

## Enhancements & Modifications

Enhancements - We will enhance the SAP functionality in Customer namespace (Z or Y).

Modifications - We will enhance the SAP functionality in SAP namespace (Name should not start with Z or Y).

### Types of Enhancements & Modifications :

- 1) Implicit & Explicit Enhancements - Enhancement
- 2) Customer Exit (Function Module Exit, Menu Exit, Screen Exit) - Enhancement
- 3) BADI (Business Addin's) - Enhancements
- 4) User Exit - Modification

### 1) Implicit & Explicit Enhancements

**Implicit Enhancement** - Implicit point is available at the starting or at the last of the program, sub routines, Function modules etc.

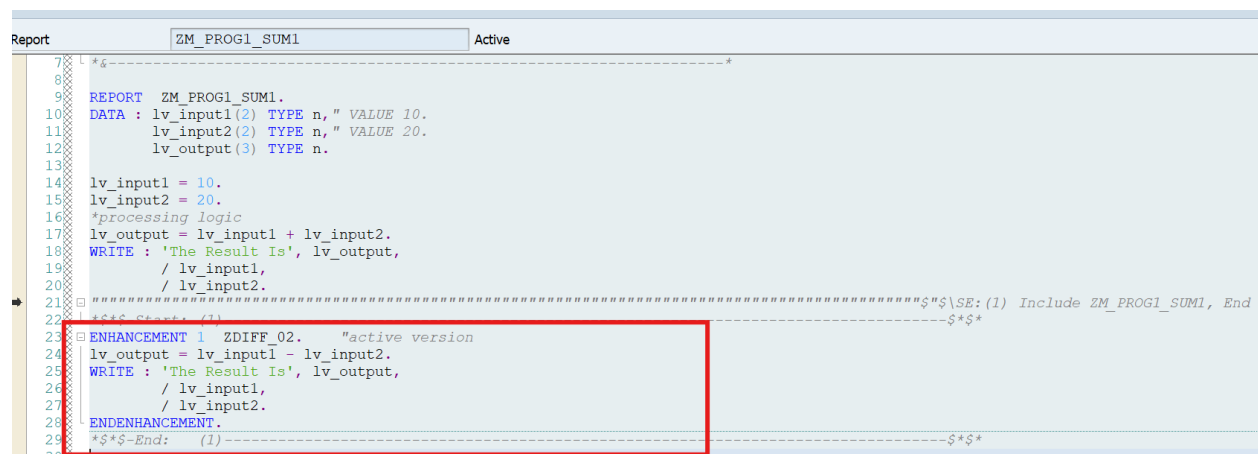
We will create the Implicit Implementation using those points.

Path: Click on edit-> Enhancement operations-> Show Implicit Enhancement options

Then click on Enhancements icon, allows you to create implicit enhancement

Then write the logic for requirement

Ex:



```

Report      ZM_PROG1_SUM1      Active
7 | *-----*
8 |
9 | REPORT ZM_PROG1_SUM1.
10| DATA : lv_input1(2) TYPE n, " VALUE 10.
11|         lv_input2(2) TYPE n, " VALUE 20.
12|         lv_output(3) TYPE n.
13|
14| lv_input1 = 10.
15| lv_input2 = 20.
16| *processing logic
17| lv_output = lv_input1 + lv_input2.
18| WRITE : 'The Result Is', lv_output,
19|         / lv_input1,
20|         / lv_input2.
21|
22| *****$*SE:(1) Include ZM_PROG1_SUM1, End
23| *****$*
24| ENHANCEMENT 1 ZDIFF_02. "active version
25| lv_output = lv_input1 - lv_input2.
26| WRITE : 'The Result Is', lv_output,
27|         / lv_input1,
28|         / lv_input2.
29| ENDENHANCEMENT.
30| *****$*End: (1)-----$*

```

**Explicit Enhancement** - Explicit point & Section are available at any point. We will create the Explicit implementations using those points and sections.

Enhancement-point -- You can only add additional codes; you cannot change or replace the existing code.

1. It will not give default implementation.
2. Along with standard code your implementation also executed
3. You can only add additional codes, you cannot replace the existing code

Enhancement-section -- You can change or replace the existing SAP code.

1. It will give default implementation
2. Only your implementation will execute
3. You can change or replace the existing SAP code

```

*processing logic
ENHANCEMENT-POINT ZMUL_02 SPOTS ZMUL_02 .
lv_output = lv_input1 * lv_input2.
WRITE : 'The Result Is', lv_output,
        / lv_input1,
        / lv_input2.

ENHANCEMENT-SECTION ZSUM_02 SPOTS ZSUM_02 .
lv_output = lv_input1 + lv_input2.
WRITE : 'The Result Is', lv_output,
        / lv_input1,
        / lv_input2.

END-ENHANCEMENT-SECTION.

```

Enhancement Spot: Enhancement spots are containers for explicit enhancement options.

**Enhancement Spot ZMUL\_02 Display**

Enhancement Spot:  Active

Attributes | Enhancem. Implementations | Technical Details | **Enhancement Options**

Dev. Obj. that Can Be Enhanced:

List of Enhancement Options

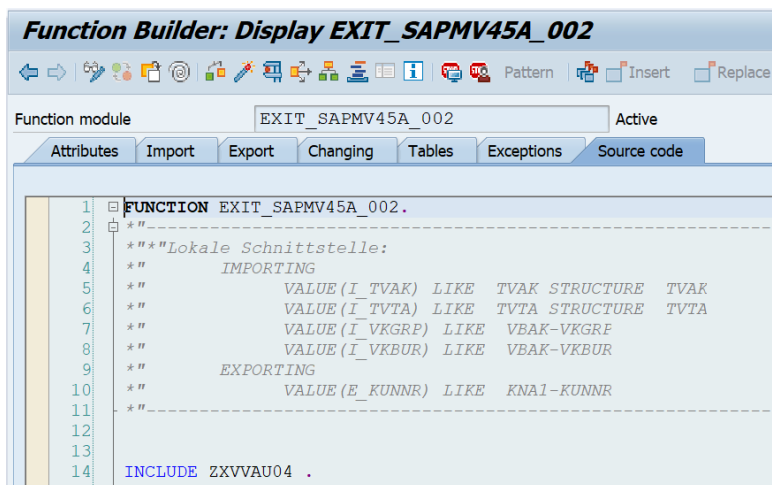
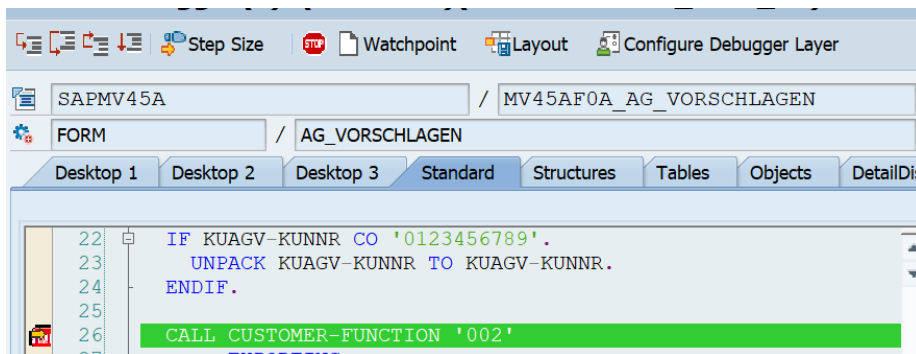
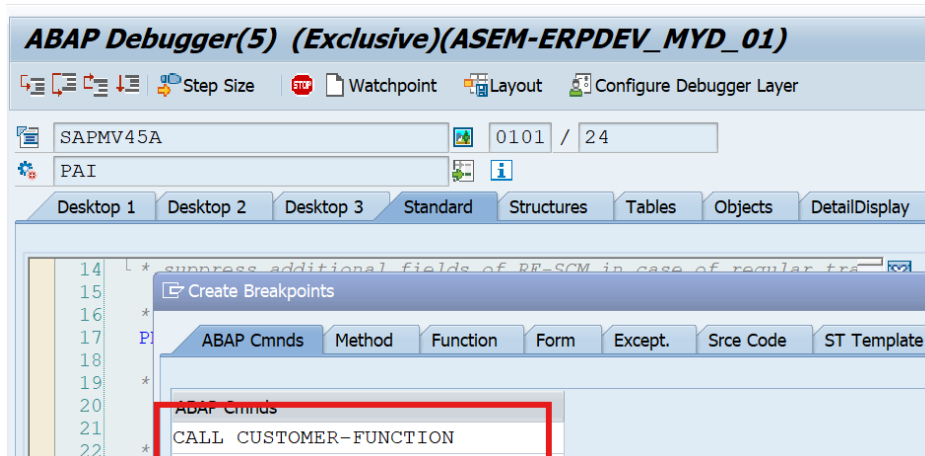
Enhancement Implementation Point/Section	Enhancement Implementation Type	Include-Bound	Type of Modification	Unit Name of Modification Unit	Program Name	Meth
\PR:ZM_PROG1_SUM1\EX:ZMUL_02	Dynamic Enhancement Point		Before First Unit	N->ZM_PROG1_SUM1	ZM_PROG1_SUM1	

Program : LEINBFOM

2) **Customer Exit:** It is also called as Function Exit.

## Ways to Find a Customer Exit – >

1) Put the break-point on the statement CALL CUSTOMER-FUNCTION.



2) Put the package name in SMOD transaction code (Path: Utilities - Find - Package name).

### Repository Info System: Find Exits

Standard selections

Exit name

Short text

Package

va

Application Component

Settings

### Repository Info System: Exits Find (15 Hits)

Choose Save Complete List New Selections

Exit name	Short text
<input type="checkbox"/> SDTRM001	Reschedule schedule lines without a new ATP check
<input type="checkbox"/> V45A0001	Determine alternative materials for product selection
<input type="checkbox"/> V45A0002	Predefine sold-to party in sales document
<input type="checkbox"/> V45A0003	Collector for customer function module pool MV45A
<input type="checkbox"/> V45A0004	Copy packing proposal
<input type="checkbox"/> V45E0001	Update the purchase order from the sales order
<input type="checkbox"/> V45E0002	Data transfer in procurement elements (PRreq., assembly)
<input type="checkbox"/> V45L0001	SD component supplier processing (customer enhancements)
<input type="checkbox"/> V45P0001	SD customer function for cross-company code sales
<input type="checkbox"/> V45S0001	Update sales document from configuration
<input type="checkbox"/> V45S0003	MRP-relevance for incomplete configuration
<input type="checkbox"/> V45S0004	Effectivity type in sales order
<input type="checkbox"/> V45W0001	SD Service Management: Forward Contract Data to Item
<input type="checkbox"/> V46H0001	SD Customer functions for resource-related billing
<input type="checkbox"/> V60F0001	SD Billing plan (customer enhancement) diff. to billing plan

### Components in SAP Enhancement V45A0002

Function module exits

Function module

EXIT\_SAPMV45A\_002

Short Text

Preassignment of Sold-to Party in Sales Documents

Function codes

Program

Code

Short text

Screen areas

Calling screen	No.	Area	Called screen	No.	Short Text

INCLUDEs

## 3) Go to transaction code - SE84 (Path: Enhancements - Customer Exits)

**Repository Info System: Find Exits**

Standard selections

Exit name

Short text

Package

Application Component

Settings

Maximum No. of Hits

Objects

- Repository Information System
  - Development Coordination
  - Business Engineering
  - ABAP Dictionary
  - Program Library
  - Class Library
  - Web Dynpro
  - BSP Library
  - Enterprise Services
  - Enhancements
    - Business Add-ins
    - Customer Exits
      - Enhancements

**Repository Info System: Exits Find (15 Hits)**

Choose Save Complete List New Selection

Exit name	Short text
<input type="checkbox"/> SDTRM001	Reschedule schedule lines without a new ATP check
<input type="checkbox"/> V45A0001	Determine alternative materials for product selection
<input type="checkbox"/> V45A0002	Predefine sold-to party in sales document
<input type="checkbox"/> V45A0003	Collector for customer function modulpool MV45A
<input type="checkbox"/> V45A0004	Copy packing proposal
<input type="checkbox"/> V45E0001	Update the purchase order from the sales order
<input type="checkbox"/> V45E0002	Data transfer in procurement elements (PRreq., assembly)
<input type="checkbox"/> V45L0001	SD component supplier processing (customer enhancements)
<input type="checkbox"/> V45P0001	SD customer function for cross-company code sales
<input type="checkbox"/> V45S0001	Update sales document from configuration
<input type="checkbox"/> V45S0003	MRP-relevance for incomplete configuration
<input type="checkbox"/> V45S0004	Effectivity type in sales order
<input type="checkbox"/> V45W0001	SD Service Management: Forward Contract Data to Item
<input type="checkbox"/> V46H0001	SD Customer functions for resource-related billing
<input type="checkbox"/> V60F0001	SD Billing plan (customer enhancement) diff. to billing pl

Objects

- Repository Information System
  - Development Coordination
  - Business Engineering
  - ABAP Dictionary
  - Program Library
  - Class Library
  - Web Dynpro
  - BSP Library
  - Enterprise Services
  - Enhancements
    - Business Add-ins
    - Customer Exits
      - Enhancements

**Components in SAP Enhancement V45A0002**

Function module exits

Function module	Short Text
EXIT_SAPMV45A_002	Preassignment of Sold-to Party in Sales Documents

Function codes

Program	Code	Short text

Screen areas


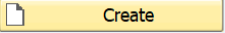
Calling screen	No.	Area	Called screen	No.	Short Text

INCLUDEs


### Steps to Implement a Customer Exit -

- 1) Go to transaction code - CMOD
- 2) Provide a project name and click create.

**Project Management of SAP Enhancement**

Project: ZSD\_OR1  

Subobjects

- ☒ Attributes
- ☐ Enhancement Assignment
- ☐ Components

- 3) Click on Enhancement assignment tab and provide the customer exit name.

**SAP Enhancements in Enhancement Project ZSD\_OR1**

Enhancement      Text

V45A0002      Predefine sold-to party in sales document

4) Click on Components tab - It will navigate you to function module.

**Change ZSD\_OR1**

Enhancement assignments    Enhancement

Project			ZSD_OR1 Sales orders
Enhancement	Impl	Exp	V45A0002 Predefine sold-to party in sales document
Function exit	✓		EXIT_SAPMV45A_002

5) Write the logic in the Z include of that function module.

**Function Builder: Display EXIT\_SAPMV45A\_002**

Function module      EXIT\_SAPMV45A\_002      Active

Attributes    Import    Export    Changing    Tables    Exceptions    Source code

```

1  FUNCTION EXIT_SAPMV45A_002.
2  *-----
3  ***"Lokale Schnittstelle:
4  *      IMPORTING
5  *          VALUE(I_TVAK) LIKE TVAK STRUCTURE TVAK
6  *          VALUE(I_TVTA) LIKE TVTA STRUCTURE TVTA
7  *          VALUE(I_VKGRP) LIKE VBAK-VKGRP
8  *          VALUE(I_VKBUR) LIKE VBAK-VKBUR
9  *      EXPORTING
10 *          VALUE(E_KUNNR) LIKE KNA1-KUNNR
11 *-----
12
13
14  INCLUDE ZXVVAU04 .
15

```

**ABAP Editor: Change Include ZXVVAU04**

Include      ZXVVAU04      Active

```

1  *-----
2  *      Include          ZXVVAU04
3  *-----
4
5  IF i_tvak-auart = 'TA'.
6      e_kunnr = '18000000'.
7  ENDIF.

```

**Create Standard Order: Overview**

Standard Order  Net value

Sold-To Party

Ship-To Party

PO Number  PO date

6) Activate the project.

### **Tables & Transaction code:**

- 1) SMOD -> To find customer Exit.
- 2) CMOD -> To Implement a customer Exit.
- 3) MODSAP -> To find the customer exit name by passing the function module.
- 4) MODACT -> To find the project for a customer exit name.

Relationship between a project and Customer Exit name -> 1:1

### **Menu Exit ->**

Menu exits add menu items to standard SAP applications.

These special entries have function codes that begin with "+" (a plus sign) - +CUS

CALL TRANSACTION

Link for Menu Exit -> <https://saptechblogspot.blogspot.com/2016/09/menu-exits.html>

### **Screen Exit->**

Screen exit add fields to the SAP screens

We create the sub screen then assign subscreen to SAP standard main screen

Syntax: CALL SUBSCREEN 'SUBSCREEN AREA'

Syntax for screen exit: CALL CUSTOMER-SUBSCREEN 'SUBSCREEN AREA' INCLUDING 'PROGRAM NAME' 'CUSTOMER SUBSCREEN NUMBER'



The screen type of the screen is Subscreen.

### Ways to find out a Screen Exit:

1. Check screen flow logic for the statement CALL CUSTOMER-SUBSCREEN
2. Put the package name of the program in SMOD and find the screen exits
3. GO to t code SE84 (Enhancements – Customer exits)

### How to implement Screen exits:

1. GO CMOD and create the project

**Attributes of Enhancement Project ZSCRE01**

Enhancement assignments Components

Project ZSCRE01

Short text **Project create subscreen CATS**

Administrative Data

Package \$TMP

2. Assign Screen exit

**SAP Enhancements in Enhancement Project ZSCRE01**

Enhancement Components

Enhancement Text

CATS0007 CATS: Subscreen on initial screen

**Change ZSCRE01**

Enhancement assignments Enhancement

Project			ZSCRE01	Project create subscreen CATS
Enhancement	Impl	Exp	CATS0007	CATS: Subscreen on initial screen
Screen exit	✓		SAPLCATS	1000 CUSTSCR2 SAPLXCAT 2000

3. Design screen and flow logic and activate

**Screen Painter: Change Screen for SAPLXCAT**

Screen number 2000 Active

Attributes Element list Flow logic

```

1 PROCESS BEFORE OUTPUT.
2 * MODULE STATUS_2000.
3 L *
4 PROCESS AFTER INPUT.
5 * MODULE USER_COMMAND_2000.

```

Screen Painter: Change Text Field

Screen Edit Goto Utilities(M) Environment Help

Name TEXT Text \_entered\_information\_is\_correc; Lg 38 H 1

Confirm entered information is correct

<b>Change ZSCRE01</b>									
Enhancement assignments   Enhancement									
Project				ZSCRE01	Project create subscreen CATS				
Enhancement	Impl		Exp	CATS0007	CATS: Subscreen on initial screen				
Screen exit				SAPLCATS	1000	CUSTSCR2	SAPLXCAT	2000	

#### 4. Check the T code

**Time Sheet: Initial Screen**

**Data Entry**

Data Entry Profile ☒

**Personnel Selection**

Personnel Number

☒ Confirm entered information is correct

Link for Screen Exit -> <http://freesapabap.blogspot.com/2014/11/customer-exit-screen-exit.html>

### **3)BADI**

- 1) BADI is an Enhancement.
- 2) The full form of BADI is Business ADD In's.
- 3) It is based upon OOPS concepts (Interfaces & Classes).
- 4) SE18 -> BADI Definition (Interface)
- 5) SE19-> BADI Implementation (Classes)

### **Types of BADI:**

- 1) Classic BADI
- 2) New BADI (Kernel BADI)

### **How to find a classic BADI ->**

- 1) We can use SAP class - CL\_EXITHANDLER. In this class we have the method name - GET\_INSTANCE.
- 2) Pass the package name in SE18 transaction code  
(Path: Click on F4 help of BADI name->New Selection->Pass the package name).
- 3) Pass the package name in SE84 transaction code (Enhancements-Business Addin's-Definition).

### **How to find a new BADI**

- 1) Put the break-point on Key word - CALL BADI or GET BADI.
- 2) Pass the package name in SE18 transaction code  
(Path: Click on F4 help of BADI name->New Selection->Pass the package name).
- 3) Pass the package name in SE84 transaction code (Enhancements-Business Addin's-Definition).

Multiple Use -> We can create multiple Implementations.

SAP Internal -> Only for SAP Use.

Filter technique:

Ex: GET BADI create object FILTERS filter name = parameter.

### **Difference between classic BADI and New BADI**

- 1) In Classic BADI, there is no Enhancement Spot. In New BADI there is an enhancement spot.
- 2) In Classic BADI, the name of the Implementing class automatically appears.

In New BADI we need to provide the implementing class name.

### **Real time Implementation:**

**Requirement:** Material master Unit of measurement filed should not be 'KG' display error message "UOM cannot be KG"

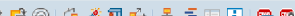








### Classical BADI Example:

Transaction code: MM01

BADI Definition: BADI\_MATERIAL\_CHECK

Interface: IF\_EX\_BADI\_MATERIAL\_CHECK

Method: CHECK\_DATA

Class Builder: Class ZCL_IM_BADI_MATERIAL_CHECK_Display			
 <a href="#">Pattern</a> <a href="#">Pretty Printer</a> <a href="#">Signature</a> <a href="#">Public Section</a> <a href="#">Protected Section</a> <a href="#">Private Section</a>			
Ty.	Parameter	Type spec.	Description
	VALUE( WMARA )	TYPE MARA	General Material Data
	VALUE( WMARC )	TYPE MARC	Plant Data for Material
	VALUE( WMARD )	TYPE MARD	Storage Location Data For Material
	VALUE( WMBEW )	TYPE MBEW	Material Valuation
	VALUE( WMLGN )	TYPE MLGN	Material Data For Each Warehouse Number
	VALUE( WMLGT )	TYPE MLGT	Material Data For Each Storage Type
	VALUE( WMVKE )	TYPE MVKE	Sales Data for Material
	VALUE( WSTAT )	TYPE MGSTAT	Interface for Customer Exit EXIT_SAPLMGMMU_001

**Create Material ROH001 (Finished Product)**

Additional Data   Org. Levels   Check Screen Data

Basic data 1   Basic data 2   Classification   Sales: sales org. 1   Sales: sales o

Material: ROH001   test

**General data**

Base Unit of Measure: kg   Material Group

Old material number   Ext. Matl Group

Division   Lab/Office

Product allocation   Prod.hierarchy

X-plant matl status   Valid from

☐ Assign effect. vals   GenItemCatGroup

**Material authorization group**

Authorization Group

**Dimensions/EANs**

Gross Weight   Weight unit

Net Weight   Volume unit

Volume   Size/dimensions

! UOM cannot be KG

### **New BADI Definition Example (MM01):**

Transaction code: MM02

Enhancement Spot: EHSPS\_SPOT\_PS\_SPEC

BADI Definition: BADI\_EHSS\_AUTH\_CHECK

Interface: IF\_EX\_BADI\_EHSS\_AUTH\_CHECK

Method: AT\_SAVE\_CHECK

Link for BADI: <https://www.sapnuts.com/courses/core-abap/badi-sap/real-time-of-using-badi.html>

### **4)User Exit.**

User Exit are modifications. They are only available in SAP SD (Sales & distribution) module.

They are available in the form of a Sub routines.

**Ways to find out a User Exit.**

- 1) Check the documentation of the program.
- 2) Search for Key word - PERFORM USEREXIT
- 3) Search in Package: VMOD

The Most Important User Exits of SAP SD module is available in program: MV45AFZZ.

FORM USEREXIT\_MOVE\_FIELD\_To\_VBAK.

ENDFORM.

While debugging User Exit, XVBAK, XVBAK[ ] is new values...YVBAK, YVBAK[ ] is old values.

Update indicator (UPDKZ): I – insert, U – Change/update, D – Delete

**5)BTE(Business Transaction Events) :**

- The full form of BTE is Business Transaction Events.
- BTE is an enhancement. We enhance the SAP functionalities in customer namespace.
- BTE is a custom function module attach to the standard program to enhance the functionality.
- BTE is applicable to FI module.
- The transaction code for BTE is FIBF.

<http://saptechnical.com/Tutorials/ExitsBADIs/VL02/page1.htm>

Link for User exit, Customer Exit, BADI:

<https://inui.io/sap-user-exit-customer-exit-badi-bapi/#why-user-exits-customer-exits-badis-and-bapis>