameter class can be used for transaction launcher links.

New launch transactions do not only require IMG table entries but also some ABAP code: the so called Handler Class that controls most aspects of the launch transactions.

There is a wizard to create new launch transactions that allows you to make all required settings without having to manually implement the ABAP class coding.

Important settings when going through the wizard are:

- **Handler Class:** The handler class represents the ABAP Objects class that contains all WebClient specific code needed to execute a specific launch transaction. (Note: if you want to manually change the ABAP code of the classes you can access all handler classes in the Development Workbench [Transaction SE80] as sub-classes of super class CL_CRM_UI_LTX_ABSTRACT).
- **Mapped Logical System:** If you want to launch BOR objects you have to enter the mapped logical system connection that connects the remote SAPGUI transaction via SAPGUI for HTML to the CRM User Interface.
- **(BOR) Object Type:** Here you select the type of object you want to launch (for example, a CRM opportunity or an SAP ERP sales order).
- **Method:** Methods can be create, change, display, and others depending on the chosen object
- **Parameters:** most object types allow you to pass parameters to the launched transaction like for example the ID of the identified account (Interaction Center specific).

OSS note 1139385 might be helpful when experiencing authorization problems.

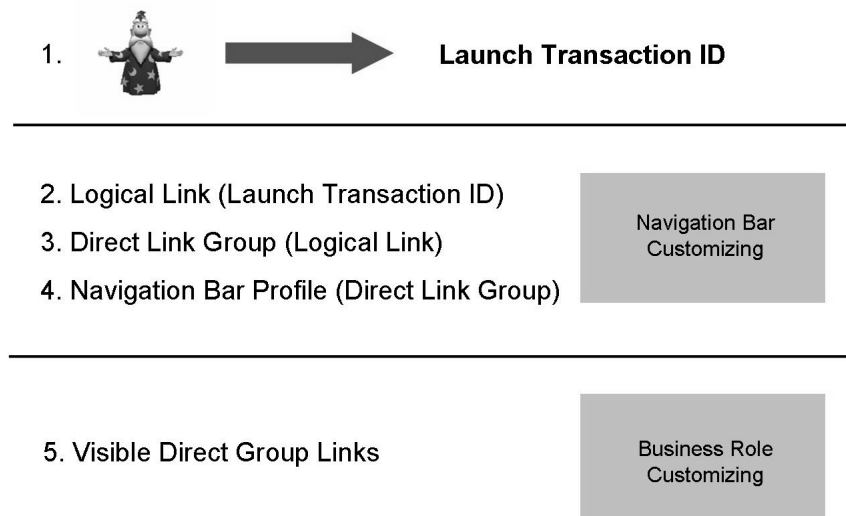


Figure 276: Assignment of a Launch Transaction ID

After creation of the transaction launcher ID, you need to create a logical link to integrate the transaction launcher call to your navigation bar profile and business role.

Note: Demonstrate how to add the new links to the navigation bar profile. Do the steps as described in the exercise.

In the transaction launcher wizard one can enter a class name. This class will be generated once the wizard is finished. This class name should be unique. Otherwise it might happen that an existing class is overwritten.

See IMG documentation *Configure Transaction Launcher* in order to learn more about relevant target id and parameter class entries.

SAP Implementation Guide → Customer Relationship Management → UI Framework → Technical Role Definition → Define Navigation Bar Profile

Demonstration: Use the transaction launcher wizard

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Show an example how to create a launch transaction with the wizard. First use a URL. The system demo should be similar to the first exercise of this chapter. When executing the wizard, explain each step. Mark the checkbox stateful.
2. The 'Raise Veto' checkbox is relevant for the IC Agent related Business Roles. In the IC web client, all transactions get automatically saved when a contact with a business partner is ended. In case the launch transaction is still open in a separate window (checkbox stateful is marked) the agent gets a popup to close the separate window if this 'raise veto' checkbox is marked. For 'normal' Business Roles it makes no sense to mark this checkbox.

3. You can pass parameters to the external web page or BOR Object. The formal parameters can be defined in the definition of the URL ID. The actual parameters can either be defined 'hard coded' in the transaction launcher wizard or can be taken from the context at runtime. The context (F4 help for parameters in the wizard) is only available in the IC Web Client. Additionally you can manually add coding in the generated ABAP class.
 4. These generated ABAP classes are local objects. If you want to transport them to the test system you have to assign them to a package
 5. As a second example use the BOR Object TSTC_UIF (for CRM) as used in the exercise. This time do not mark the checkbox 'stateless' to demonstrate the difference
-

Unit 17

577

Architecture

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Describe the role of the UI components in the framework
- Get a basic understanding of the Model View Controller concept
- Use the UI Component Workbench to get information about the UI components
- Describe the functionality of the Generic Interaction layer
- Use the GenIL Model Browser to get information about the data model of the applications
- Explain the classification of the Business Objects
- State the role of the Business Object Layer in the Framework
- Work with the system tool BOL Browser

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Lesson: UI Components

578

Lesson Duration: 45 Minutes

Lesson Overview

This lesson introduces the CRM WebClient UI architecture.

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the role of the UI components in the framework
- Get a basic understanding of the Model View Controller concept
- Use the UI Component Workbench to get information about the UI components

Depending of the target group this unit might either be too technical or (if developers are considered) not detailed enough.

Business Example

You want to know more about the architecture of the framework as this knowledge is helpful when you need to configure or enhance the applications.

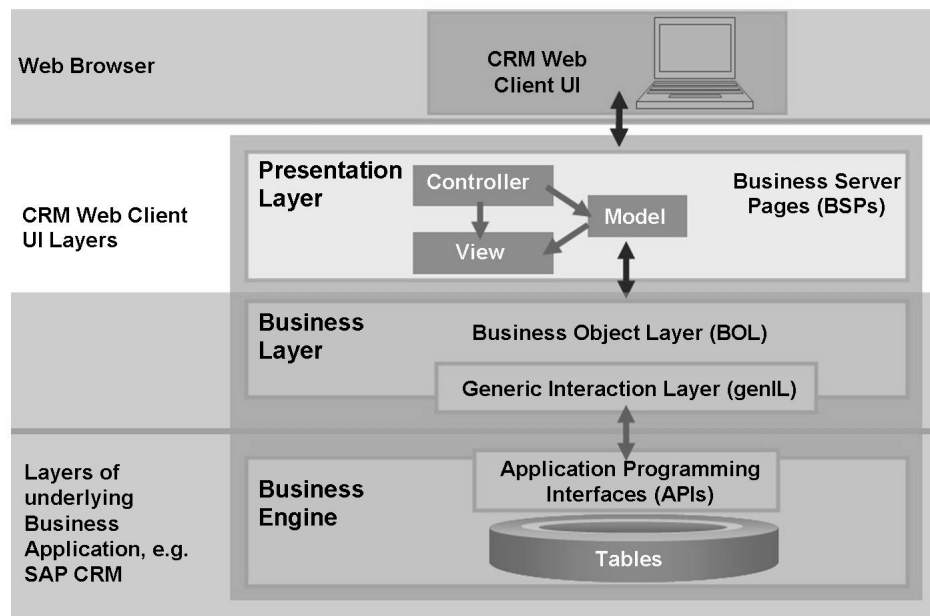


Figure 277: Layers of the CRM WebClient UI

Introduce the different layers and the terminology. Mention the BSP technology as a common SAP technology for web applications (use HTML for presentation and ABAP (and/or Java Script) as scripting language

The different software layers are completely separated from each other. This separation allows the connection of any business application, via business object layer (BOL) and generic interaction layer (genIL) to the presentation layer

The presentation layer of the CRM WebClient UI is based on the CRM User Interface Framework (CRM UIF), which is the basis for the HTML pages running in the Web browser.

Business Server Pages (BSPs) are representing the presentation layer of the CRM WebClient UI. They are used to generate the HTML page of the CRM WebClient running in the agents browser. The business logic of CRM business objects and processes is not controlled by the BSPs: presentation and data model are handled separately.

The business layer of the CRM WebClient UI consists of the following software layers:

- Business object layer (BOL): The business object layer saves the business object data, for example of sales orders, at runtime of the SAP CRM session. This layer guarantees the separation of the CRM WebClient UI and the underlying business logic.
- Generic interaction layer (genIL): The generic interaction layer handles the data transfer from the business object layer to the application programming interfaces (APIs) of the underlying business engine. It is the connection between the business object layer and the underlying business engine.

The Generic Interaction Layer (genIL) handles the data transfer between CRM database tables and the BOL.

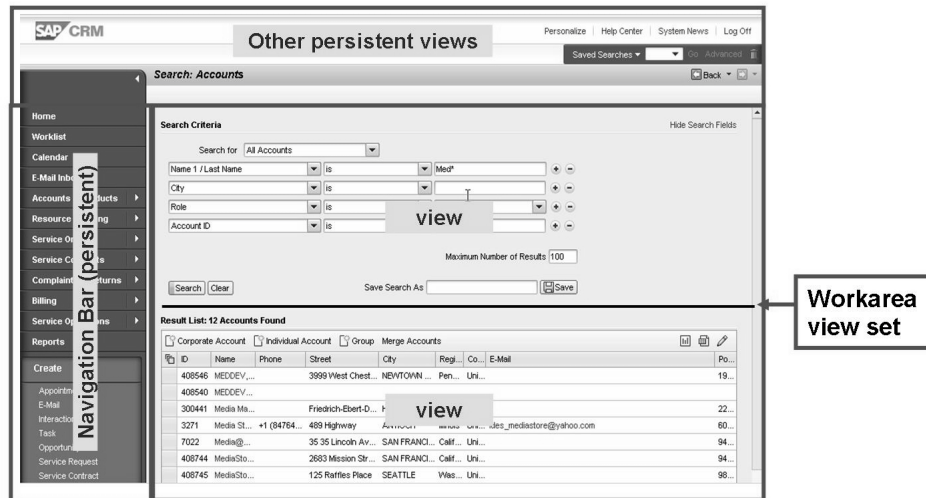


Figure 278: Views of the CRM Web Client

Explain the structure of the Web Client UI with focus on the views. Explain the difference between persistent views in the L-Shape and the views used in the work area. Technically, there is no difference. Views can be composed to view sets to display them in a special order or pattern. Views are not stand alone objects but are part of UI components. To access views you first need to find out the technical name of the UI component and the view.

Note: Perform demonstration “Identification of Component and Component Workbench”

Some of the views of the CRM WebClient are persistent others views are selected and changed dynamically throughout an CRM WebClient session.

The navigation bar that serves as a menu as well as the context area on top of the screen are persistent.

Applications like business transactions, e-mails, account maintenance are displayed as view sets in the so called work area. This part of the screen is not persistent. Views change depending on navigation, events raised and data constellations.

The single views that are displayed in the workarea view set are not stand alone objects, but are hosted in different UI components.

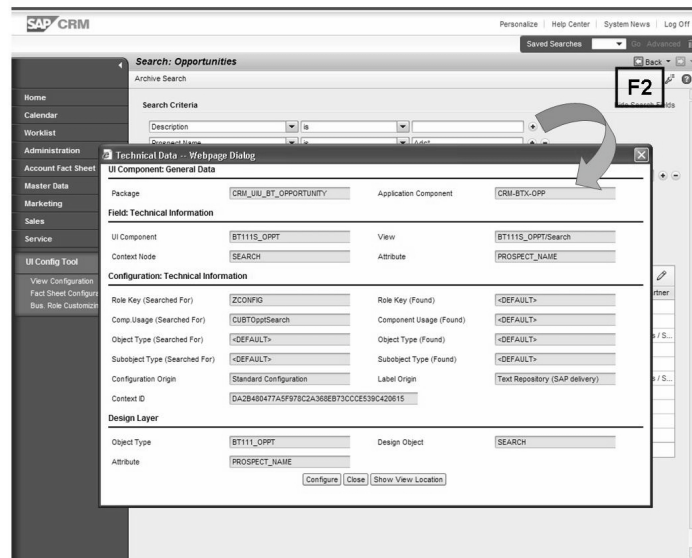


Figure 279: Identify Component and View

The CRM WebClient UI consists of various components. Components are technically Business Server Page (BSP) applications.

To find out the name of the UI component and view place your cursor in an editable field in the CRM WebClient UI application and press F2

UI Component, View, Attribute, Configuration search and found key as well as Design Layer information is displayed.

A UI Component is a bundle of views, viewsets, etc. that logically belong together

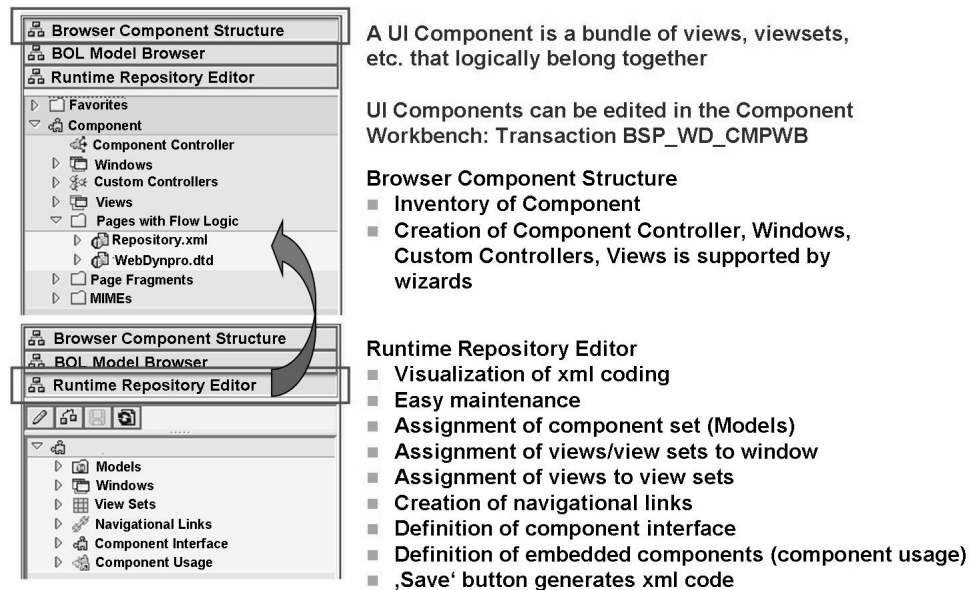


Figure 280: Component Workbench

In SAP CRM 7.0 the component workbench visualized views that are outdated by means of a different color. A good example can be found when looking at the numerous views under UI component **BP_HEAD**.

The BSP Component Workbench is the central framework modeling tool, and provides access to a variety of functions. It offers the following main access points:

- **Component Structure Browser:** The Component Structure Browser provides access to the objects of a UI Component.
- **BOL Model Browser:** The BOL Model Browser shows the business object layer (BOL) model of a UI component. This BOL model is assigned to the UI component via the runtime repository. The BOL Model Browser is available only if this assignment exists.
- **Runtime Repository Editor:** The Runtime Repository Editor shows the runtime repository of a UI component. In the runtime repository, you can see and edit the view set composition, that is, which views are assigned to a view area and which view areas belong to a view set. In this runtime repository, you can also see and edit the navigational links between the views of a UI component. You can see the component interface description and the component usages.

To start the BSP Component Workbench, you can

- use transaction BSP_WD_CMPWB.
- choose IMG activity *Customer Relationship Management* → *UI Framework* → *UI Framework Definition* → *Access BSP Component Workbench*
- Include a work center CT-ADMIN (the work center contains a work center link group which itself contains the Logical Links: BSP-DLC-VC (View configuration) and BSP-DLC-FC (Fact Sheet configuration) to you business role.

After embedding such links into your role a search screen will appear that lets you choose a component and select a view.

- Show configurable areas via button ‚Show configurable areas‘ and button ‚configure page‘ The configurable areas are shown and the configuration of the different views can be started, if you click on an area If this mode is active, general navigation is switched off. To show these buttons you have to activate the Configuration Mode (PERSONALIZE page → Personalize Settings). A special authorization is necessary to use this feature.

If ABAP coding is necessary the system navigates from the component workbench directly to the development workbench (Transaction code SE80) or class builder (SE24)

The runtime repository is a xml file. Maintaining xml is not that convenient. The component workbench therefore offers an editor that visualizes the existing xml coding and offers an easy maintenance of the different elements contained in the runtime repository.

When saving the settings in the runtime repository editor the corresponding xml code is generated.

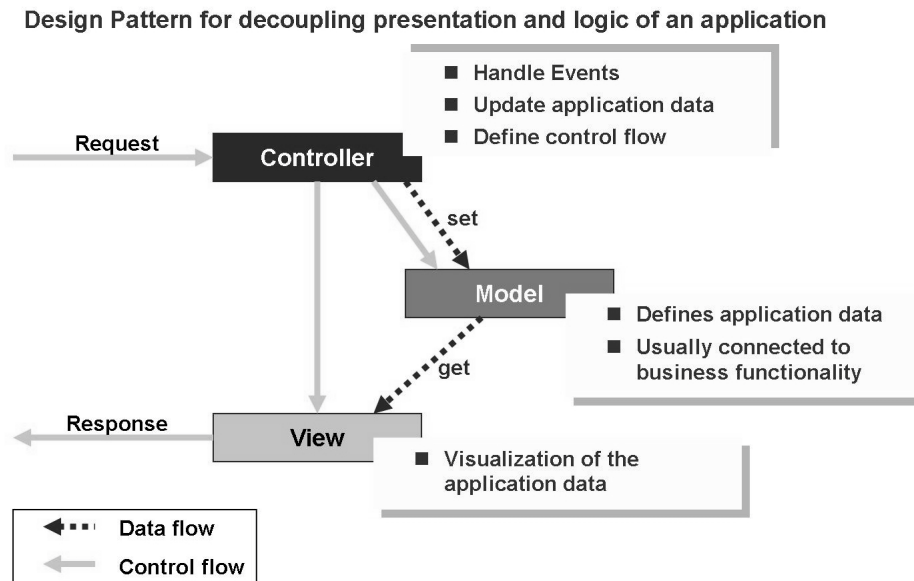


Figure 281: Visible Model-View-Controller (MVC)

Point out that the MVC Pattern is a general concept for web applications. SAP has adapted the concept and implemented it in the SAP Basis to use it with the BSP Technology

Model

The model of the CRM WebClient BSPs consists of contexts and context nodes that link the fields of a view to the underlying business layer (the BOL). This linking is referred to as binding. Each data field on a view visualizes an attribute of a context node.

View

The view handles the visual output. It is responsible for rendering the output and relevant UI controls, such as data fields and push buttons. All output is received from the controller for rendering. All user input is passed from the view back to the controller for processing.

Controller

The controller handles the interaction logic and provides the connection between a view and a model of a MVC application. A controller receives all keyboard and mouse input from the view. Based on these events, the controller can decide how to react, for example, by accessing data from the model or triggering the navigation to a different view.

View controllers consist of:

- Controller definitions
- Assigned controller classes

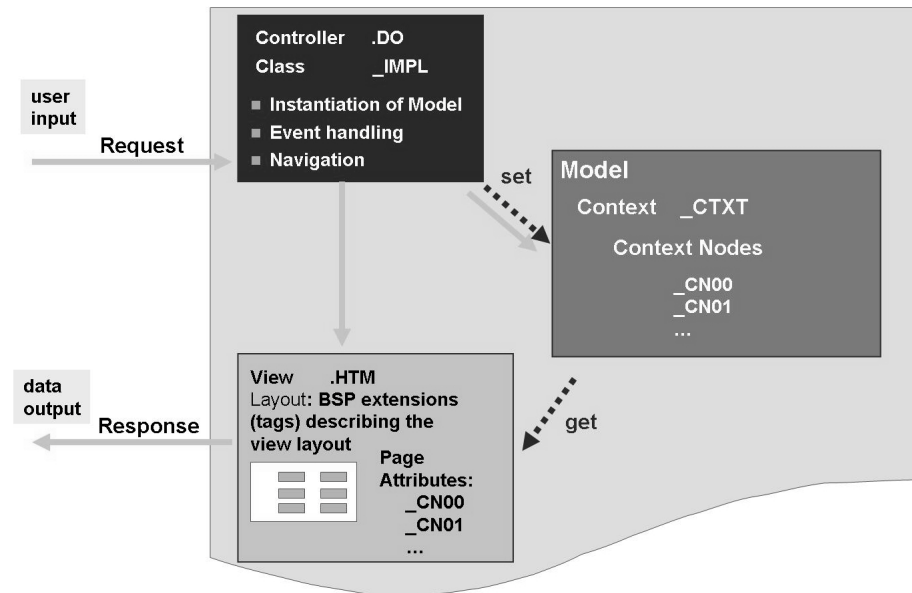


Figure 282: Model View Controller in CRM WebClient

CRM Web Client UI uses the Model View controller concept. It follows a naming convention that makes it easy to recognize what function a specific class has.

Note: Perform demonstration “Model, View, Controller in the Component Workbench”

This slide introduces the naming convention of model view and controllers of the CRM Web Client:

Usually the first part of the name is identical and always contains the view name. The extensions are:

- *.HTM for the views
- *_IMPL for the controller implementation class (*.DO for the view controller)
- *_CTXT for the context of the model.
- *_CNxx with (xx = 00, 01, 02, etc.) for the context nodes

The controller is the first element that is instantiated when the system navigates to a specific view. It triggers the creation of the context Class that itself instantiates the context nodes.

The context nodes are the link between the input fields on the view and the data model in the BOL. For each Business Object used in the BOL there is one context node necessary. The context nodes follow the same hierarchy as defined in the data model.

Data are transported from the Model to the View automatically.

The view does not contain any logic. It uses BSP extensions which that generate HTML coding and use ABAP as scripting language.

All User Input is handled by the controller. The data are transferred to the model and the context nodes update the BOL.

In case the user pressed a button (event) the controller contains the logic what to do with this click (e.g. navigate)

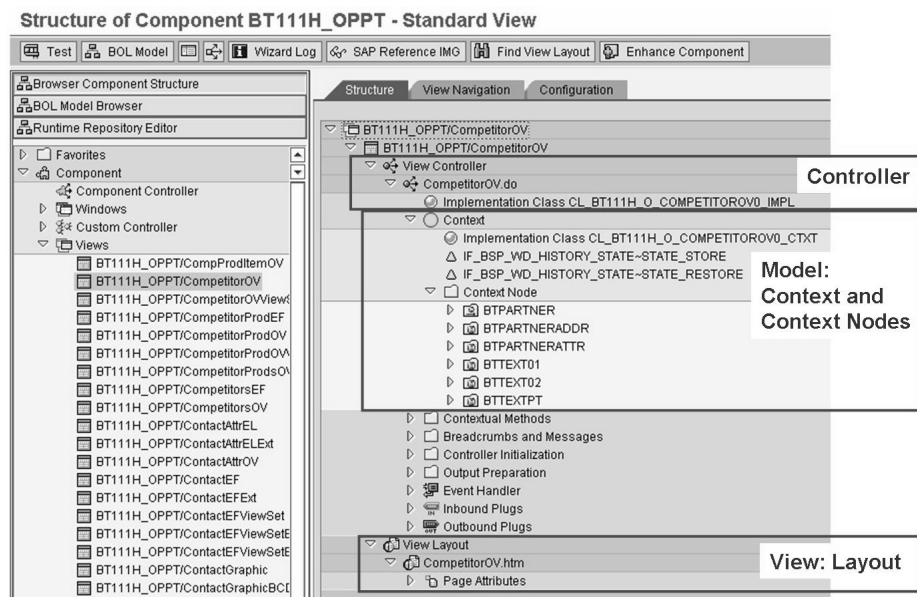


Figure 283: Component Workbench: View, Controller and Model

Demonstrate in the system how to navigate in the component workbench to find the controller, the model and the view

Transaction BSP_WD_CMPWB displays all development objects of the CRM Web Client applications.

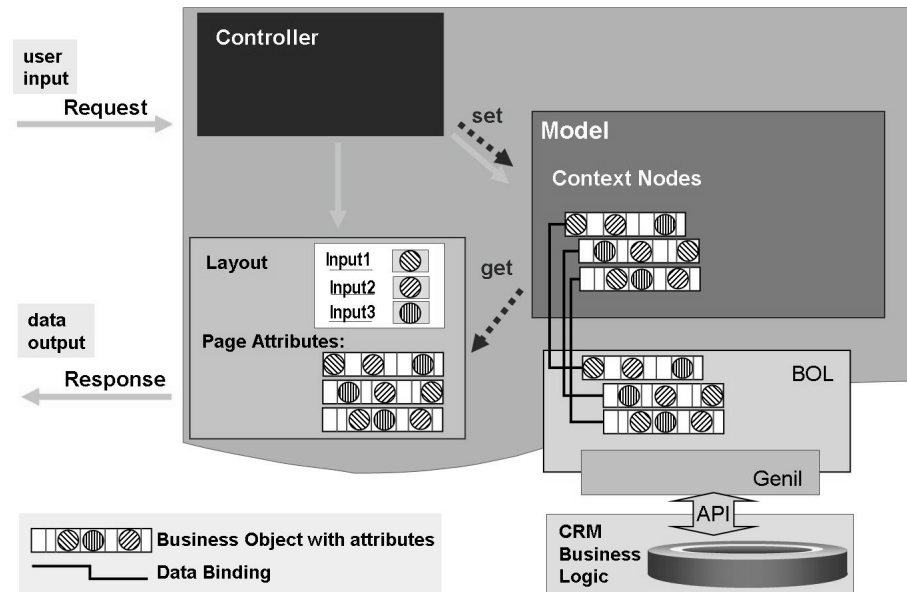


Figure 284: Context Nodes

The context nodes build the link with the underlying framework. Each context node represents a set of attributes. There is a one directional automatic field transport from the context nodes to the layout. User input is passed via the controller to the context nodes.

The model of CRM WebClient UI Business Server Pages (BSPs) consists of contexts and context nodes that link the fields of a BSP view to the underlying Business Object Layer (BOL) data structures. This linking is referred to as data binding. Each data field on a view visualizes an attribute of a context node. Each attribute of the context node is connected to a field in a BOL structure.

Context nodes and contexts are both implemented as ABAP classes.

Data is automatically transported from the Model to the View.

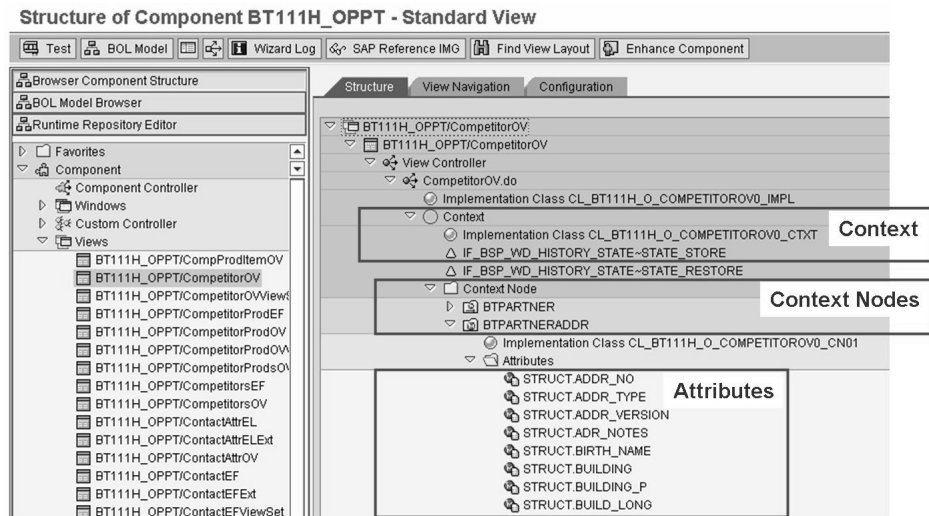


Figure 285: Component Workbench: Context Nodes, Attributes

Demonstrate in the system how to navigate in the component workbench to find the context nodes and the attributes.

The model of CRM Web Client BSPs consists of contexts and context nodes that link the fields of a BSP view to the underlying BOL data structures. This linking is referred to as data binding. Each data field on a view visualizes an attribute of a context node. Each attribute of the context node is connected to a field in a BOL structure.

Context nodes and contexts are both implemented as ABAP classes.

In the example, the context class (suffix `_CTXT`) is an attribute of the view controller class. The context contains several context nodes, such as with suffixes `CN00`, `CN01`, and `CN02`. Each context node class contains one or more attributes. The attributes of context nodes are exchanged with the attributes of corresponding BOL structures.

In contrast to former implementations the CRM Web Client views can be based on a minimal amount of coding

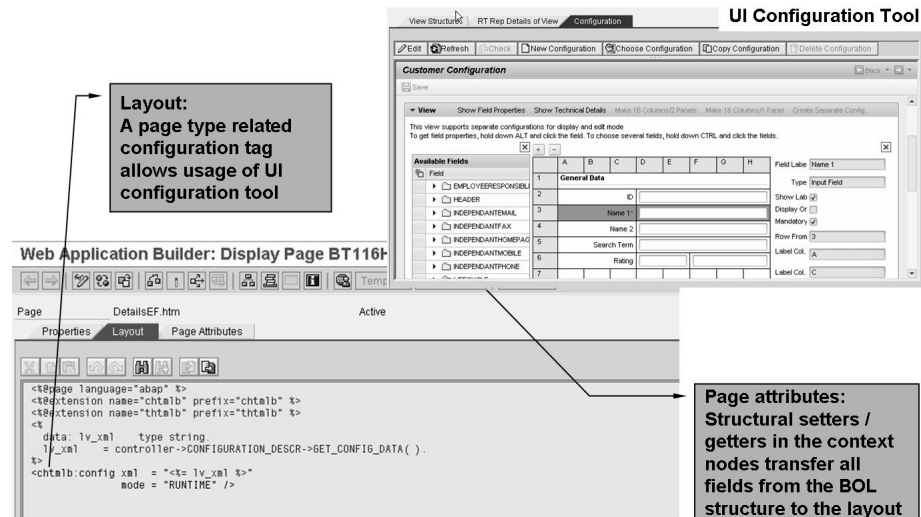


Figure 286: CRM Web Client: View Details

Demonstrate in the system how to see the details of a view. Point out that the page attributes of the view are identical with the context nodes of the model (data binding) Show the layout which is basically very simple. Mention that the layout will be generated by the UI Configuration tool in combination with the usage of specific BSP extensions.

The layout of CRM WebClient views can be implemented in two different ways that both rely on HTMLB tags. Both ways are used by the CRM WebClient standard delivery layout.

Option 1)

The layout definition like the selection, sequence and positioning of fields and labels is configured and stored outside of the view by the UI configuration tool. The view just contains one special HTMLB tag that is able to read the layout definition that was saved by the configuration tool. To access the tool select a view in the component workbench and click on tab page *Configuration*.

Option 2)

The layout details are represented by HTMLB tags directly in the view layout coding. HTMLB tags are used to structure the view layout and to describe all of its UI elements. The view layout definition structures the available space as a grid of columns and rows. Cells of this grid are filled by HTMLB tags for the various UI elements like fields, navigation links, and buttons. To access the view layout code double click on the view on the tab page *Structure* in the component workbench.

HTMLB is an SAP extension of HTML. HTMLB tags include complex and extensible capabilities which are much more powerful than normal HTML tags. HTMLB tags ensure a consistent look and feel throughout all applications. In addition to standard HTMLB tags the CRM WebClient framework makes use of THTMLB and CHTMLB tags. THTMLB are the basic tags (T stands for thin). These tags could and are also be used directly (Input tag, Table Tag...).

CHTMLB are the configurable tags (C stands for configurable). These tags are used on the view in case that the view should be changeable via configuration. The CHTMLB Tags are based on the basic tags and are more complex tags than the basic ones.

For more information about HTMLB tags, see the *Tag Browser* in transaction SE80.

Option 1 is used mainly for the layout of form views (fields and labels and the grid of table views).

Option 2 is used for areas of views that contain buttons and navigation links.

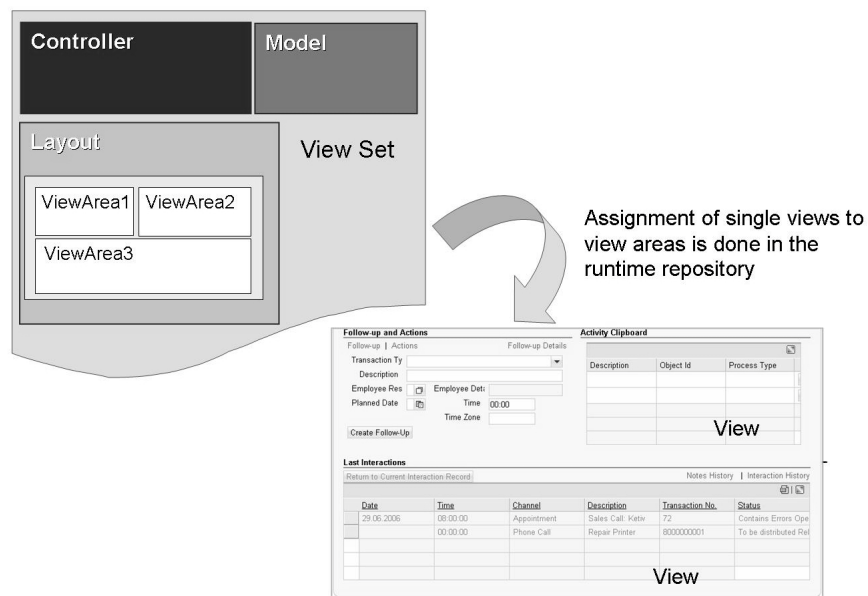


Figure 287: View Set, View Area and View

Explain that an overview page is also a kind of view set. Show the assignment of views to a view set in the runtime repository editor.

Each component contains an XML file called Repository.xml (also called Runtime Repository). This repository describes the view set hierarchy, including how the views are plugged into the view areas of the view set, as well as the navigation between views of a component. You can find the Repository.xml of a component under Pages with Flow Logic in the component workbench. You can see and edit the assignment of views to view areas in the XML files. An easier way to configure the view set composition is through the runtime repository editor of the component workbench.

View Sets are views as well. They have a controller Class and a context class but no context nodes.

The layout of a view set defines the positions of the view areas (position, width, height). Each view area has a defined name.

In the runtime repository you can assign views to a view area of a view set.

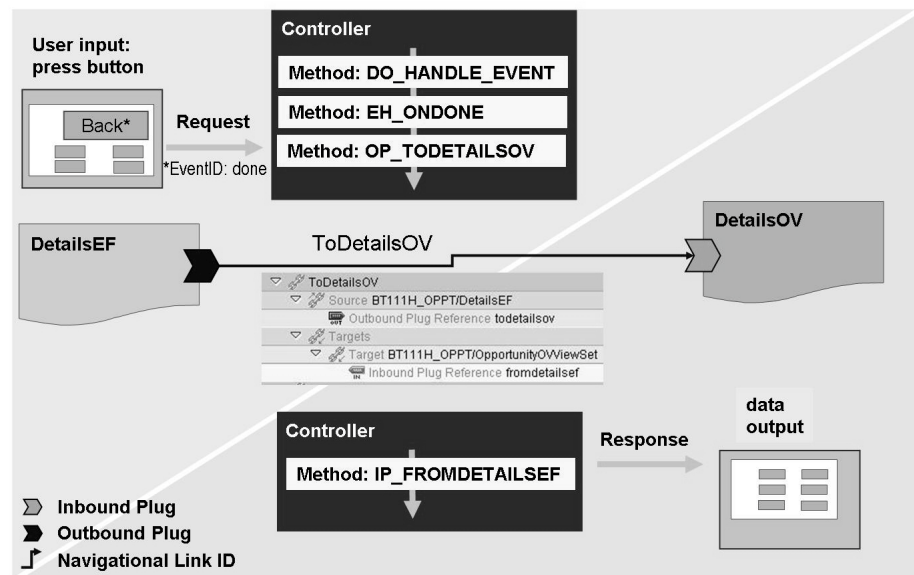


Figure 288: Navigation between views (in same window)

Explain basic steps of the navigation between views. Navigation is handled by methods of the controller class.

Navigation from view to view is controlled by several elements. First, there are outbound and inbound plugs. These plugs are methods of the view controller classes. The outbound plug is a method of the source view (where the navigation starts) and the inbound plug belongs to the target view where the navigation ends. In addition, it is necessary to map the outbound and inbound plugs (and thus the

source views and the target view of the navigation). This mapping can be done by navigational links. A navigational link consists of an identifier, source view, outbound plug, target view, and inbound plug. Navigational links are stored in the runtime repository. Since each component has its own runtime repository, navigational links are mainly used when navigating between the views inside the same component or to views of reuse components. If the navigation target is an independent work area component, the navigation is mediated by mapping tables that are part of the navigation bar customizing and the work area component repository. The navigation bar not only controls the navigation triggered by the buttons in the navigation bar, but also the navigation from one work area component to another.

Buttons or links cause events. All events are handled by the view controller class in the method `DO_HANDLE_EVENTS`. Depending on the event that is triggered, event handling classes define the further logic. Each event defined in the layout (eventid) has a corresponding event handler. Event handler methods use the naming convention `EH_ONeventid`. These methods contain the logic how to react on the event. One possible reaction is the navigation to a new view.

In case a navigation is required, an outbound plug is called. An outbound plug corresponds with a method that mostly follows the naming convention `OP_TOTargetviewname`. Inbound plugs are methods defined in the source view and mostly follow the naming convention `IP_FROMsourceviewname`

In addition it is necessary to **map the outbound and inbound plugs** and thus the source views and the target view of the navigation.

This mapping can be done by **navigational links**. A navigational link consists of an identifier, source view, outbound plug, target view and inbound plug. Navigational links are stored in the runtime repository. As each component has its own runtime repository navigational links are mainly used when navigating between the views inside the same component or to views of reuse components.

The above navigation describes the case when navigation is done within one window. That can be views within one component or between views of a component and a window of an embedded component.

If the navigation target is an independent workarea component the navigation is mediated by mapping tables that are part of the **navigation bar** customizing and the workarea component repository. This example will be handled in a later slide.

1. Demonstrate how to identify a component and view name. In order to stick to the examples given on the following slides, use the **Account** details view.
 2. After identification of the view go to the component workbench (transaction **BSP_WD_CMPWB**) and show the structure of the UI component that you have just determined (e.g. BP_HEAD)
 3. Give an overview of the component workbench. Show the inventory of the component, but do not go too much into detail yet. Switch to the Repository editor and give a very basic explanation what the runtime repository is used for. (The runtime repository is a file that contains the technical descriptions of the objects used in a component. It contains the information how views are composed into view sets and about the possible navigation between views. It as well contains the link to the data model)
 4. Switch back to the 'Browser component structure' and show the list of views without going further into detail now.
-

Lesson: **Generic Interaction Layer and Business Object Layer**

592

Lesson Duration: 30 Minutes

Lesson Overview

This lesson describes the functionality of the General Interaction Layer and the role of the Business Object Layer in the overall framework.

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the functionality of the Generic Interaction layer
- Use the GenIL Model Browser to get information about the data model of the applications
- Explain the classification of the Business Objects
- State the role of the Business Object Layer in the Framework
- Work with the system tool BOL Browser

Introduce the Business Object Layer (BOL) and Generic Interaction Layer (GenIL). Depending on the group either keep it simple or try to give a more advanced view on both layers.

Business Example

You want to know more about the architecture of the framework as this knowledge is helpful when you need to configure or enhance the applications.

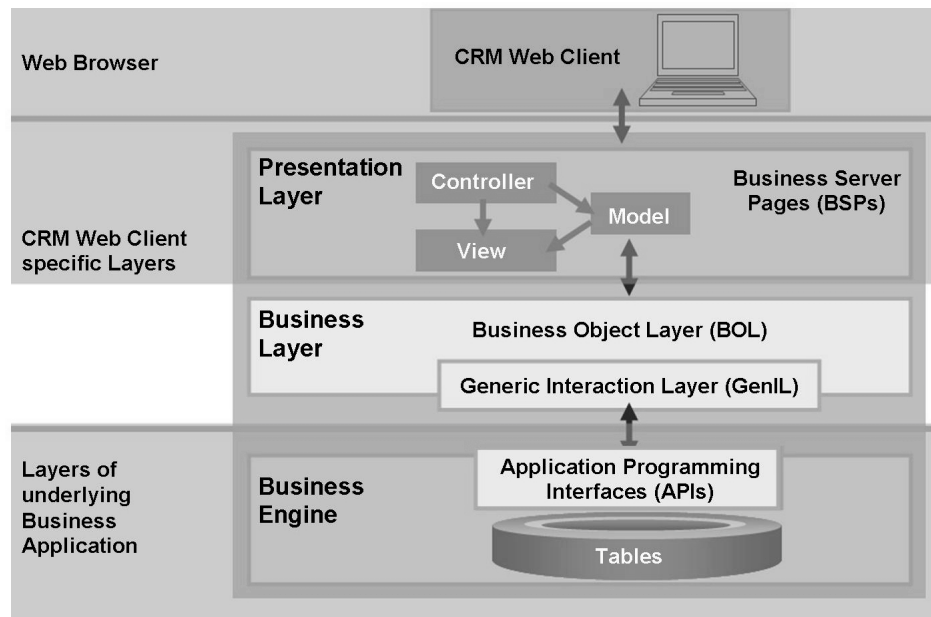


Figure 290: Layers of the CRM User Interface

The focus now lies on the Business Layer, that is the framework of the CRM Web Client User Interface.

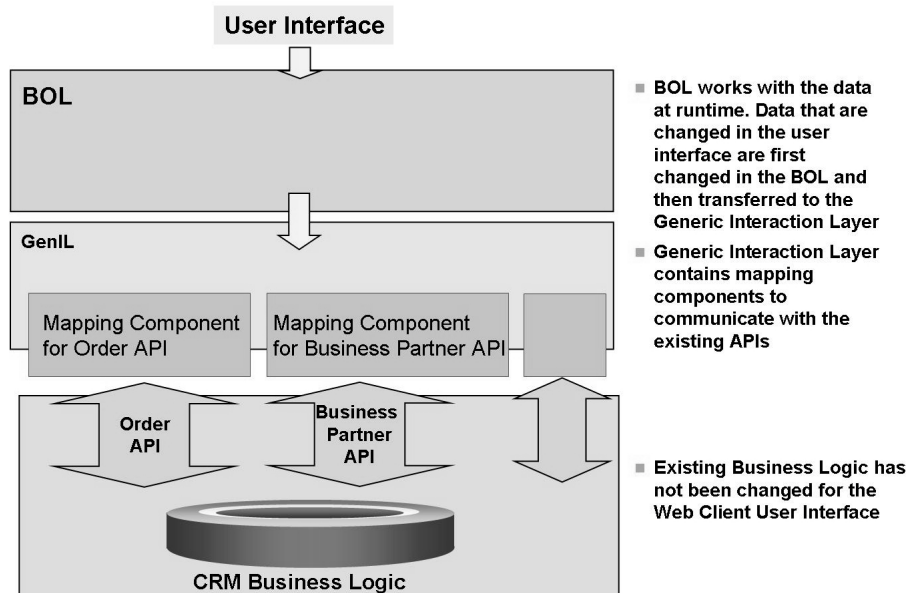


Figure 291: Business Layer

Point out that the existing business logic has not been changed for the Web Client UI. Instead the existing logic needs to be encapsulated in order to communicate with the framework. With this encapsulation, the framework is able to handle each CRM object in the same way. The encapsulation is done by so called GenIL Components which are part of the generic interaction layer.

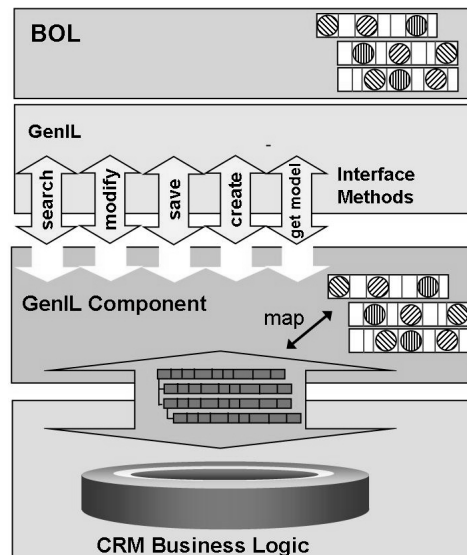
The existing CRM Business Logic has not been changed with the introduction of the Web Client User Interface. The business logic for creation and update of different CRM objects as Business Partner, Orders, Marketing campaign etc. is still encapsulated in APIs (Application Programming Interfaces).

These APIs are object specific in terms of interfaces, data model and methods that they offer. In former releases developers and application consultants had to know the specific properties of these APIs very well in order to do any enhancements.

The generic interaction layer contains specific mapping components to communicate with the existing APIs. These GenIL components map the data between the APIs and the Business Object Layer. Additionally they trigger the call of the APIs for execution of searches, creation and update.

The mapping is necessary as every CRM object needs to expose its data model in a defined way in order to be handled by the Business Layer.

The business Layer does not contain any business Logic. The benefit of this framework is that the Business Layer can handle all data in the same way independent from the object that it belongs to.



- The GenIL Component is a class that acts as a link between the existing CRM Business Logic and the UI Framework.
- It communicates with the Generic Interaction Layer via a specific Interface.
- Each component defines a hierarchical data model that it publishes to the Generic Interaction Layer.
- These so called Business Objects are used within all layers of the framework and in the Presentation Layer.
- The GenIL Component does the mapping between the data model that it has defined and the actual data interfaces of the APIs

Figure 292: GenIL Components

Keep it simple: The genil component has two purposes. One is to offer the data model in a way that the framework can work with it. As the existing APIs had not been changed there needs to be a mapping between the interface of the APIs and the data model provided by the Genil component. The second purpose is to communicate with the framework via a special interface. The interface provides basic methods as search, modify, save, etc. Inside the components, the related API is called.

Generic Interaction Layer (GenIL) Component:

A component is an ABAP class which implements the specific component interface to communicate with the framework. It exposes a set of CRM business objects to the Generic Interaction Layer which form a hierarchy.

Each component defines attribute properties for each attribute (technical, read-only, changeable, etc.)

Inside the components the existing business logic in form of APIs (Application Programming Interface) is still used. The data structures used in the APIs may not be the same structures that are exposed to the GenIL as data model. The component class does the transfer of data between the GenIL Data model and the APIs.

There is no further business logic in the Generic Interaction Layer or Presentation Layer.

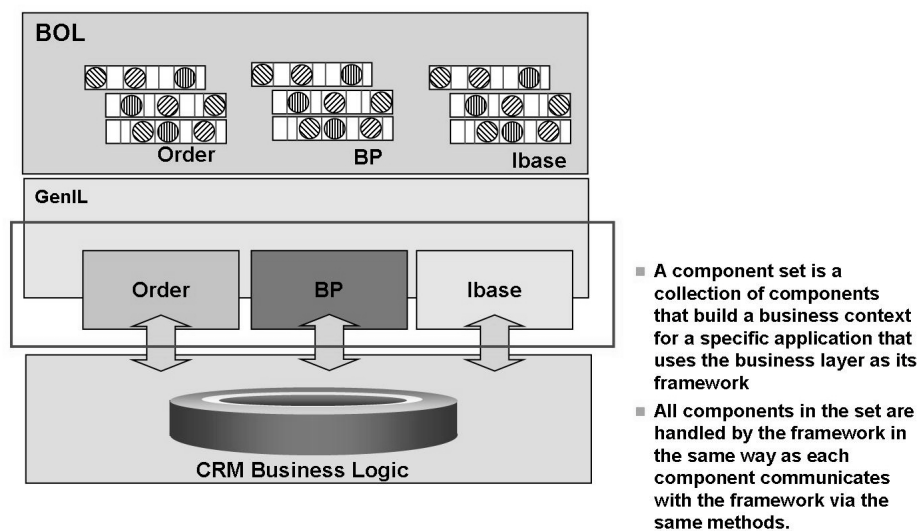


Figure 293: Component Sets

The usage of component sets has historical reasons. The framework was introduced in CRM4.0 for the IC Web Client. In the IC Web Client it was necessary to load all required components for the business context at the start of the IC Web Client. Meanwhile each UI component has a link to its component set. So you still use the component sets, but the component sets mostly contain only one component. The system tools BOL Browser and Model browser use component sets to start.

Note: Perform demonstration “Component Sets, Model Browser ”

A component set is a collection of components that build a business context for a specific application that uses the business layer as its framework. A component set contains one or more Genil components. Example: In the Interaction Center application the agent needs access to different components within one session with the customer.

The framework is always started with a component set. When the framework is started, the data model of each component is requested and stored in the memory of the Generic Interaction Layer.

All components are handled by the framework in the same way as all components communicate with the framework via the same methods. The framework itself does not contain any business logic. It knows which components are registered and which Business objects belong to which component.

With the introduction of the new browser based User interface all existing CRM objects were transferred into Genil Components. Each CRM object uses the Genil Interface to communicate with the framework.

The list of component sets and components with the technical information which class is assigned can be found in the IMG:

Customer Relationship Management → CRM Cross-Application Components → Generic Interaction Layer/Object Layer → Basic Settings

The data model of a component set can be visualized in the BOL Model Browser

Generic Interaction Layer: Model Browser for Application BT

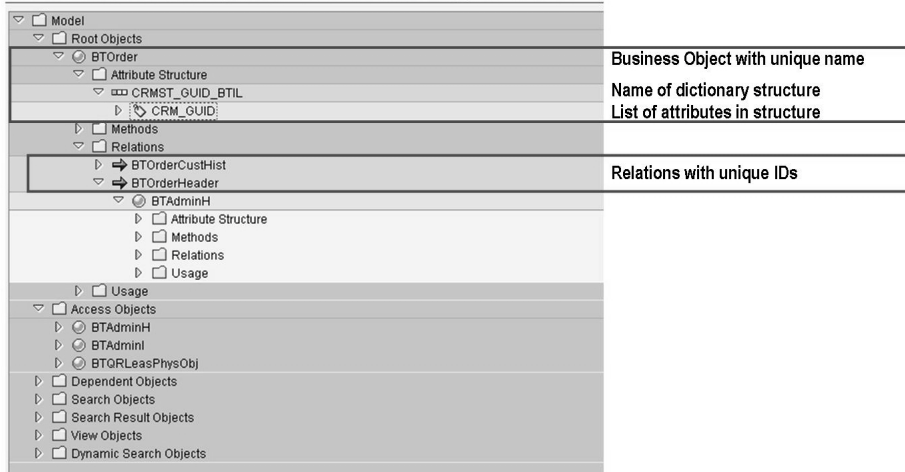


Figure 294: Business Objects and Data Model

Introduce the classification.

Business Object (BO): Smallest unit of an object model. Each BO is assigned a unique name. The structure is either defined in the ABAP dictionary or directly in the Genil Component.

Relation: A relationship between two BOs that has a cross-component unique name. The relation has a cardinality for each BO. That means there can be 1:1 or 1:n relations.

Object model: Number of BOs and their relations.

Classification of Business Objects

Access Object: An access object is a special type of BO, whose ID can be used to determine both the attributes of the access object itself and those of its dependent objects.

Dependent Object: A dependent object is a special type of BO, whose attributes cannot be determined solely from the ID of this BO, but instead, only or together with the ID of the superior access object.

Root object: The root object is the only object within the hierarchical structure of a data model that is assigned as a superior object to all other objects. Each root object is also an access object.

Search-Object: A query object is a special type of BO whose attributes are the parameters of a search request.

Dynamic Search-Object: A dynamic query object is a type of BO whose attributes are the parameters of a search request. It is possible to create select options for these parameters.

Search Result Object: The result object of a search request has a dictionary structure assigned and displays data from different BOs as a result list. To link the search result object to the data model hierarchy the Search Result Object is associated with the root object of the same component.

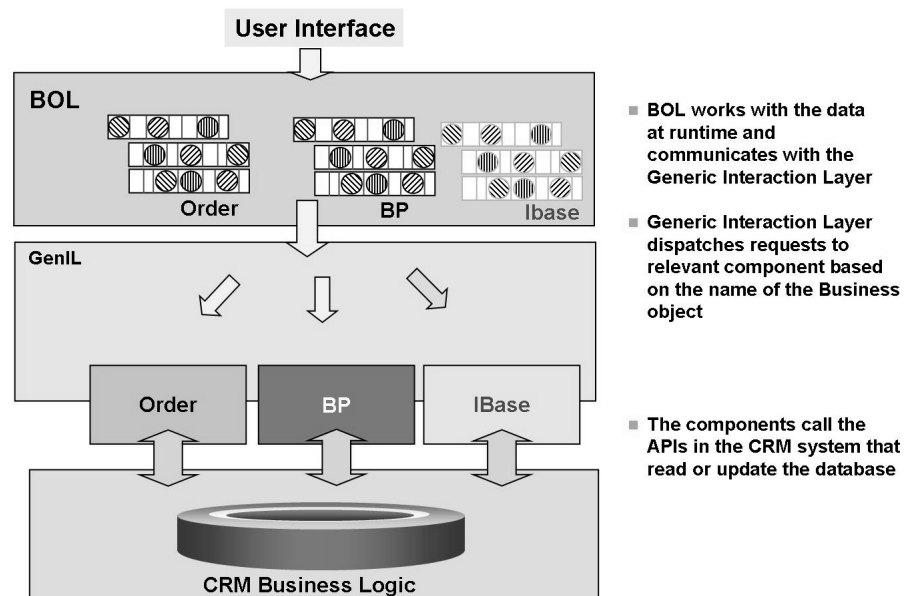


Figure 295: Business Object Layer and Generic Interaction Layer

If the framework is started with a component set, the data model of all components are loaded, that are part of the component set. At runtime, the Business object layer handles the data. Only in case data have been changed the corresponding methods of the genil components will be called. In the example of the slides the black colors for Business Partner and transaction should slides should imply that there have been changes. The Ibase was loaded into the framework, but nothing was changed, so the genil component will not be called.

The Business Object Layer is the layer that is linked to the User Interface. The BOL works with the data at runtime and keeps the information about what objects has been changed. It communicates with the Generic Interaction Layer with the same methods that are used in the GenIL component interface. The BOL does not know to which component a business object belongs. But the GenIL does and dispatches the request (lock, modify, save, etc.) to the relevant component.

For example: In the User Interface Order and Business Partner related business objects have been changed. The Generic Interaction Layer will check to which component the Business objects belong and in this case call the Order Component and the Business Partner component to update the data.

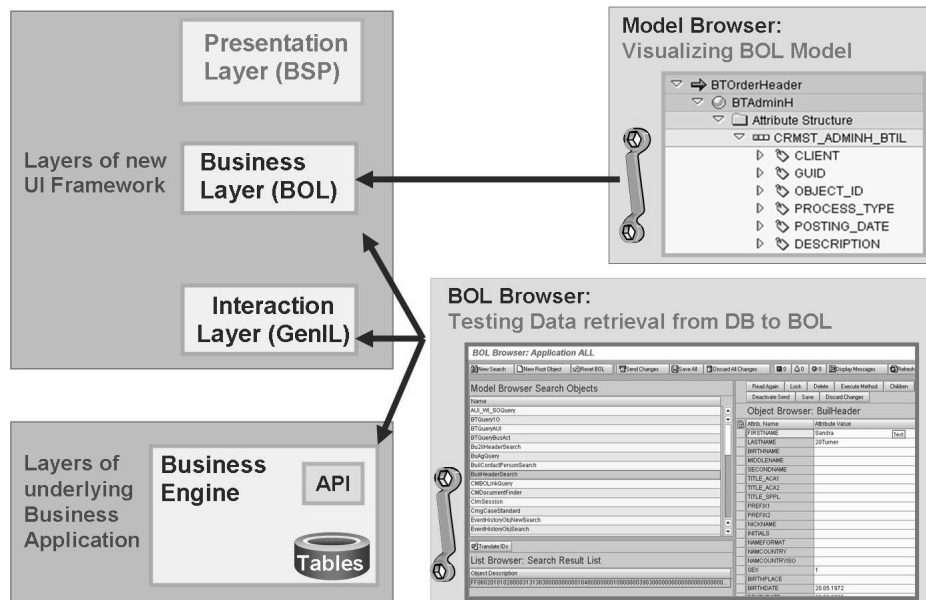


Figure 296: BOL and GenIL: Tools

The GenIL Model browser just visualizes the data model of a component set. With the BOL Browser you can use the framework without BSP interface.

Note: Perform demonstration “BOL Browser”

There are some tools that help you to investigate the model of BOL and GENIL.

The Data model of the GenIL Component sets can be visualized with the BOL Model Browser. Transaction GENIL_MODEL_BROWSER

The data retrieval from the data base to the BOL can be tested with the BOL Browser. Transaction GENIL_BOL_BROWSER.

The following slides will schematically explain how data is retrieved and in the framework and how you can navigate the data model.

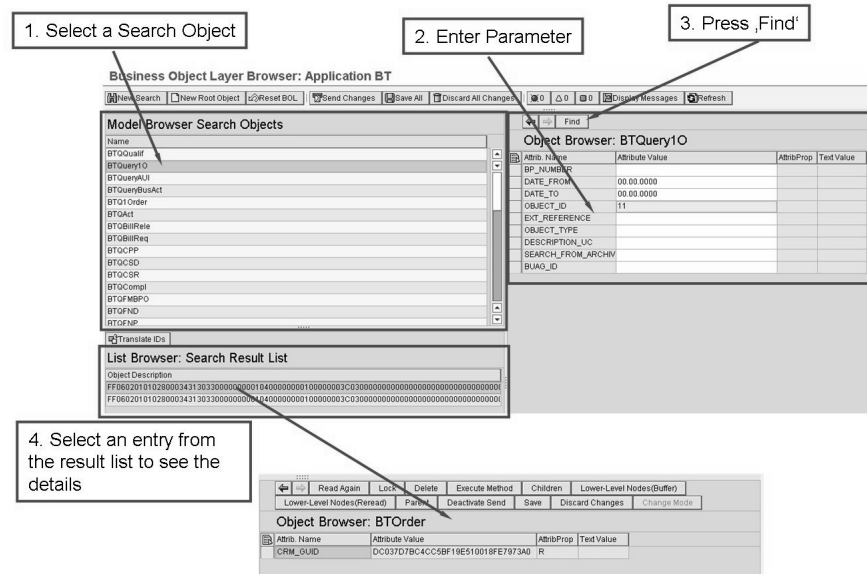


Figure 297: BOL Browser: Query Execution

The BOL Browser is a tool used by developers to test the framework independent from the user interface. You can execute searches and create new objects or change existing objects.

You can use the tool to find out which data is held in which Business Object. This information will be useful when using the UI configuration tool later.

To execute a search do the following steps:

The search objects area first lists all query services in alphabetical order, then it lists all dynamic query services in alphabetical order. Choose a query service by double clicking on the entry

Enter parameters

Press Find button to execute the search

The result list shows a list of Business Object Instances. They are identified by the framework by a specific Identifier which is only used within the framework. Query services return a list of root objects whereas dynamic query services return a list of Search Result objects. Double click on one entry.

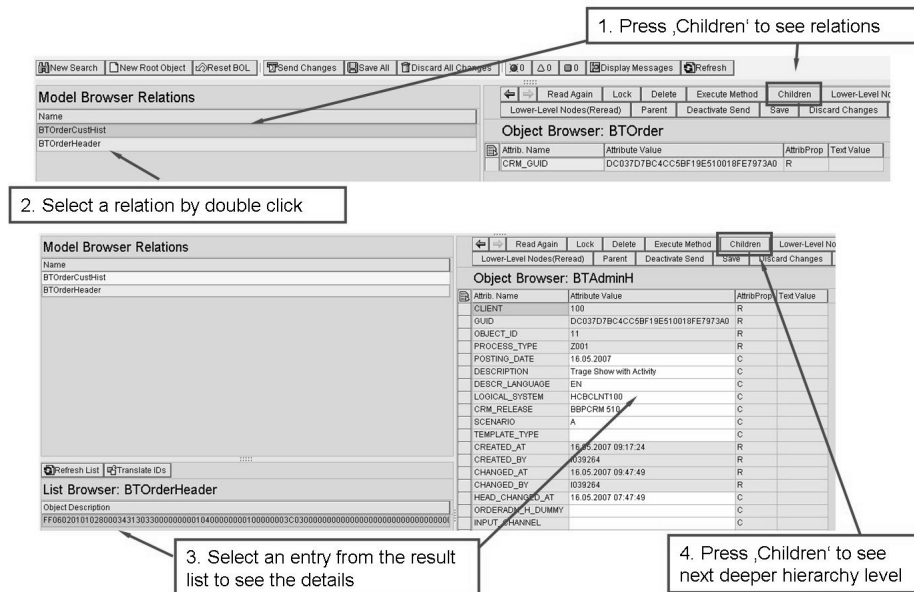


Figure 298: BOL Browser: Navigate Data Model

To access the data of the single Business objects you need to navigate through the data hierarchy starting with the Root object (or access object).

By pressing Children you see the list of relations linked to the current displayed Business Object.

By Double clicking on a relation the BOL retrieves the list of dependent business objects.

Selecting an entry from the result list displays the details of this entry

You can continue the navigation by pressing Children to access other dependent data or you can press Parent to navigate to the next higher hierarchy level again.

Demonstration: BOL Browser

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Start the BOL Browser with transaction code GENIL_BOL_BROWSER.

2. Point out that this is a developer tool but very useful if you want to find out, where in the data model specific attributes e.g. of Business partners or transactions are stored.
 3. Motivate the participants that they will need this knowledge later for the UI configuration.
 4. Demonstrate the steps as shown in the following slides.
-

Demonstration: Component Sets, Model Browser

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Show the customizing of components and the grouping to component sets. *Customer Relationship Management* → *CRM Cross-Application Components* → *Generic Interaction Layer/Object Layer* → *Basic Settings*.
 2. The customizing table shows the name of the ABAP Class and the tables, in which the data model of the component is defined. Components that have no entries in column 'Object Table' and 'Model Table' define their data model directly in method 'GET_MODEL' and 'GET_OBJECT_PROPS' in the ABAP Class.
 3. Introduce the Genil Model Browser. It visualizes the data model that is defined in the single components. Here you have to choose a component set. Choose Component Sets 'All' and 'BT' to show the difference. Component Set 'BT' just contains the Component BT (Transactions), component set 'ALL' contains a big number of components, so you will see the data model of all these single components.
 4. With Component Set 'BT' explain the classification of Business Objects as described on the next slide. Show the root object BTOOrder and navigate through the hierarchy.
-

Unit 18

609

UI Configuration

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Explain the functionality of the UI Configuration Tool
- Explain main concepts of UI Configuration
- Use the UI Configuration Tool
- Explain how the Design Layer influences the CRM WebClient User Interface
- Maintain Design Layer Customizing
- Configure the Account Fact Sheet

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Lesson: UI Configuration

610 Lesson Duration: 60 Minutes

Lesson Overview

This lesson explains the functionalities of the UI configuration tool and how to use it.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the functionality of the UI Configuration Tool
- Explain main concepts of UI Configuration
- Use the UI Configuration Tool

After having seen the Component Workbench this lesson introduces the UI Configuration Tool which is part of the work bench. SAP standard views (.htm) contain a special tag that leads to the tab “Configuration” and the possibility to do view configuration using a graphical tool.

Business Example

You would like to apply typical changes to the user interface. View changes are, for example, moving fields, changing field labels or hiding fields.

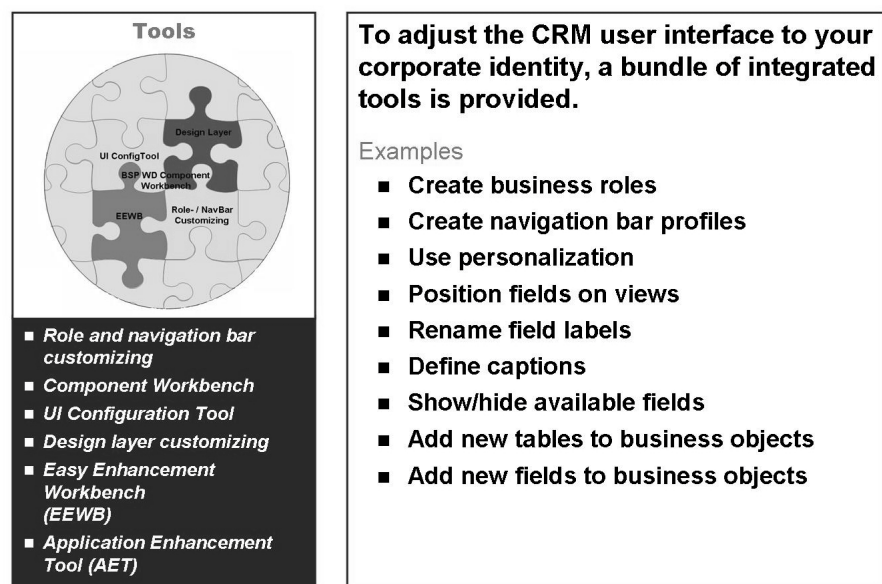


Figure 299: UI Configuration: Overview

Present the overview of tools provided by the CRM Web Client UI. Component workbench and Business Role customizing have already been introduced. UI Configuration and Design Layer will be the topic of this chapter.

Different tools are used for general UI Configuration but most obvious changes and enhancements could be achieved with the UI Configuration Tool.

With this tool you can easily position fields on views or add new fields to layout and rename field labels.

All other mentioned tools are also necessary in the complete process of UI Configuration.

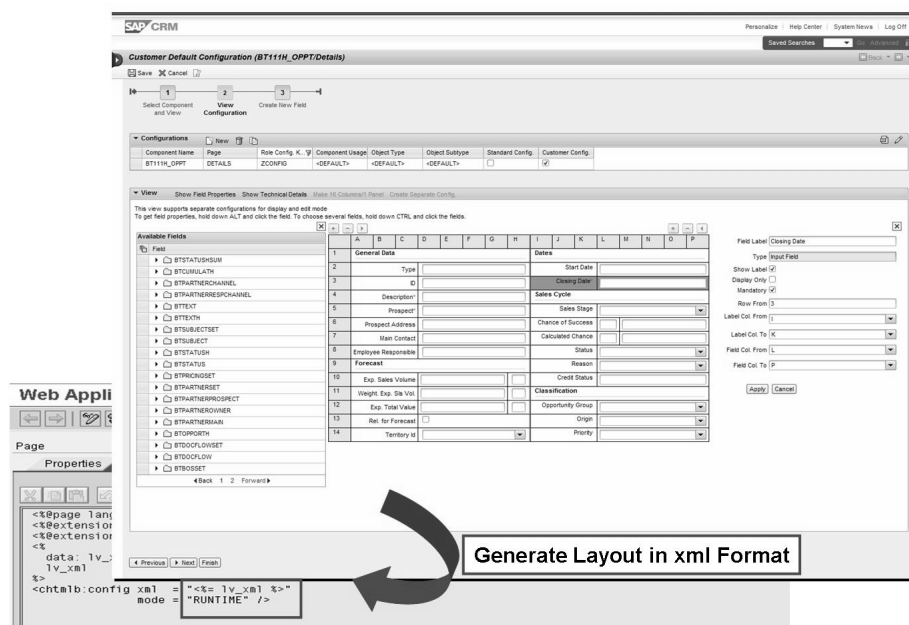


Figure 300: UI Configuration Tool

Remind the participants of the view layout that they have seen in the last chapter. The UI configuration tool generates the layout in an xml format.

You can use the UI Configuration Tool to adapt the user interface of SAP CRM to your company's specific requirements. You can access the UI Configuration Tool in SAPGUI and in the CRM WebClient UI.

The UI Configuration Tool in the CRM WebClient UI offers the following general features:

- The UI configuration is based on an authorization object. The UI configuration in SAP GUI is also based on an authorization object.
- The UI configuration is automatically started with the parameters that were found. This is true, if you start the UI configuration directly from an application. If you start it from the navigation bar or the work center page, you need to select manually the configuration parameters of the pages or views that you want to change.
- All configuration changes that you have made are automatically visible in the application.
- To save your configuration changes you can create a new transport request or select an existing transport request in the CRM WebClient UI.

Configuration can be stored according to differentiators using the following parameters:

- Role Configuration key
- Component usage
- Application-specific parameters like Object Type and Object Subtype

Hint: Example of an Object Type: BT116_SRVO (UI Component for Service Order)

Example of an Object Subtype: SRVO (= transaction type)

Language support: editable texts in configurations (labels, captions) can be translated.

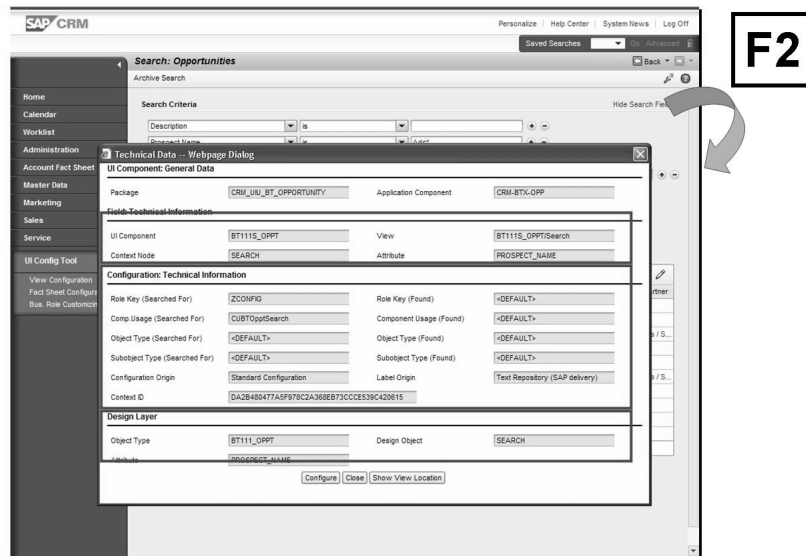


Figure 301: Identify Component and View

To display technical information choose F2 in the CRM WebClient Application.

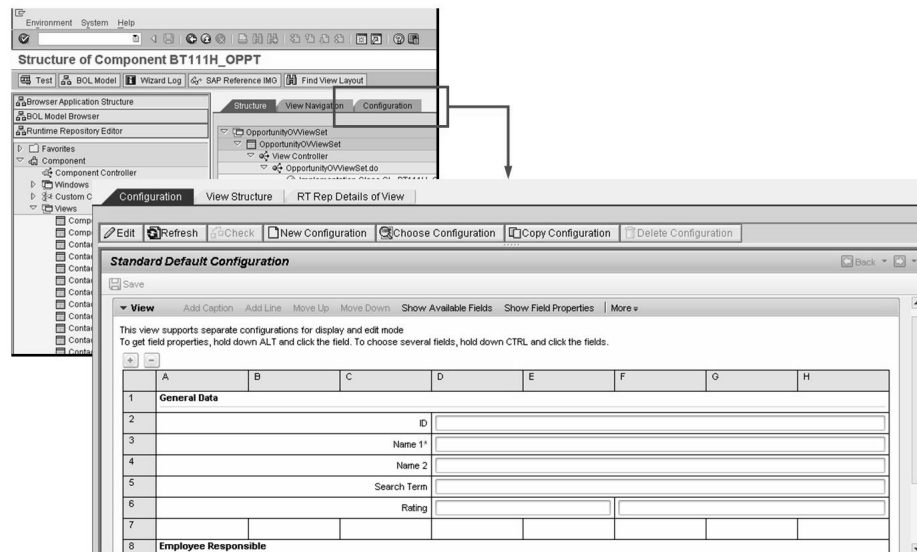


Figure 302: Component Workbench: Select view

Note: Perform demonstration “Identify Component and View and start UI configuration tool”

In development systems it might be useful to launch the UI configuration tool from within the component workbench.

Display the UI component in the component workbench and select the view you want to change.

Choose the *Configuration* tab to see the standard configuration.

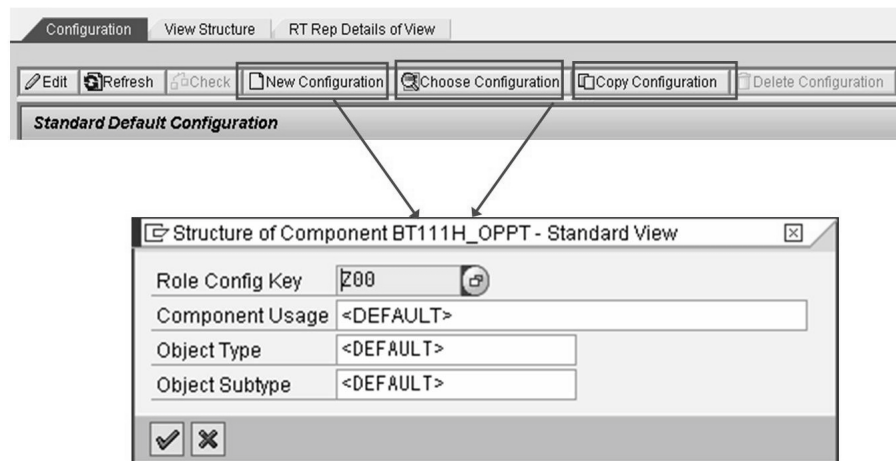


Figure 303: Creation of your own configuration

Note: Perform demonstration “Creation of your own configuration”

It is possible to delete a customer UI configuration. It is not possible to delete the SAP default configuration. Even when using the DELETE on a SAP default configuration, the standard will not be deleted.

Before you start with the creation of your own configuration you need to create your own Role Configuration Key.

IMG Path: *Customer Relationship Management* → *UI Framework* → *UI Framework Definition* → *Define Role Configuration Key*

Your first step of configuration should always be to copy the standard configuration to a configuration including your Role Configuration Key.

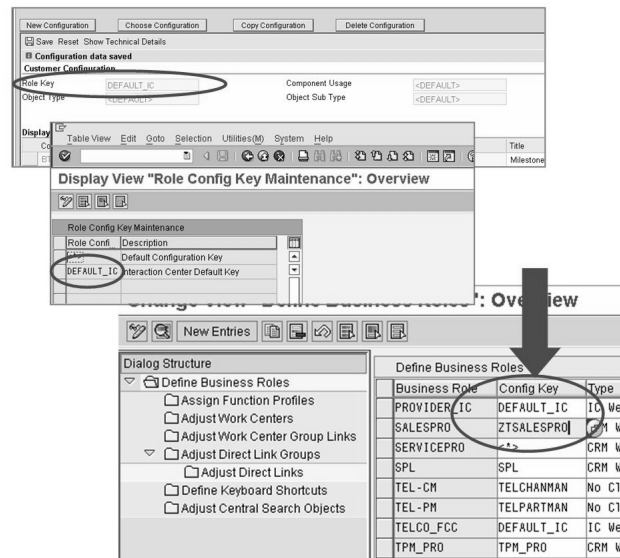


Figure 304: Role-Dependent View Configuration

A configuration key can be used for different views and is assigned to a business role. The purpose is that some users (business roles) should see other information on the views as other business Roles. Of course you can use the same configuration key for different business roles.

Note: Assign your configuration key to your business Role and show the result.

The SAP CRM 7.0 documentation contains an information about the UI Configuration Determination. An access sequence in form of a table can be shown. Therefore choose *SAP Customer Relationship Management* → *Components and Functions* → *Basic Functions* → *UI Framework and Configuration* → *UI Configuration Determination* → *Access Sequence Logic*

To create role-dependent configuration, save the configuration with a Role Configuration Key in the UI configuration tool.

You assign the Role Configuration Keys to one or more Business Roles.

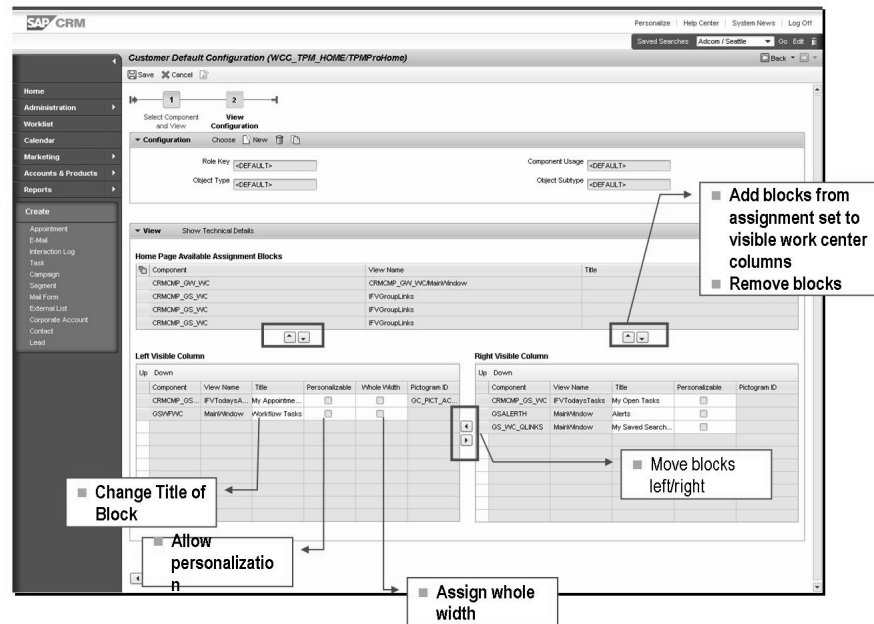


Figure 305: UI Configuration Part 1: Work Center Pages

The different page types offer different UI configuration options. (technically they use different page type related BSP extensions)

Note: Show the UI Configuration options for a work center. The component behind work center **Service Orders** is **WCC_SRV_ORDERS** (only one view)

Demonstration:

Use the Component Workbench and do UI configuration for a Work Center page
Optional: do the demo using the special icons.

A work center page represents all available links for an entry in the navigation bar.

In general the standard UI components that host the work center page (view) have an identifier starting with **WCC**
E.g. **WCC_SRV_ACC_PRO** represents the work center **Accounts & Products** of a Service Professional

Once a UI component / view has been identified, you can configure the default layout of different link areas.

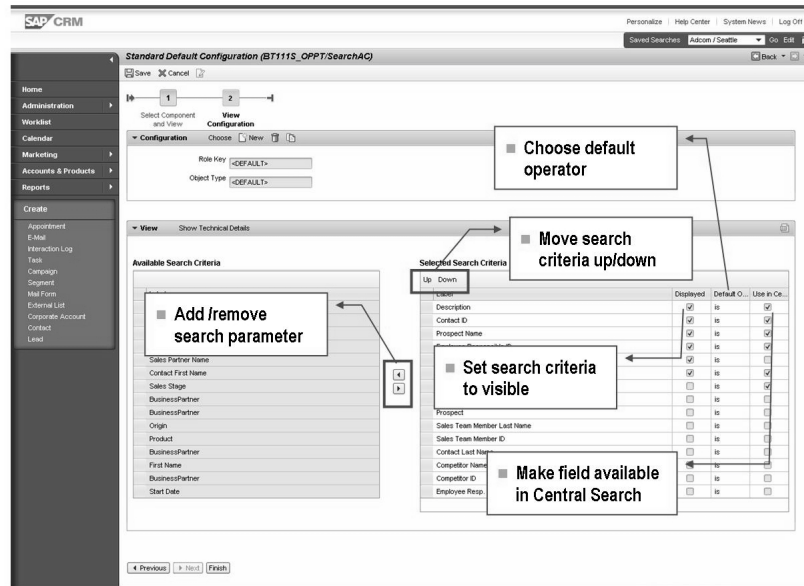


Figure 306: UI Configuration Part 2: Advanced Search

Demonstration:

Use the Component Workbench and to UI Configuration for an advanced search page. Stick to the account example. Use component **BP_HEAD_SEARCH** and view **MainSearch**.

Optional: do the demo using the special icons.

In the Advanced Search Configuration you can add search parameters from the Available Search Parameters set, remove parameters, move the parameters up and down, set them to displayed and set the Default Operator.

Order of fields in left hand side table corresponds to displayed order of fields in WebClient UI.

With the little arrow buttons at the bottom field ordering can be adjusted.

Change label of search criteria by simply clicking into label text enable input readiness.

Setting Checkbox “displayed” will intend which criteria should be visible by default. The number of checked checkboxes referred to the number of displayed drop down list boxes later in rendered layout. Via these dropdown list boxes all in this list defined search criteria will be selectable.

Also you can define default search operator for each field.

With these little arrow buttons in the middle you can add new criteria from the right hand side table or remove criteria from your layout.

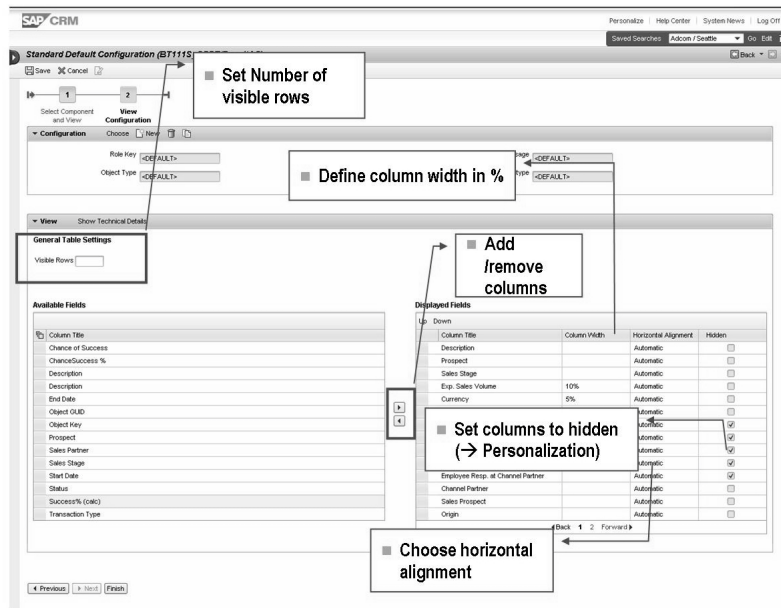


Figure 307: UI Configuration Part 3: Table View

Demonstration:

Use the component workbench and do UI Configuration for a table. Stick to the account example. Use component **BB_HEAD_SEARCH** and view **MainSearchResult**.

Optional: do the demo using the special icons.

In the table configuration you can choose columns from the field. You can change the column title, define the column width, the horizontal alignment. You can set a column to mandatory, disable a column and enable personalization.

Configuration of tables is an own configuration step.

In this configuration you will find also a screen separated into two parts:

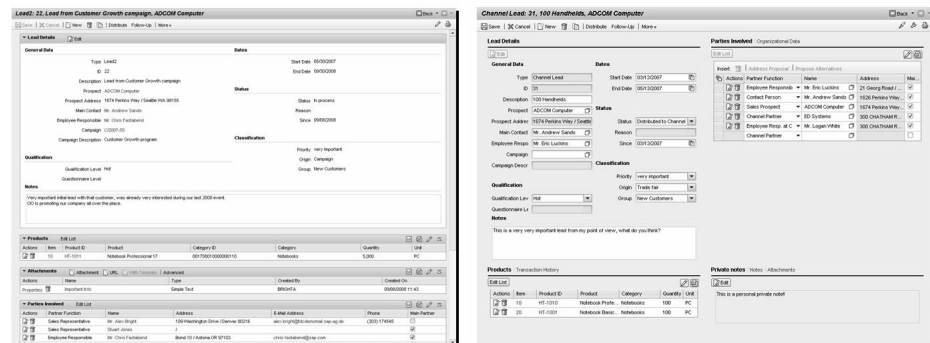
- On right hand side there are all available fields for selecting as table columns.
- On Left hand side there are all already selected fields.

The main general properties you can set for a table are the number of visible rows by default and if it should be possible to scroll the table.

Further you can configure each column individually. Changing labels, defining fixed default column size and alignment as well as setting a column to read only or mandatory are all available properties you can maintain for a table.

With an entry in “Column width in %” you can predefine a fixed size for regarding table column.

Settings for availability of personalization to the end user for a column, for disabling a column at all or setting it to mandatory could easily be done by regarding checkboxes in UI Config Tool.



Two options are available for the layout of object overview pages.

- The standard layout in CRM user roles is the single column layout that provides all related information for an object in assignment blocks below each other in a scrollable format
- Especially in the Interaction Center area – but now possible in general for all objects – a specific tile layout, which provides the assignment blocks on tiles is available.
- The content of the assignment blocks is always configured with the same tools and in the same way, while the UI configuration of the structure of the page itself differs.

Figure 308: UI Configuration Part 4 - Overview Page (1) - Comparison

Note: Show the UI Configuration options for an overview page. Stick to the opportunity example. Use component **BP_HEAD** view '**BPHEADOverview**'. Demonstrate the options

In the Overview Page Configuration you choose the Assignment Blocks from the set. You can move them up / down, change the title and define the load option. With load option direct the blocks are loaded expanded, with Lazy Load, they aren't get automatically expanded. The user can expand them. Hidden

Configuration of Overview Pages looks a bit similar to configuration of search pages.

You do not configure individual fields but so called assignment blocks.

Each assignment block represents an own kind of view with a predefined field content.

Configuration of overview pages is more or less just to define which assignment blocks should be available in general and how each assignment block gets rendered by initial launch of page.

Right hand side shows all available assignment blocks and left hand side shows all assignment selected for display.

As mentioned before there are three different so called load options: direct, lazy and hidden.

Direct loads assignment block fully opened, lazy loads it closed and with hidden assignment block is not visible by default. User can display these hidden blocks by personalization.

Renaming of captions of assignment blocks is also possible.

Unit 18: UI Configuration

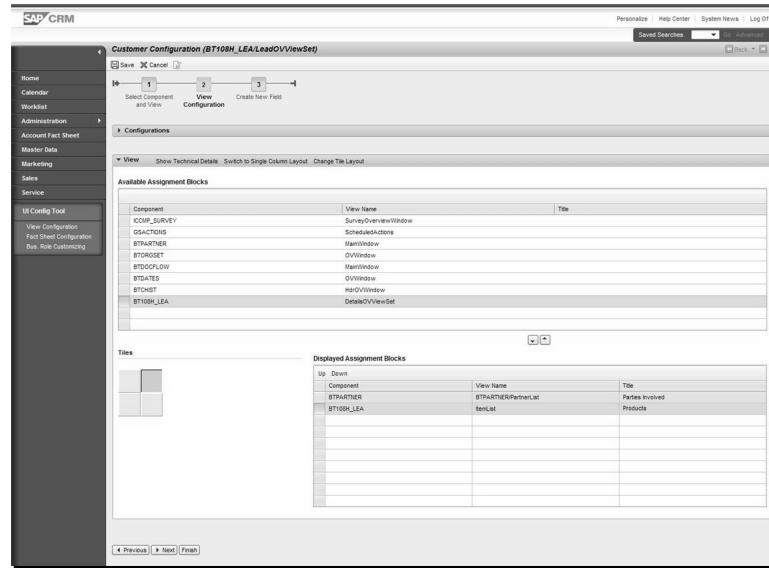


Figure 310: UI Configuration Part 4: Overview Page (3) - Tile Layout

For the Tile Layout you can choose from the Tile Layouts defined in IMG.

The Tile Layout is visualized. You can mark a tile and then assign the available views to the tile.

You can change the order and title of assignment blocks within a tile. You can assign more than one tile. The first tile is displayed as default. The other tiles can be reached via links. As link name the title is used.

Use drag and drop to move columns between tables and within lower table.

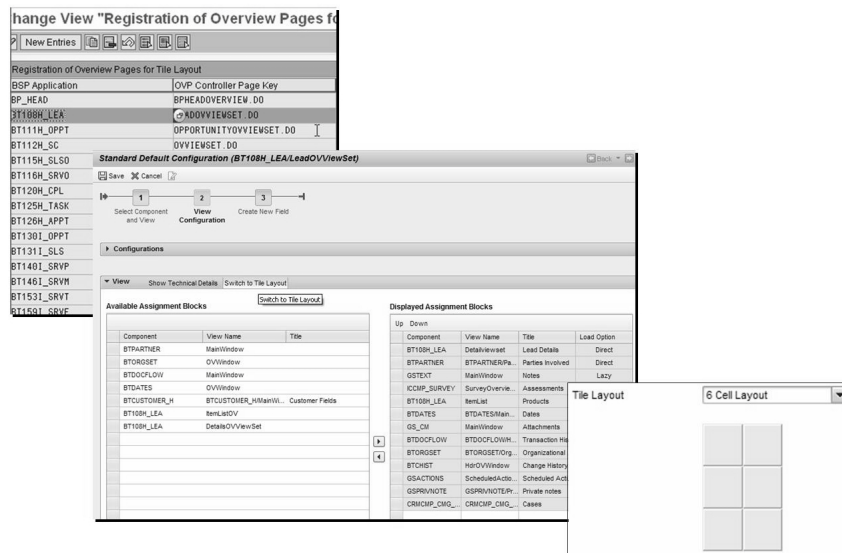


Figure 311: Prerequisites for Tile Layout Configuration

In order to configure an Overview Page in a tile layout to the following:

- Register the overview page for tile layout. Therefore choose IMG activity *SAP Customizing Implementation Guide → Customer Relationship Management → UI Framework → UI Framework Definition → Register Overview Pages for Tile Layout*
- Define general tile layouts (via Fact Sheet customizing).
- Switch in UI configuration to tile layout via button and choose required tile layout.

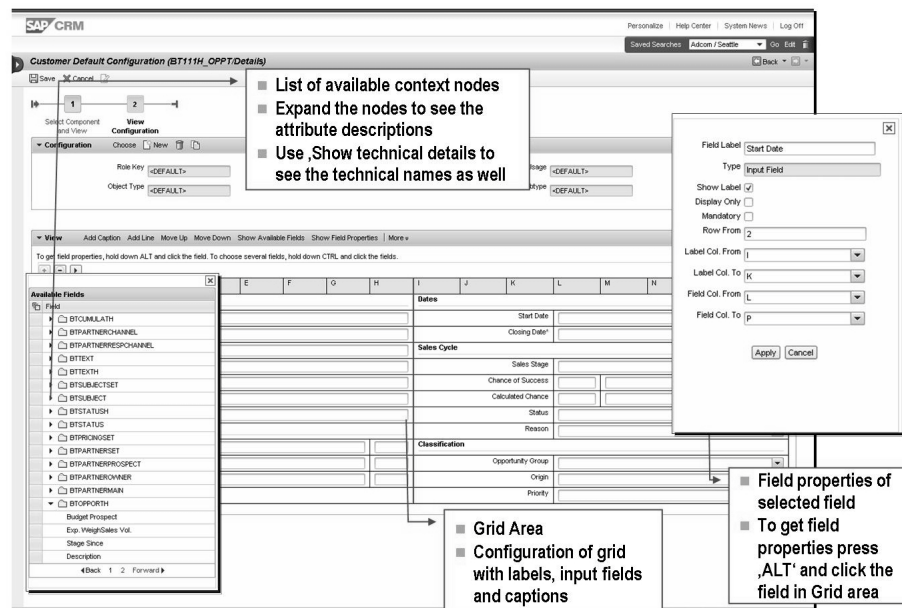


Figure 312: UI Configuration Part 5: Form View

Demonstration:

Use the Component Workbench and do UI Configuration for a form view. Come back to the configuration that you have already started. (component **BP_HEAD** view **AccountDetails**. Demonstrate the options presented on the slides.

Caution: Observe the option to change between a **16 Columns/2 Panel** and a **16 Columns/1Panel** layout.

Using the 1 Panel layout reduces the number of available buttons, e.g. Move Up and Move Down are not available. But using the 1 Panel layout allows you to configure a field label/field using the entire width of the page.

The red colored separator between both panels indicate that you are in the 2 Panel Layout.

The Form Configuration is used to change the properties for each element in the configuration grid. Column, row, text label, input field width and other properties can be adjusted in the detailed page configuration. Note, that the changes you can make are based on the field type.

Detailed configuration supports the more technical oriented configuration of a view. It provides the user with additional information and field properties. Furthermore it enables a more exact positioning of fields.

By initial launch of detailed configuration just grid area is visible. This represents more in detail the structure of later rendered UI.

All fields and labels are aligned according cells of a grid. So you can define col- and rowspans to fit UI better to customer needs.

Within this grid view you can change field labeling and order as well as adding new rows to the grid. You can also add new captions.

If you want to have a more detailed view of a certain field configuration hold down ALT key on your keyboard and left click field of your choice.

On right hand side a screen area opens where all field properties get displayed.

Here you can maintain properties like mandatory, readonly and renaming of field labels. Also you can define in detail positioning of the field, with row- and colspan, if needed.

To add new fields first you have to display the Item Set by clicking button show item set on the most top of UI Configuration Screen

Item Set will be displayed on left hand side of grid area. There you will find all fields sorted by their according so called context node. Each of these context nodes represent a BOL Object. From there you can select one ore more fields to add them to the grid.

Demonstration: Identify Component and View and start UI configuration tool

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. The participants already know how to identify a component and view, just show it again. Use again the opportunity views. Afterwards switch to the component workbench and navigate to the selected view.
 2. Switch to the component workbench and navigate to the selected view (e.g. component **BT116H_SRVO**, view **Details**). Choose Tab **Configuration** to see existing configurations.
-
-

Demonstration: Creation of your own configuration

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. To create your own configuration you first need to create a configuration key. Do as described in the later exercise: *SAP Implementation Guide* → *Customer Relationship Management* → *UI Framework* → *UI Framework Definition* → *Define Role Configuration Key*.
 2. Create a configuration key Z40RCK
 3. Copy the existing configuration of a Details view and do a little change (title).
 4. Later you can explain more functionality, first assign the configuration key to your business role (next slide, next demonstration step)
-

Lesson: Design Layer

634

Lesson Duration: 30 Minutes

Lesson Overview

This lesson explains the influence of the design layer on the UI and also explains how to customize the design layer.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain how the Design Layer influences the CRM WebClient User Interface
- Maintain Design Layer Customizing

This lesson introduces the Design Layer Customizing which has been improved with SAP CRM 7.0. Several SAP Design Objects have been predefined and assigned to appropriate views (context nodes). In principal the only work a customer now has to do is Copying an existing SAP design object into customer name space and do label changes in the customer copy.

Business Example

You want to change field labels on certain views.

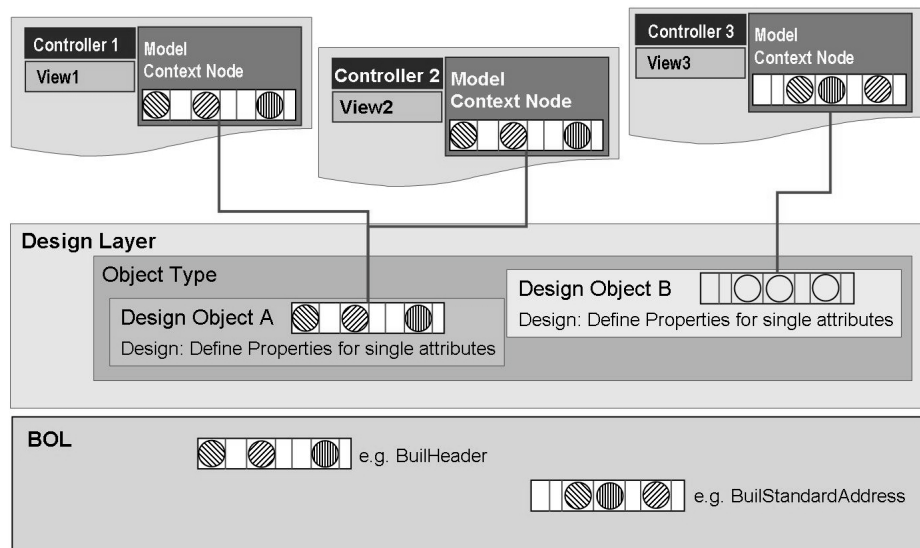


Figure 313: Design Layer

The design layer controls field labels in form views, table columns, and in the search criteria of the advanced search. It also controls the field visibility on the UI at runtime and in the available field set in the UI Configuration Tool.

The purpose of the Design Layer is to define a Layer which is logically positioned between the BSP view layer and the BOL layer to provide a modeling capability that is based on business processes and not on the technical data model (such as BOL or UI context nodes). Such modeling capability allows SAP and customers to make UI relevant settings in one central place: A single field label definition for many views and hiding technical fields, that are not needed as available fields in the configuration.

Technically the design layer is linked to both BOL objects and UI views. Purpose is to have an independent 'business oriented' layer used by the UI at runtime. The Design Layer links UI related settings to a Design Object, which is then assigned to several views implementing the same business content. The UI related settings are field settings which are most likely to be changed by customers and application developers

Similar to the view configuration tool the design layer data is defined by SAP in a client-independent way and by customers as client-dependent customizing. Customer settings override SAP settings.

You can use the design layer to do the following:

- Rename field labels
- Hide fields that are not needed: You must have selected the option Hidden or Field excluded from field set in Customizing. This means that the fields are not available in the UI Configuration Tool.
- Assign existing value helps from the ABAP Dictionary without any customer-specific development. Special getter methods (type V) have been implemented that define the following: **Value help** (Search help; Check table; Domain values); **Field type** (Input field; Checkbox; Dropdown list box . Note The checkbox Value help from ABAP Dictionary needs to be selected in the design layer Customizing.

The following slides will give an overview how to use design layer customizing.

- Requirements for UI configuration:**
- Change Field Label on every view where it appears
 - Change Input Field to drop down field where it appears
 - Influence field visibility

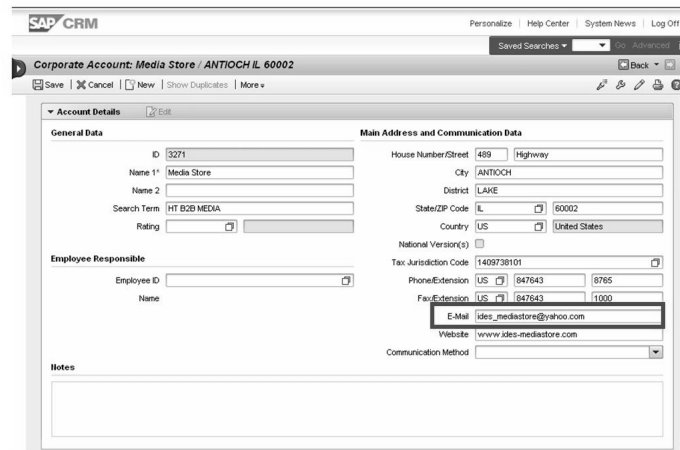


Figure 314: Configuration Requirement

Before using design layer customizing, Identify at Runtime which Design Object is Used. In the CRM WebClient UI application, use the F2 key to get technical information.

- The 'Component' and 'View name' used to access the view configurations
- The 'Attribute' which specifies the configuration field or design entry
- The 'Found' keys on the right side (Role Key, Component Usage, Object Type, Subobject Type) to determine the specific configuration used for this view.
- The 'Label Origin' which is either:
 - Text Repository (SAP Delivery):** Label comes from Configuration /Text Repository and needs to be maintained there. (Unfortunately it is currently not possible to distinguish whether it comes from a non-default configuration or the default configuration)
 - Design Layer (SAP Delivery):** Label comes from the Design Layer and needs to be maintained there. To access the label in the Design Layer, use the '(Generic) Object Type (DL)' and '(Ref.) Design Object (DL)' which specifies a (Reference) Design Object
 - ABAP Dictionary:** Label comes from the data element.

1. Get technical information

F2

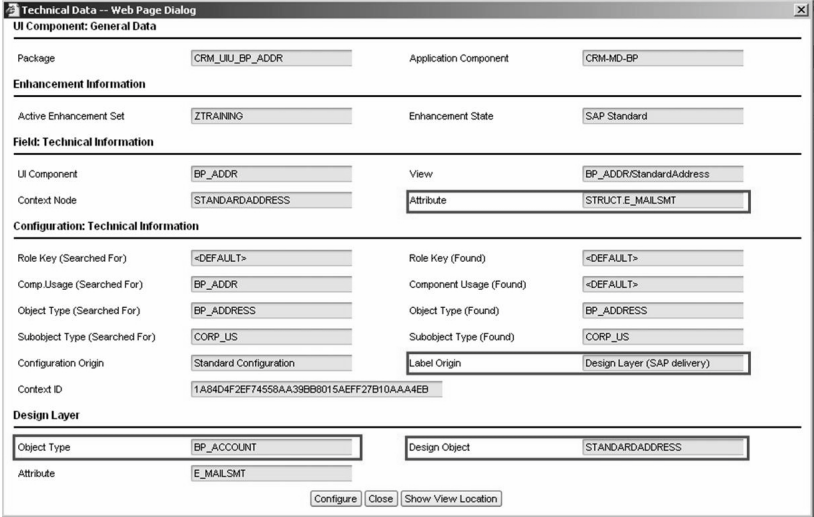


Figure 315: Design Layer Customizing: Get Technical Help

Demonstration: Get technical information using F2 and point to the design Object. Choose the example on the slide.

2. Copy SAP Design Objects

IMG

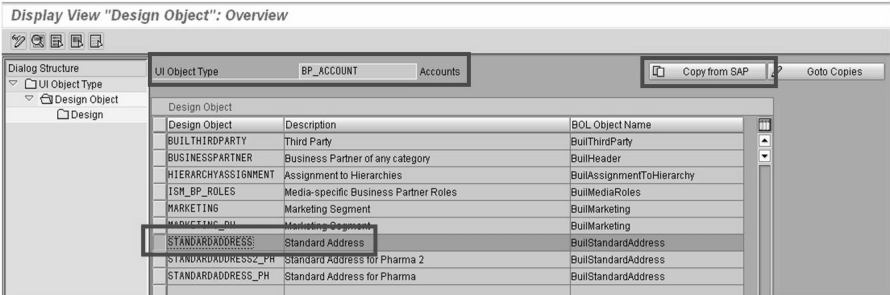


Figure 316: Copy SAP Design Object

Demonstration

Choose *Customer Relationship Management* → *UI Framework* → *UI Framework Definition* → *Copy SAP Design Objects* and show the predefined design objects.

Design Layer customizing can be defined in the IMG Path :
Customer Relationship Management → *UI Framework* → *UI Framework Definition* → *Copy SAP Design Objects* and
Customer Relationship Management → *UI Framework* → *UI Framework Definition* → *Define Design Objects*

3. Adapt the copied Design Object

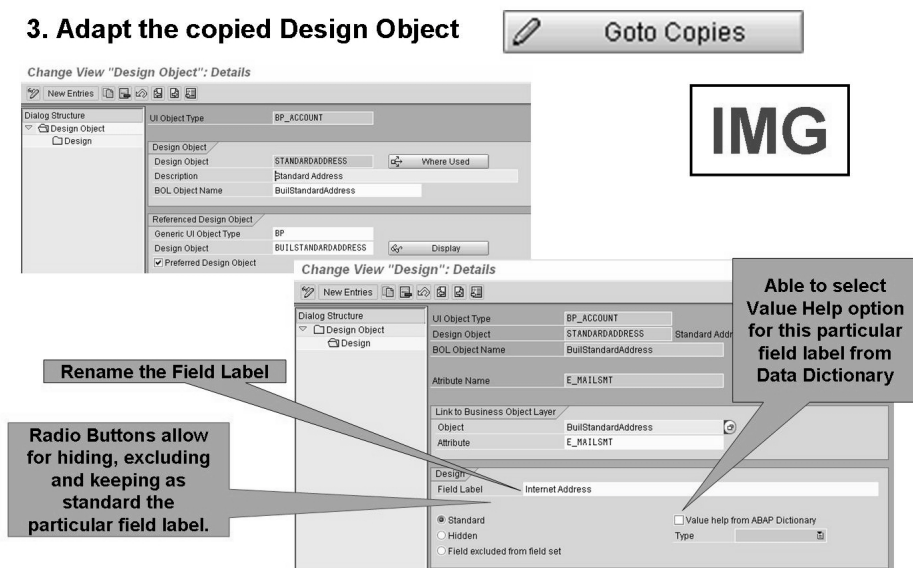


Figure 317: Adapt the Design Object

Use the **Where Used** button in the Design Object: Details screen to see a list of components/views to which the design object in question is assigned. Note that the where-used list for a reference design object only shows a list of components/views to which this reference design object is directly assigned. More views might be affected as some specific design objects may refer to this reference design object.

4. Check Result

Figure 318: Design Layer Customizing: Check Result

Screen above shows the result of your Design Layer Customizing. Regarding field label has been changed to settings of Design Object.

To get an overview of all existing design object assignments have a look in BSP_DLC_DASSIGN. In here you will find all assignments.

Usage of Design Objects is independent of several configuration of views.

So if you use a Role Configuration Key to separate your changes on views, these settings will be overlaid by an assigned Design Object.

Demonstration: Creation of a Design Object

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. *Customer Relationship Management* → *UI Framework* → *UI Framework definition* → *Maintain design layer*. Create a new design object for the Object Type **BP_ACCOUNT**.
2. Create a design object (e.g. HEADER) for BOL object **BUILHeader**.

Unit 18: UI Configuration

3. Change the label for an attribute (e.g. LASTNAME).
 4. Explain the other options. Fields that have a check table or search help assigned in the dictionary can be easily converted into a drop down list box.
-

Lesson: Fact Sheet

640

Lesson Duration: 25 Minutes

Lesson Overview

This lesson explains the fact sheet functionality and how to configure a specific fact sheet.

Lesson Objectives

After completing this lesson, you will be able to:

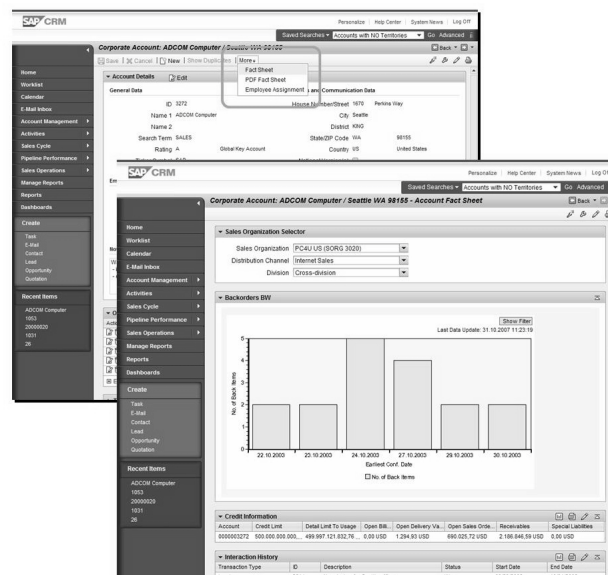
- Configure the Account Fact Sheet

This lesson introduces the Fact Sheet functionality, e.g. the Account Fact, Object Fact Sheet or Interaction Center Fact Sheet.

The configuration of Fact Sheet is similar to the configuration of Overview Pages in Tile Layout.

Business Example

Some of the CRM WebClient UI users need specific fact sheet information.



Access to Customer Fact Sheet

- Start CRM Web Client UI
- Go to an Account overview page and choose Fact Sheet
- Any kind of Fact Sheet is normally embedded in the work area toolbar of the object it belongs to

Figure 319: Fact Sheets

The fact sheet provides you with an immediate and condensed overview of information about business partners taken from several sources such as business partner master data, statistical and transaction data, derived from SAP CRM, SAP ECC, and SAP NetWeaver BI. It enables you to see quickly and easily the most important details about your key customers.

Example: The Account fact sheet is available in Account Management on the CRM WebClient UI. On the overview page of the individual accounts, you can click Fact Sheet and receive the most important information about this account online. This information can come from multiple sources, for example master data, statistical data, and operation data. It enables you to quickly and easily see the most essential details about your key customers and partners from the various business transactions. For example, you want to visit one of your customers. You open the fact sheet about this customer and receive all the important information about this customer at a glance.

The online fact sheet offers all the assignment blocks available on the overview page, and in addition, assignment blocks with information integrated from SAP NetWeaver BI, SAP ERP, and SAP CRM. The fact sheet is delivered preconfigured but can be changed if necessary.

Standard personalization options are available from the online fact sheet page, enabling you to select which assignment blocks and columns are to be displayed.

The PDF fact sheet has a different content to the online version and incorporates information from SAP CRM and SAP ERP.

You cannot personalize the PDF fact sheet. The assignment blocks available are determined by the role to which the fact sheet is assigned, this being the sales professional role in the standard delivery.

To customize the print version, see Note 1040229.

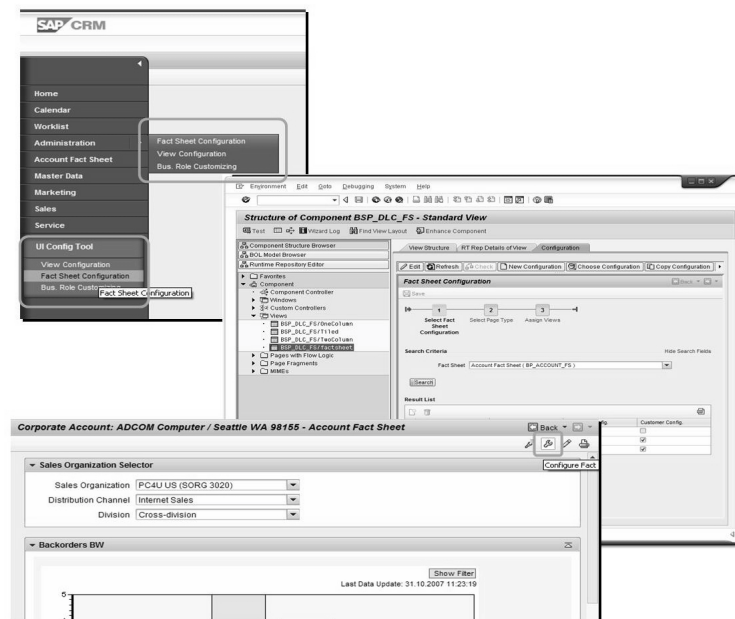


Figure 320: Fact Sheet Configuration

There are different options how to access the fact sheet configuration

- Component Workbench Component: Component **BSP_DLC_FS**.
- Launch from navigation bar of your role. Embed logical link ID **BSP-DLC-FC**. Work center group CT-ADMIN also contains this logical link.
- Launch from fact sheet directly. Switch on configuration mode under **PERSONALIZE**. Use the configuration icons in the top right corner of the page.

Unit 18: UI Configuration

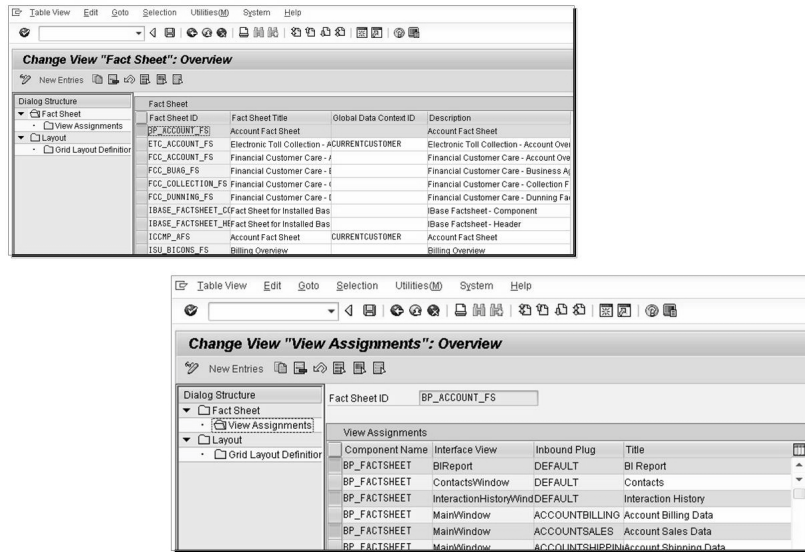


Figure 321: Fact Sheet Customizing

In the Fact Sheet area the fact sheet components / views are defined.

Standard Layout Types: Several standard layout types are delivered for tiled layout pages.

SAP Customizing Implementation Guide → Customer Relationship Management → UI Framework → UI Framework Definition → Fact Sheet → Maintain Fact Sheet

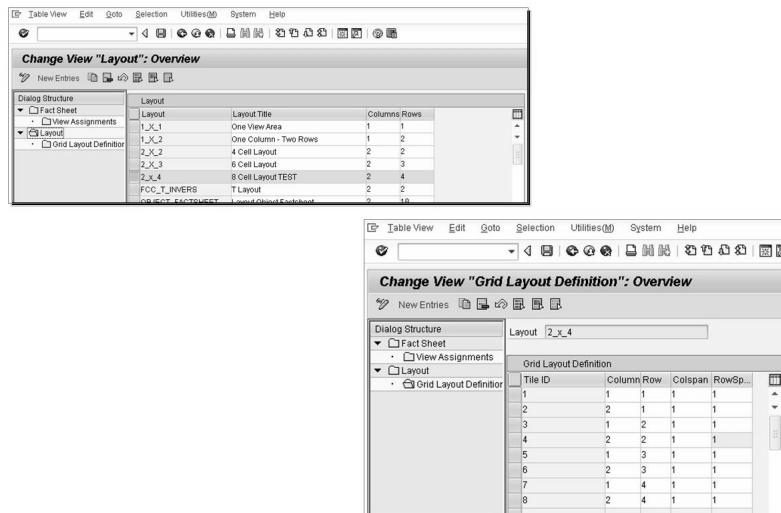


Figure 322: Fact Sheet Customizing - Definition of Layout Types

You can define the layout that is relevant for pages with tiles.

You need to define the name of the new tile layout, and the number of columns and rows. Then you define the tiles and their position and span in the grid.

For the grid definition, you need to make entries in the following fields:

- **Tile ID:** The tile ID is a unique identifier for a tile in a certain tile layout. It does not define the order of the tile.
- **Column:** The number defines the column position of the upper left corner of a tile in a layout.
- **Row:** The number defines the row position of the upper left corner of a tile in a layout.
- **Colspan:** The number defines the number of columns many columns in the grid that a tile expands to the right.
- **Rowspan:** The number defines the number of rows in the grid that a tile expands downwards.

Caution: Defining the grid, be careful that the tiles do not overlap or exceed the grid size. The order in a grid is from left to right, from top to bottom, and starts with ' 1 '.

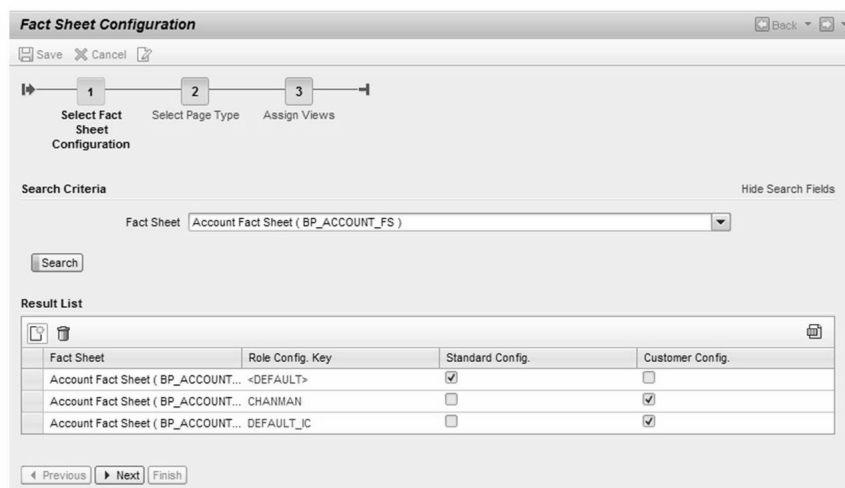


Figure 323: Configuration Environment

- **Step 1: Select Fact Sheet Configuration.** Choose from fact sheets (maintained in IMG) Access to existing configurations Deletion of configurations Create new configuration.
- **Step 2: Select Page Type.** Select form available layout types.
- **Step 3: Assign Views.** Detailed configuration what shall be visible on the fact sheet.

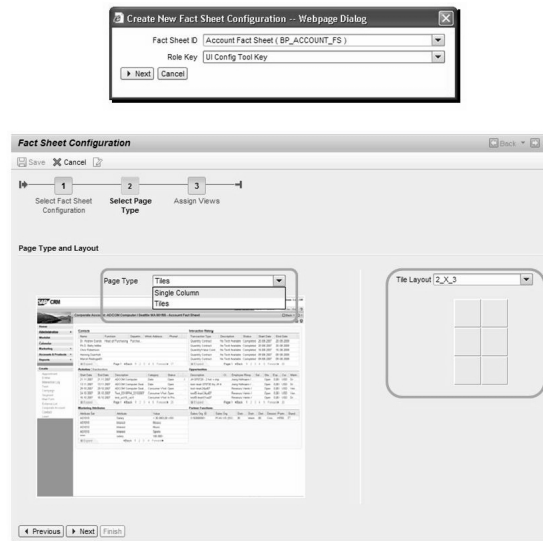


Figure 324: Creating a new Fact Sheet Configuration

Demonstration: Create a new fact sheet configuration.

Check exercises for details or do your own configuration.

Hint: Interesting Option: Before you configure the fact sheet, create a new Layout (1x1) in customizing and “simulate” a SAPGUI transaction with tab strips.

-
- Step 1: Click on NEW button
 - Step 2: Choose a Fact Sheet ID and a Role Key. Only role keys for which no configuration exists already for the selected fact sheet appear in the DDLB.
 - Step 3: you can decide about the layout type you want to use for the configuration. Those tile layouts appear, that are maintained in IMG layout customizing.
 - Use the previous/next buttons or the roadmap steps for navigation within the guided maintenance.

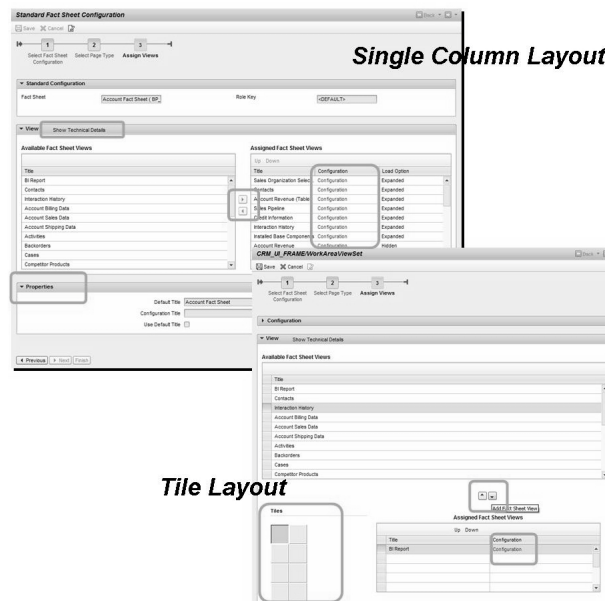
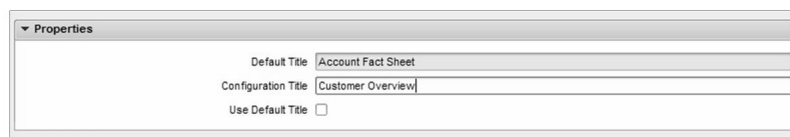


Figure 325: Assign Views to the Fact Sheet



- Properties allow you to change the Fact Sheet title.
 - You can use the default title or define an other title in the configuration
- If you have further requirements regarding the title (e.g. text + attributes) an Enhancement Spot can be used:
 - Transaction: SE18
 - Enhancement Spot: BSP_DLC_FS
 - Example and Default Implementation: BSP_DLC_FS_IMPL
 - Account Fact Sheet implementation: BP_FACTSHEET
 - Method, that returns the Fact Sheet title: IF_EX_BSP_DLC_FS~GET_FACTSHEET_TITLE

Figure 326: Properties of a Fact Sheet

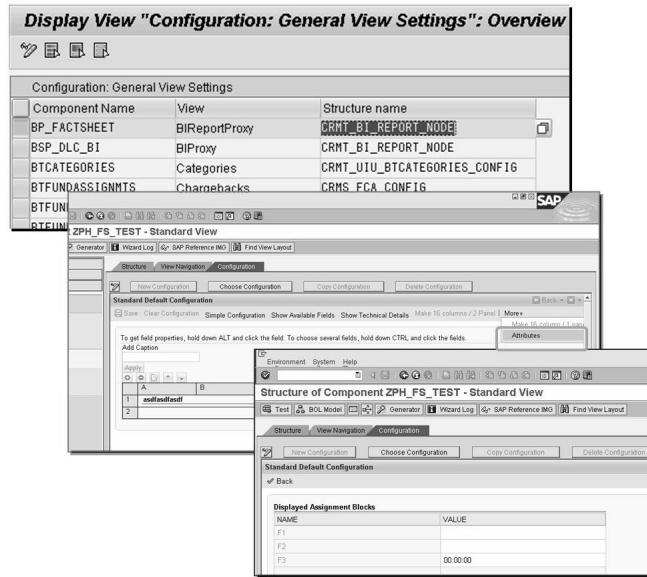


Figure 327: Attributes of Fact Sheet Views

You can assign attribute structures to your own components. Prerequisite for this: Attribute structures need to be created via SE11 & component development in BSP_WD_CMPWB.

Transaction: SM30. View: BSPC_DL_VIEWS

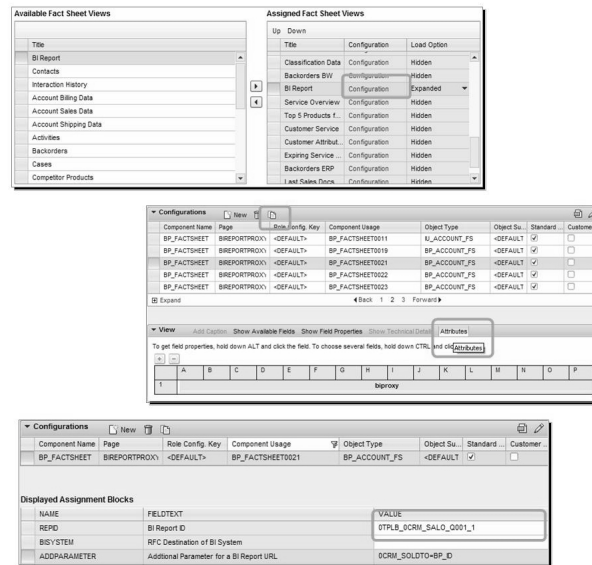


Figure 328: BI Report Configuration

- Add a new BI Report to the assigned fact sheet views
- Choose CONFIGURE link
- Copy the default configuration key to your specific one. It must be a new usage.
- Choose ATTRIBUTES button and maintain the corresponding parameters for your BI report.

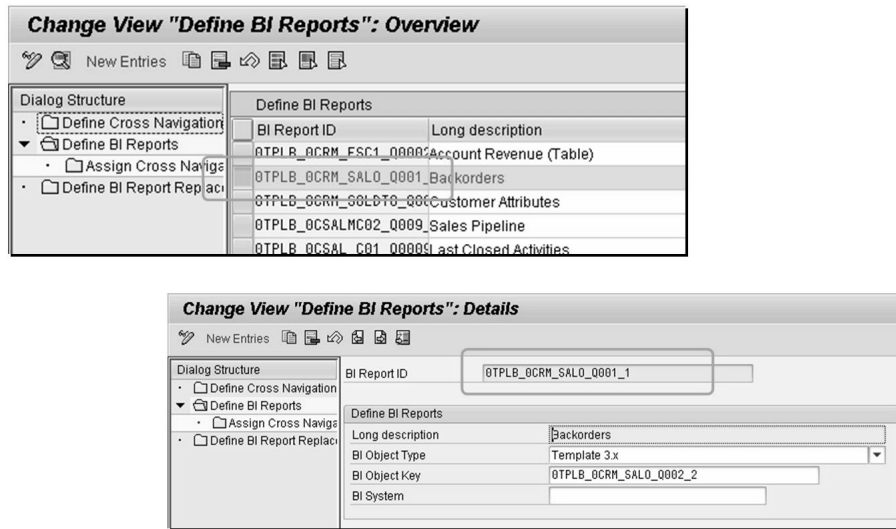


Figure 329: BI Report Customizing Prerequisites

- BI reports need to be defined in IMG:
Customer Relationship Management → *UI Framework* → *UI Framework Definition* → *Display SAP NetWeaver BI Reports in CRM*
- To fill the placeholders an Enhancement Spot BSP_DLC_FS can be used.
Method: IF_EX_BSP_DLC_FS~GET_BI_REP_PARAMETER.

1. Tx: SM34
2. CRMVC_BUIL_PRT
3. Create entries for PFCG roles

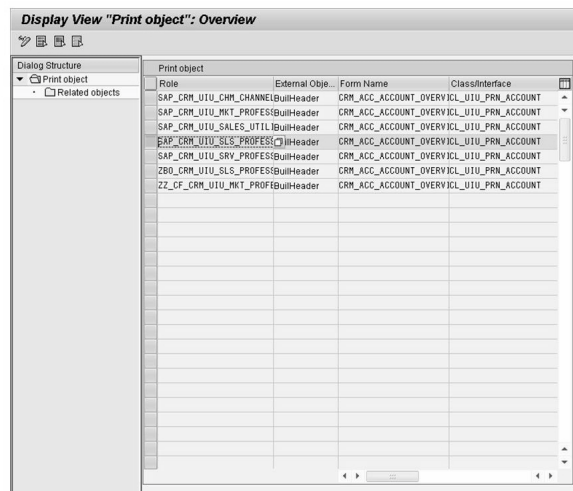


Figure 330:

See note 1040229 **Account Fact Sheet (Print version)** for further details on the PDF Fact Sheet.

Unit 19

Extensibility Tools

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Explain the concept of the Easy Enhancement Workbench
- Use the easy enhancement workbench to add customer specific fields to the CRM business applications
- Explain the concept of the Application Enhancement Tool (AET)
- Explain differences between Application Enhancement Tool and Easy Enhancement Workbench

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Lesson: Easy Enhancement Workbench

660

Lesson Duration: 60 Minutes

Lesson Overview

This lesson explains the Easy Enhancement Workbench and how to use it to add customer specific tables or fields to CRM objects.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the concept of the Easy Enhancement Workbench
- Use the easy enhancement workbench to add customer specific fields to the CRM business applications

Caution: Before running the exercises of this lesson, the BP_HEAD component must be enhanced. The following procedure is also part of the preparation steps at the beginning of the course document

Preparation for EEW exercises

1. CRM-system
 - a) Call Transaction **BSP_WD_CMPWB**.
Enter Component **BP_HEAD** (Enhancement Set **ZTRAINING** should be set as default).
Choose **Display**.
Choose **Enhance Component**.
Enter Enhancement Set **ZTRAINING**.
Enter (BSP) Application **ZBP_HEAD** and confirm.
Choose Yes and Continue to create Page **Repository.xml**.
Save a **Local Object** and create transport request.

Caution: The Demonstration **EEW Enhancement for Activities - Part 2** is a prerequisite for the exercises of Unit/Lesson **Enhancement Concept**.

The Easy Enhancement Workbench is an extensibility tool which has been introduced with SAP CRM 4.0. It not only allows to extend CRM objects/applications with new fields but also CRM Middleware structures relevant for data exchange.

Caution: When using the EEW in the training system always use **Package \$TMP**.

Business Example

You want to add customer specific tables or fields to CRM business objects.

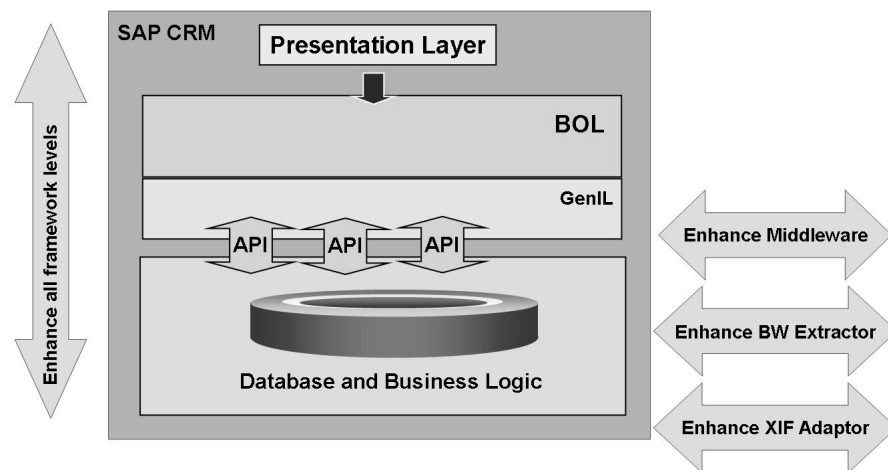


Figure 331: Easy Enhancement Workbench: General Idea

- Give some background of the EEW. Point out the benefit as it also enhances the interfaces to other systems.
- Explain the principle of the EEW
- Customizing includes allow you to make fields available at predefined positions in the database and on the user interface. Customer includes are used in the Easy Enhancement Workbench (EEW) when enhancing certain applications. Customer includes are included automatically in the necessary tables and structures in CRM applications, and are then available on all application levels.
- Customer includes are not delivered by SAP, but are created in the customer's system. By their inclusion in the CRM applications, the fields of the customer includes are available immediately.
- The content of the customer includes is only distributed for the objects 'business partner' and 'business transaction' via the CRM Middleware to SAP ERP and the CRM Mobile Client.

The Easy Enhancement Workbench (EEW) allows you to enhance business objects in SAP CRM with user-defined fields and tables and distribute them to SAP ECC and the Mobile Client via the CRM Middleware. You do not have to make any modifications for this. The EEW creates and fills customer includes automatically.

You can find more information about customer includes and the EEW in SAP Notes 484597 and 494966.

The Easy Enhancement Workbench is a development tool with which SAP applications (called Business Objects) can be extended in a simple manner.

An extension created using the Easy Enhancement Workbench does not differ technically from one created manually. In both cases transportable ABAP objects are created and the same Customer Exits, Business Transaction Events or BADIs are implemented.

The difference lies exclusively in the manner in which the objects required are created. The automation offered by the Easy Enhancement Workbench is achieved by template objects that are adapted to the extension definition and created by a generator.

The functionality of the Easy Enhancement Workbench is therefore only available for specially prepared Business Objects.

The following notes might be useful when using the EEW:

955236 (BDT-DC is Not Prepared for This Application Object)

1037748 (Enhancing the CRM WebClient UI for business transactions)

1047266 (FAQ: Limitations and restrictions of EEW generation)

1069791 (CRM WebClient UI for EEW enhancements)

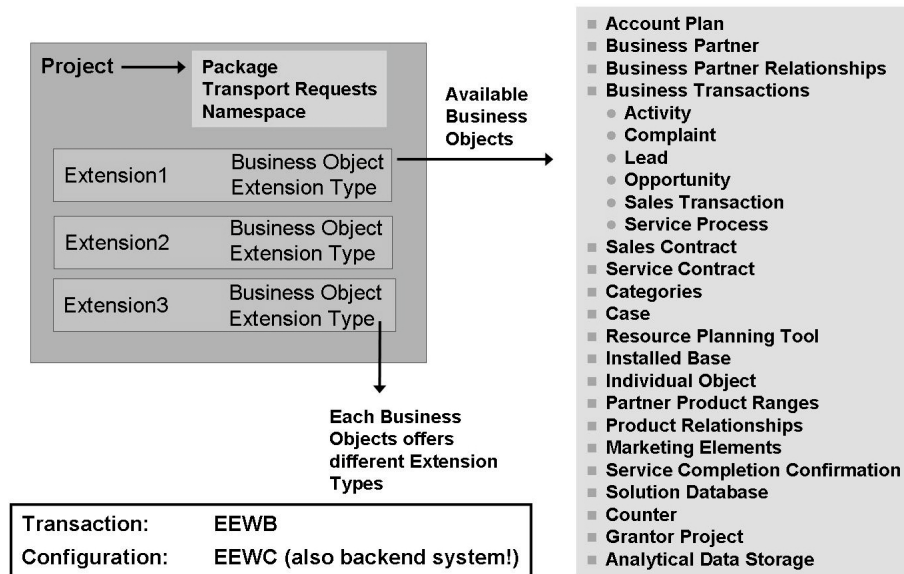


Figure 332: Easy Enhancement Workbench - Objects

Note: Perform demonstration “EEW Introduction”

The Easy Enhancement Workbench can be accessed via

- Transaction code EEWB
- IMG activity *SAP Customizing Implementation Guide* → *Customer Relationship Management* → *CRM Cross-Application Components* → *Easy Enhancement Workbench*

The system landscape must be set up in order to be able to use system-wide generation. This can be done via

- Transaction code EEWc
- IMG activity *SAP Customizing Implementation Guide* → *Cross-Application Components* → *General Application Functions* → *Easy Enhancement Workbench* → *Maintain System Landscape*.

The hierarchy of the object list is adapted to the structure of a customer project:

The project is the highest level. A project combines several extensions and offers the possibility of defining the project documentation. All generated objects belonging to a project are transported together; it is not possible to transport an individual extension. Additionally, the package (development class) of the generated objects is determined in the project.

Extensions are displayed at the next level. An extension refers to a Business Object and an extension type. The definition of the extension takes place via Business Object-specific wizards. Extensions too can be documented.

When an extension has been defined and generated, the object type Post Processing typically appears at the next level. These are activities that must be executed manually by the user. An extension is only considered to be ready when it has been generated correctly and all required Post Processing activities have been executed.

In order to facilitate monitoring of the generation and to make the technical flow transparent, all generator calls are displayed as tasks in the object list. After an extension has been generated all generated objects in a task are visible and can be displayed by double-clicking on them.

See notes 649336 and 676439 for more details on the EEWB configuration.

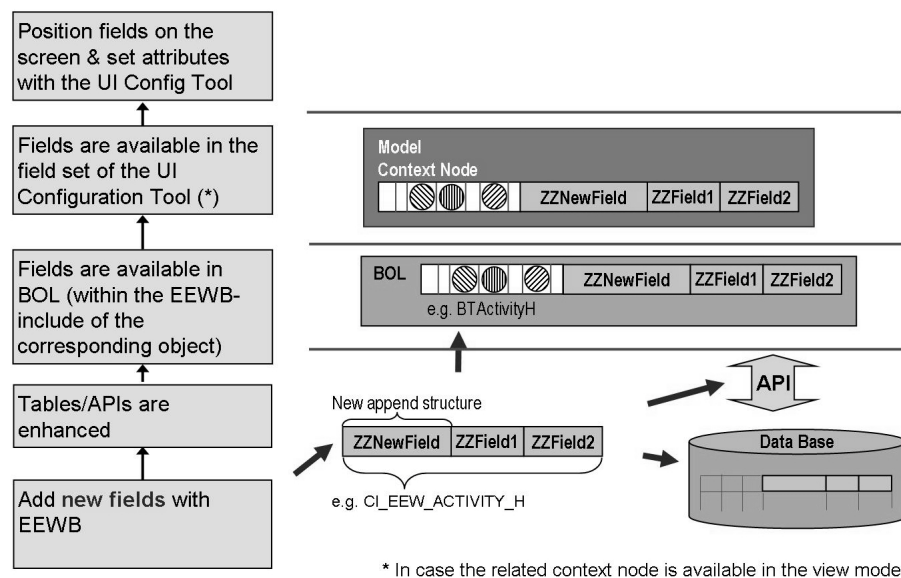


Figure 333: Enhancement process: Add new fields

When using the Easy Enhancement Workbench for a Business Partner extension **Add New Fields**, it creates the following repository objects and table entries:

- A data element and a domain for each field
- The required APIs, including interface structures, for each enhancement
- If necessary, check tables and associated maintenance views for selected fields, through which the check tables must be filled with values in postprocessing. The check tables are now generated for CRM Enterprise only, and not for the CRM Field Applications.
- One function group for each enhancement
- Function modules for data processing (API for reading, creating, changing, and deleting data)

For more information on how to integrate the new fields with CRM Field Applications, SAP ERP and BI, see the Online Documentation (*SAP CRM → Components and Functions → Basic Functions → Enhancements with the Easy Enhancement Workbench in SAP CRM*).

As the same include is contained in a Business Object structure as well the fields will be available as well in Business Object Layer (BOL).

A view that has the context node linked to the Business object will automatically have the fields available, you just need to position them on the layout.

Display customer-specific fields on the screen (UI configuration tool).

Business Partner and Business transaction offer the extension type ‘Add new fields’. Here the EEW just creates the fields in the given CI Structure.

Hint: All EEW related Includes start with name **CI_EEW_**.

- Open SE11 and show database table BUT000.
- Then open the transaction GENIL_MODEL_BROWSER with component set BP_APPL and show the data structure related to the root object BUILHeader.
- Both dictionary structures contain the same include. The relevant APIs will as well contain the same include. Fields added to this include will be available in both structures.

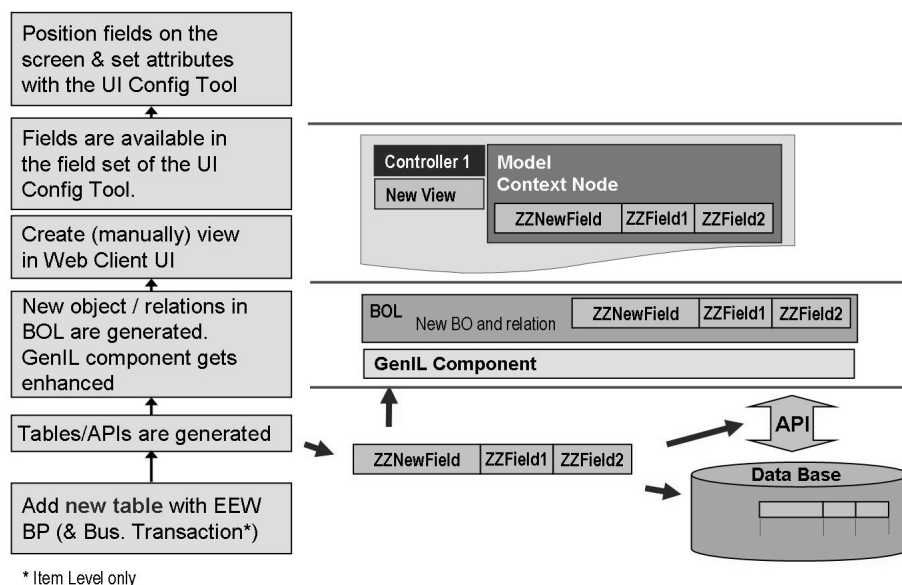


Figure 334: Enhancement process: Add new table

Business Partner and Business Transaction offer the extension type 'Add new table'. (For Business Transaction on item level only).

The business partner enhancement 'New table' will generate a new table, a class in the genIL component and also a view in the UI Component. Refer to the exercise, where this example is used.

The extension **Add New Table** is possible for Business Partners and transactions on item level.

The Easy Enhancement Workbench creates the following repository objects and table entries when extending the Business Partner by a new table:

- One data element and one domain per field
- The fields Client and Partner of the table BUT000 are included in the new table as key fields
- The required APIs, including interface structures, for each enhancement
- If necessary, check tables and associated maintenance views for selected fields, through which the check tables must be filled with values in postprocessing
- One table structure for each enhancement
- One change document object for each enhancement
- One function group for each enhancement
- Function modules for data processing (API for reading, creating, changing, and deleting data)
- Business object layer enhancements
- XIF adapter enhancements for data exchange
- Middleware enhancements for data exchange

For more information on how to integrate the new table with CRM Field Applications, SAP ERP and BI, see the Online Documentation (*SAP CRM → Components and Functions → Basic Functions → Enhancements with the Easy Enhancement Workbench in SAP CRM*).

The genIL Component will also be enhanced with the logic for the new table.

A new BO with a new relationship to the root object is created.

Subobject	Technical Name of Subobject	Enhancement in BOL
General header data	ORDERADM_H	BTAdminH
General item data	ORDERADM_I	BTAdminI
Activity data	ACTIVITY_H	BTActivityH
Opportunity data	OPPORT_H	BTOpportH
Lead data	LEAD_H	BTLeadH
Product data	PRODUCT_I	BTProductI
Financing product data	FINPROD_I	BTFinProdI
Sales data	SALES	BTSales
Shipping data	SHIPPING	BTShippingSet
Billing data	BILLING	BTBillingSet
Organizational data	ORGMAN	BTOrgSet
Pricing data	PRICING	BTPrisingSet
Pricing result	PRICING_I	BTPrisingI
Schedule lines	SCHEDLIN	BTSchedlin
Service item data	SERVICE_I	BTServiceI
User-defined header data	CUSTOMER_H	BTCustomerH
User-defined item data	CUSTOMER_I	BTCustomerI

Figure 335: Enhancement of Business Transactions

This list is an overview which sub-objects are available for the business transactions.

On header and item level you can enhance either category related structures (e.g. opportunity, activity specific) or general header data (CUSTOMER_H) that are valid for different categories

Depending on the business transaction categories

- fields are not displayed on the interface for business transaction categories that have not been selected
- only Data Sources are enhanced for the selected business transaction categories
- subobjects are determined for the business transaction (for example, product data, pricing data) that can be enhanced
- the system determines whether a transfer to the CRM Mobile Client or to SAP ERP is relevant at all.

The EEW creates the following Repository Objects and table entries in accordance with your entries:

A data element for each field

Customer include structure CI_EEW_<subobject>, for each subobject to which fields will be added

A dictionary structure with the new fields for each subobject This structure is included in the customer include structure.

Additional tab page in the SAP GUI on which the enhancements can be found

Enhancement of the synchronization BDoc for the Mobile Client, as well as a BAdI implementation for transferring fields to and from the Mobile Client.

BAdI implementation that maps the fields to the sales fields in SAP ERP (and vice versa), as well as append structures in SAP ERP.

Append structures for the relevant BW Data Sources, a BAdI implementation that fills the fields, as well as the required Metadata

Append structures for the structures of the XIF adapter.

ACTIVITY_H*	CUSTOMER_H
<ul style="list-style-type: none"> ■ Customer fields are available for selected transaction category only ■ Related BO is normally available as context node ■ Only UI Configuration, no further enhancements necessary 	<ul style="list-style-type: none"> ■ Customer fields are available for more than one transaction category ■ Related BO is never contained as context node ■ Always component enhancement necessary

* the same is valid for other transaction categories such as Lead, Opportunity, etc.

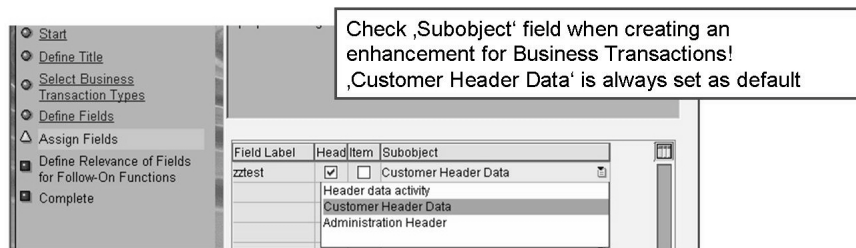


Figure 336: Transaction Category vs. Customer Data

Demonstrate the EEW

Optional: After the EEW has been used to extend an object, e.g. an Appointment, go to GENIL_MODEL_BROWSER and show the relations/attributes of the Root Object, e.g. BTOOrder. You should be able to identify the generated information.

There are different options where to add the customer-specific fields when enhancing the Business Transaction.

You can either extend data that should be specific for a Transaction category or create data that should be valid for all types of Transaction categories.

For enhancing the CRM WebClient User interface it makes a difference in effort which type of enhancement you choose.

Extensions of type CUSTOMER_H will not be available right away in the UI Configuration since the related object in BOL is never contained in the context. Hence an Enhancement is required in order to extend the context (see Enhancement Concept).

Extensions of type CUSTOMER_H can be “reused” e.g. in different types of transactions. If a field extension originally was created for an activity, it can easily be integrated e.g. into transactions of type quotation.

Example: Add new table to Business Partner

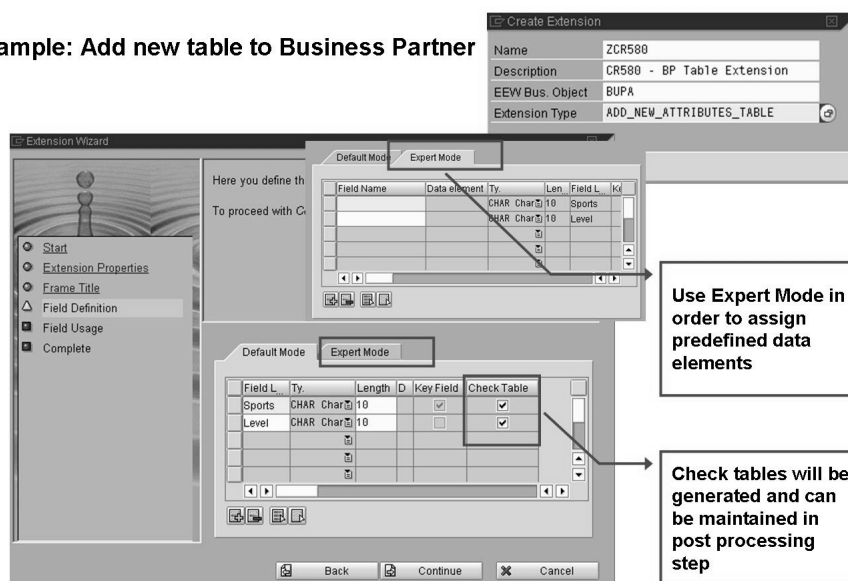


Figure 337: Demo: Business Partner - Add New Table

Caution: A prerequisite to the business partner extension (new table) is that an enhancement set exists and that the component BP_HEAD was enhanced.

Note: Perform demonstration “EEW Enhancement for Activity - Part 2” (required Demo for exercise Component Enhancement).

Optional: Perform demonstration “EEW Enhancement for Business Partner”.

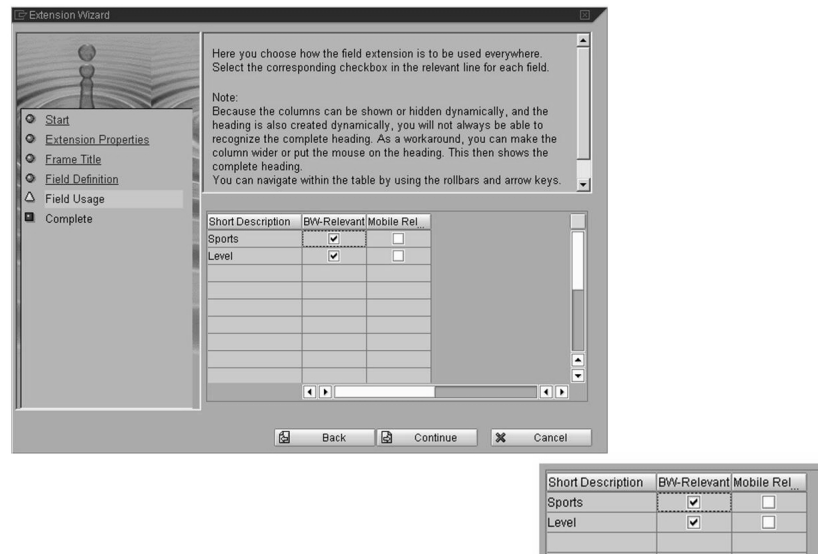


Figure 338: Demo Part 1: Integration with other systems

For the Easy Enhancement Workbench functionality there are a couple of related notes available on the Service Marketplace.

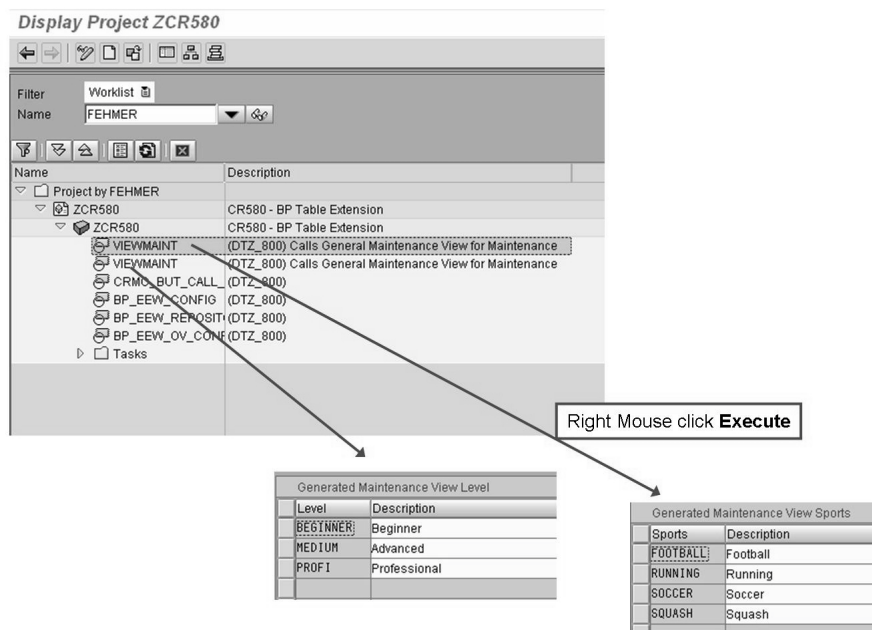


Figure 339: Demo Part 2: Post Processing of Checktables

After the Easy Enhancement Workbench has generated several objects, post processing steps can be executed.

Maintenance of check tables is possible easily.

The collective note 864222 (Composite SAP note on the data exchange of EEW enhancements) describes how to exchange newly generated objects with other systems.

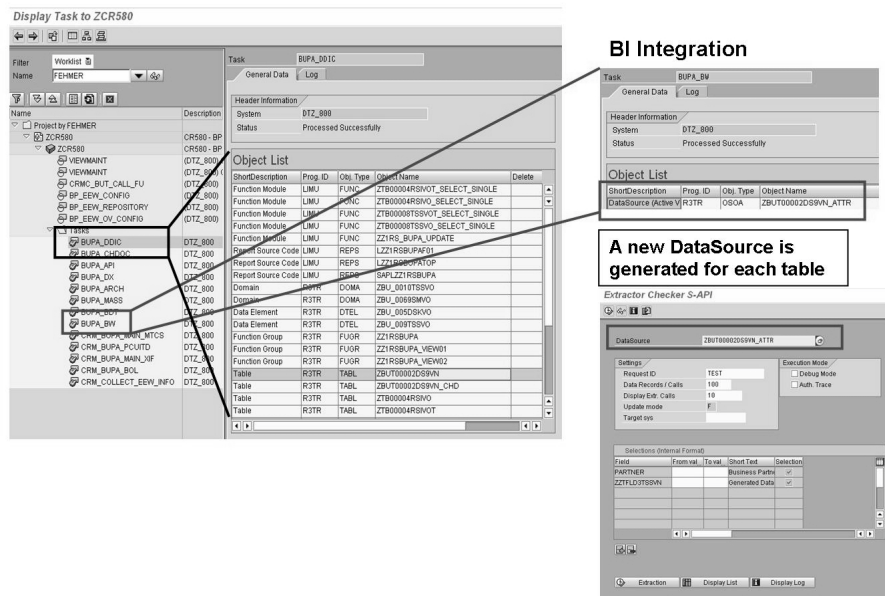


Figure 340: Demo Part 3: Display Generated Objects

When extending objects with the Easy Enhancement Workbench, a log/protocol is created which contains the lists of objects that have been generated/extended.

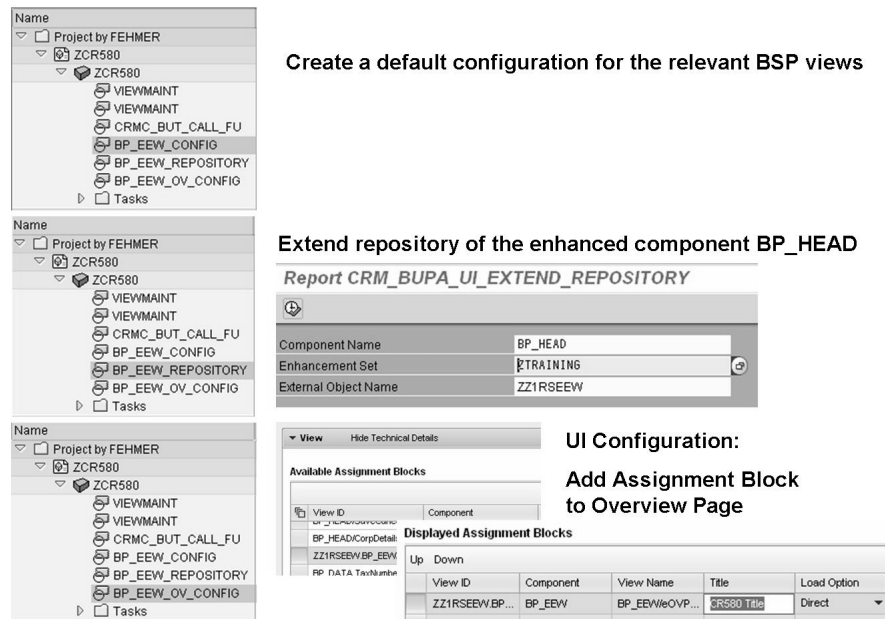


Figure 341: Demo Part 4: Post Processing - Make table visible in the CRM WebClient UI

As a summary, review what we have done so far.

Demonstration: EEW Introduction

Purpose

Demonstrate how to create a project.

System Data

System:

Client:

User ID:

Password:

Set up instructions: In order to use the EEW the system landscape needs to be maintained in customizing: IMG Path: *Cross-Application Components* → *General Task Functions* → *Easy Enhancement Workbench* → *Maintain System Infrastructure*

1. You need to assign transport requests and a package. In the customer namespace you can choose between Z and Y.

Note: (Due to note 649336) it is not possible to use namespaces as /*/

2. Create an extension.
 3. Choose a name and a description.
 4. Show the list of EEW business objects (F4 help).
 5. Choose **BUPA** and show the related extension types.
 6. Choose **MARKETING ELEMENT** and show the related extension types.
 7. Each EEW Business Object can offer different extension types.
-
-

You can use transaction codes OXT4, OXT5, OXT6, OXT7, OXT8 to show the insights of EEW. The content is delivered by SAP, changes must be considered a modification!

Demonstration: EEW Enhancement for Activities - Part 1

Purpose

Create an extension for Activities.

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Choose EEW Business Object **Business Activity** and extension type **ACTIVITY_H**.
2. Select Business Transaction type **Business Activity**
3. Add a field (choose description) with data type CHAR length 20.
4. Assign fields.
5. Choose the default Subobject **Header Data Activity**
6. Finish the wizard.

7. Go to the component workbench and choose component BT126H_APPT. Select View ApptDetails. **The field is available in the UI configuration tool and can be found in the BTACTIVITYH node.**
-

Demonstration: EEW Enhancement for Activities - Part 2

Purpose

Create a new extension for Appointments (**Required Demo for exercise Component Enhancement**).

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Transaction **/neewb**.
 2. Create a project **ZAPPT** (Appointments Demo). Package: **Stmp**. Save project.
 3. Create Extension **ZAPPT** (Appointments). EEW Bus Object: **BUSINESS_ACTIVITY**. Extension Type: **CUSTOMER_H**. **Continue**.
 4. Extension Title: **Appointments**. Check **Business Activity**. **Continue**.
 5. Field Label: **NewCharField**. Data Type: **Character**. String Field Length: **10**. **Continue**.
 6. Head: **Checked**. Subobject: **Customer Header Data**. **Continue** and **Complete**.
 7. The newly created field currently is **not available in the UI** Configuration since you chose **Customer Header**. There is no context node for the BOL Object **BTCUSTOMERH**. The **field** that you have created in the EEW is **not available**. A **component enhancement is necessary**. You can tell the participants that they will be able to add the field to the UI once a component enhancement has been made.
-

Demonstration: (Optional) EEW Enhancement for Opportunity

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Continue with the extension that you have created in the last demo.
2. Choose EEW Business Object 'OPPORTUNITY' and extension type 'OPPORT_H'.
3. Select Business Transaction type 'Opportunity'.
4. Add a field (choose description) with data type NUMC length 3.
5. Assign fields. Default in Column 'Subobject' is Customer Header data.

Demonstration: (Optional) EEW Enhancement for Business Partner

Purpose

Note: In standard training systems this demo will **not work with package \$TMP**. Please test this demo before you try it in class. If it does not work, only explain the outcome of ADD_NEW_FIELDS as described.

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Create a new extension. Enter name and description.
 - Choose EEW Business Object 'BUPA' and extension type 'ADD_NEW_FIELDS'.
 - Enter technical characteristics:
 - create a field 'Amount' (currency)
 - create a field 'Period' (NUMC, length 2), mark 'checktable'
 - Finish the wizard.
 2. In the post processing step position cursor on 'VIEWMAINT' and press right mouseclick 'Execute'. Enter some values.
 3. The EEW has generated a separate table as check table (plus text table) and as well maintenance view.
 4. Show the include in the dictionary. The EEW has generated an additional field for the currency key.
 5. Go to the component workbench and choose component 'BP_HEAD'. Select View 'AccountDetails'. Start the UI configuration tool. Add your fields (available under BUILHEADER) to the UI.
 6. OPTIONAL: Go to the Design Layer customizing and edit the design object that you have created earlier. Change the type of the F4 help. Show the result.
-

Lesson: Application Enhancement Tool

680

Lesson Duration: 40 Minutes

Lesson Overview

This lesson introduces the Application Enhancement Tool (AET) which allows to extend CRM WebClient UI applications with new fields.

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the concept of the Application Enhancement Tool (AET)
- Explain differences between Application Enhancement Tool and Easy Enhancement Workbench

The AET is a new extensibility tool which was introduced the first time in SAP CRM 7.0. It allows - similar to what the EEW can do - to extend the CRM application with new fields.

Business Example

You want to add customer specific fields to CRM business objects using the Application Enhancement Tool.

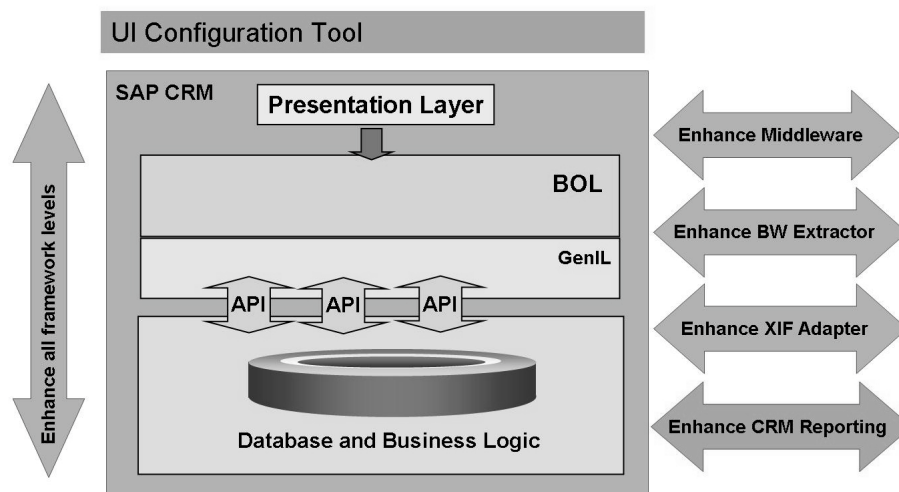


Figure 342: Application Enhancement Tool - Overview

The Application Enhancement Tool has been introduced to enhance CRM applications.

The Application Enhancement Tool is integrated in the UI Configuration Tool, and can be started in this tool. The fields that you have added to an application are available in the UI configuration of the corresponding UI component and view. You can make these new fields available on the user interface by adding them to the view.

The Application Enhancement Tool offers the following main functions:

- Creating custom fields
- Defining dropdown list boxes for custom fields
- Translating field labels and entries in dropdown list boxes
- Assigning search helps and check tables to custom fields
- Making new custom fields available in search criteria and/or result lists, Business Intelligence (BI) reporting, R/3 Adapter, CRM Mobile, and CRM interactive reporting, which depends on the enhanced business object
- Using different data types, such as characters, dates, times, numbers, and so on
- Reusing fields in other business objects, if they are based on the same enhancement place

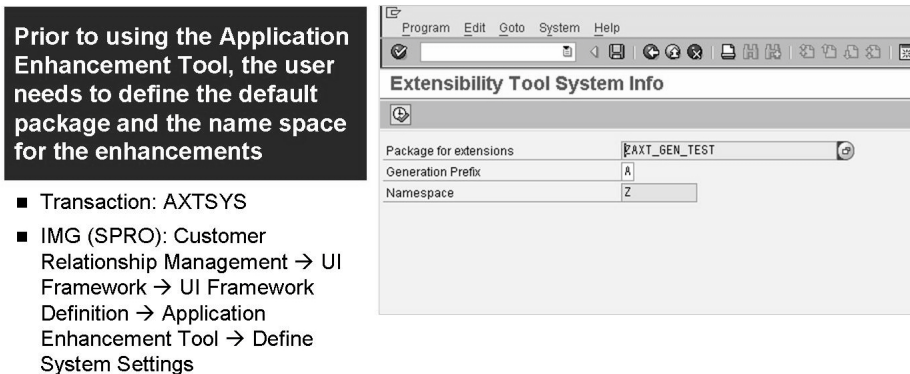


Figure 343: Application Enhancement Tool - System Settings

Before you can use the Application Enhancement Tool, you need to define the package name, generation prefix, and namespace for enhancements. You can make the necessary settings in Customizing for Customer Relationship Management, by choosing

SAP Customizing Implementation Guide → Customer Relationship Management → UI Framework → UI Framework Definition → Application Enhancement Tool → Define System Settings

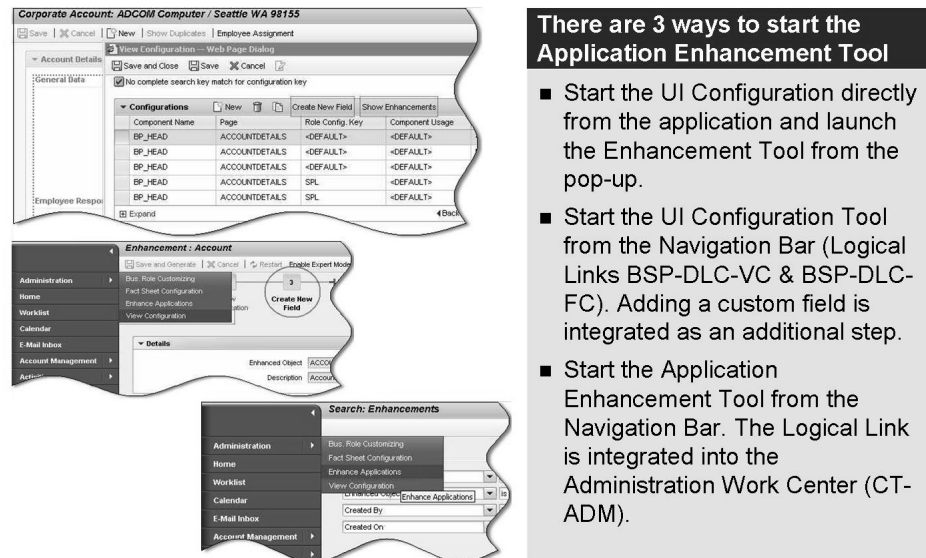
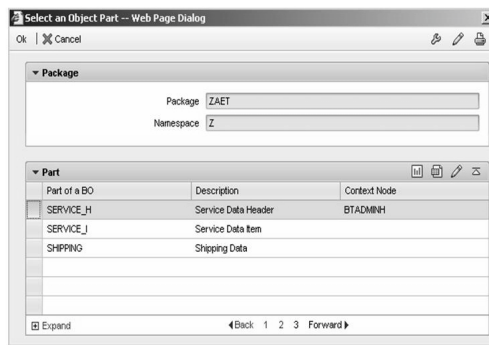


Figure 344: Ways to Start the Application Enhancement Tool

There are different ways to start the Application Enhancement Tool in SAP CRM. Since the Application Enhancement Tool is integrated in the UI Configuration Tool, you start the UI Configuration Tool first, to access the Application Enhancement Tool.

- Starting the Tool in the UI Configuration of an Application.** You can start the Application Enhancement Tool in the UI configuration of an application in SAP CRM. Therefore, you need to enable the configuration mode in the general settings on the central personalization page of SAP CRM. After you have enabled the configuration mode, you can choose one of the symbols for the UI configuration in the header area of the application. You then navigate to the view configuration. To start the Application Enhancement Tool, click Show Enhancements in the Configurations block. You can click Create New Field if you want to directly create a new field.
- Starting the Tool in the UI Configuration from the Navigation Bar.** You can start the Application Enhancement Tool in the UI configuration that you access from the navigation bar in your system administrator role. In the Administration work center in the navigation bar, you can choose View Configuration. You navigate to the view configuration, where you can enter a UI component, and choose a view. To start the Application Enhancement Tool, click Show Enhancements. You can click Create New Field if you want to directly create a new field.
- Starting the Tool in the Navigation Bar.** You can start the Application Enhancement Tool directly in the navigation bar of your system administrator role, by choosing Enhance Applications in the Administration work center CT-ADMIN. You navigate to the search page where you can search for enhancements.



The first step is to select an Object Part

- When starting the Enhancement Tool directly from the application, the Context Node column indicates how the newly created field fits in the selected view
- If you start the tool in *Expert Mode*, the Package and Namespace fields will be editable.

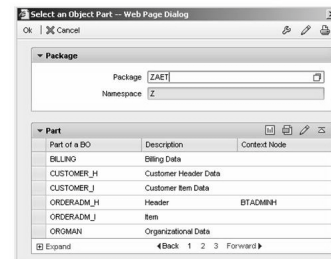


Figure 345: Enhancement Process - Choose Object

The Application Enhancement Tool is able to extend more than one hundred different business objects.

Transaction AXTREG displays technical information of the AET. The content is provided by SAP.

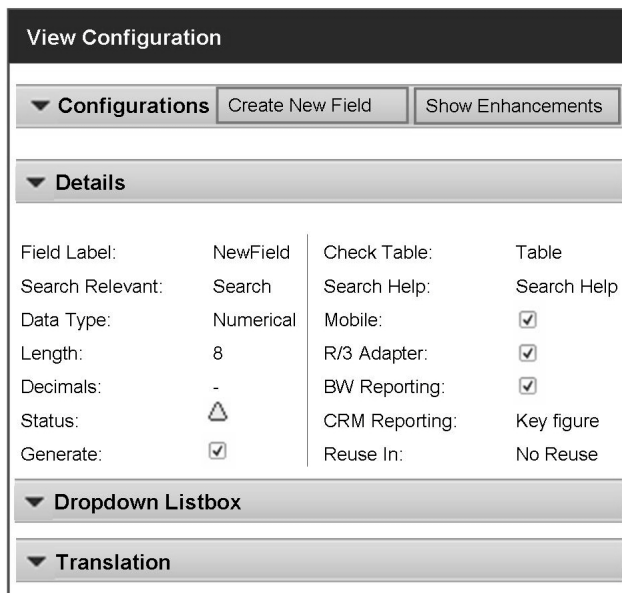


Figure 346: Enhancement Process - Define Details

All objects are enhanced in a similar way.

1. Enter the new field name in the Field Label field.
2. In the Search-Relevant field, choose whether the new field is to be used in the search or not. If the field is relevant for the search, it is available in the search criteria and the result list.
3. In the Field Data Type, select one of the following data types: Decimal number, numerical, date, time, indicator, currency, quantity, text with capital letters, or text with small and capital letters. If you have selected currency or quantity as the data type, an additional reference field for the currency or quantity unit is created, to which the related check table is assigned.
4. Enter the field length in characters.
5. Enter the decimals, if you have selected decimal number as the data type.

You can assign **input help** to a new field. This input help is automatically available at runtime. You can assign dropdown list boxes to the new field. Click **Create** to create a new dropdown list box and maintain the values. You can create dropdown list boxes for the following data types: Numerical, text with capital letters, and text with small and capital letters. Alternatively, you can assign check tables or search helps to new fields. Enter the technical name of the check table or search help.

The **Generate** checkbox indicates that you want to generate a custom field. The checkbox is available in the detailed view, and can be personalized in the Custom Fields block. This checkbox is selected by default for new and changed custom fields. If you want to remove a field from generation, you need to deselect the checkbox.

Hint: If you have enabled the **expert mode** beforehand, you can change the field ID and the reference field ID. You can enter your own data element. The field data type depends on the selected data element.

Unit 19: Extensibility Tools

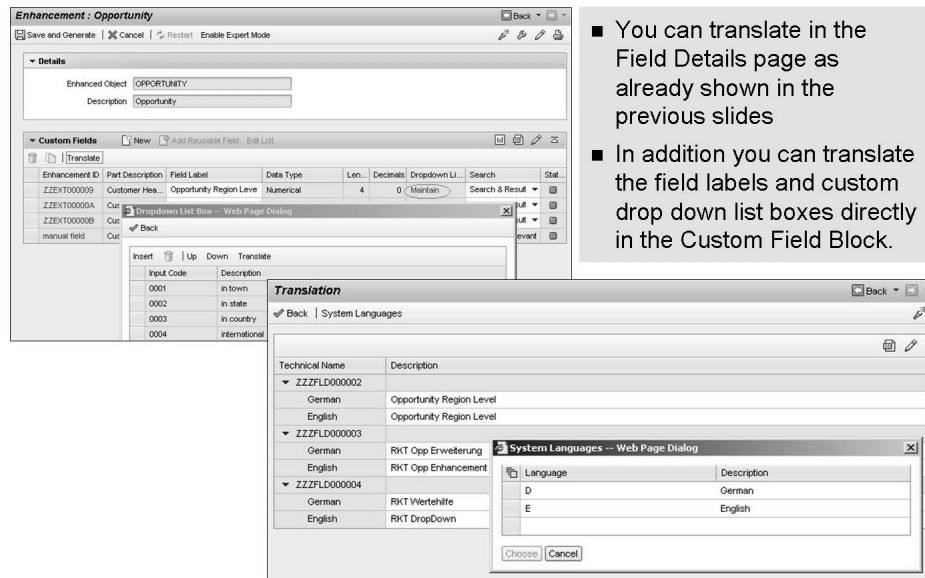


Figure 347: Translation of field labels

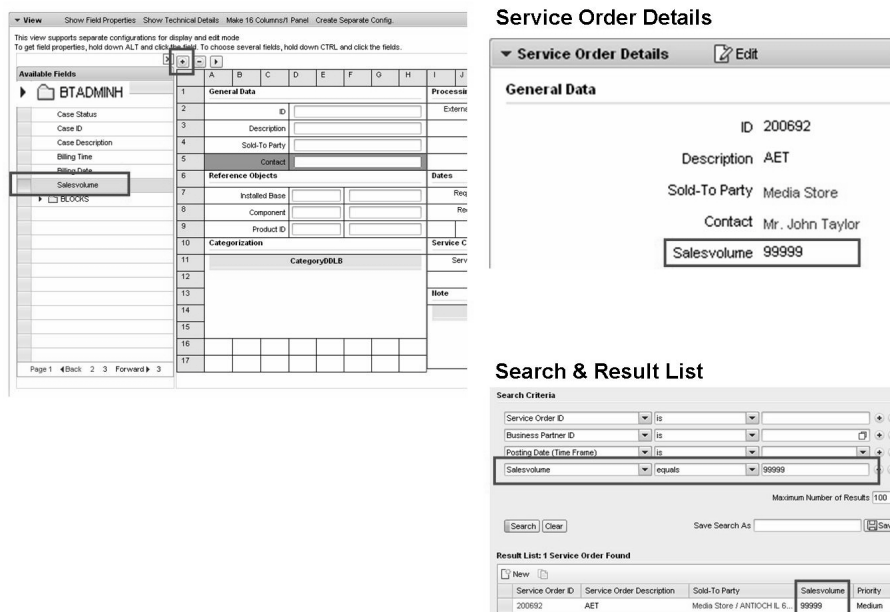


Figure 348: Enhancement Process - UI Configuration

After SAP CRM has been restarted, select the application and start the view configuration of the application to make the new field available on the user interface.

In the example above, three views (Details, Search, Result List) have been adapted in order to integrate the new custom field to the service order application.

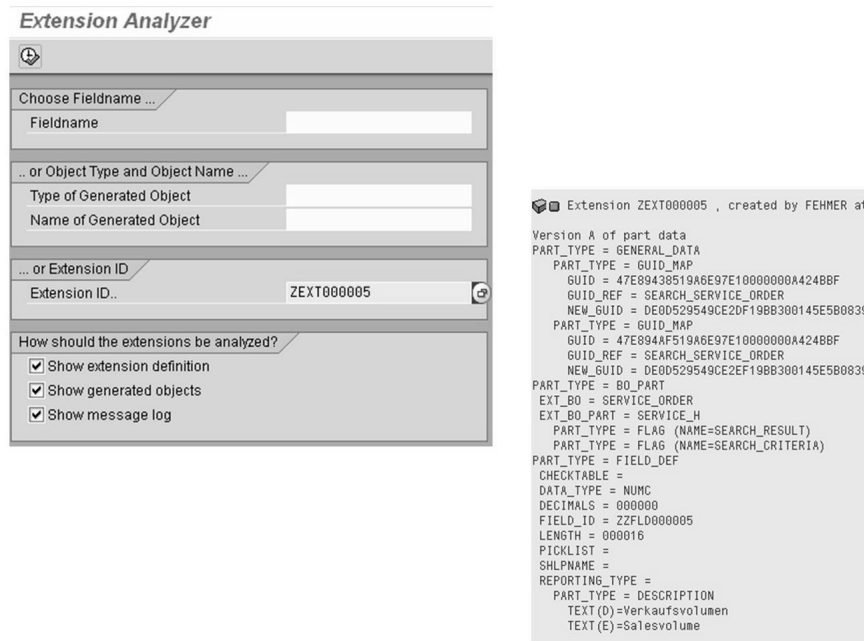


Figure 349: Technical Analysis

To IMG activity
 SAP Customizing Implementation Guide → Customer Relationship Management
 → UI Framework → UI Framework Definition → Application Enhancement
 Tool → Analyze Enhancements
 in order to display technical details of enhancements in the system.

The following table compares certain aspects of the two enhancement tools EEW and AET

Easy Enhancement Workbench	Application Enhancement Tool
Run in SAPGUI	Embedded into WebClient UI
Both field and table extensions are possible.	Only field extensions are possible in CRM 7.0.
Extension of BW DataSource	Extension of BW DataSource and CRM Interactive Reporting
Inconsistent behavior and capabilities across different applications (for example different data types are supported in different applications).	Consistent behavior across all applications (for example the same data types are supported in all applications). New features will be developed in the future

Software Layer WEBCUIF

Software Layer ABA

Demonstration: Create a customer specific field with the AET

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. If necessary enable the configuration mode within **Personalization**
2. Go to the service order details by choosing **Create Service Order**
3. Use the special icon **Show Configurable Areas** and click into the Service Order Details view to start the UI Configuration Tool.
4. Choose the button **Create New Field**
5. Choose Part SERVICE_H and **OK**.
6. Enter the following

Field Label	Salesvolume
Search-Relevant	Search & Result List
Data Type	Numerical
Length	10

Choose **Back**.

7. Choose the button **Save and Generate**.
8. If necessary choose/create a transport request.
9. Close all browser windows
10. Restart the CRM WebClient UI
11. Create a service order and start the UI Configuration
12. Create/Change the view configuration and add the new customer field via **Show Available Fields** (context node BTADMINH!)
13. Optional: Repeat this step for the search and result list view.

Unit 20

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Component Enhancement Concept

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- Describe the UI Component Enhancement concept
- Use the Component Enhancement technique to enhance the UI Components

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Lesson: Component Enhancement

694

Lesson Duration: 60 Minutes

Lesson Overview

This lesson describes the UI component enhancement concept and how it can be used to enhance UI components.

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the UI Component Enhancement concept
- Use the Component Enhancement technique to enhance the UI Components

This lesson introduces the component enhancement concept which is very important for CRM WebClient UI customers. Adapting the WebClient UI application (e.g. including customer-specific views and components; adding & removing of buttons) is possible by enhancing corresponding UI Components (= BSP applications) and views therein.

It can be an interesting demonstration to show how the Enhancement Set is filled with customer-specific BSP applications and views once you enhance UI components and single views using the Component Workbench.

Business Example

You would like to further extend the WebClient User Interface, e.g. include customer specific tables into the UI

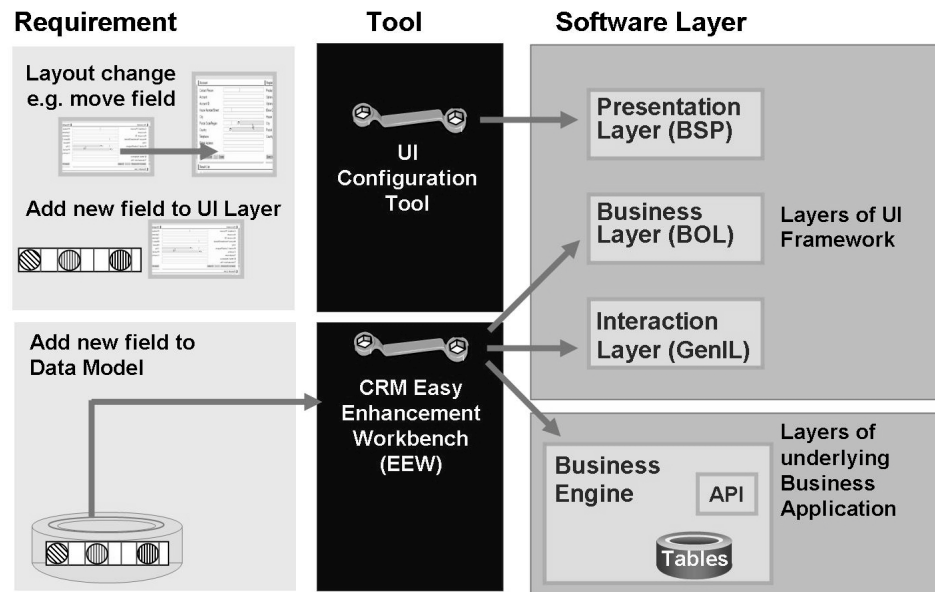


Figure 350: Enhancement Tools

Use this slide to summarize what you have done in the last unit.

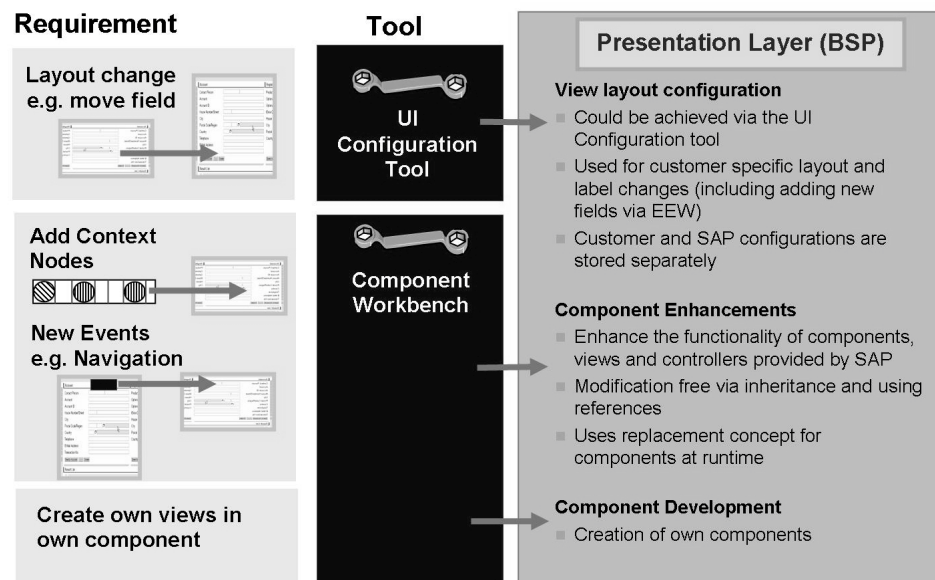
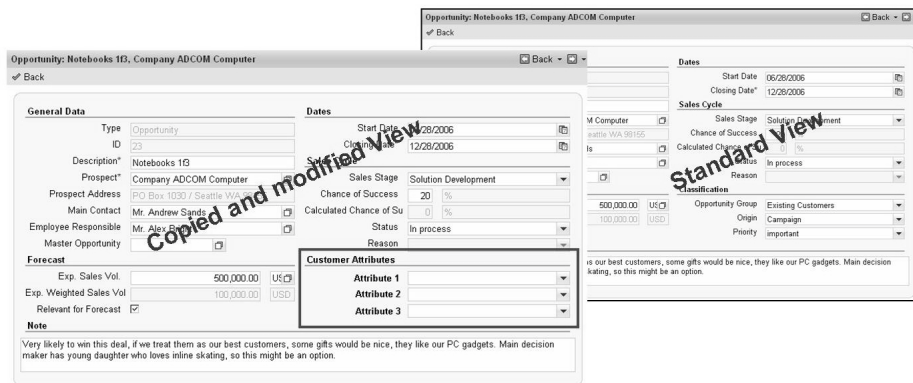


Figure 351: UI Enhancements

Unit 20: Component Enhancement Concept

We have already seen in the last unit that we could not fulfill all requirements with the EEWB and the UI configuration tools.

For some Presentation Layer related enhancements of SAP standard UI components we need to use the Component enhancement concept.



- Views from an existing component can be copied into a customer own component
- The copy can be modified (new context nodes, new buttons, navigation etc.)
- At runtime, the standard view will be replaced by the copied and modified view
- This process is supported by wizards

Figure 352: Component enhancement principle

Describe the principle as very simple. You create a copy of the standard view that you can modify. At runtime, the standard view will be replaced by your view. This process is wizard supported.

The component enhancement concept is similar to the Controller Replacement Concept of the IC Web Client in SAP CRM 5.0.

Supported by wizards, customers can create own components that have a reference to the standard components.

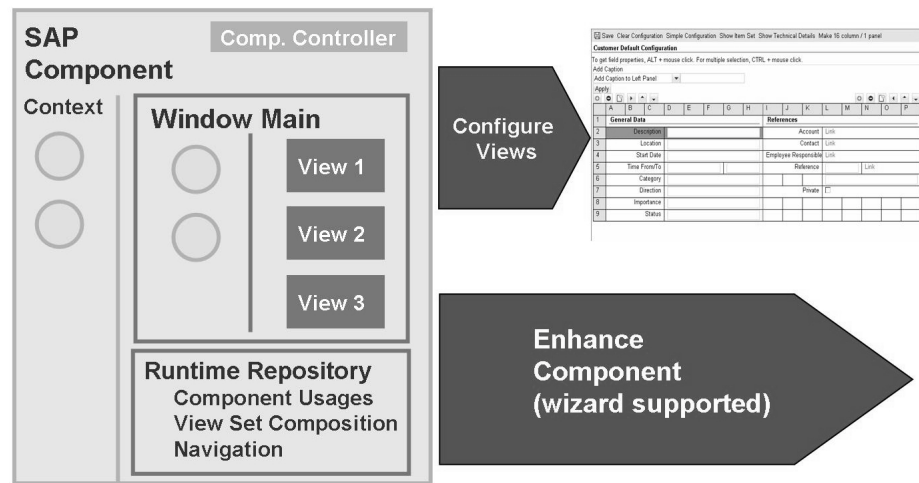


Figure 353: Component Enhancement Concept (I)

The component enhancement wizard is started from the UI component that you want to enhance.

The Component Workbench offers the wizards to support the user to enhance SAP standard Components.

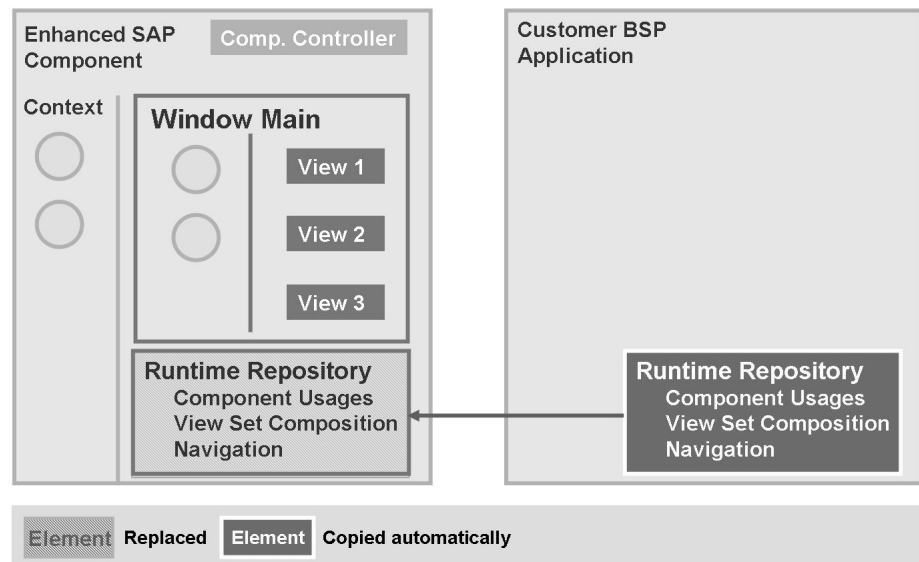


Figure 354: Component Enhancement Concept (II)

Unit 20: Component Enhancement Concept

The first step of the enhancement is that the wizard creates a BSP application in customer namespace and copies the runtime repository into the customer BSP.

The runtime repository contains the technical information about the original component.

When doing a component enhancement. The system first creates a new UI Component and copies the runtime repository of the original component into the customer component. This new component (BSP application) will be the host for all other copied elements such as views, custom controllers, etc.

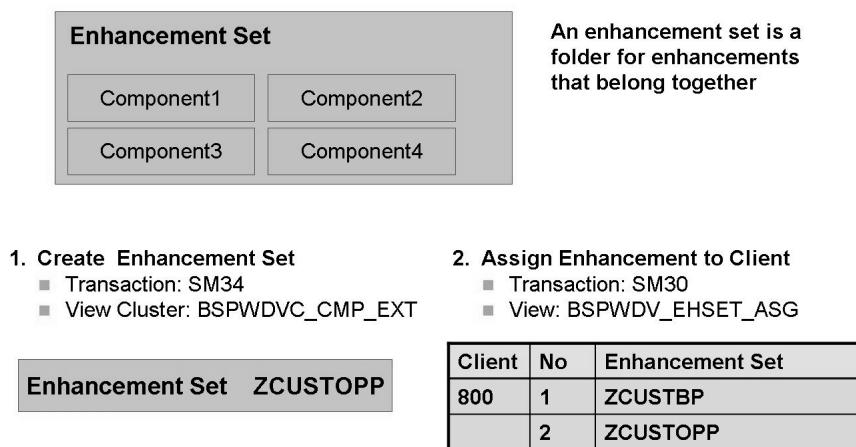


Figure 355: Enhancement Set

Note: Perform demonstration “Component Enhancement (1): Customizing”

Before you can start to enhance a component you need to create an enhancement Set and assign it to a client.

An enhancement set is a folder for enhancements that belong together

Create an Enhancement Set:

Transaction: SM34; View Cluster: BSPWDVC_CMP_EXT

The Enhancement Set will be used within the Component Workbench later on.

You only need to enter a name and a description.

The Enhancement Definition will be filled later on automatically during the enhancements you do in the BSP Component Workbench.

Assign the Enhancement Set to a client:

Transaction: SM30; View: BSPWDV_EHSET_ASG

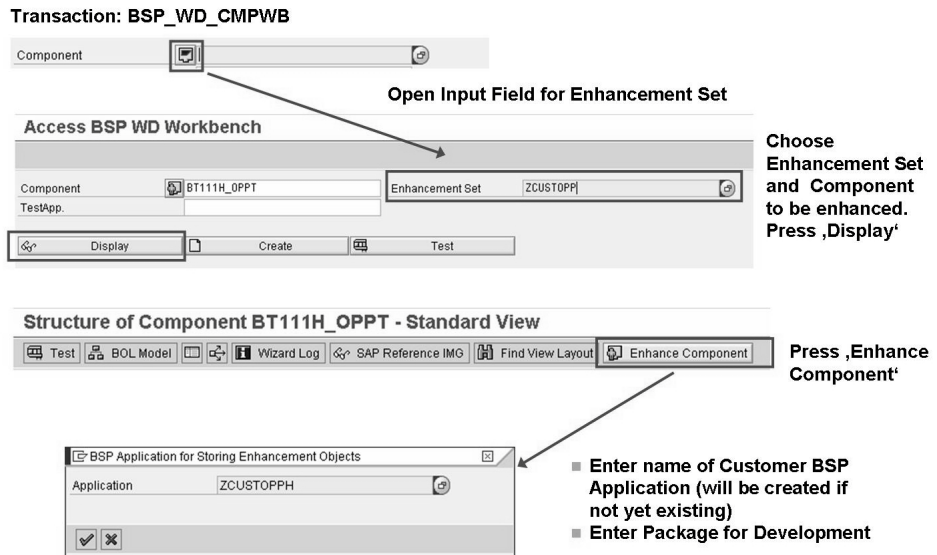


Figure 356: Create Enhancement

Note: Perform demonstration “Component Enhancement (2): Component Enhancement”

Enhancement Set ZCUSTOPP			
Component Name	Assigned BSP Application	BSP Runtime Repository	Runtime Rep Page
BT111H_OPPT	ZCUSTOPPH	ZCUSTOPPH	Repository.xml

* }

Name of SAP Component	Name of Customer BSP Application	BSP Application for Runtime Repository	File Name of Runtime Repository
-----------------------	----------------------------------	----------------------------------------	---------------------------------

* Entries will be created by wizard during creation of enhancements

- Transaction: SM34
- View Cluster: BSPWDVC_CMP_EXT

Figure 357: Customizing Generation

Unit 20: Component Enhancement Concept

Check view Cluster: BSPWDVC_CMP_EXT in transaction SM34.

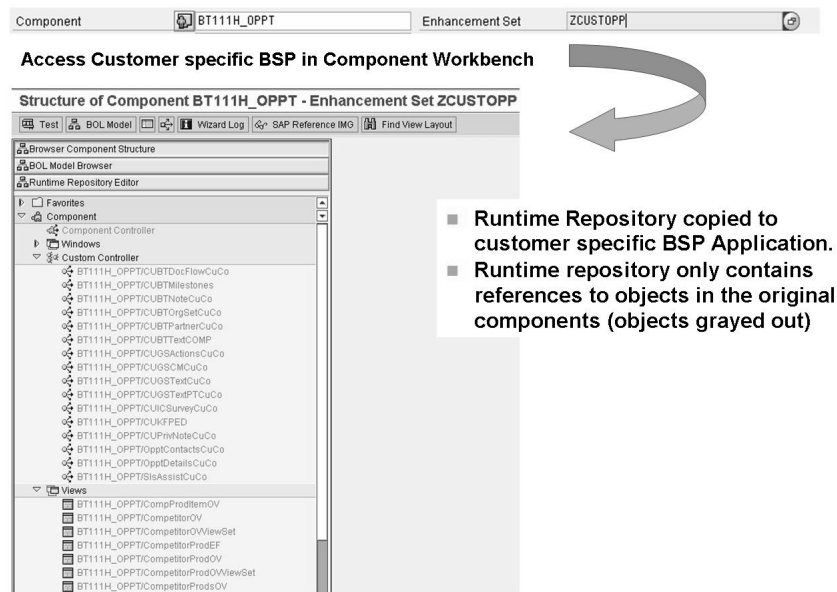


Figure 358: Enhancement Result

Show the result in the system

Note: Perform demonstration “Component Enhancement (3): Result”

Combination of Component and Enhancement Set opens Customer specific BSP in Component Workbench

The Runtime Repository is copied from the original component to the customer specific BSP Application.

But the copied Runtime repository only contains references to objects in the original components. That's why all objects are grayed out

Further enhancements done in Component Workbench are supported by several available Creation Wizards.

- Creation of new Views
- Creation of ViewSets and Overview Pages
- Creation of ContextNodes
- Generation of Methods

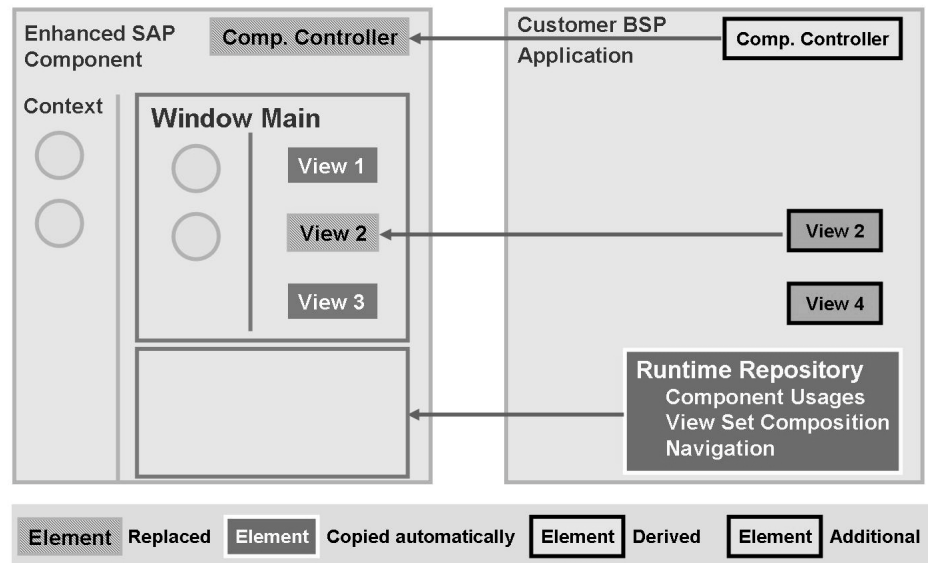


Figure 359: Component Enhancement Concept (III)

Now you can start to enhance the objects (Views, custom controller, component controller, window...) you want to modify by copying them to your own component. Additionally you can create own views.

You can the enhance single views that you want to modify. In this case a copy of the original view will be created in the customer component.

You can as well enhance existing component controller or custom controllers. In both cases, a copy will be created that inherits from the original object.

Additionally you can create own views

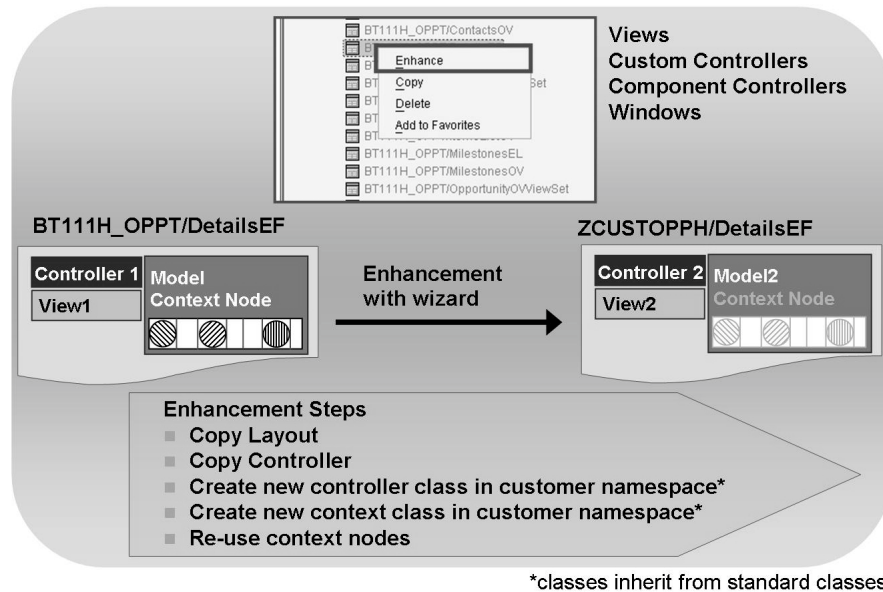


Figure 360: Enhancement of Objects

When using the enhancement option the object (Views, custom controller, component controller, window) will be copied into the customer BSP application. Due to the MVC Pattern, a new controller class and context class will be created. These classes are created as subclasses of the originals. They inherit the logic from the originals, some specific methods are redefined.

Note: Perform demonstration “Component Enhancement (4): View Enhancement”

You need to enhance the view first before editing it.

Enter the component with your Enhancement Set again.

All objects that havent yet been enhanced are marked in grey.

By right-clicking on an object, you can open a context menu and choose *Enhance* to enhance the object.

The object is created automatically in the customer namespace.

The process works for views as well as for custom controllers, component controller and windows as they all use controller classes.

Further enhancements done in Component Workbench are supported by several available Creation Wizards:

- Creation of new Views
- Creation of ViewSets and Overview Pages
- Creation of ContextNodes
- Generation of Methods

Per object enhancement, an entry in customizing is generated by the wizard

- Transaction: SM34
- View Cluster: BSPWDVC_CMP_EXT

Enhancement Set Component		ZCUSTOPP BT111H_OPPT	
BSP Application	Controller to be replaced	BSP Application	Replacement Controller
BT111H_OPPT	DetailsEF	ZCUSTOPPH	DetailsEF

Standard Component View that will be replaced at runtime

Customer Component View that will be used at runtime instead of standard view

Figure 361: Controller Substitution

Check view Cluster: BSPWDVC_CMP_EXT in transaction SM34.

When a user logs on to the CRM User Interface, the system will detect right at the start if there are valid replacement entries in this table.

In case the user navigates to the view, the system will replace it by the customer view automatically.

Unit 20: Component Enhancement Concept

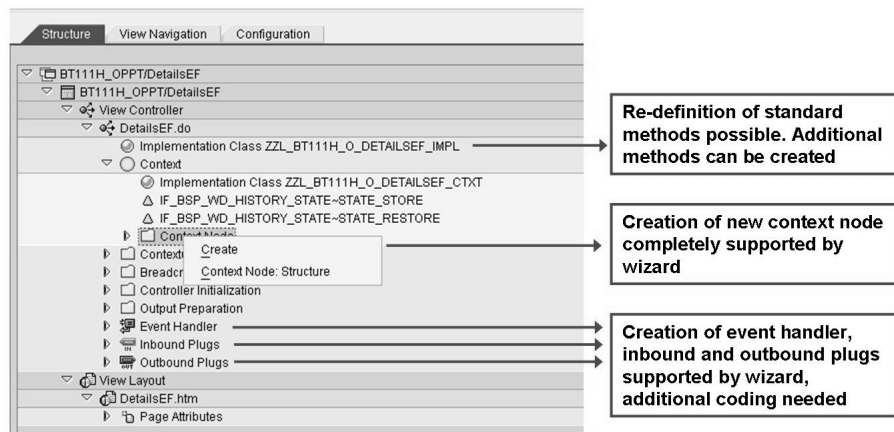


Figure 362: Object changes

Besides the creation of new context nodes you can create new Buttons and logic (e.g. navigate to own developed UI component views). Deep knowledge of the UI concepts and programming skills are mandatory,

Besides the creation of context nodes which is completely supported by the wizard, all other changes require development skills and deeper knowledge of the UI component concept.

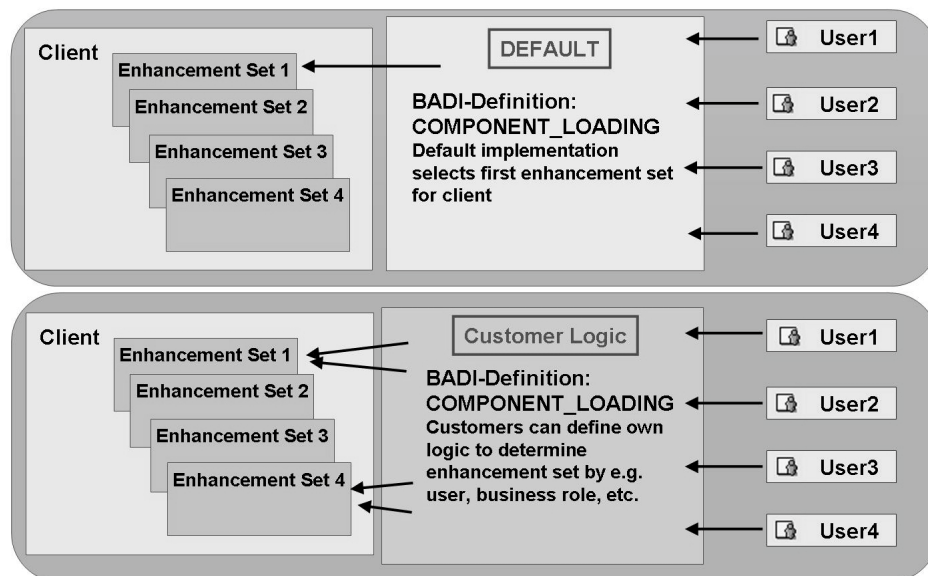


Figure 363: Enhancement Set Determination

As in the given example there can only be one enhancement set active in the whole client. This is the default implementation in the BAdI.

Customer might want create their own determination logic e.g. based on business role:

Example: the customer has done a component enhancement and added a button to access a customer own view that is only relevant for sales representatives. So the component enhancement should only be valid for users with the related business role.

If you want to determine the Enhancement Set based on a user, a profile or other criteria you can use a BAdI.

Package: CRM_BSP_WD

BADI-Definition: COMPONENT_LOADING

The DEFAULT implementation uses the customizing entries from BSPWD_EHSET_ASGN to determine the enhancement based on a client. Other determination rules can be implemented by you using this BADI.

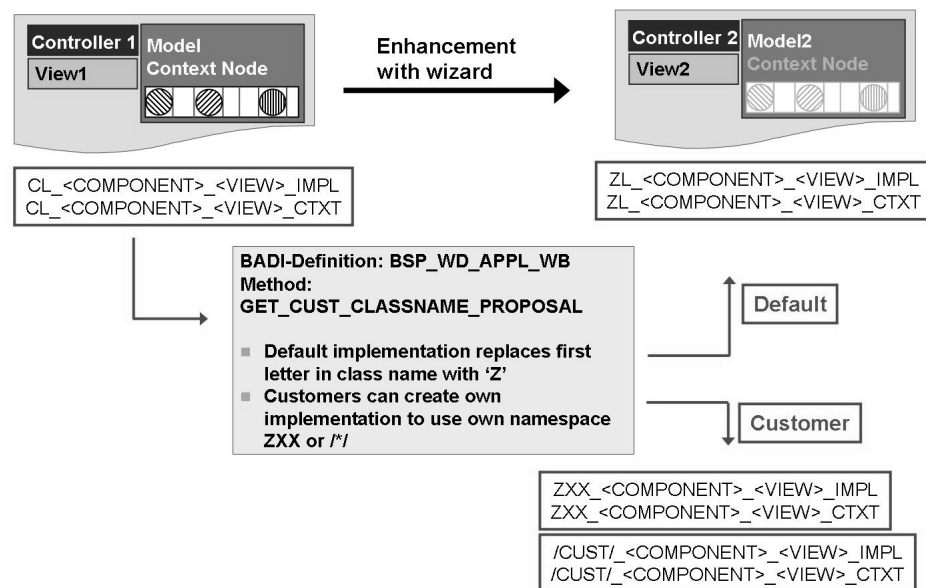


Figure 364: Customer Namespace for Enhancements

As you have seen the system proposes a class name for the generated classes. Customers that have defined other namespaces can implement this Badi and the namespace will be used for the class name proposal.

Component Enhancements

As default the prefix Z is used for customer objects.

If the customer wants to use an other namespace, a BADI can be used.

Package: CRM_BSP_WD_TOOLS

BADI-Definition: BSP_WD_APPL_WB

Method:

GET_CUST_CLASSNAME_PROPOSAL

This method provides a proposed name for customer-defined classes within the enhancement.

The default implementation of this method replaces the first letter in the name with a Z.

You can create your own implementation for this method to place all new class names in your own namespace /*/, if necessary

Customer own component development

If you want to generate own objects like views and controllers in your customer namespace, a second BADI is available.

Package: CRM_BSP_WD_GEN_TOOLS

BADI-Definition: CLASS_NAME_BUILDER

Interface: IF_BSP_WD_CLASS_NAME_BUILDER

With this BADI no default implementation is used.

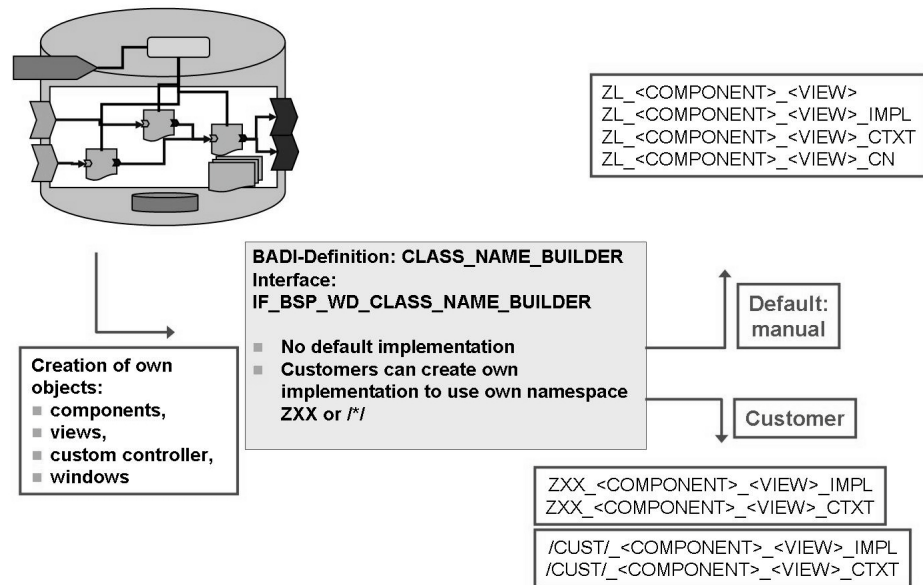


Figure 365: Customer Namespace for own developments

Customer own component development

If you want to generate own objects like views and controllers in your customer namespace, a second BADI is available.

Package: CRM_BSP_WD_GEN_TOOLS

BADI-Definition: CLASS_NAME_BUILDER

Interface:

IF_BSP_WD_CLASS_NAME_BUILDER

With this BADI no default implementation is used.

The interface contains methods to

Return a Name for Context Classes

Return a Name for Application Classes

Return a Name for Controller Base Classes

Return a Name for Controller Implementation Classes

Return a Name for Context Node Classes

Demonstration: Component Enhancement (1): Customizing

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Goal of the system demo is to create a new context node in the view DetailsEF of the component BT111H_OPPT to display the customer fields created in the BOL Object BTCUSTOMERH.
2. Create Enhancement Set (Customizing)
3. Goto transaction SM34 (View Cluster: BSPWDVC_CMP_EXT) Choose Name ZCUSTOPP and enter your description
4. Go to transaction SM30, enter Table/View name BSPWDV_EHSET_ASG and assign your enhancement set to the client you are working with.
5. There should only be your enhancement set assigned to the client. Delete all other assignments.

Demonstration: Component Enhancement (2): Component Enhancement

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Go to the component workbench and enter component BT111H_OPPT and the name of your enhancement set.

2. Press Display.
 3. Press Button 'Enhance Component'
 4. Enter a name for a BSP Application e.g. ZCUSTOPPH
 5. System will generate the BSP and the customizing entries.
-
-

Demonstration: Component Enhancement (3): Result

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

1. Go to the component workbench and enter component BT111H_OPPT and the name of your enhancement set.
 2. Press Display.
 3. Now you will see the component enhancement. The views are greyed out as they have not been copied. The runtime repository was copied that contains the information of the component inventory of the original component. So what you see here is just the reference to the original.
-
-

Demonstration: Component Enhancement (4): View Enhancement

Purpose

System Data

System:

Client:

User ID:

Password:

Set up instructions:

Unit 20: Component Enhancement Concept

1. Go to the component workbench and enter component BT111H_OPPT and the name of your enhancement set.
 2. Press Display.
 3. Select the View DetailsEF, choose context menu, press 'Enhance'. In addition to the view, a new _IMPL class and a new _CTXT class will be generated by the system.
 4. The system will propose a class name. In case the classname already exist, just insert your initials after the Z in the classname.
 5. Create new Context node for Customer enhancement (Before you start, open the transaction GENIL_MODEL_BROWSER in a separate session (component set BT) and show how to navigate from root object BOrder via BTAdminhH to BTCustomerH).
 6. Doubleclick on view name Details, open context and context nodes (right side of screen).
 7. Position cursor on 'Context Node' choose context menu 'Create'.
 8. In the wizard, do the following entries
 - Define Context Node: Choose Node Name BTCUSTOMERH.
 - Context Node Type : Model Node, Choose BOL Entity BTCustomerH
 - Skip 'Add Model Attributes'
 - Skip 'Add Value Attributes'
 - Skip 'Create Links to Custom Controller'
 - Define Dependency: Choose Higher Level Context Node 'BTADMINH', choose Relationship 'BTHeaderCustExt', mark checkbox 'Always create instance'
 9. Create a new UI configuration (use your already existing configuration key) for the view DetailsEF.htm. Make the additional fields visible in the Layout.
-

Unit 21

721

Case Study

Case Study preparation (as described in the preparation section at the beginning of this course document)

Attention: In week two (for Case Study), it is necessary to create a different organizational unit **Battery World**, mark it as a sales organization and map it also to ERP sales organization 2200.

In order to avoid data exchange problems (Material Master), please remove the sales organization mapping of IDES Training Company at the beginning of week to or immediately before the Case Study starts.

Choose transaction code /nppoma_crm

In the locator use Search term **IDES TR*** for Organizational unit. Double click the entry *IDES CRM Training Company* and go to tab strip *Function* and choose the radio button **Sales**.

Remove value 2200 in the field R/3 sales org.

Save the data.

Use transaction **PRC_CONDTYPE_CRM** to rename condition type **0K07** to **CustDiscount CRM**.

Unit Overview

Unit Objectives

After completing this unit, you will be able to:

- work on the Case Study

Unit Contents

Lesson: Case Study	842
Exercise 46: Case Study	845

Lesson: Case Study

722

Lesson Duration: 10 Minutes

Lesson Overview

Introduction of Case Study

Lesson Objectives

After completing this lesson, you will be able to:

- work on the Case Study

Introduce the Case Study exercise. Point to the different “sections” of the case study consisting of

- Requirements (short version)
- Requirements (long version)
- Test data
- Final test of prototype

Caution: Do not forget to do the system preparation as stated at the beginning of the course document

Attention: In week two (for Case Study), it is necessary to create a different organizational unit **Battery World**, mark it as a sales organization and map it also to ERP sales organization 2200.

In order to avoid data exchange problems (Material Master), please remove the sales organization mapping of IDES Training Company at the beginning of week to or immediately before the Case Study starts.

Choose transaction code /nppoma_crm

In the locator use Search term **IDES TR*** for Organizational unit. Double click the entry *IDES CRM Training Company* and go to tab strip *Function* and choose the radio button **Sales**.

Remove value 2200 in the field R/3 sales org.

Save the data.

Use transaction **PRC_CONDTYPE_CRM** to rename condition type **0K07** to **CustDiscount CRM**.

Business Example

You would like to set up a prototype according to customers requirements.

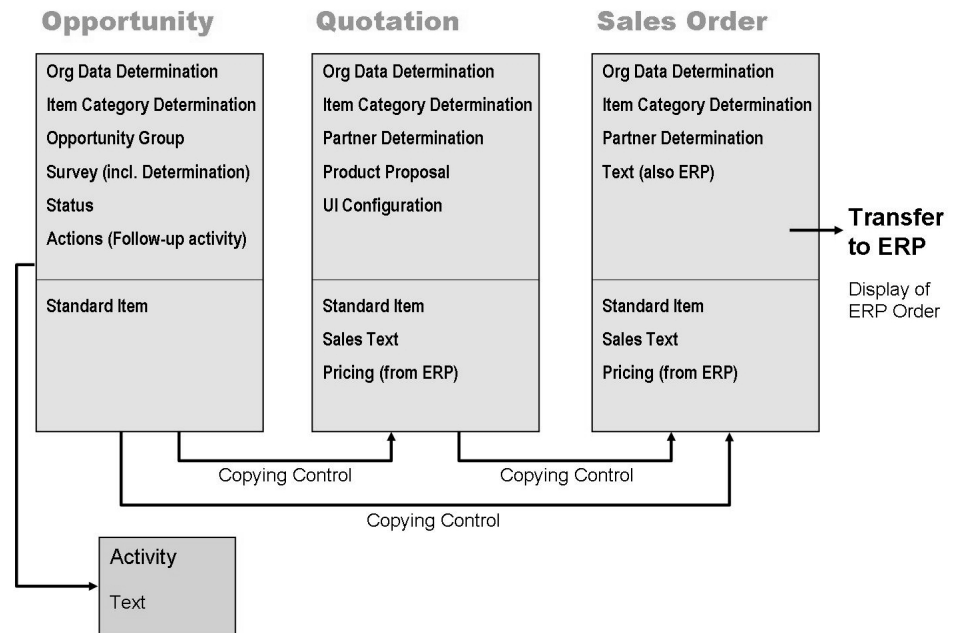


Figure 366: Schematic Prototype Requirements

This figure is intended to give a graphical overview of the requirements.

Go to the exercises of this lesson to find detailed information about the requirements.