

# ABAP Part III

## Lesson 04: Enhancement and Modification

# Lesson Objectives



After completing this lesson, participants will be able to understand-

- Changing the SAP Standard System
- Personalization
- Enhancements Using Customer Exits
- SAP Modifications
- Enhancement Framework





SAP System provides a comprehensive infrastructure for business computing.

To streamline the business processes some modifications may be done to the standards

For a specific environment, the functions provided can be enhanced, modified or reduced.

When making changes to the SAP standard, first determine which type of modification suits best.

# Introduction



R/3 Business  
Applications  
(SAP-Standard)

Exits  
Add-Ins

Customer  
Programs

Customizing

Personalization

Modification

Enhancement  
Business Add-Ins

Customer  
Development

Accelerated SAP

ABAP Workbench



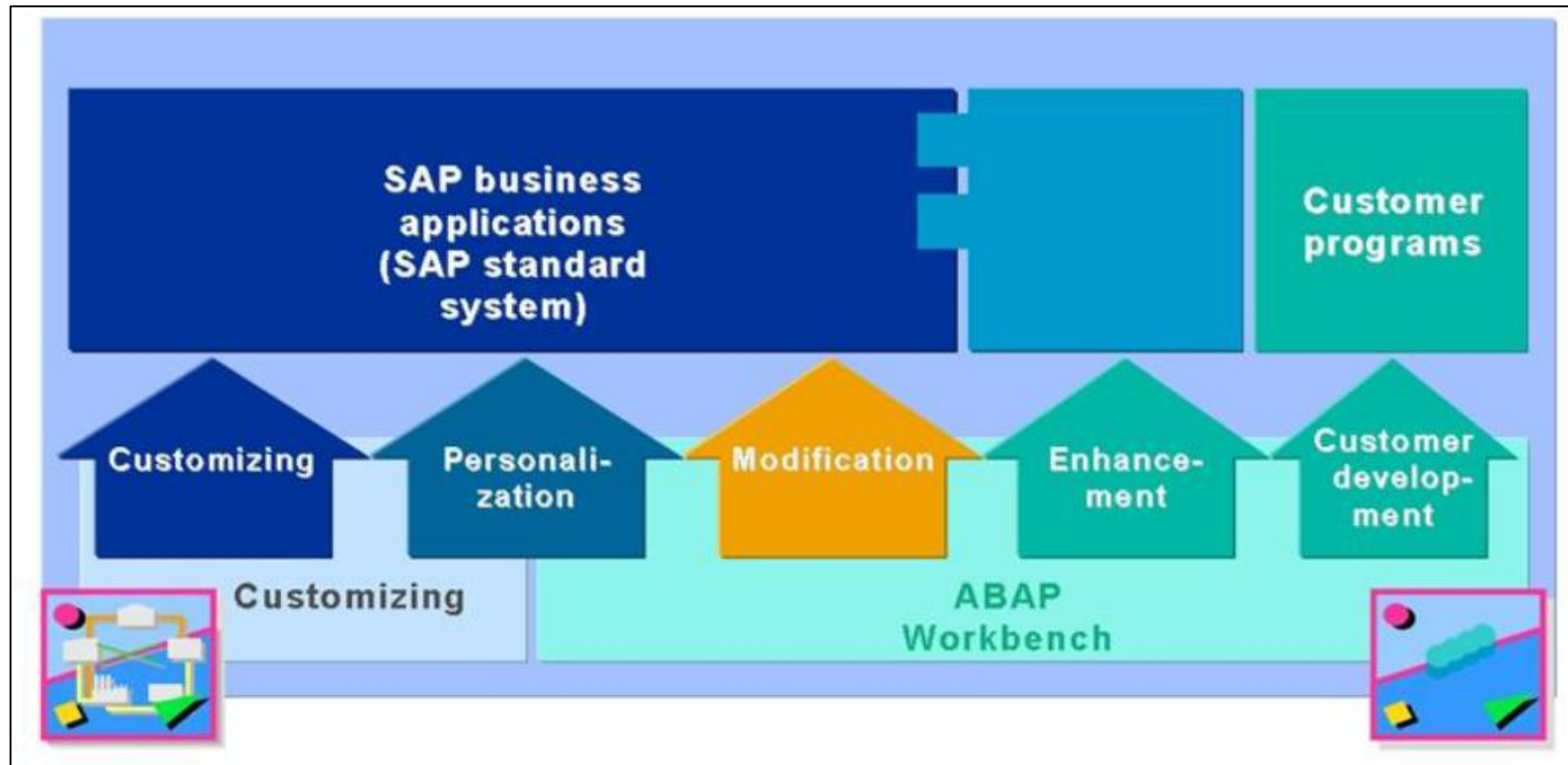
- There are several ways for modifying a SAP standard.
- R/3 system can be adjusted to meet the customer needs in different ways
  - Customizing
  - Personalization
  - Modifications
  - Enhancements
  - Customer Development

# Changing the SAP Standard System



Customizing and most personalization are achieved using the tools found in the Business Engineer.

Customer developments, enhancements, and modifications are all made using the tools available in the ABAP Workbench





You can adjust the SAP R/3 Enterprise to meet your needs in the following ways:

- Customizing: Set up specific business processes and functions for your system according to an implementation guide. The need for these changes has Already been foreseen by SAP and an implementation procedure has been developed.
- Personalization: Make changes to the global display attributes of particular fields, which means to set the default values or hide fields, as well as create user-specific menu sequences.
- Modifications: Signifies the changes to the SAP repository objects made at the customer site. If SAP delivers a changed version of the object, the Customer's system must be adjusted to reflect these changes. Prior to Release 4.0B, these adjustments had to be made manually using upgrade utilities. From Release 4.5A, this procedure has been automated with the Modification Assistant.

# Changing the SAP Standard System



- Enhancements: Create the repository objects for individual customers, which indicate the objects that already exist in the SAP repository.
- Customer Developments: Create repository objects unique to individual customers in a specific namespace reserved for new customer objects.

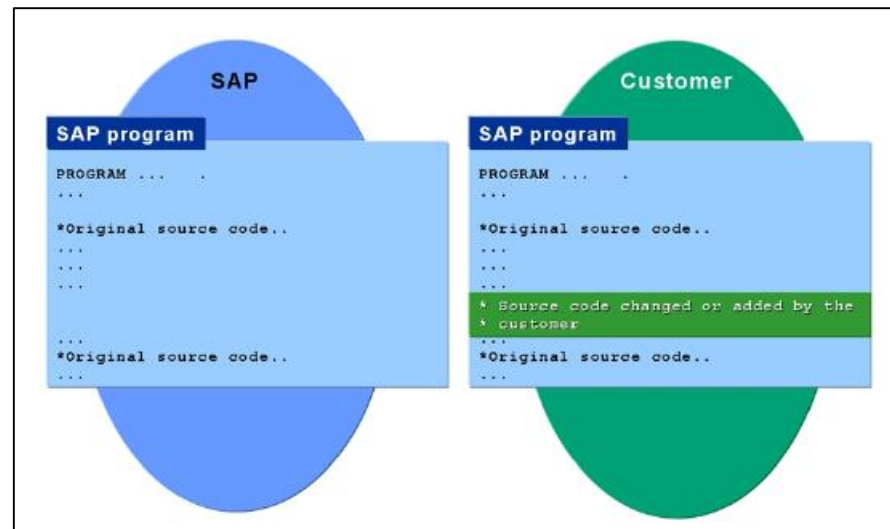


# Changing the SAP Standard System



## Modification in Change Levels

- 1. Any change that you make in your system to an object that has been delivered by SAP is known as a modification.
- 2. Modifications can lead to complications at upgrade.
- 3. When SAP delivers a new version of the object, you must decide whether the new object should be used or you want to continue using your old object.



# What is Customizing?



Customizing is the setting of system parameters via SAP's own interface.

Possible changes to the standards have been thought out and organized by SAP.

Customizing is an obligatory part of the R/3 implementation process.

# Customizing (Contd.).



If a company has decided to implement the SAP System, they must adopt the software to meet their individual business requirements

This process of customizing the system can be controlled and accelerated using the Accelerated SAP method.

The term Customizing refers to the process of system configuration during which the members of the project teams make the required system settings.

In the SAP System, Customizing activities are performed through the Implementation Guide (IMG). SPRO T-Code

# Customizing (Contd.).



- Customizing supports the project teams in the following situations:
  - Implementing the SAP System
  - Enhancing the SAP System
  - in release and system upgrades

# Functions of Customizing



- Customizing provides the following functions:
  - Tools for making and documenting system settings
  - Recommendations for system settings
  - Customizing provides a means for controlling the management, editing and analyzing the processes of implementation and upgrade projects
  - Support for transferring the system settings from the test system into the production system
  - Support for transferring the system settings by means of Business Configuration Sets in a group rollout
  - Tools for system upgrades and release upgrades and Pre-configured industry systems

# Locating Application that have Exits



- To take advantage of exits if SAP has added them to one of its standard applications, we need to know how to locate the exits available in the SAP System.
- SAP organizes its exits in packages called SAP enhancements.
- Each SAP enhancement can contain many individual exits.

# Locating Exits



- Choose Tools → ABAP Workbench → utilities --> Enhancements --> Project Management from the ABAP Workbench menu.
- The CMOD Screen is displayed.
- Then choose utilities --> SAP enhancements to call a selection screen that allows to look for the exits available in the standard applications.
- To list all the enhancements in the entire system, choose the Execute function without specifying any selection criteria.

# Demo: Locating an Exit





# Enhancements using Customer Exits



- There are two main reasons why exits should be used rather than modifying SAP software.
- Add-ons attached to exits have the advantage that:
  - They do not affect standard SAP source code
    - When a new functionality is added to SAP System using SAP's exits, the source code of standard SAP programs is not altered any way.
    - The code and screens created are encapsulated as separate objects.
    - These customer objects are linked to standard applications, but exist separately from SAP's standard software package.
  - They do not affect software updates
    - When adding new functionality to SAP System using SAP's exits, the objects (called customer objects) must adhere to strict naming conventions.
    - When it comes time to upgrade a to a new software release, customer objects' names ensure that they will not be affected by any changes or new additions to the standard software package.



- There are several different types of customer exits.
- Each of these exits acts as hooks where add-ons can be attached or "hanged" .
- Menu Exits
  - Menu exits add items to the pulldown menus in standard SAP applications.
  - These menu items can be used to call up own screens or to trigger entire add-on applications.
  - SAP creates menu exits by defining special menu items in the Menu Painter.
  - These special entries have function codes that begin with "+" (a plus sign).
  - Specify the menu item's text when activating the item in an add-on project.



## ■ Screen Exits

- Screen exits add fields to screens in R/3 applications.
- SAP creates screen exits by placing special subscreen areas on a standard R/3 screen and calling a customer subscreen from the standard screen's flow logic.
- The subscreen is called during flow control of the main screen with the CALL CUSTOMERSUBSCREEN statement.

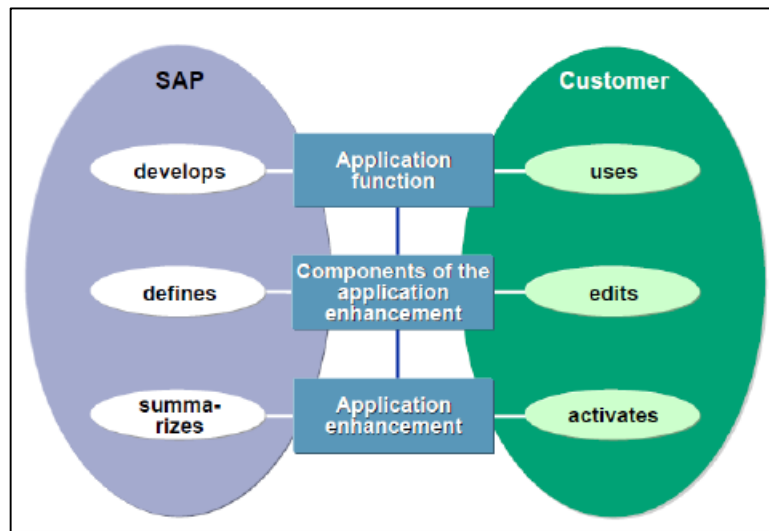
## ■ Function Module Exits

- Function module exits add functions to R/3 applications.
- Function module exits play a role in both menu and screen exits.
- SAP application developers create function module exits by writing calls to customer functions into the source code of standard R/3 programs.
- These calls have the following syntax: CALL CUSTOMER-FUNCTION '001'.

# Enhancements using Customer Exits



- Application enhancements allow customers to enhance their application functions. Customer exits are preplanned by SAP and generally consist of several components
- Application enhancements are inactive when delivered and can be completed and activated by customers as they are needed.
- As a customer, you do not need in-depth knowledge of how to implement SAP R/3 Enterprise applications.
- You do not need to adjust enhancements at upgrade because of new functions that SAP has developed.

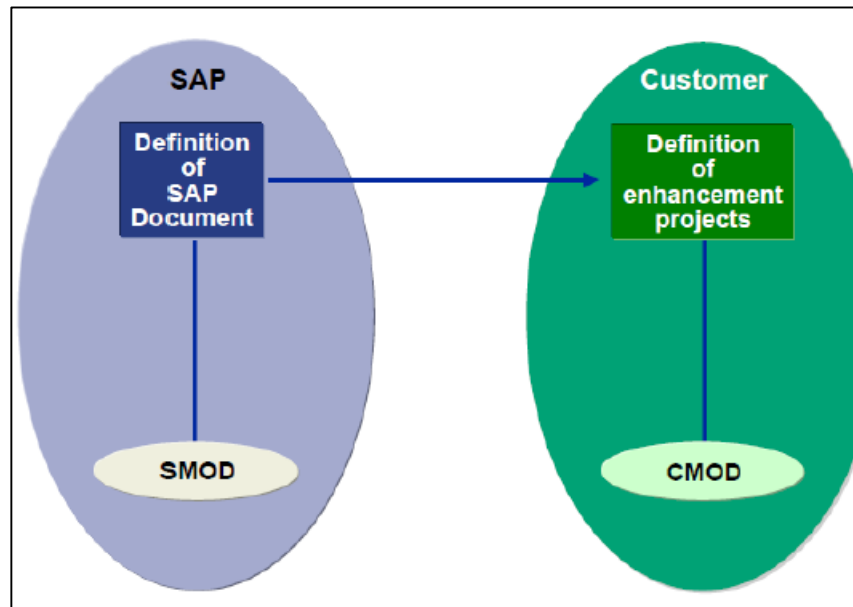


# Enhancements using Customer Exits



## ■ Customer Enhancement Project

- The SAP application programmer creates SAP enhancements from function module exits, menu exits and screen exits. A management function is provided for this purpose (transaction code SMOD).
- Customers are given a catalog containing an overview of existing SAP enhancements. They can then combine the SAP enhancements they want into an enhancement project using transaction CMOD.



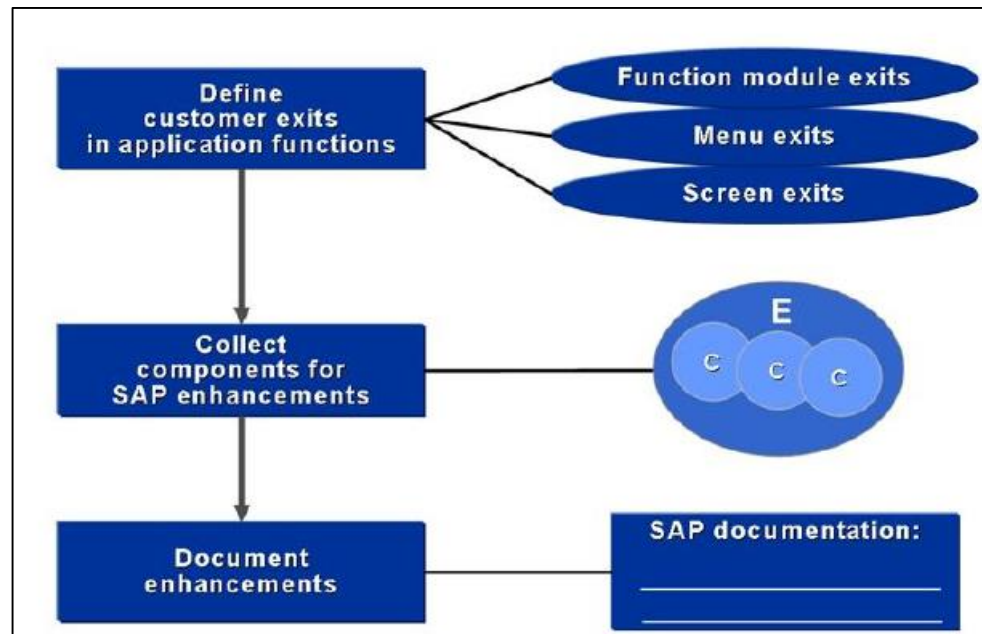


- Enhancements and Enhancement Projects
  - SAP enhancements are made up of component parts. These components include function module exits, menu exits, and screen exits. A specific component may be used only once in a single SAP enhancement (this guarantees the uniqueness of SAP enhancements).
  - Customer enhancement projects consist of SAP enhancements. Each individual SAP enhancement may be used only once in a single customer enhancement program (this guarantees the uniqueness of a customer project).

# Enhancements using Customer Exits



- The SAP application programmer plans possible application enhancements in an application and defines the necessary components. These components are combined in SAP enhancements
- The programmers document their enhancements as best they can, so that customers can implement the enhancements without having to analyze program source code or screen source code.

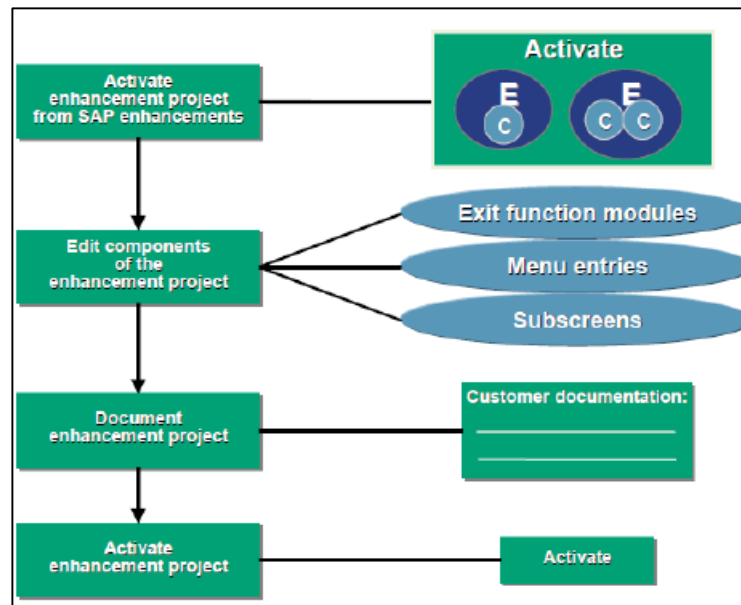


# Enhancements using Customer Exits



## ■ Procedure at the Customer Site

- 1.First, create an enhancement project and then choose the SAP enhancements that you want to use.
- 2.Next, edit your individual components using the project management function and document the entire enhancement project.
- 3.Finally, activate the enhancement project. This activates all of the project's component parts.





# Demo: Create a Screen Exit

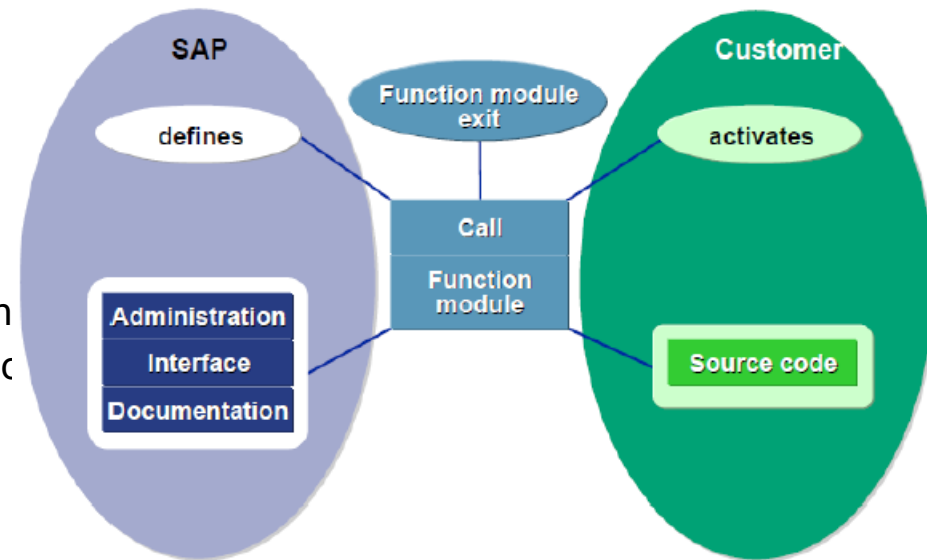


# Enhancements using Customer Exits



## ■ Function Module Exit

- Function module exits allow customers to implement additional logic in application functions.
- SAP application programmers define where function module exits are inserted and what kind of data they transfer.
- You write the source code for the function modules yourself. If need be, you can also create your own screens, text elements, and includes for the function group.
- The system processes your ABAP code when the enhancement project (of which your function module is a component) is activated. Function module exits have no effect prior to enhancement project activation

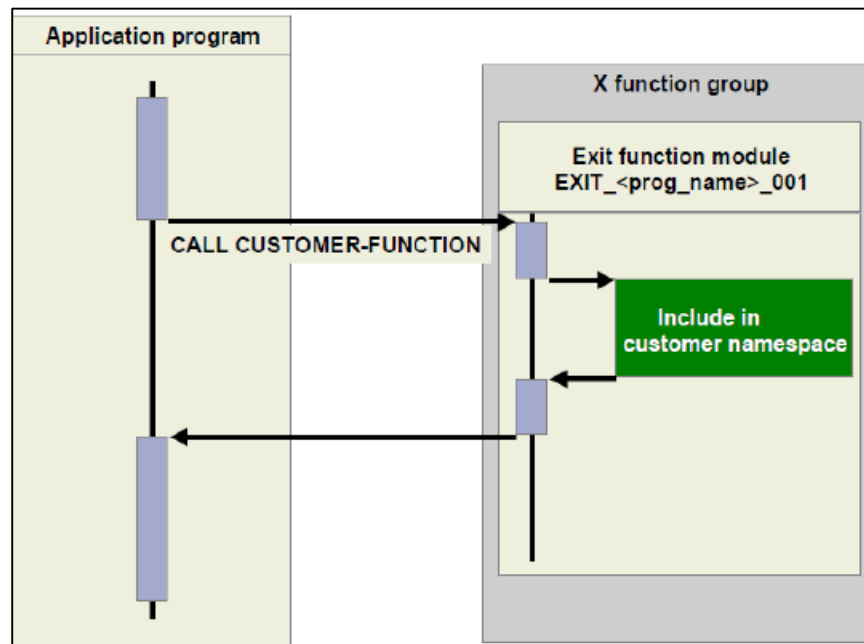


# Enhancements using Customer Exits



## ■ Program Exit- Architecture

- 1. The exit function module is called at a position determined by the SAP application developer.
- 2. Within the function module, the user can add functions in the customer namespace using an include

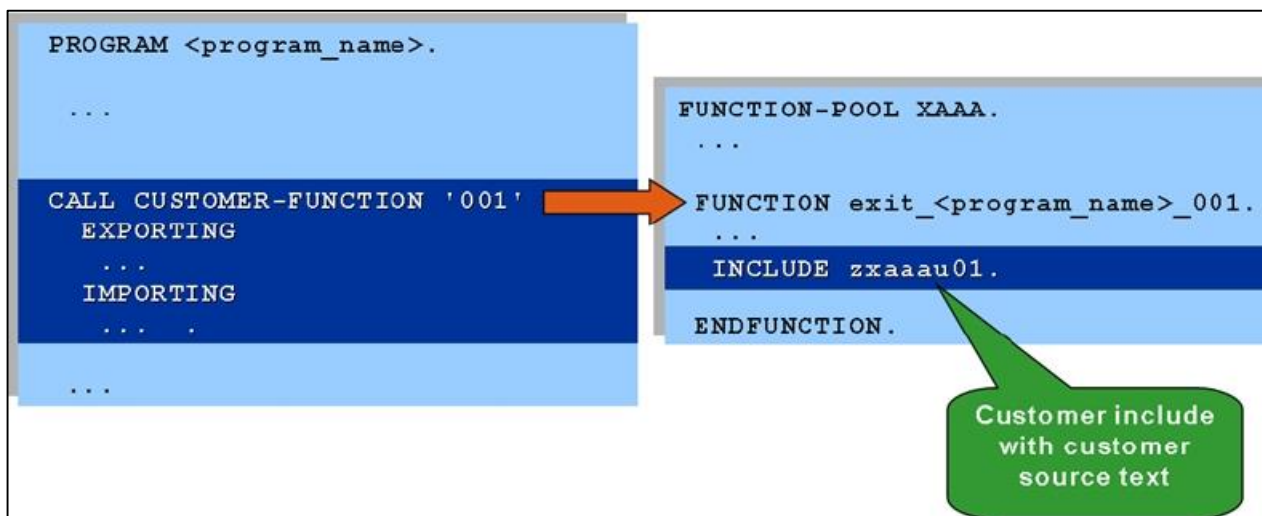


# Enhancements using Customer Exits



## ■ Program Exit- Syntax

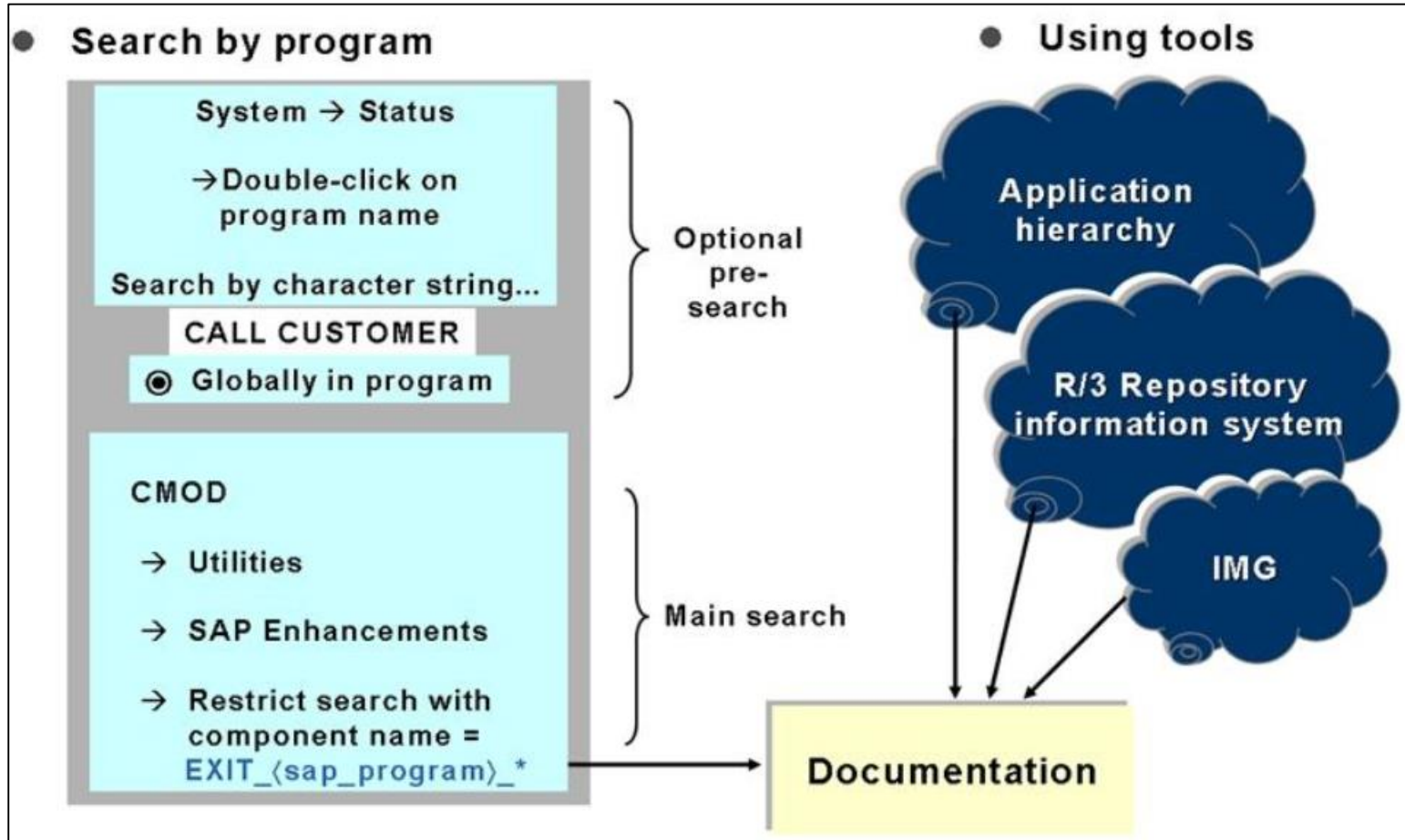
- 1.SAP application programmers use the ABAP statement CALL CUSTOMER-FUNCTION 'nnn' to call function modules, where nnn is a three-digit number.
- 2.These function modules belong to function groups whose names begin with X (X function groups).
- 3.The CALL CUSTOMER-FUNCTION statement is only executed if the enhancement project has been activated. Multiple calls of the same function module are all activated at the same time.



# Enhancements using Customer Exits



## ■ Finding Program Exits

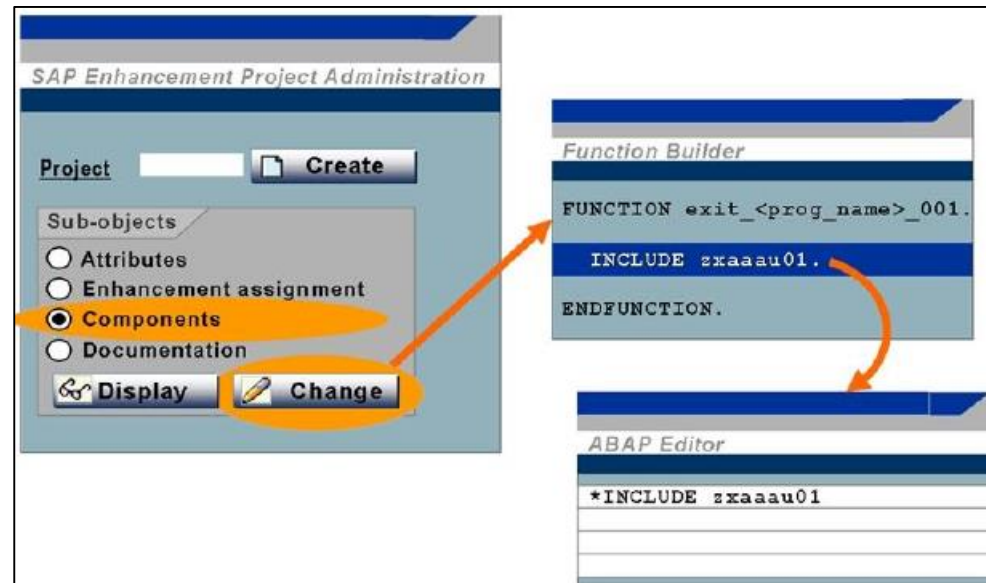


# Enhancements using Customer Exits



## ■ Editing Program Exits

- 1. Use the project management (transaction: CMOD) function to edit function modules for function module exits.
- 2. DO NOT change the function module itself. It is especially important that you do not alter the interface in any way. The function module, however, contains an INCLUDE statement for an include program that you have to create in the customer namespace.



# Demo: Create a Function Exit

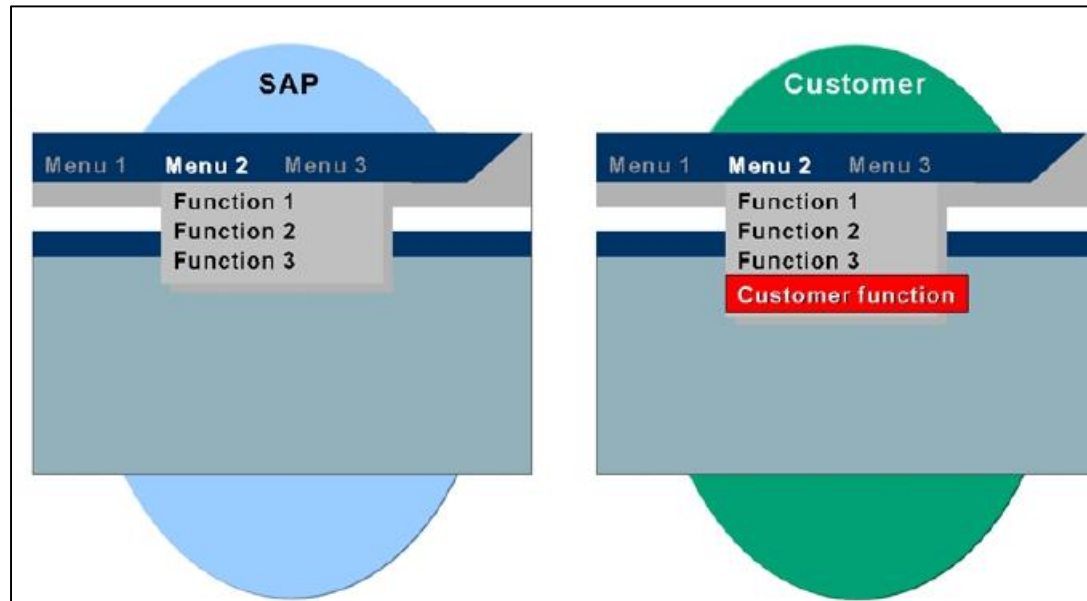


# Enhancements using Customer Exits



## ■ Overview of Menu Exits

- 1. Menu exits
- 2. SAP application programmers reserve certain menu entries in your GUI interface for this. This allows you to define a text for the reserved menu entry and add your own logic, often in the form of a related function module exit.



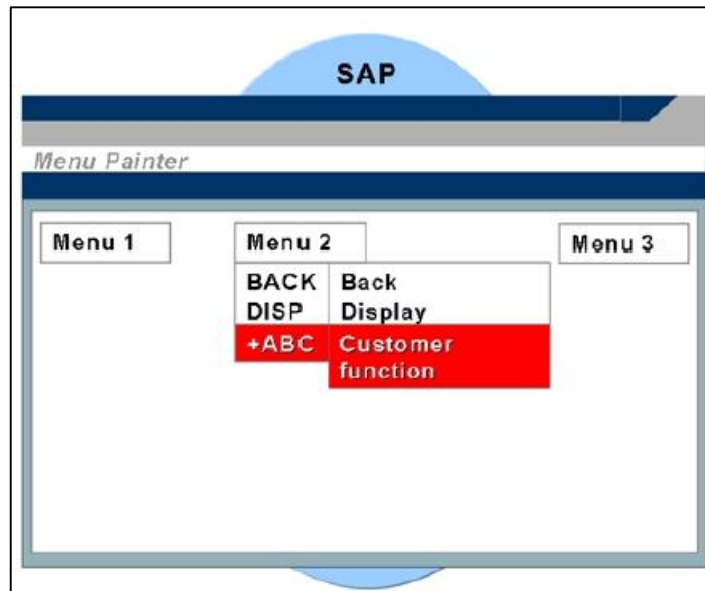


# Enhancements using Customer Exits



## ■ Menu Exit Requirements

- 1. In order for you to be able to implement menu exits, SAP application programmers must equip the GUI interface with function codes that begin with a plus sign ('+').
- 2. These function codes are inactive at first and do not appear in the GUI until you have activated them. They do not appear on the screen.

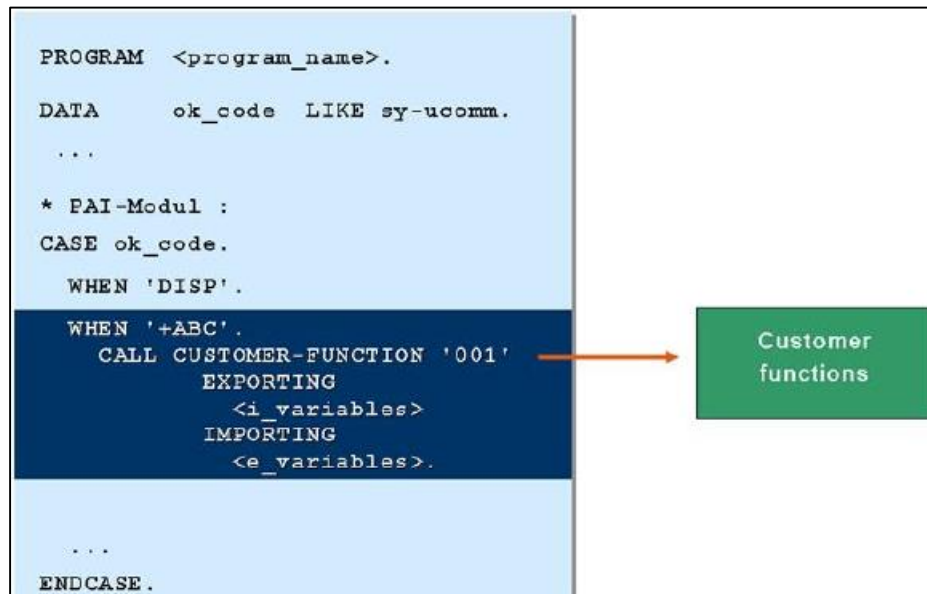


# Enhancements using Customer Exits



## ■ Menu Exits and Program Exits

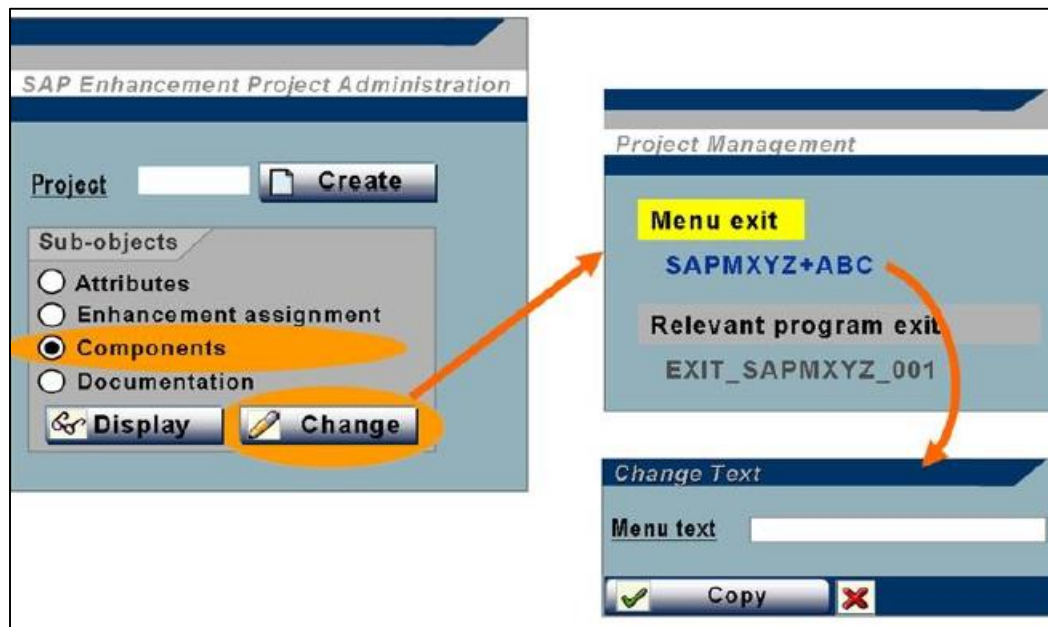
- 1.SAP application programmers determine where a program reads additional function codes and how it reacts--- either with a function module exit or with a predefined function.
- 2.Menu exits and function module exits are both part of the same SAP enhancement.
- 3.No pushbuttons may be assigned to additional function codes.



# Enhancements using Customer Exits



- Naming and Editing Menu Exits
  - Menu exits are edited with the project management transaction (CMOD).



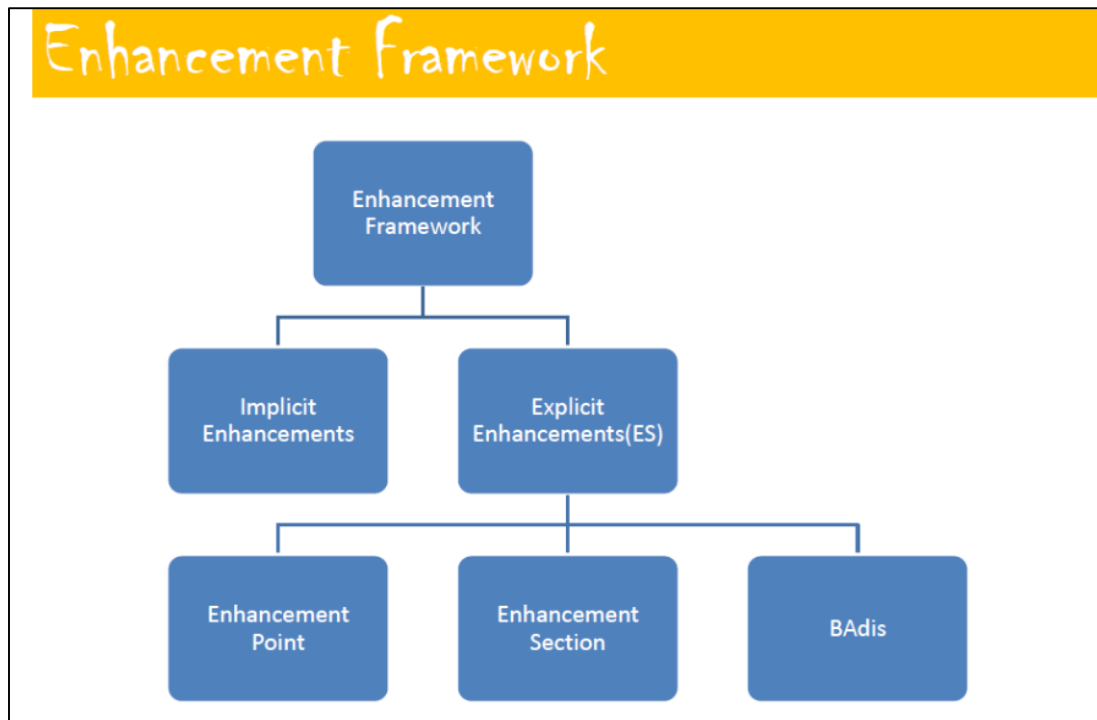
# Demo: Create a Menu Exit



# Enhancement Framework in ABAP



Enhancement Framework in SAP ABAP helps the customers, consultants and third parties by giving an option of enhance the standard code base with the custom code that they want to add





In an ABAP report, there are two places at which the enhancements are possible by default.

One is the start of the report and at the end of the report.

So, by default in all the reports, customers can do enhancements at the start and end by creating enhancement implementations.



In this case, SAP has to explicitly provide the places in the report where exactly it can be enhanced.

So, again there are three options to do the same.

## **1. Enhancement Point:**

Enhancement points has to be created in the report where exactly customer can enhance such that the desired results at that point can be changed

by the enhancement implementations.

## **2. Enhancement Section:**

Enhancement sections has to be created in the report by selecting the section of code lines which can be enhanced by the customer implementation.



## **3. BAdi:**

BAdis are the ways of enhancements which are mainly available for ABAP Objects where a BAdi definition will be created with a interface with fixed signature that can be implemented by the customer by BAdi implementation.





In this lesson, you have learnt:

- Changing the SAP Standard System
- Personalization
- Enhancements to ABAP Dictionary Elements
- Enhancements Using Customer Exits
- Business Transaction Events
- Business Add-Ins
- SAP Modifications
- Enhancement Framework



# Review Question



Question 1. \_\_\_\_\_ allow you to attach your own functions to menu options in SAP menus.

Question 2: \_\_\_\_\_ exits allow customers to implement additional logic in application functions

