Objectives
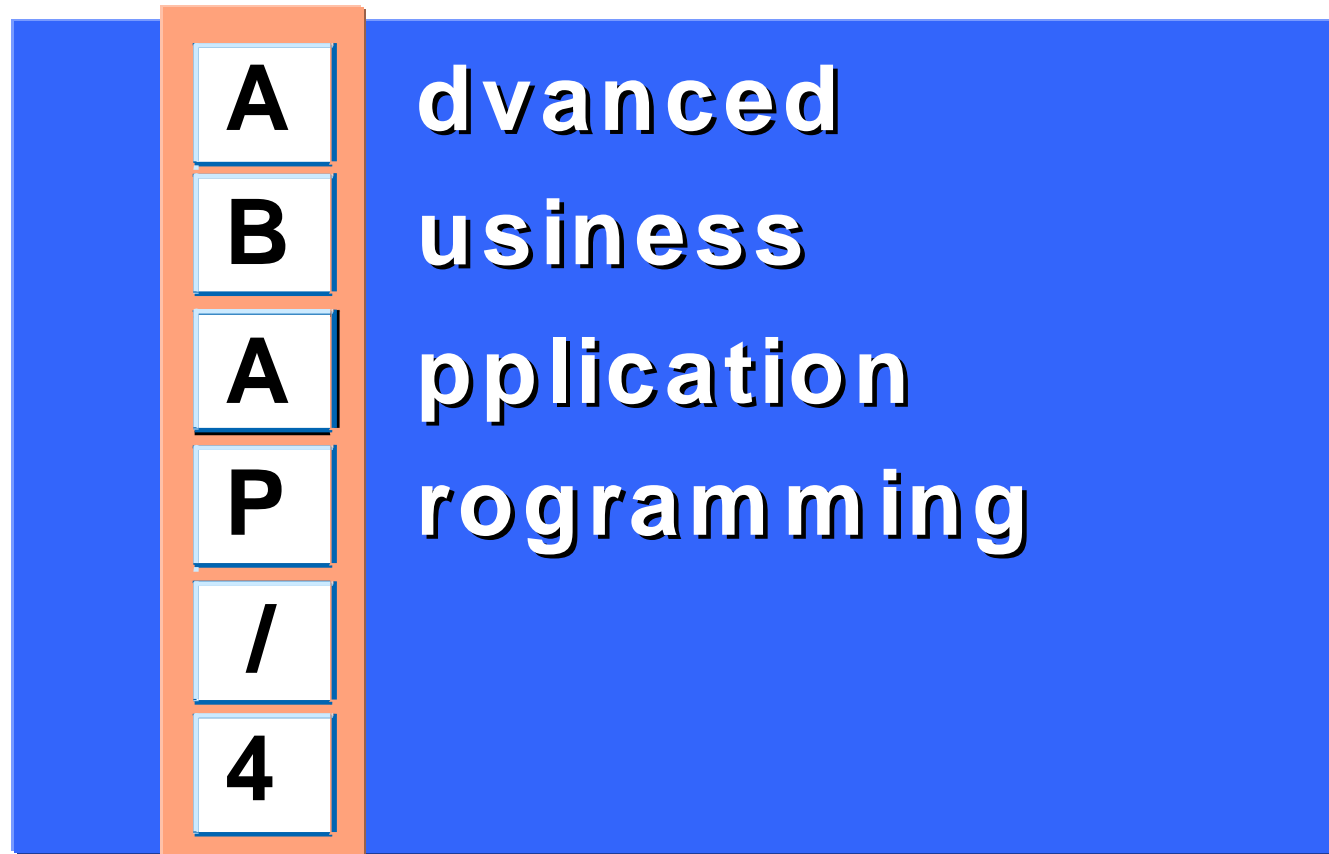
In this Chapter you will learn...

- **Overview of ABAP Programming Language**

- **Basic Syntax of ABAP**

The ABAP/4 Programming Language

A	**dvanced**
B	**usiness**
A	**pplication**
P	**rogramming**
/	
4	

Overview of ABAP

- ABAP 4 is a programming language developed by SAP for the interactive development of application programming.

- ABAP 4 is a fourth generation language.

- ABAP 4 is tightly integrated across all the modules viz like SD, MM, HR etc and most or all of the modules and transactions(like screens are created using ABAP).

- All application programs, along with parts of the R/3 Basis system, are written in the ABAP Workbench using ABAP, SAP's programming language. The individual components of application programs are stored in a special section of the database called the R/3 Repository. The R/3 Repository serves as a central store for all of the development objects in the R/3 System
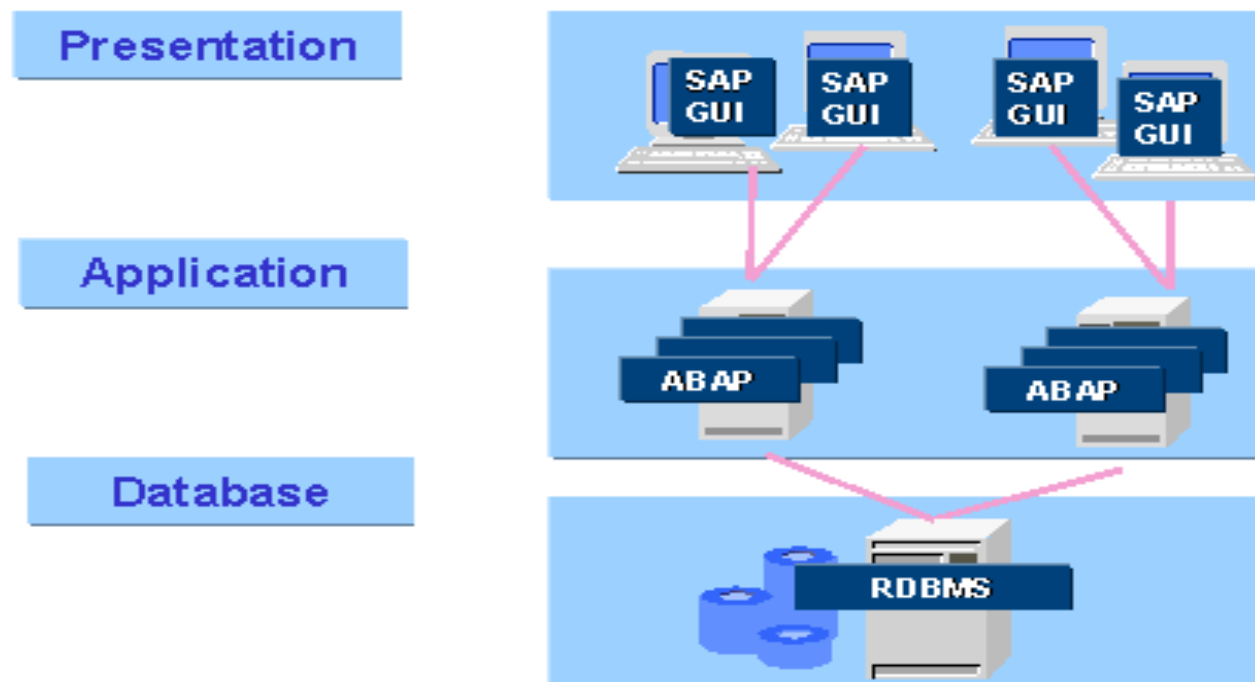
Overview of ABAP

• **ABAP Programs are objects of R/3 Repository. You maintain them   using ABAP WorkBench Tool- in this case its ABAP Editor(Transaction SE38).**
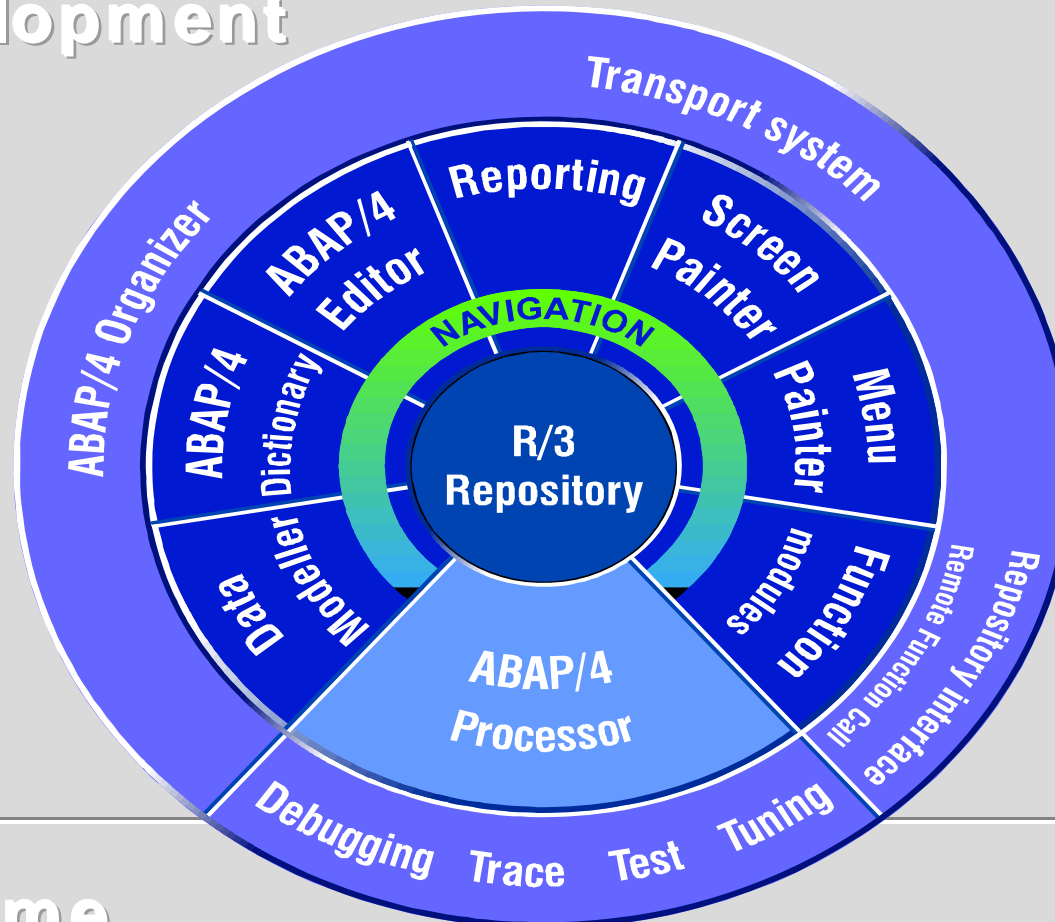
Three-Tier Architecture Overview
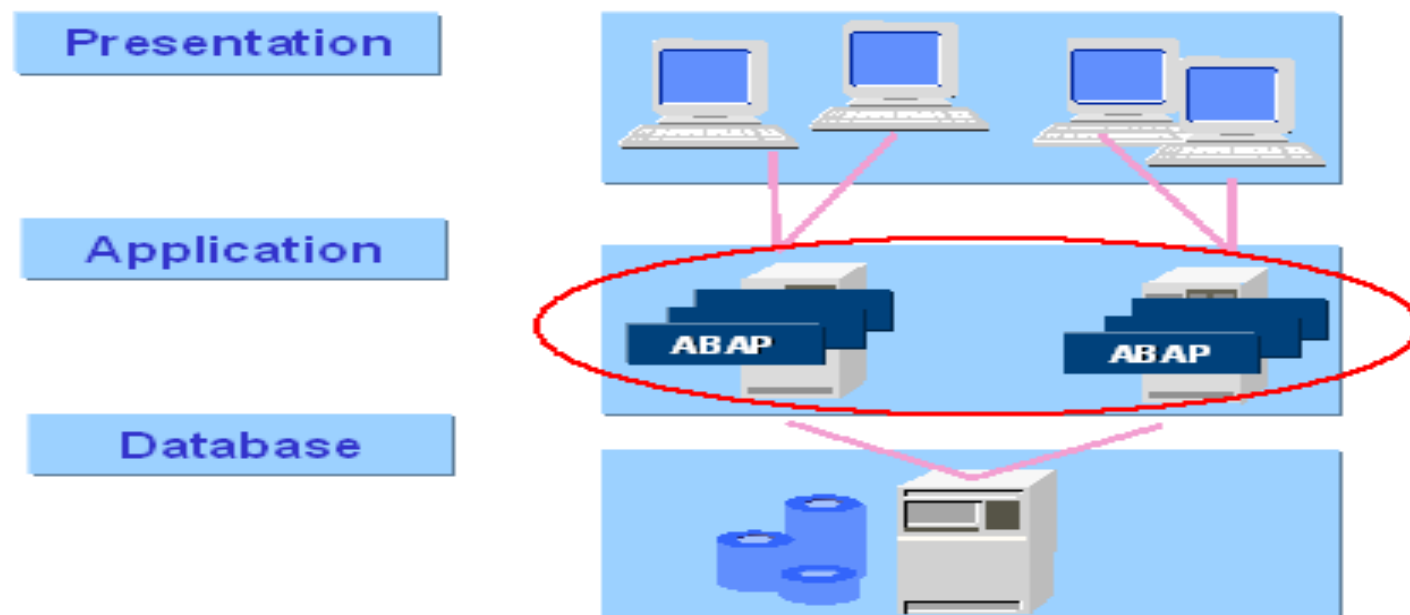
Overview of ABAP

- •R/3 applications are written in the ABAP programming language, and run within the application layer of the R/3 System.

- •ABAP programs communicate with the database management system of the central relational database (RDBMS), and with the graphical user interface (SAP GUI) at presentation level.

ABAP/4 Development Workbench Architecture

Overview of ABAP

■The ABAP/4 Development Workbench provides access to Sap's development tools which cover the entire software development cycle.

■These tools can be used both for customer-specific developments and enhancements to R/3 applications supplied by SAP.

■All applications created with the ABAP/4 Development Workbench can run without further modifications on any platforms, database systems and graphical user interfaces supported by SAP.

Overview of ABAP

• **ABAP Development Work Bench consists of many tools for like ABAP Editor, Screen Painter, Function Builder, Menu painter… for you to create or write Programs like Reports or Screens or Menus etc ...**

•**Typically as a ABAP Developer you will be working on the above said Tools to design, develop and test any programs which include Reports, Screens, Menu that you might want to implement in SAP.**

• **During the Period of the Course you will be guided and taken through the tools one by one.**

Overview of ABAP

ABAP/4 Program Objects.

ABAP/4 Program Objects

Development class

- Dev. class object types
- Dictionary objects
- Programs
- Function groups
- Includes
- Transactions
- Logical databases
- Message classes
- :

Program

- Global data
- PBO modules
- PAI modules
- Subroutines
- Screens
- GUI status
- Includes
- Transactions

Overview of ABAP

- **Development Class**

    - To create a program, you first specify a development class. Development classes are containers for objects in the same area. A common transport route is defined for all objects within a development class. Customer-specific development classes begin with Y or Z.

    - If you are creating a test object which you do not want to be transported, choose local private objects. The development class is then set to $TMP.

    - You then specify the name of the new program. To proceed, click the radio button Program and choose Display.

Overview of ABAP

- **Development Class**

  - **If you are creating a object which needs to be transported to production System from Development System, then choose the appropriate development class and then Click Save, then the system will ask for the "request No" under which your program needs to stored. At this point you can either specify the transport request number provided by system administrators or create your own request.**
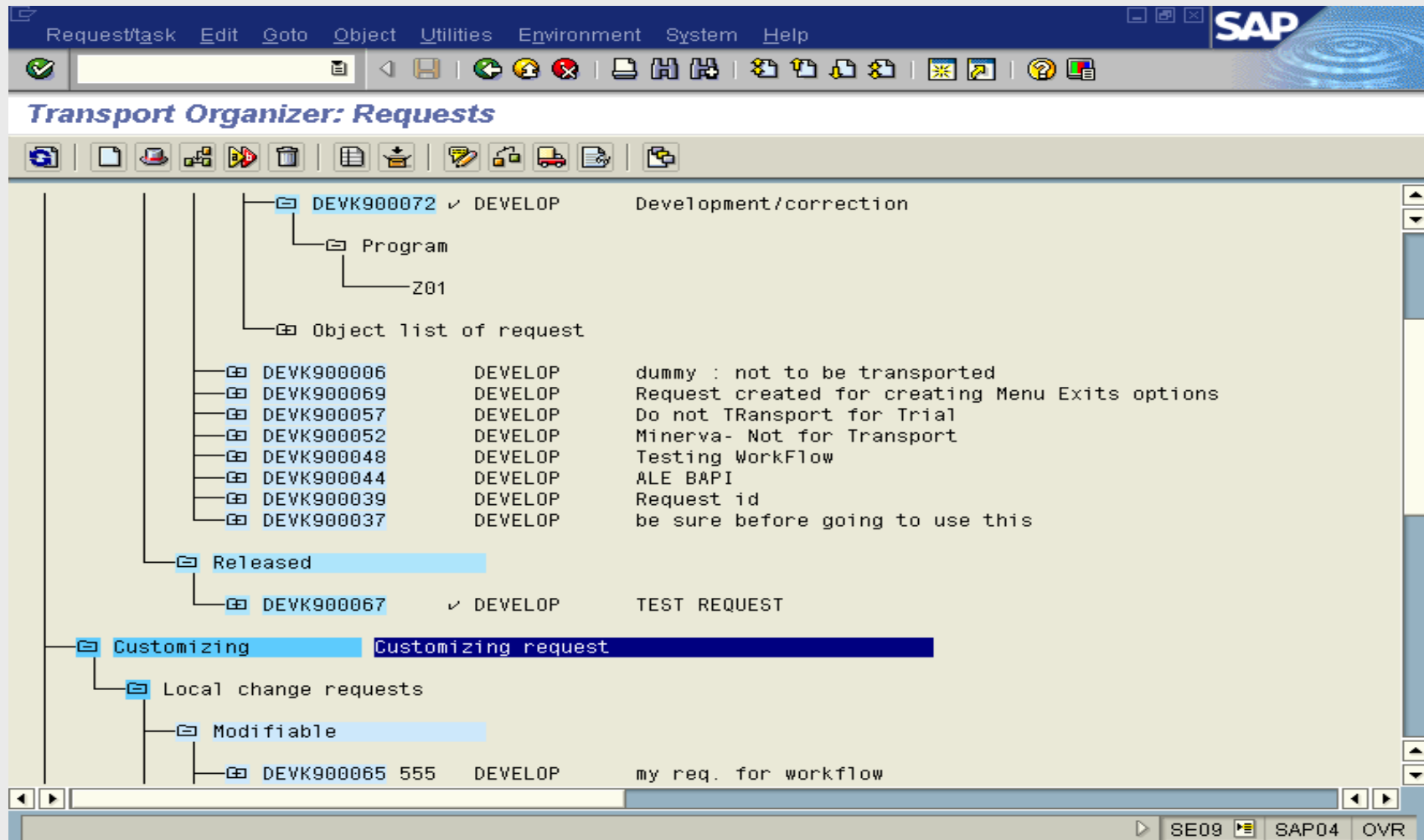
Overview of ABAP/ Transport Organizer
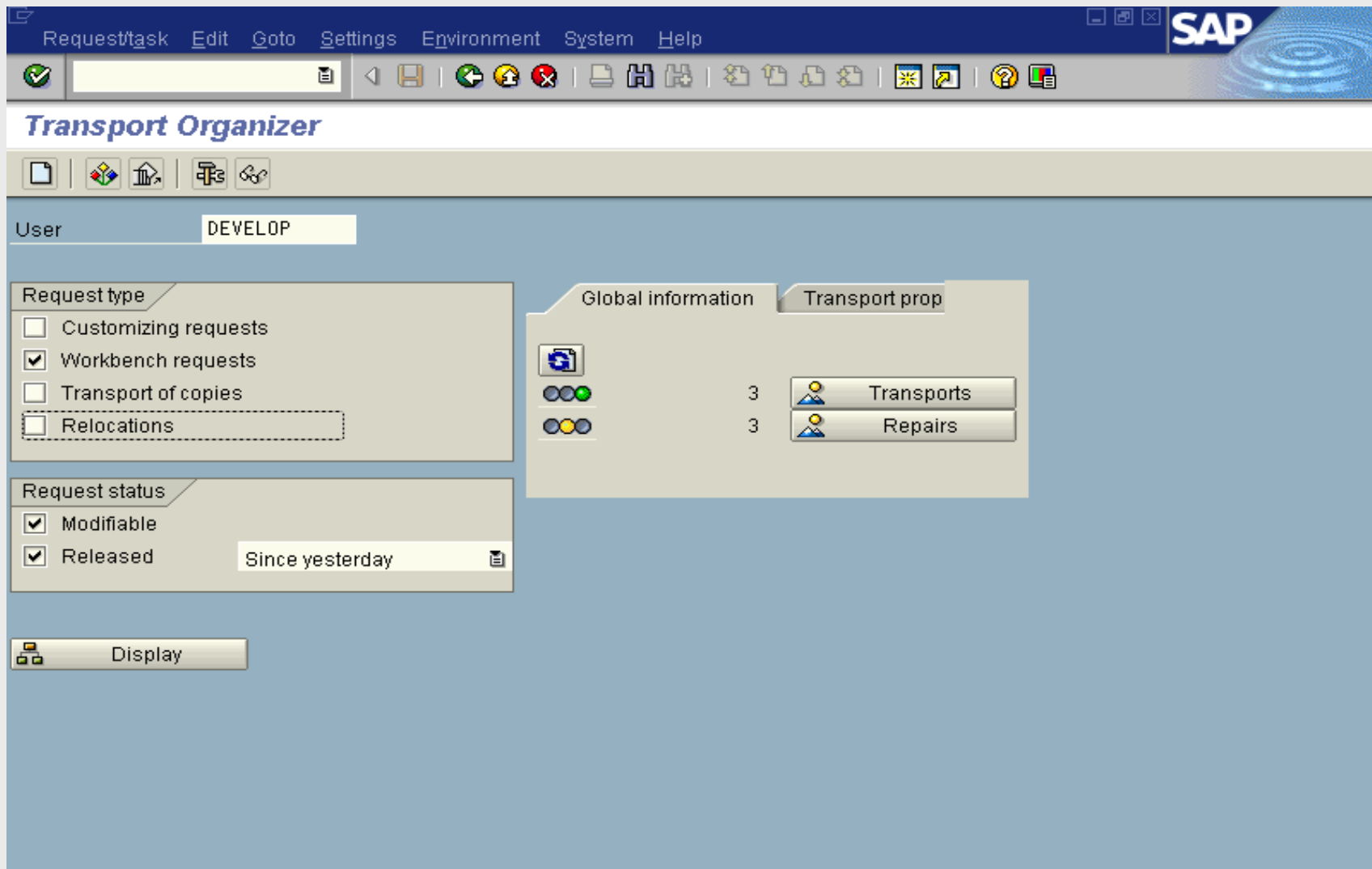
Overview of ABAP/ Transport Organizer

• Workbench requests record changes made to ABAP Workbench objects.

• There are local and transportable Workbench requests.
(Local Workbench requests have the target system <space>.)

• The development class of the object and the transport route settings in the Transport Management System determine whether changes are recorded in a local or a transportable Workbench request.

Overview of ABAP/ Transport Organizer

Transaction se09

- **ABAP/4 Interfaces**

A B A P /4 In terfaces

N o n -S A P s ystem
S A P R /2
S A P R /3

S A P R /3

C o m m u n ica tio n s interfaces

G eneration program

D ata transfer program

D ata interfaces

sequential dataset
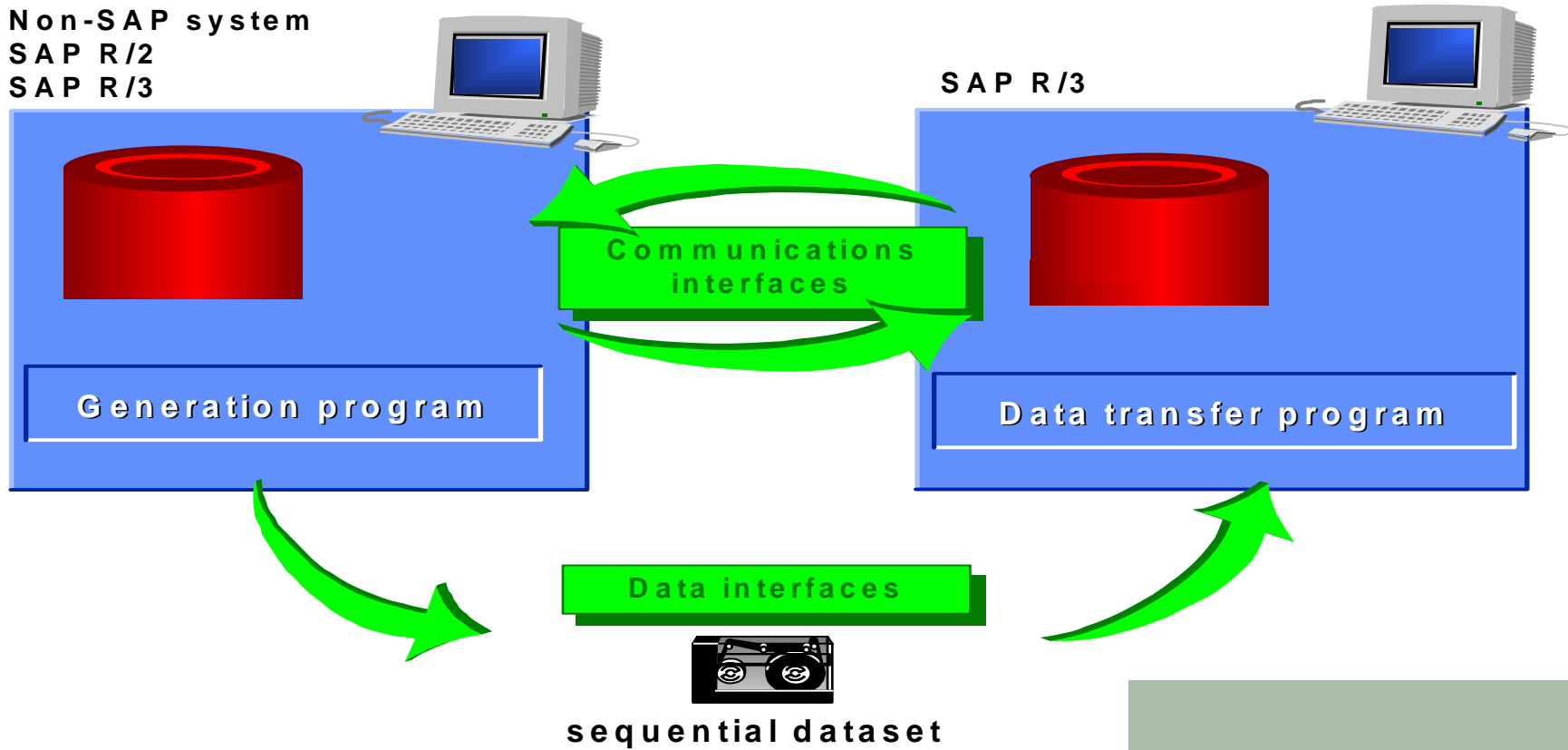
Overview of ABAP

- **ABAP/4 Interfaces Uses:**

    - **When you use ABAP/4 Data interfaces, a sequential dataset is generated in the source system . This is read into the target system by the data transfer program and imported automatically into the R/3 database using batch input, call transaction or direct input.**

    - **ABAP/4 contains statements for the implementation of Communication interfaces like RFC/BAPI, OLE which typically connects R/3 with Non R/3 system for establishing a transaction over the Net.**
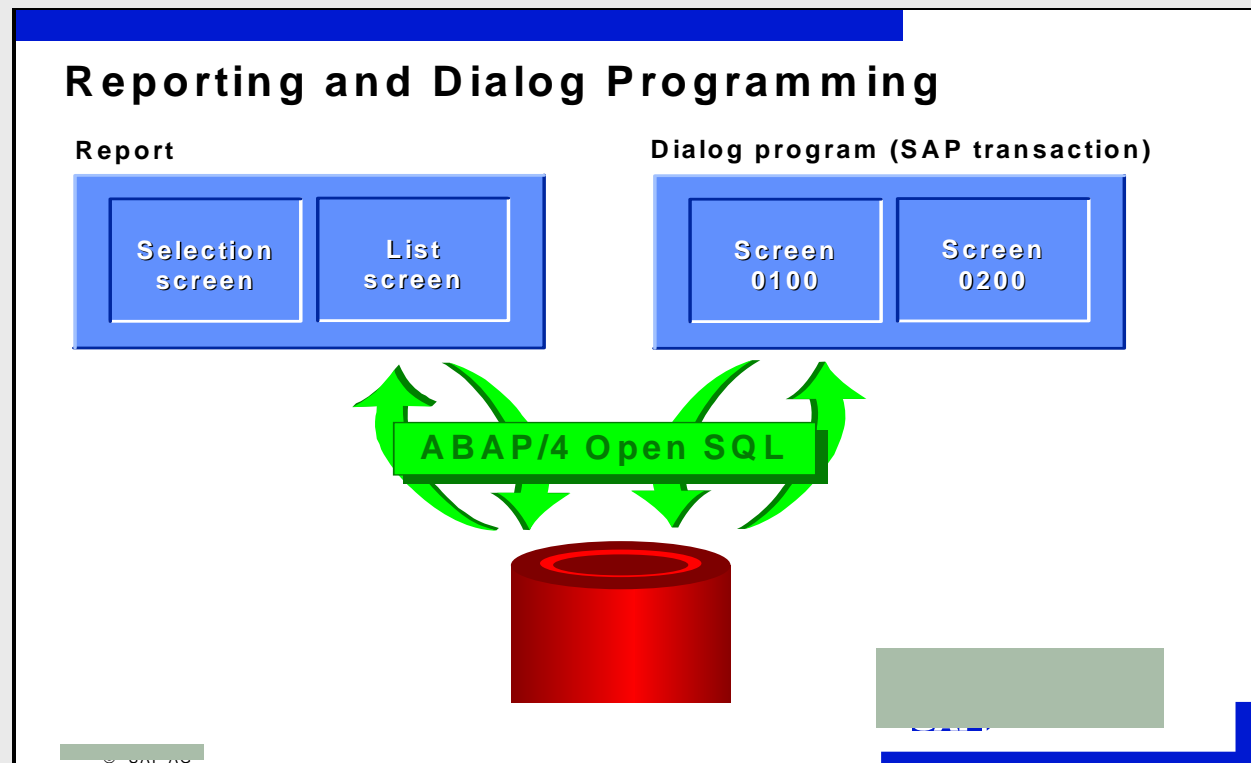
Overview of ABAP

- As a ABAP Developer

  - Majority of the work during and after implementation of R/3 will be Report programming, Dialog programming, BDC, Enhancements using ABAP/4 Programming Language.

  - In reporting you use the ABAP/4 Open SQL to read data from the R/3 database. A report consists of a selection screen, on which you define the dataset you wish to display, and a list, which displays the data itself. In interactive reporting, the user can navigate from the (basic) list to details lists at runtime. Typically, reports merely read data from the database. However, it is also possible to make changes in the database using a report.

Overview of ABAP

•Dialog Programming

• In dialog programming you use the Screen Painter to create screens and program the sequence in which they appear. You write an ABAP/4 program (ABAP/4 module pool) for your screens. This is a collection of dialog modules which are called by the flow logic of your screens. You use dialog programs for both reading and changing database tables.

Reporting and Dialog Programming

Report	Dialog program (SAP transaction)

Selection screen	List screen		Screen 0100	Screen 0200

ABAP/4 Open SQL

Overview of ABAP

• **Batch Data Communication (BDC)**

  •Batch Data Communication (BDC) offers transferring of data into the SAP System from other SAP Systems and non-SAP Systems (legacy systems).

  •For example, the data collection in some areas of your company is still performed by a non-SAP system like VB-SQL or Java-Oracle etc. You can still consolidate all of your data in the SAP System by exporting the data from the other system and reading it into the SAP System with batch input.

Overview of ABAP

• **SAP Scripts**

  •**SAP script is the tightly integrated text management system of the SAP R/3 System.**

  •**It will therefore be used for many different text-processing tasks all over the SAP System.**
  •**Example:**
    •**SAP script is used for incorporating the company logo in forms sets.**
    • **SAP Script can be used for printing the Sales order or the purchase order in the company given pre printed format.**

Overview of ABAP

- **Enhancements**

  - **SAP offers a broad range of functionality within its business application suite.**

  - **If standard applications do not offer some of the functionality you need, You don't have to Panic!!**

  - **R/3 provides the flexibility to Add-on/Bolt-on any application to its standard functionality This facility is called "Enhancement" and called as "User Exits", "Menu Exits", "Screen Exits" and "Function Exits".**

  - **Enhancement offers better alternative to the problem-ridden modification approach.**

Overview of ABAP

Before going to Next topic, Lets browse some important transactions in ABAP Development Workbench like

• ABAP Editor(se38) : used for Writing Report programs..etc

• Object Navigator(se80) : used for Creating Screens and/or Transactions or Development Class or navigation purpose ..etc

• Function Builder(se37): used for Writing Functions which can be further used in Report programs or Screen programming.. etc.

• Data Dictionary(se11) : Used for Database Table handling.. etc.

ABAP/4 Syntax

```
DATA    COUNTER TYPE I.
DATA    NAME(20).

MOVE 1 TO COUNTER.
MOVE 'ABC' TO NAME.
    .
    .
    .
WRITE NAME.
WRITE COUNTER.
```

ABAP/4 program

statement

| word 1 | word 2 | word 3 |

word 4 ·

key word

parameter, field,
constant

- **ABAP/4 Syntax**

    - **An ABAP/4 program consists of individual statements. Each statement must end with a period.**

    - **The first word of a statement is known as the key word.**

    - **Words are separated from each other by at least one blank.**

    - **Statements can be indented.**

    - **Statements can extend over several lines.**

- **ABAP/4 Syntax/ Chain Statements.**

Chain Statements

```
WRITE 'XYZ'.
WRITE NAME.
WRITE COUNTER.
```

```
WRITE: 'XYZ', NAME,
             COUNTER.
```

```
ADD 1 TO COUNTER1.
ADD 1 TO COUNTER2.
ADD 1 TO COUNTER3.
```

```
ADD 1 TO: COUNTER1,
          COUNTER2,
          COUNTER3.
```

Overview of ABAP/ Basic Syntax of ABAP

• You can concatenate several consecutive statements with an identical first part into a chain statement.

• When doing this, conclude the identical first part with a colon. After the colon, separate each concatenated part from the next with a comma.

• Blanks can appear before and after the separators (colon, comma or period).

• Commenting a ABAP Statement
   • You can insert comments into a program in two ways:
      - An asterisk (*) in column 1 flags the whole line as a comment.

      - A quotation mark (") within a line flags the remainder of the line as a comment.

Comments

```
DATA: SUM TYPE P, " Totals field
      COUNTER TYPE P.


*       New account
*       Initialize totals field

CLEAR SUM.
```

System Fields

for table structure SY

System fields

Name	Type	Length	Meaning
SY-DATUM	DATE	8	Date
SY-UZEIT	TIME	6	Time
SY-UNAME	CHAR	12	User ID
SY-SUBRC	HEX	2	Return code
SY-REPID	CHAR	8	Program name
SY-LANGU	CHAR	1	Logon language

.
.
.

WRITE Statement

```
REPORT      RSAAA02C.
WRITE:      '******************************'.

SKIP 2.

WRITE:      'Date',       SY-DATUM.
WRITE:      'Time',       SY-UZEIT.
SKIP 2.
WRITE:      '******************************'.
```

WRITE: Introduction	1
***	
Date 01.01.1996 Time 14:46:10	
***	

Overview of ABAP/ Basic Syntax of ABAP

- •Write Statement

- • WRITE outputs the contents of a field or constant in the format appropriate for the type.

- • Consecutive WRITE statements output data on the same line. If there is no more space on one line, the output continues on the next line.

- •SKIP generates blank lines.

- •The ABAP/4 processor generates a standard header for each line. This consists of the list title, page number and an underline.