

SAP Utilities  
SAP ERP  
SAP IS-Oil  
SAP Business Suite  
SAP Marketing  
SAP IS-U  
SAP SCM  
SAP SRM  
SAP BW on HANA  
SAP TPM  
SAP Oil & Gas  
SAP CRM  
SAP S/4HANA  
SAP ECC  
SAP BW/4HANA  
SAP HCM  
SAP BW  
SAP Business Suite on HANA

**PRESENTED BY: Mazhar K**

# Overview

- Introduction to **SAP**
- Major Acquisitions
- Evolution & Releases of **SAP**
- SAP Project Lifecycle
- SAP NetWeaver
- SAP ABAP & BASIS
- SAP Business Applications (Modules)
- SAP Security
- SAP Analytics
- SAP HANA

# SAP

- German multinational that makes enterprise software (ERP)
  - business operations & customer relations.
- “Systems, Applications & Products in Data Processing”
- HQ: *Walldorf*, Germany (Year: 1972)
- 425,000 customers in over 180 countries
- URL: <https://www.sap.com/index.html>

# Subsidiaries

**SAP** acquired 70 companies worldwide:

- Oct 2007 - BusinessObjects: BI
- May 2010 - Sybase: Database & MW
- Dec 2011 - SuccessFactors: HCM
- June 2012 - Syclo: Mobile Asset Management
- Oct 2012 - Ariba: Supplier network
- May 2013 - Hybris: e-commerce solution
- Sept 2014 - Concur: Travel & Expense mgmt
- Jan 2019 - Qualtrics: Experience & Management

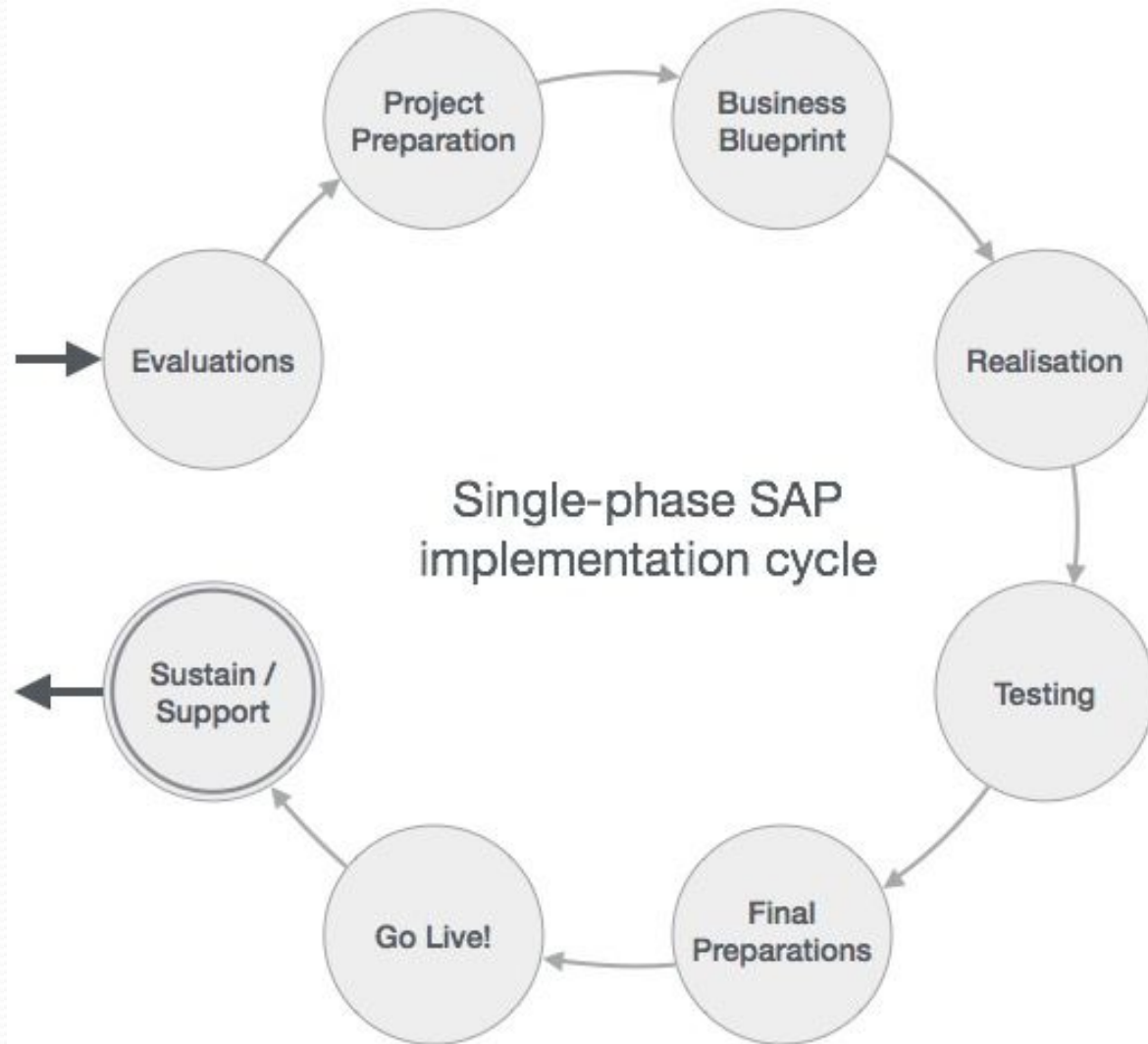
# Evolution of SAP

<b>1973</b>	SAP R/1	Financial Accounting system (IBM)
<b>1979</b>	SAP R/2	Accounting, Manufacturing, SCM, HR
<b>1992</b>	SAP R/3	3-tier architecture ERP solution
<b>1999</b>	my SAP	client server/ my SAP
<b>2003</b>	my SAP ERP	PLM, SRM, CRM, SCM
<b>2004</b>	SAP ERP	Netweaver, SOA, SAP ECC 5.0, SAP 6.0
<b>2006</b>	SAP B A-i-O	mid-size enterprises (SAP R/3 & NW)
<b>2009</b>	SAP BS7	Optimize performance & reduce costs
<b>2015</b>	SAP HANA	in-memory database

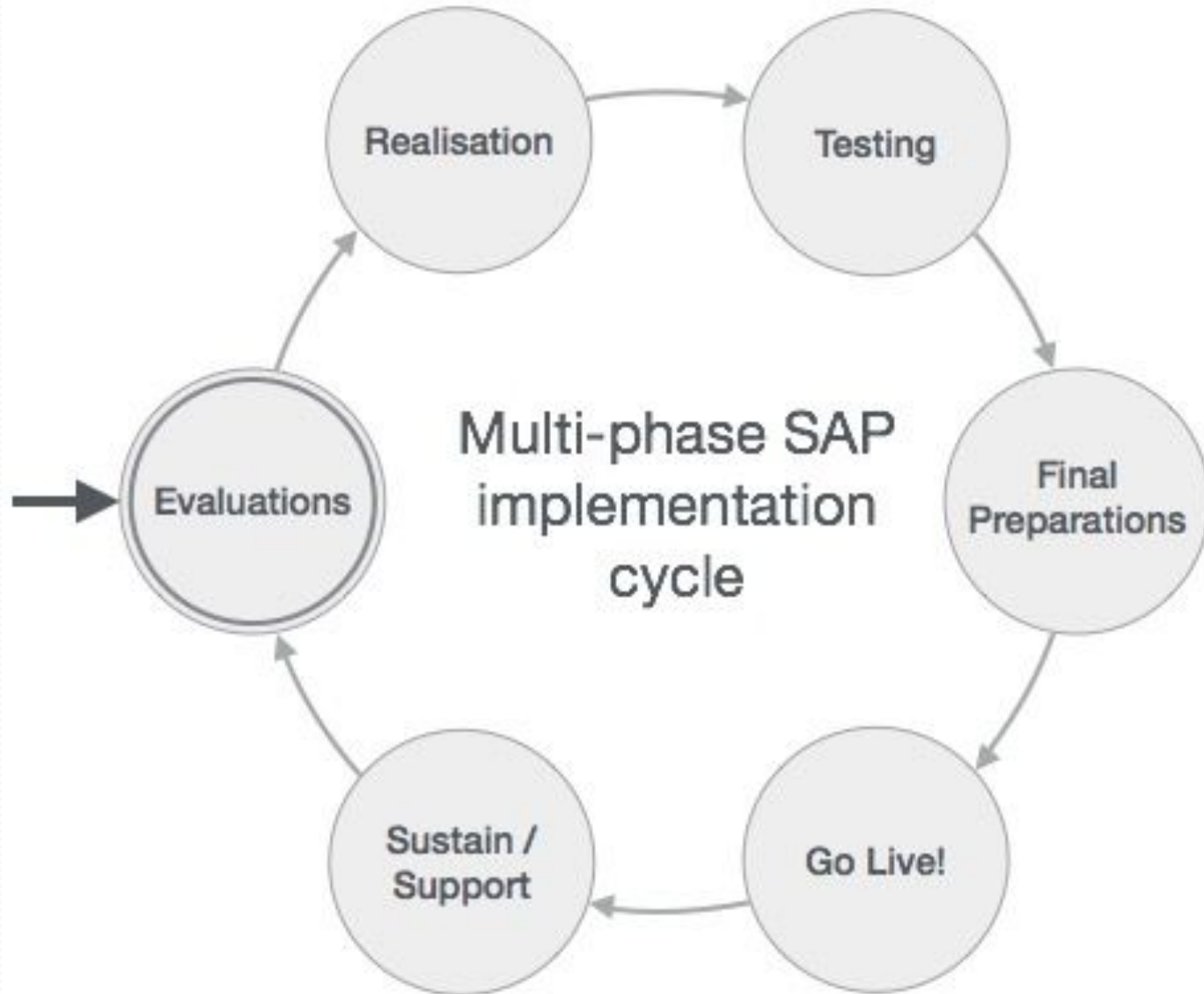
# SAP Project Lifecycle

## Implementation phases:

- Phase 1: Project Preparation
- Phase 2: Business Blueprint
- Phase 3: Realization
- Phase 4: Final Preparation
- Phase 5: Go Live Support



# SAP Project Lifecycle ...contd



# SAP NetWeaver

SAP NetWeaver is --

- Programming language
- Software Application or Product
- Set of API libraries
- Server, Database or O/S





# SAP NetWeaver ...contd

SAP NetWeaver is a Technology Platform

- Collection of Software Applications:
  - Portal Capabilities
  - Analytics/ Reporting Capabilities
  - Integration Capabilities
  - Mobile
- Manages Security & Identity Management
- Development Tools
- Communication based on Industry standards
- Server (Java & ABAP)
- Supports Application Lifecycle Management (ALM)

# SAP NetWeaver ...contd

Enterprise Portal  
(Java)

SAP ECC  
(ABAP)

SAP PI  
(Java + ABAP)

JAVA

ABAP

SAP Netweaver Application Server or Web AS Server

HANA

ORACLE

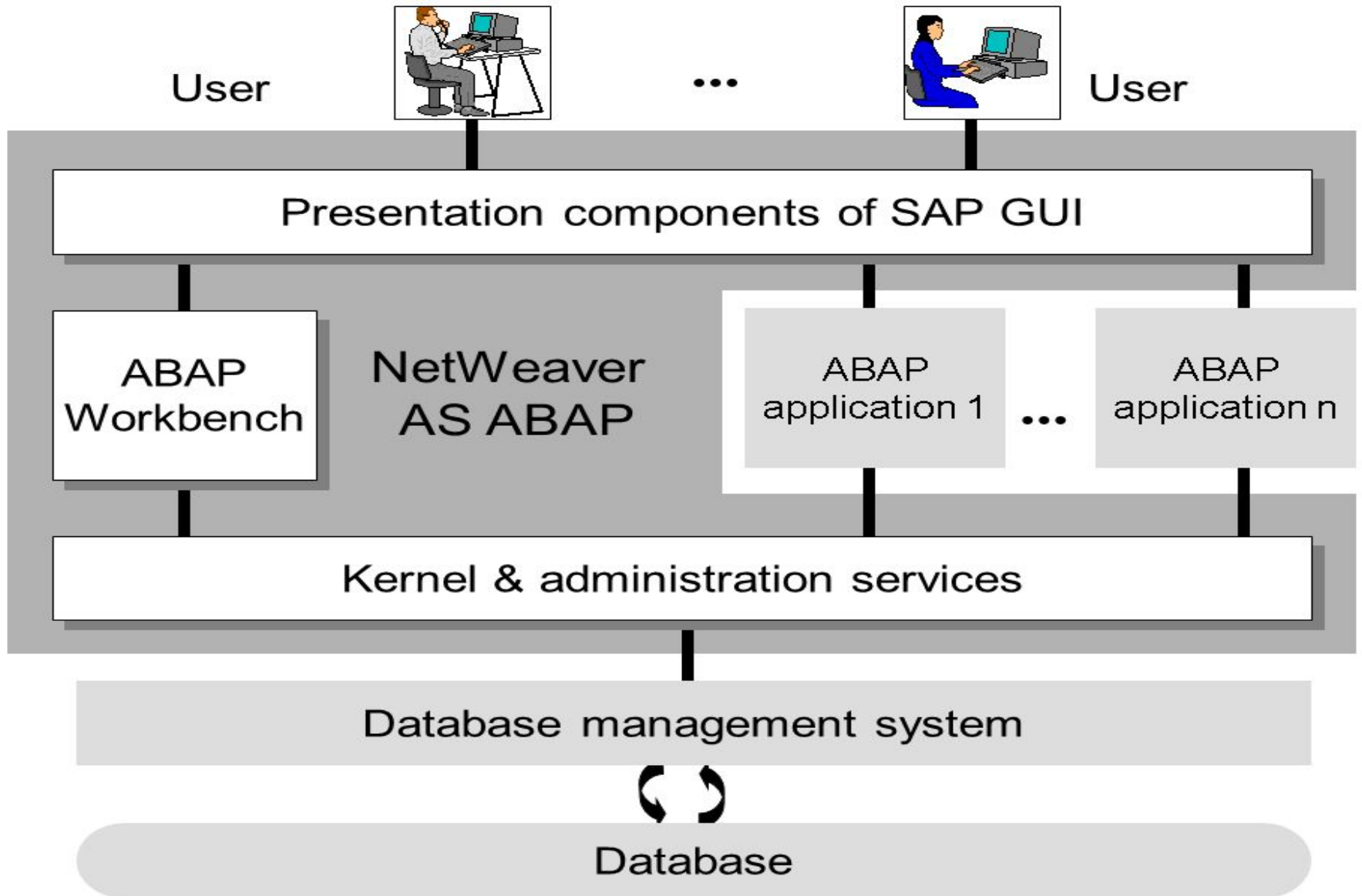
OTHER DB

Application Platform

# SAP ABAP

- **Advanced Business Application Programming (ABAP/4)**
- Programming language - developing business application support and development.
- Event-driven programming language.
- User actions and System events control the execution of an application.
- Created initially **ONLY** for reporting purposes.
  - Module pool programming
  - Interfaces
  - Forms
  - Data conversions
  - User Exits & BADI (Business Add-In)

# SAP ABAP ...contd



# SAP ABAP ...contd

## Role of an ABAP Consultant:

- Receives a ticket/ bug in the form of Functional Specification doc.
- Analyzes the business requirement.
- Estimates the no. of hours
- Develops the object
- Performs the unit testing
- Releases the developed object to the testing server
- Prepares the Technical Specification doc for the object

# SAP BASIS

- **Business Application Software Integration System**
- **Technical foundation that enables SAP apps to function**
- **System administration platform for SAP environments from SAP R/3 through SAP S/4HANA.**
- **SAP Basis consists of 3 layers:**
  - **RDBMS - database layer**
  - **SAP GUI - presentation layer**
  - **Client/ Server architecture - application layer**

# SAP BASIS ...contd

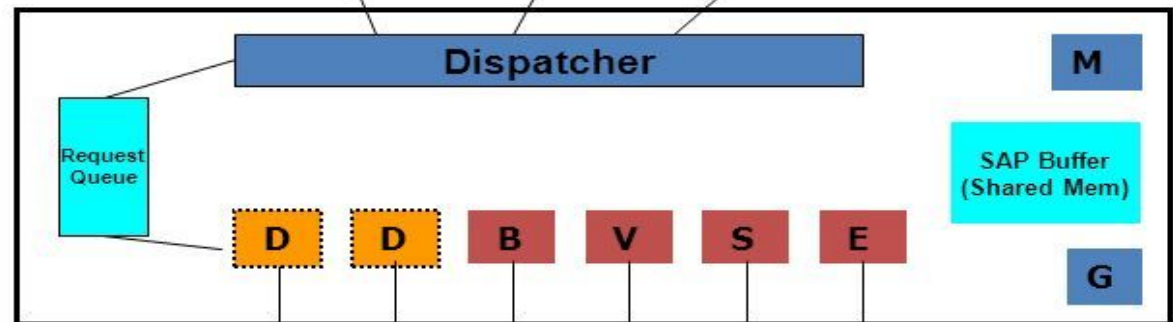
## SAP System : 3 Tier Architecture

**Presentation Layer**  
(Windows based)



**Application Layer**  
(Windows Server/UNIX)

**SAP Instance**



**Database Layer**  
(Windows Server/UNIX)



**Oracle**  
**Informix**  
**DB2**  
**MS SQL Server**  
**MaxDB**

# SAP BASIS ...contd

## Role of a **BASIS** Administrator:

- Ensures all SAP systems are up and running.
- Responsible for installing and configuring SAP systems.
- Performs Backup and Restore of SAP system database.
- Performance Tuning.
- Check and Schedule background jobs.
- Check and Configure TMS.
- Configure operation modes, printers, etc.
- Basic networking concepts.



# SAP Modules

Functional modules:

- SAP FI (Financial Accounting)
- SAP CO (Controlling)
- SAP FSCM (Financial Supply Chain Management)
- SAP MM (Materials Management)
- SAP SD (Sales and Distribution)
- SAP LE (Logistics Execution)
- SAP PP (Production Planning)
- SAP PM (Plant Maintenance)
- SAP PS (Project System)
- SAP HCM (Human Capital Management)
- SAP eWM (extended Warehouse Management)
- SAP QM (Quality Management)

# SAP FI/CO

## SAP FI:

- General Ledger (GL)
- Accounts Payable (AP)
- Accounts Receivable (AR)
- Bank Accounting
- Budgeting and Monitoring
- Cash Management
- Asset Accounting (AA)
- Funds Management (FM)
- Treasury Management (TM)
- Special Purpose Ledger
- Withholding Tax (TDS)

## SAP CO:

- Cost element Accounting
- Cost center Accounting
- Product Cost Accounting
- CO internal orders
- Profit Center Accounting
- Profitability Analysis
- Periodic Allocations

# SAP FSCM

Manages customer-related financial functions such as risk assessment, billing, receivables, and collections.

Sub-modules:

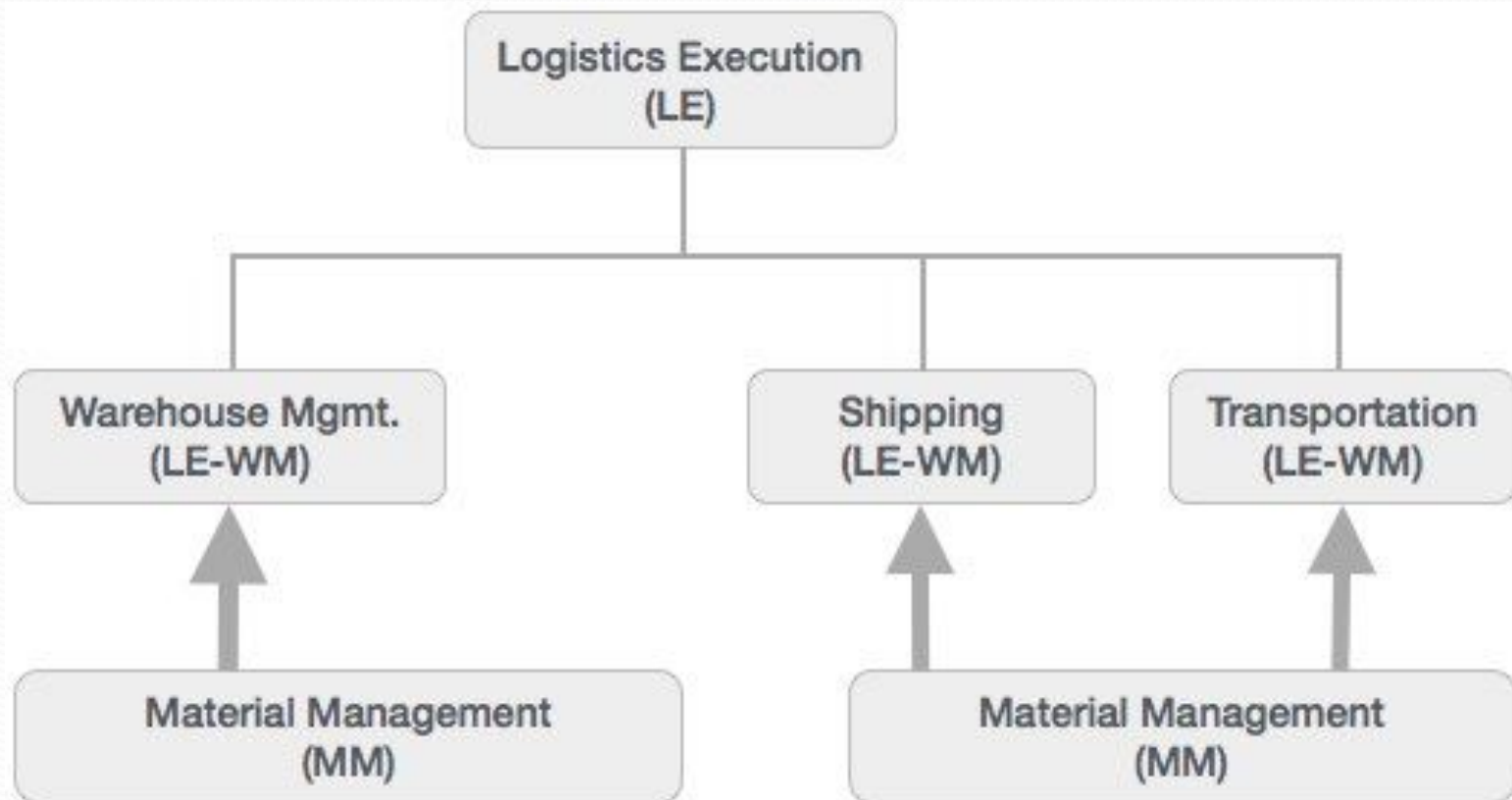
- Credit Management
- Cash & Liquidity Management
- Treasure and Risk Management
- Collections Management
- Payments
- Dispute management

# SAP LE

Divided into two sub-modules:

- shipment of goods (purchase to procurement)
- warehouse management (storage of goods)

It integrates with SD, MM and PP



# SAP MM & SD

## SAP MM:

- Purchasing
- Inventory Management
- Material Planning
- Invoice Verification
- Material Requirement Planning (MRP)
- Warehouse Management
- Vendor Valuation

## SAP SD:

- Sales
- Shipping & transportation
- Billing/ Invoice generation
- Bill of Material (BOM)
- Sales Information system
- Credit Control
- EDI (Electronic Data Interchange)

# SAP PP & PM

## SAP PP:

- Production Planning
- Demand Management
- Material Requirement Planning (MRP)
- Capacity Requirement Planning
- Bill of material
- Production Orders
- Routing
- Work Center
- Shop floor control

## SAP PM:

- Maintenance planning
- Preventive Planning
- Service Management
- Predictive Maintenance
- Project Maintenance

# SAP eWM

- Efficiently manage inventory in the Warehouse and for supporting processing of goods movement.
- Allows the company to control their Warehouse inbound & outbound processes and movement of goods in the Warehouse.
  - Incoming and outgoing materials
  - goods receipt and goods issue
  - fulfil customer orders, and
  - distribution of goods
- SAP eWM is similar to SAP WM but it provides additional features like picking, put away, RF framework, warehouse structure and flexible options to manage the warehouse functions.

# SAP eWM ...contd

## Deployment Models

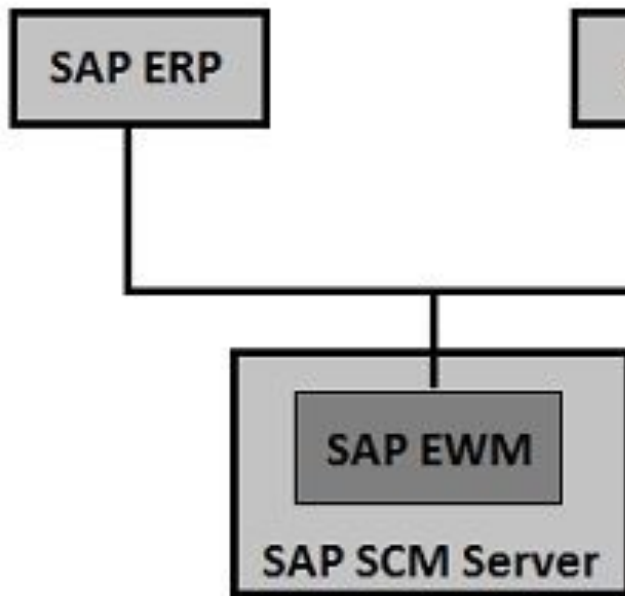


Figure 1

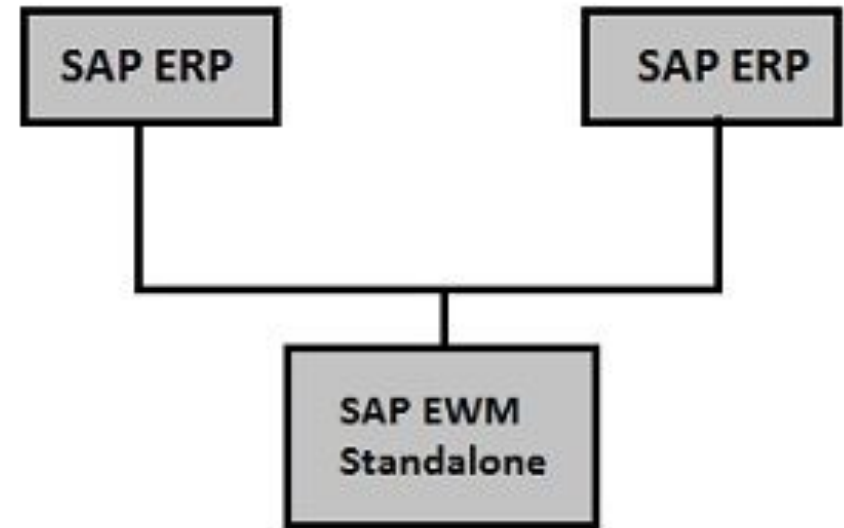


Figure 2



# SAP HCM

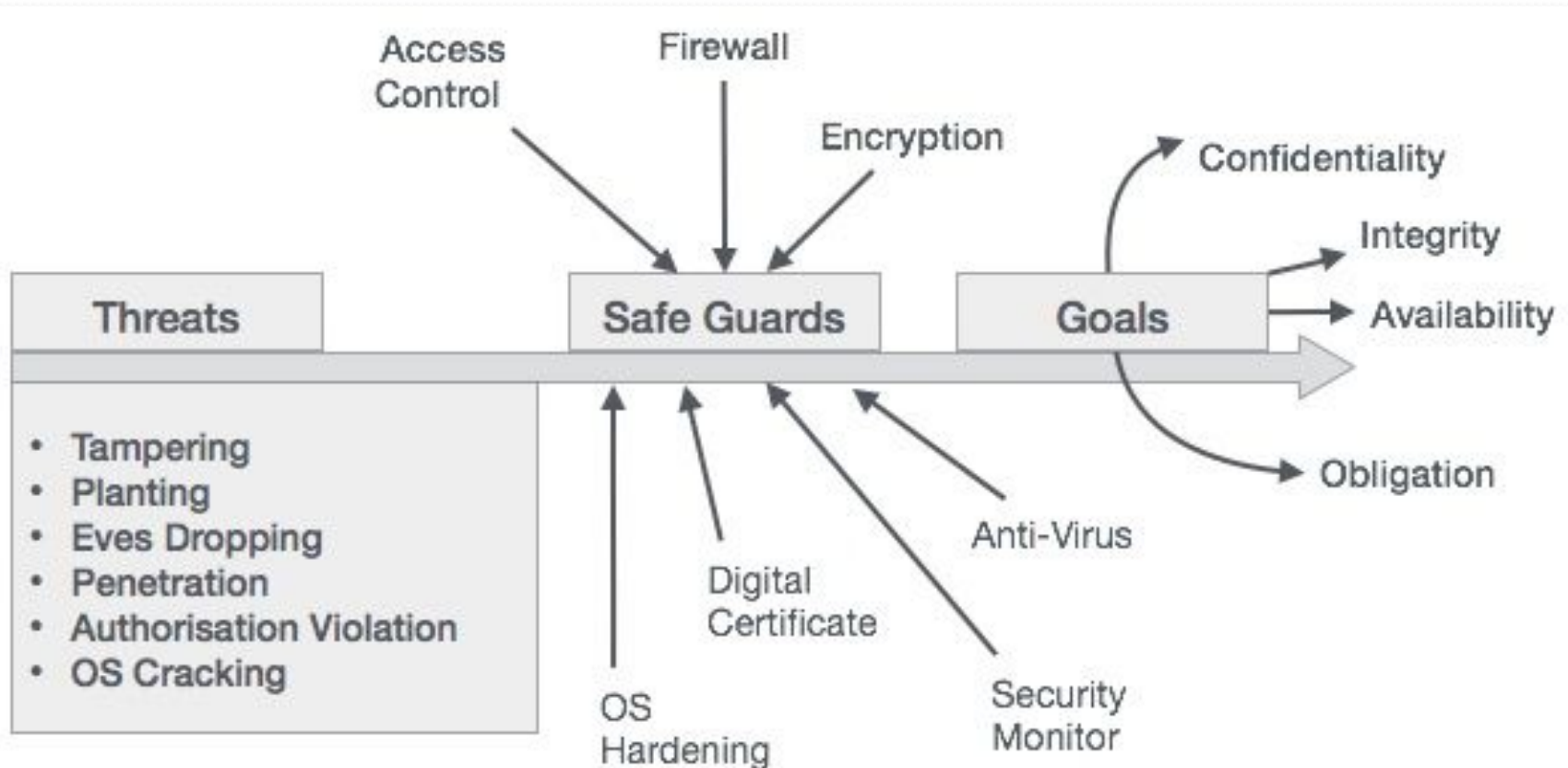
## Sub-modules:

- Organizational Mgmt
- Personnel Admin
- Recruitment
- Payroll
- Travel Mgmt
- Time Mgmt
- Comp & Ben
- Training
- Wages
- Workforce Administration



# SAP Security

- Confidentiality - Unauthorized disclosure of data
- Integrity - Unauthorized modification of data
- Availability - Denial of service (a lack of availability of computing resources)



# SAP Analytics

Quick video:

<https://youtu.be/eGGZ33fzxKo>

# SAP HANA

- HANA stands for “*High-Performance Analytic Appliance*”
- SAP HANA == HANA Database + Data Modeling + HANA Administration + Data Provisioning in one single suite.
- Salient features:
  - Combination of software and hardware innovation to process huge amount of real time data.
  - Based on multi-core architecture in distributed system environment.
  - Based on row and column type of data-storage in database.
  - Reduces cost of ownership, increases application performance, enables new applications to run on real time environment that were not possible before.
  - Written in C++, supports and runs on only one O/S Suse Linux Enterprise Server 11 SP1/2

# SAP HANA ...contd

Major responsibilities of SAP HANA Consultant:

- HANA Modeling
- HANA Reporting
- HANA Security
- HANA Data Replication
- HANA Monitoring
- HANA SQL
- **SAP BW** integrates data from different sources, transforms and consolidates the data, does data cleansing, and storing of data as well.
- **SAP BI** does analyzing and reporting of data from different heterogeneous data sources.
  - Acquires data from multiple data sources, data staging, which can be further distributed to different BI systems.

# Need for SAP HANA

HANA overcomes the limitations mentioned below:

- Due to increase in “**Data Volume**”, it is a challenge for the companies to provide access to real time data for analysis and business use.
- It involves **high maintenance cost** for IT companies to store and maintain large data volumes.
- Due to unavailability of real time data, analysis and processing results are delayed.

# SAP HANA - Customer Exp

**P&G** has adapted to SAP BW on HANA with the following business transformations.

- 55% database reduction from 36 TB to 16 TB.
- 400% increase in data loading speeds.
- 35,000 business users supported.

**CenterPoint Energy** uses SAP HANA as the foundation to realize their strategic vision.

- 10 minutes to create marketing targets, down from 4 weeks.
- 200% increase in productivity by replacing manual data replications with scheduled data loads into SAP HANA.
- 98.8% faster predictive analytics engine runtime (from 90 seconds to 1 second).
- 15% more calls handled by IVR rather than by agents.

# BW on HANA

Capabilities required by a BW on HANA Consultant:

- BW on HANA project experience & at least 2 e-to-e BW implementation/ development experience.
- Implementing SAP BW on HANA specific modeling like “Composite Providers” and exposing BW objects in HANA Views, Operational Data Provisioning, LSA++, etc.
- Work on HANA Studio - Schemas, tables on HANA, Attribute view, Analytical view and Calculation views.
- Developing and handling hybrid scenarios - BW data models and HANA views as per the requirement.
- Manage SAP BW tables in HANA distribution environment.
- Knowledge on BOBJ tools like WEBI, Lumira, and Design Studio.
- SAP BW 7.0 & above Certified & SAP BW on HANA Certified.



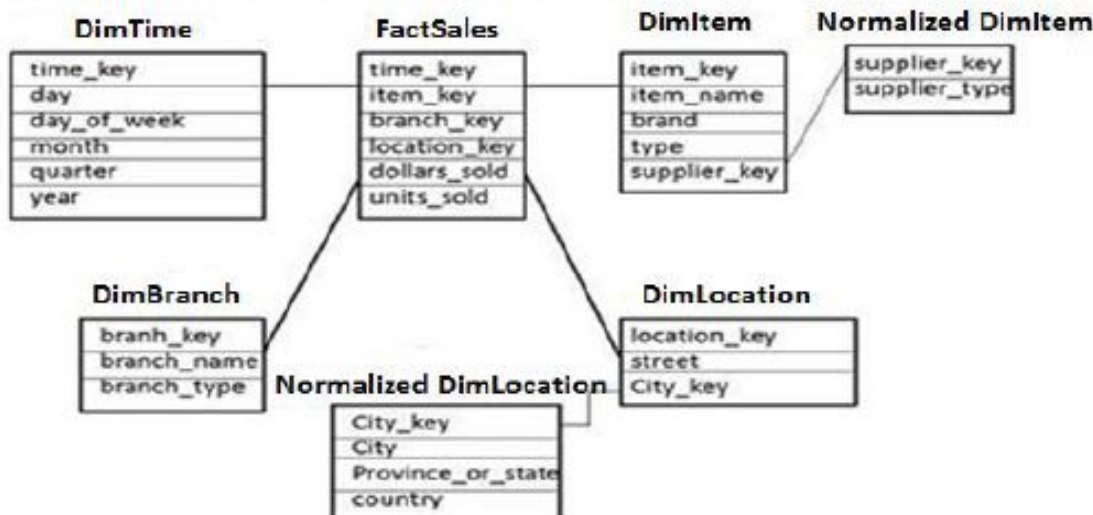
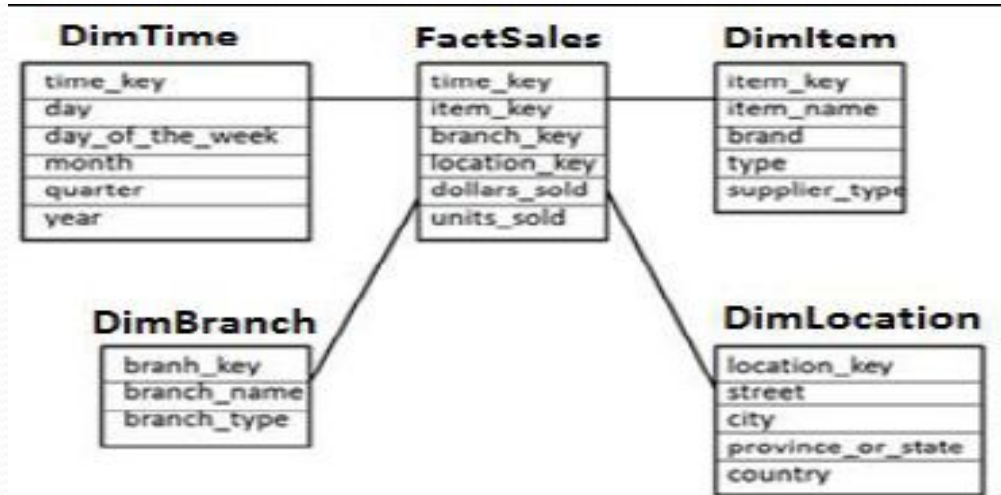
# HANA Modeling

- SAP HANA Modeler is used to create Information views on the top of schemas & tables in HANA database.
- Views are consumed by JAVA/HTML based applications or SAP Applications like SAP Lumira, Office Analysis or 3rd party software like MS Excel, Crystal Reports.
- HANA Modeling is done on the top of tables under Schema in HANA Studio and all views are saved under Content table.
- Schemas are logical description of tables in Data Warehouse. Schemas are created by joining multiple Fact and Dimension tables to meet some business logic.
- Python plays an important role

# HANA Modeling ...contd

There are 3 types of Schemas used in a Data Warehouse:

- Star Schema
- Snowflakes Schema
- Galaxy Schema



# HANA Data Replication

- SAP HANA Replication allows migration of data from source systems to SAP HANA database.
- For ex: to move data from existing SAP system to SAP HANA is by using various data replication techniques.
- System replication can be set-up on the console by using HANA Studio.
- We have 3 types of data replication methods in HANA system:
  - SAP LT Replication method
  - ETL tool SAP Business Object Data Service (**BODS**) method
  - Direct Extractor Connection method (**DXC**)