Introduction to SAP S/4HANA

SAP as a Software (SAP SE, 2023)

System Applications and Products (SAP) SE is the market leader in enterprise application software. It is a German multinational company that pioneered ERP (Enterprise Resource Planning) software. It is one of the world's largest independent software manufacturers, with 400,000 customers in 190 countries. SAP lets companies streamline processes, use live data, predict customer trends, and connect entire businesses.

SAP History

The following shows a short history of SAP through the years:

YEAR	DESCRIPTION
1972	SAP was founded for the development of real-time data application software.
1981 – 1982	SAP R/2 was introduced
1986 – 1989	SAP R/3 was developed, and SAP was presented at the CeBIT Hanover.
1993 – 1994	A partnership with Microsoft was established by connecting SAP R/3 with the Windows NT operating system. The IBM Corporation started using SAP R/3.
1995 – 1996	SAP joined the Internet, and SAP R/3 can be used online
2002	It is its 30th anniversary, becoming the 3rd largest independent software provider.
2005 – 2006	The release of SAP ERP was announced.
2009	SAP Business Suite 7 was launched to optimize business performance and reduce IT costs.
2011	The first SAP in-memory computing product was implemented, resulting in the SAP HANA platform. It made data access possible in seconds.
2013	SAP Business Suite moves to SAP HANA, becoming the fastest-growing product in the history of enterprise software.
2015	SAP S/4HANA was introduced.

SAP S/4HANA (SAP SE, 2023)

SAP ERP is the standard ERP solution for companies around the world. It enables a company to support and optimize its business processes and allows the collection of logically related transactions within identifiable business functions.

SAP's strategic goal in recent years has been to develop a next-generation ERP package such as an integrated management system based on proven business practices and meet the requirements of the digital transformation era consisting of all-encompassing digitization of the economy.

This results in **SAP S/4HANA.** It is the next-generation Business Suite and the biggest innovation since SAP R/3. It is the digital core of the company that enables digital transformation.

One of the advantages of SAP S/4HANA is **real-time simplification**. A typical booking transaction with 15 tables could be compressed to four (4) tables using SAP S/4HANA. It is achieved since the **S/4HANA Data Model Principles** allow data storage in denormalized form, have a single data source, remove redundant data storage for tasks such as aggregation, and process aggregation and analytics on the fly. It is compared to the **traditional database architecture**, which frequently uses redundant data to increase data aggregation performance and requires more effort to update redundant data.

SAP ERP is designed to strengthen companies of every size in various industries, while SAP S/4HANA caters more to large, enterprise-level organizations.

SAP Fiori

It is a design system and a user experience (UX) layer that allows business app creation with a consumer-grade user experience. It makes casual users into SAP experts with simple screens that run on any device. SAP Fiori provides a user interface for SAP S/4HANA. It has three (3) application types:

- **Transactional apps** that are used to access tasks like *Create*, *Change*, or *Display Process* with guided navigation;
- **Analytical apps** that give a visual overview of business data and
- A **factsheet** with a view of the essential information about objects and contextual navigation between related objects.

Data Types

The data types included in ERP systems are organizational data, master data, and transaction data. **Organizational Data** are data that are part of the organizational unit, such as the company code, plant, storage location, and distribution channel. **Master Data** such as person, material, customer, and vendor can be stored for a long time and rarely changed. It represents logically grouped data like customer master, material master, vendor master, and general ledger accounts. **Transaction Data** is the system record of the business event wherein, depending on the business event, different master data and organization data will be referenced.

For example, during a sales order business event, the following data is stored:

- Organizational: Client, Company Code, Sales organization
- Master: Customer, Material, Pricing
- Situational: Date, Time, Person, Amount

Furthermore, transactions are data sets generated if a business transaction is executed. The record of the business transaction is called a '**document**.' It includes all relevant predefined information from the master data and organization entities. Examples of documents are sales documents, purchasing documents, material documents, and account documents.

The **document flow and the order status allow** the setting of the status at any point in time. SAP revises the status every time a change in a document takes place.

Cloud vs. On-Premise

SAP S/4HANA can be accessed on the Cloud and On-Premise. Both can be used hybridly without losing the company's integration.

The **Cloud Edition** has a subscription licensing deployed in the private cloud maintained by SAP. SAP also provides system and control maintenance. This edition allows automatic participation in quarterly innovation upgrades and has current release cycles. The **On-Premise** edition is under traditional licensing with customer control of deployment and maintenance. The hardware in this edition is at the company's location, and the data is privately controlled. Compared to the cloud edition, this has fewer release cycles.

Optimization Levers

Efficiency, Effectiveness, and Agility are three (3) optimization levers considered in SAP S/4HANA. **Efficiency** focuses on accelerated execution, automated process steps, and digital out-tasking. **Effectiveness** is speeding up action, de-layer processes, and raising process intelligence. **Agility** focuses on process flexibility, organizational flexibility, and assimilating process innovation.

Here is the application of optimization levers on real-time inventory management based on business and IT.

BUSINESS	IT
Real-time inventory management	No separation of data entities from different tables
Real-time product availability	Parallel postings and processes
Increased inventory turnover	Faster reporting
Reduced batch size	Frequent updates
Faster operational reporting	One (1) document table instead of 26 aggregate tables
Fewer stockouts	Reduced memory footprint

Transition to SAP S/4HANA

Here are the possible scenarios when a company transitions to SAP S/4HANA and the benefits they could get. The scenarios include new implementation, system conversion, and landscape transformation.

New Implementation
Scenario: New implementation of SAP S/4HANA for customers migrating a legacy system. It is known as the **greenfield approach**.

Benefits for the customer:

- Reengineering the process simplification based on ready-to-run business processes
- Predefined migration objects and best practices are available with guided configuration
- Reduce time to value and customer total cost of ownership (TCO)
- The rapid adoption of innovations

This type of transition would require project duration parameters such as the number of data migration objects (Material, Customer, Vendor, etc.) and volume and complexity per data migration object.

The process begins with installing SAP S/4HANA and an initial data load from the source system. Tools used are SAP Data Services (SAP DS) for On-Premise and SAP Landscape Transformation (SAP LT) for Cloud.

System Conversion
Scenario: Customers who want to convert their current system into an SAP S/4HANA system. It shows the database, SAP NetWeaver, and application transition in a single step.

Benefits for the customer:

- Migration without reimplementation
- No disruption to existing business process
- Reevaluation of customization and existing process flows

This transition requires the number of systems and source database size (technical) and the number of company codes, ledgers, and operating concerns (functional) as its project duration parameters.

Before running the conversion, add-ons and other solutions must be prioritized to ensure compatibility, and the components and customer code to validate further prerequisites must be checked.

Landscape Transformation

Scenario: Customers who want to consolidate their landscape or selectively transform data into a SAP S/4HANA system.

Benefits for the customer:

- Selective data transformation allows a phased approach, focusing on parts of the business with the highest ROI (return on investment) and lower TCO.
- System and landscape consolidation with harmonized/simplified processes and unified master data leads to lower TCO.

This transition's general project duration parameters depend on the selected sub-scenario, such as system consolidation, selective migration, and central finance. Still, the specified parameters include the number of systems to be consolidated, including the volume of the selected data.

For **Consolidation**, clients are consolidated from different source systems into one (1) new or existing SAP S/4HANA system using the SAP LT tool. For **Selective Data Transformation**, selected SAP applications, such as central finance, are migrated using the SAP LT tool.

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