

S4H01

SAP Business Suite to SAP S/4HANA Delta Overview

PARTICIPANT HANDBOOK INSTRUCTOR-LED TRAINING

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Typographic Conventions

American English is the standard used in this handbook.

The following typographic conventions are also used.

This information is displayed in the instructor's presentation



Demonstration



Procedure



Warning or Caution



Hint



Related or Additional Information



Facilitated Discussion



User interface control

Example text

Window title

Example text

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Course Overview

TARGET AUDIENCE

This course is intended for the following audiences:

- Executive
- Systems Architect
- Project Manager
- Application Consultant
- Technology Consultant
- Support Consultant
- Super / Key / Power User

Lesson 1

Introducing SAP S/4HANA

3

UNIT OBJECTIVES

- Explain the need for a new business suite
- Describe the evolution of SAP S/4HANA
- Describe the key aspects of SAP S/4HANA

Unit 1

Lesson 1

Introducing SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Explain the need for a new business suite
- Describe the evolution of SAP S/4HANA
- Describe the key aspects of SAP S/4HANA

Learning Journey

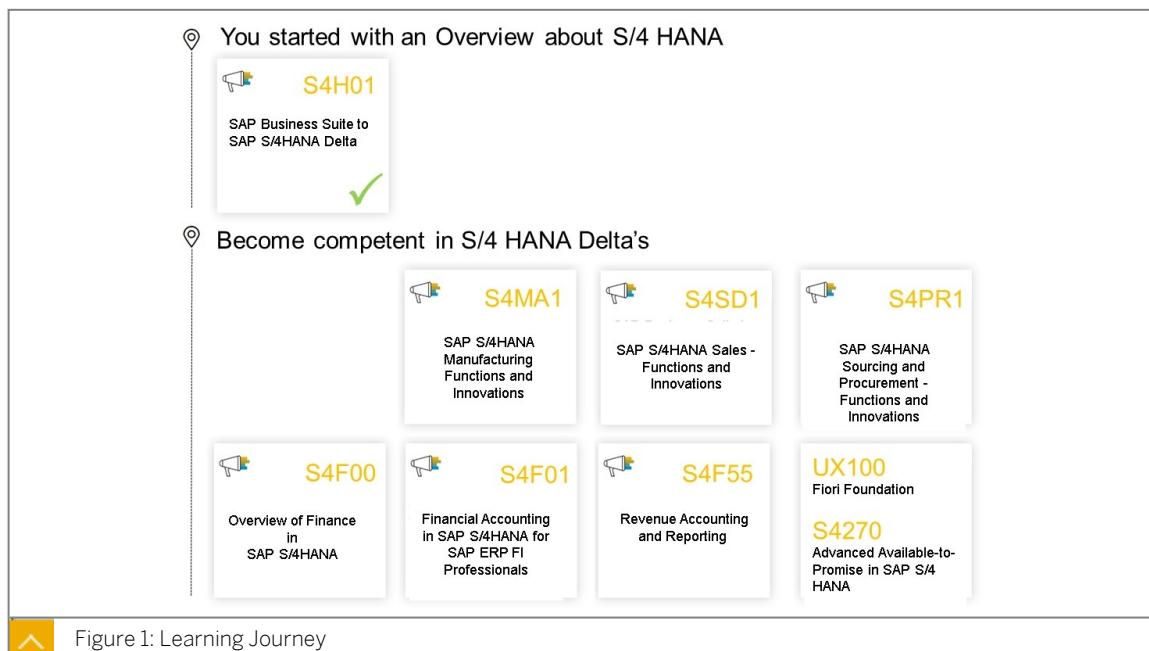


Figure 1: Learning Journey

Business Suite Requirement

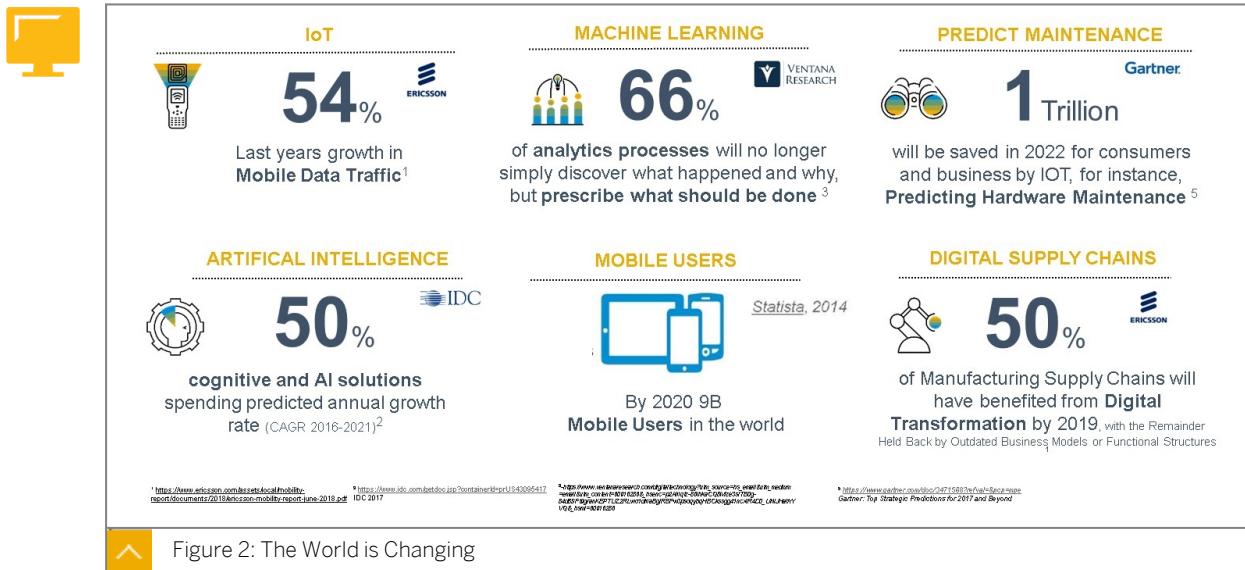


Figure 2: The World is Changing

The figure, The World is Changing, shows that the world around us is becoming more complex. There has been an exponential growth of digital information (social, mobile, and big data), an increase of globalization and the spread of business networks, and the Internet of Things. These changes have resulted in more complex business processes, more complex organizations, and more complex software solutions.

At the end of 2009, 5% of the world's population owned smart phones. Four years later, that figure jumped to 22%. Currently, 1.7 billion people are on social networks. Over the next three years, that audience will surpass 2.55 billion. By 2020, 5 billion people have become middle class and come online. 50 billion devices will be connected to the Internet of Things, creating a digital network of virtually everything. Cloud computing, a \$41 billion business in 2011, will grow to a \$241 billion business in the same time frame.

The exponential proliferation of mobile devices, social media, cloud technologies, and the staggering amounts of data they generate, have transformed the way we live and work. 61% of companies report that most of their people use smart devices for everything – from e-mail, to project management, to content creation.

Machine Learning (ML) is the study of algorithms and statistical models that computer systems use to progressively improve their performance on a specific task. Machine learning algorithms build a mathematical model of sample data, known as "training data" in order to make predictions or decisions without being explicitly programmed to perform the task.

Artificial intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans. Some of the activities that computers with artificial intelligence are designed for, include the following:

- Speech recognition
- Learning
- Planning
- Problem solving

These advancements have improved our lives and have provided us with greater opportunities for innovation than ever before.

The world may be getting smarter, but it is not getting any easier.

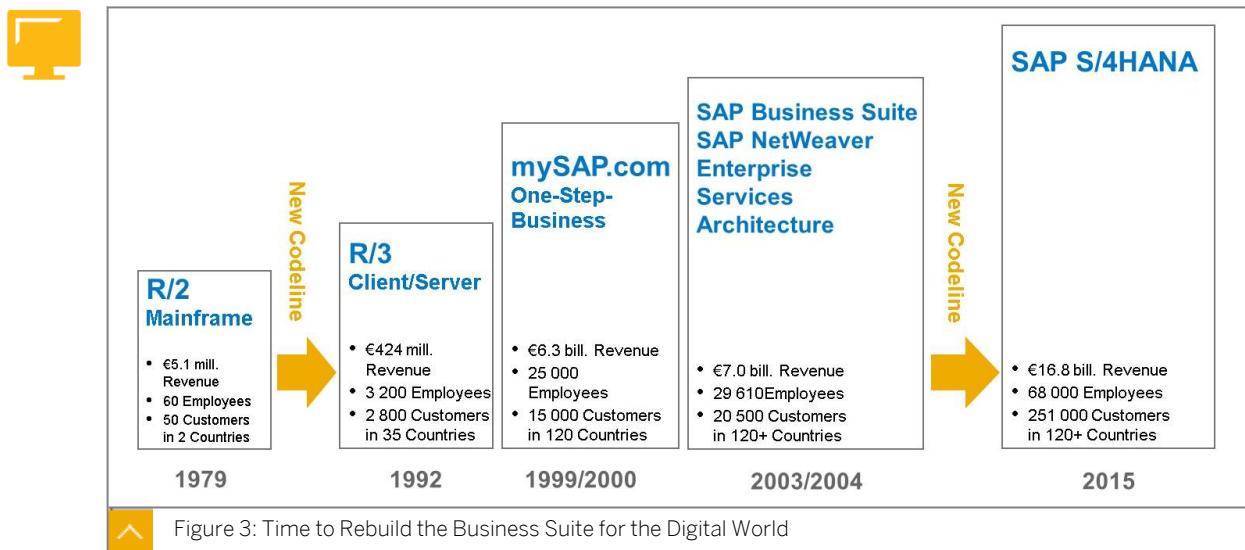


Figure 3: Time to Rebuild the Business Suite for the Digital World

Since the beginning of enterprise computing, SAP has been rebuilding the business applications whenever major technology shifts have occurred.

Some key moments in the SAP application development history are the following:

- 1979 - SAP invents ERP. SAP builds standard business software based on mainframe technology. The name, SAP R/2 supports and integrates major business functions in real-time, and handles multi-country and multi-currency implementations. (R means real-time, and although there was an R/1, this is not regarded as the first major release).
- 1992 - With the rise of the personal computer, the introduction of client/server architecture means another rewrite of the applications to exploit the power of a layered, three-tier architecture approach, in which processing is split across three layers, client, application, and database. It is the end of the mono-chromatic, text-based, messy green screens and the start of a new graphical interface to improve the end user experience. This is the birth of SAP R/3.
- 2004 - The Web is firmly established as the common business network and customers demand better integration between their business applications and the Web. SAP develops a new integration application platform called SAP NetWeaver to enable this. All SAP applications run on a common platform, and customers and partners can build and integrate existing applications easily using widely adopted Web standards, such as service-oriented architecture (SOA). Additionally, a little later, a new switch framework is introduced to allow customers to selectively enable only the new functions developed by SAP in order to avoid disrupting their core processes. The SAP R/3 name is now replaced by SAP ERP. SAP ERP is part of a larger family known as SAP Business Suite, which also contains many other line of business (LOB) applications from SAP, such as SAP CRM.
- 2015 - A new wave of advances in hardware architecture brings massive computing power at decreasing costs. Huge memory and multi-core processors arrive to offer massive computing power. The underlying design of existing SAP applications does not fully exploit the power of the new hardware. A complete rewrite of the SAP Business Suite is required. The new business suite is called SAP S/4HANA.

As you can see from the figure, R/3 was upgraded, extended, and eventually renamed to SAP ERP. With upgrades from R/3 to the next version, we added to and enhanced functionality,

and mostly kept other functionalities as before. This allowed custom ABAP programs to continue to run with no, or only small, adjustments.

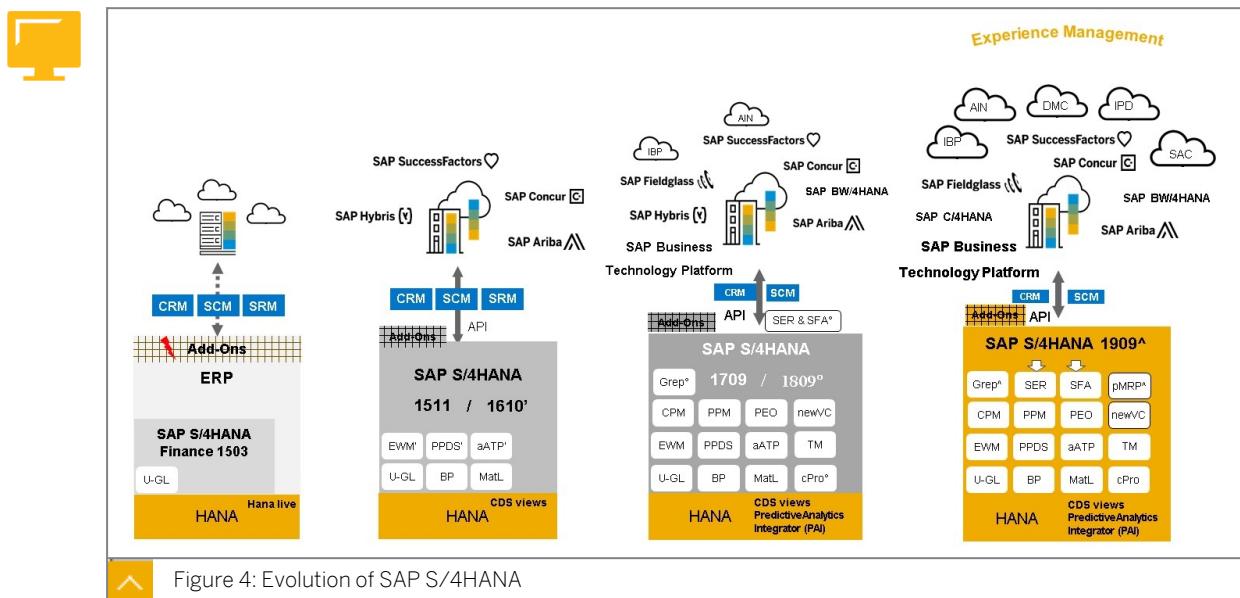
SAP S/4HANA is our next generation Business Suite, but it is not another new version of R/3. It is a new code line.

The last time we made a product announcement like S/4HANA was 1992, when R/3 was introduced as next generation after R/2. It was a new code line on a different hardware and software architecture. R/2 was for mainframe computers and R/3 for micro computers on Unix, and later Windows NT.

We kept many things from R/2, like some tables, fields, and so on. Some R/2 ABAP code was converted to R/3. But, with new technologies, it was time for a fresh new start. In R/3, functionality was extended, re-designed, or retired. In short, we kept the best and did housekeeping where necessary. The new technologies allowed us to make R/3 a better product, not just an upgrade with more functionality.

Now, with SAP S/4HANA, we have a new, better product. It is like the step from R/2 to R/3. It is because we have new technologies that we can make a better ERP product on technologies, like SAP HANA on multi-core CPU and large RAM memory.

Evolution of SAP S/4HANA



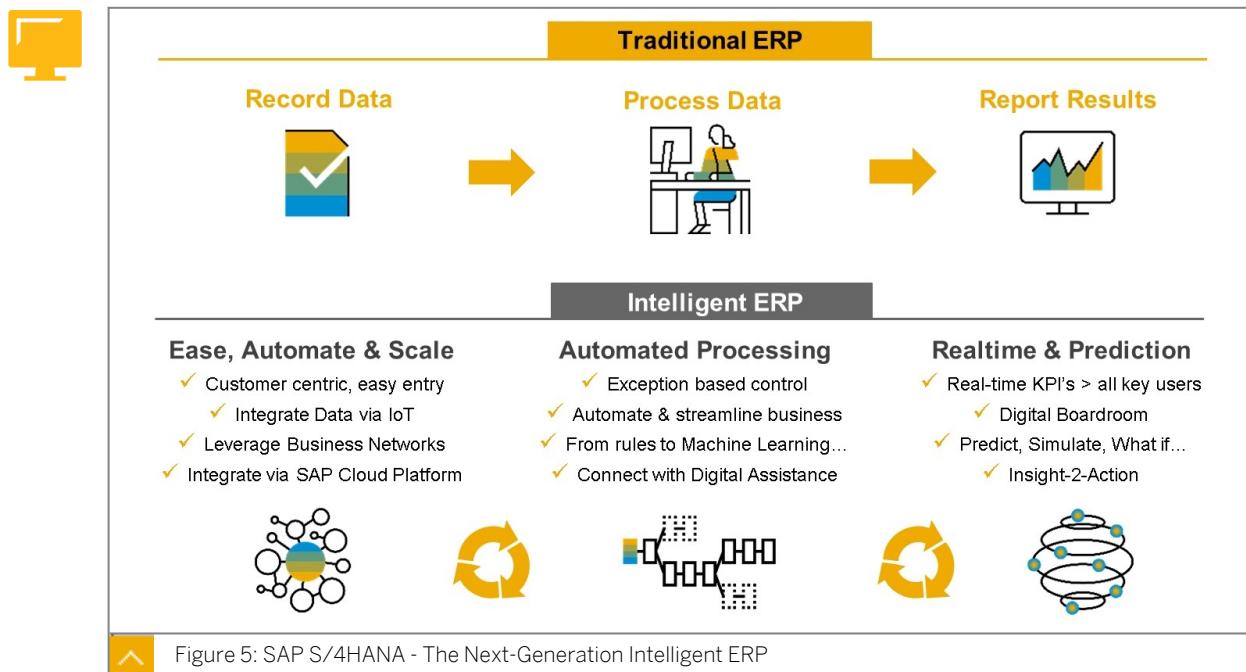
In SAP S/4HANA Finance 1503, the Unified General Ledger (U-GL) was introduced. It brings together the once separate components Financial Accounting (FI) and Controlling (CO) into one pool of relevant business data. This single source of truth collects all accounting-relevant transactions and makes them available to all relevant application components: Financial Accounting (General Ledger), Controlling, Asset Accounting, and Material Ledger.

With SAP S/4HANA 1511, the optimized data model for logistics with Business Partners (BP) and Material Ledger (ML) was introduced.

With SAP S/4HANA 1610, Extended Warehouse Management (EWM), Production Planning and Detailed Scheduling (PP/DS) were embedded, and advanced ATP (aATP) was developed.

With SAP S/4HANA 1709, Transportation Management (TM) was embedded, and Commercial Project Management (CPM), Portfolio and Project Management (PPM) and Financial Closing Cockpit (FCC) were added.

With SAP S/4HANA 1809, Group Reporting (GRep), Sales Force Automation, Central Procurement (CPro) (Central Requisitioning was available as of 1709. 1809 adds Central Contract and Central Purchasing) were added.



SAP S/4HANA improves entry management for orders and data records. Orders can come in, for example, via business networks or via cloud systems. Internet of Things (IoT) data is easily imported.

Execution of data is improved by adding heuristics, machine learning, and fast batch processing. Users only have to react when exceptions are raised.

Analytical and transactional data are brought together in real-time to support fast decision making.

These days, that is not where the story ends. An example is the experience economy that has changed the way businesses compete. It's not just about products and services anymore, it's about experiences. Experiences drive customer expectations, brand perceptions, and can make or break an organization's success. That's why every organization needs tools to help them better understand the beliefs, emotions, and intentions of their customers. The only way to get that and deliver breakthrough customer experiences, is to combine the power of experience data (X-Data) and operational data (O-Data) so companies can truly understand what's happening at every step of the customer journey. With SAP S/4HANA and Qualtrics, customers can now combine O + X data.

Key Aspects of SAP S/4HANA

SAP S/4HANA

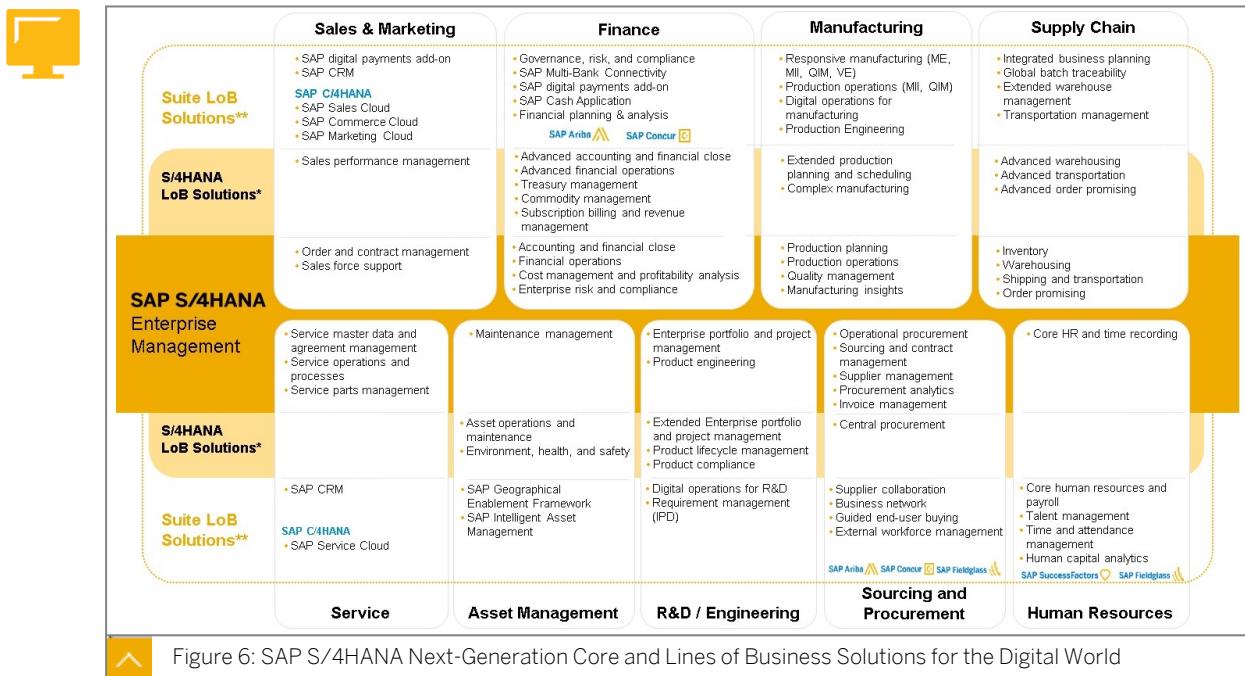


Figure 6: SAP S/4HANA Next-Generation Core and Lines of Business Solutions for the Digital World

The figure outlines the official product map of the SAP S/4HANA Suite, comprising of different sections.

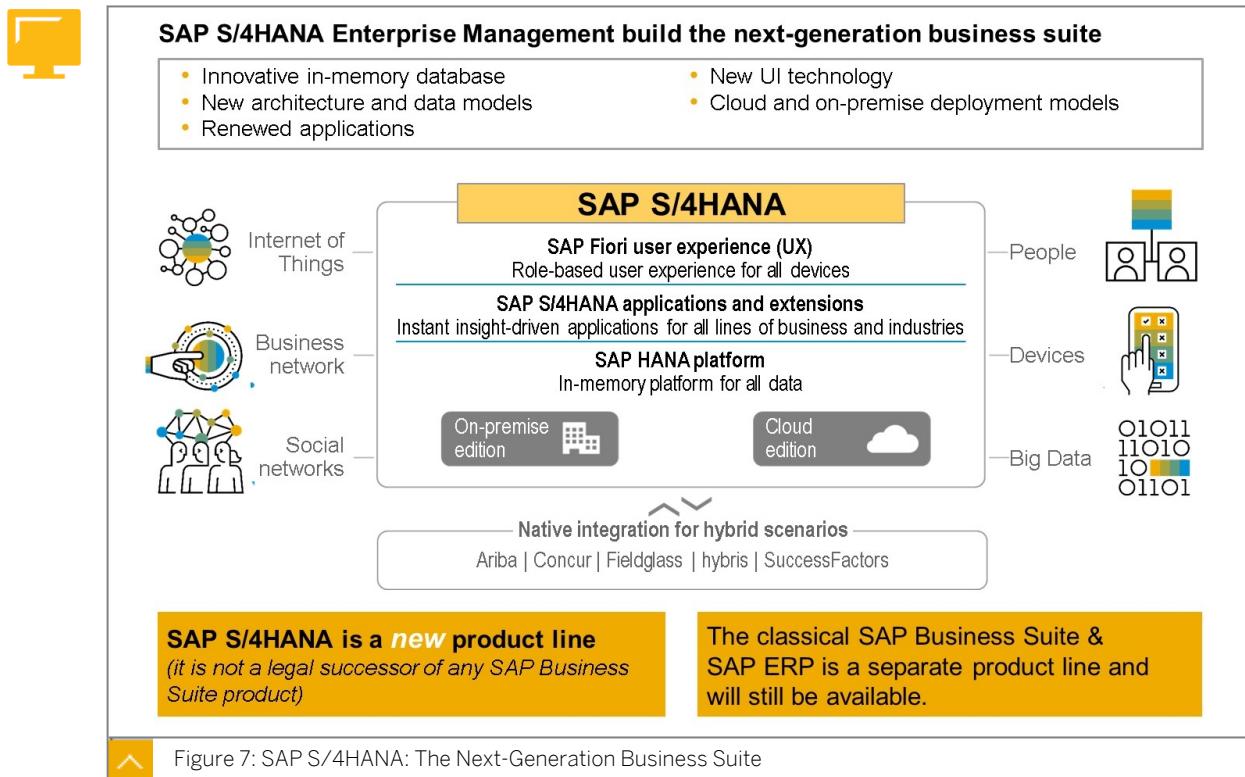
All Business Areas reflect the official SAP GTM terminology, which is further documented in the SAP Feature Scope description.

In the dark gray area, you can see all Business Areas included in the Shipment Scope and in the SAP S/4HANA Enterprise Management license.

In the light gray area, you will see the Business Areas included in the shipment (or available as add-ons), which will require separate licenses.

In the white area, you will see Products or Solutions outside the shipment scope which can be integrated, but require individual project. Many of them can be seamlessly integrated with available interfaces (APIs) or Best Practices, so that a relevant integration scope is supported "out of the box".

SAP S/4HANA: The Next-Generation Business Suite



SAP S/4HANA Enterprise Management is our next-generation Digital Core, and is a new product. With SAP S/4HANA, we are building on the success of the SAP Business Suite powered by SAP HANA with a completely new and re-imagined suite.

SAP S/4HANA runs on SAP HANA for massive simplifications (simplified data model: no indexes, no aggregates, no redundancies) and innovations (for example, open in-memory platform for advanced applications predicting, recommending, and simulating).

SAP S/4HANA is designed with SAP Fiori UX, offering an integrated user experience with modern usability and instant insight on any device (role-based, three steps maximum to get the job done, mobile-first, consistent experience across lines of business).

SAP S/4HANA is connected to the Internet of Things and business networks for real-time collaboration (planned: machine-to-machine, Ariba Network, Concur) in the networked economy.

SAP S/4HANA is engineered for providing choice of deployment (on-premise, cloud, and hybrid).

SAP S/4HANA is made for easy adoption (guided, configuration, and easy on-boarding, from the discovery of the solution through cloud trials to deployment with pre-configured best practices).

In addition, SAP HANA Cloud Platform serves as an open extension, agility layer for SAP S/4HANA. The extensions built on the cloud platform can run against either deployment of SAP S/4HANA, in the cloud and on-premise.

How SAP S/4HANA Will Change the Way You Run Your Business

360° Cockpits and Analytical Views
for comprehensive and customizable insights

Embedded Analytics
for simulation, prediction, and insight-to-action

Role-based applications
for user/task-related optimization

Digital Assistant and Mobile UX
for device-independent use

Machine Learning for
automation and decision support

Figure 8: How SAP S/4HANA Will Change the Way You Run Your Business

Analytics

SAP S/4HANA embedded analytics means direct and real-time analysis in SAP S/4HANA using SAP Fiori. As SAP S/4HANA runs on SAP HANA high-performance database, analytics is one of the most typical and tangible values of SAP S/4HANA. SAP S/4HANA embedded analytics is the function for real-time operational analytics in SAP S/4HANA. It consists of ABAP CDS Views (or OData service not from CDS view) as data source, and SAP Fiori analytical apps as the front-end. Other than embedded analytics, standalone SAP BW or embedded SAP BW can be the data source for analyzing data in SAP S/4HANA.

With Predictive Analytics, you can leverage machine learning models to enrich the basis for decision making, for example, by forecasting the future value of a KPI and, therefore, helping you to anticipate needs.

Digital Assistant

SAP Joule is the AI copilot, interact with your business apps through one single interface by typing your commands.

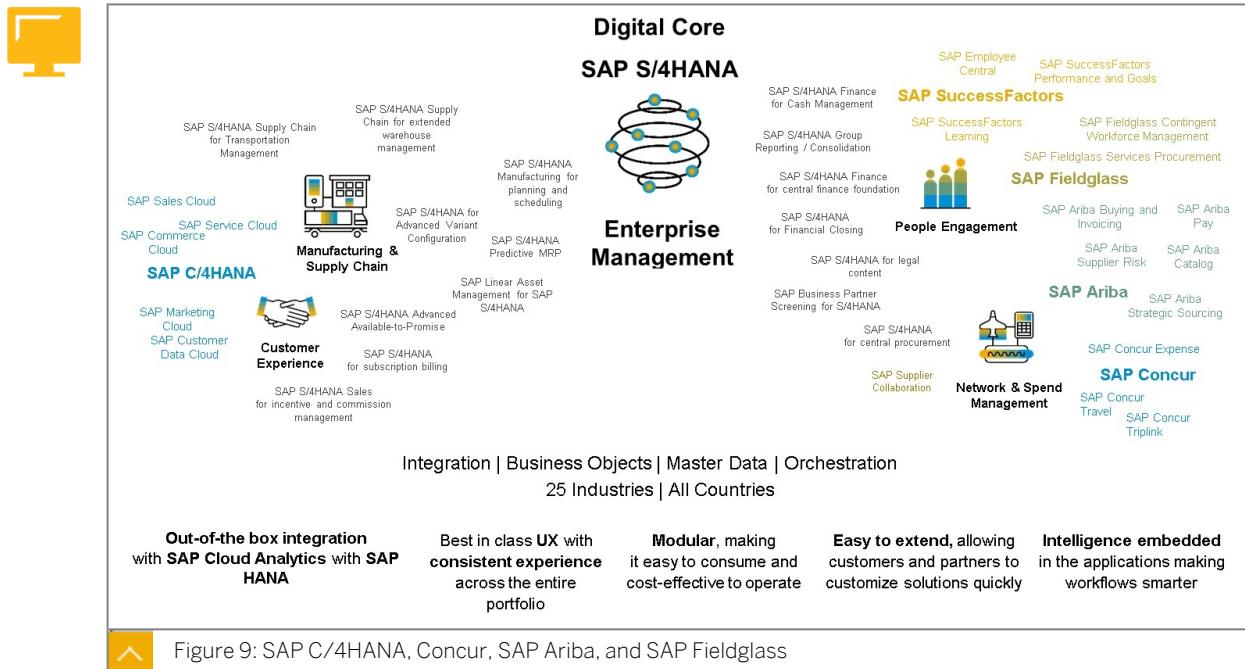
Machine Learning

With the machine learning functionalities included since 1709, SAP S/4HANA becomes release-intelligent, and tasks become more and more predictive. In addition to this, routine and repetitive tasks are fully automated.

Role-based and Mobile UX

Personalize and simplify the user experience (UX) for your SAP solutions. Using modern UX design principles, SAP Fiori delivers a role-based, consumer-grade user experience across all lines of business, tasks, and devices. Use SAP Fiori apps, or take advantage of new solutions that incorporate the UX, such as SAP S/4HANA and SAP Hybris Cloud for Customer.

SAP C/4HANA, Concur, SAP Ariba, and SAP Fieldglass



The figure shows how the SAP solution SAP C/4HANA supports the customer area, while the supplier area is supported by Concur, SAP Ariba, and SAP Fieldglass.

- Workforce engagement to retain and grow existing talent, attract new talent, and preserve enterprise intelligence with a smarter, more engaged workforce.
- Supplier collaboration through business networks to mitigate supply risk, accelerate growth, and help ensure global compliance, all while maximizing product availability and margins.
- The Internet of Things and Big Data, combining internal, external, social, and sensor data to enable real-time visibility to quantifiable measures of consumer demand and other market dynamics with qualitative measures of consumer sentiment, intent, and behavior.

SAP S/4HANA is designed to drive instant value across lines of business and industries with the ultimate sophistication – simplicity.

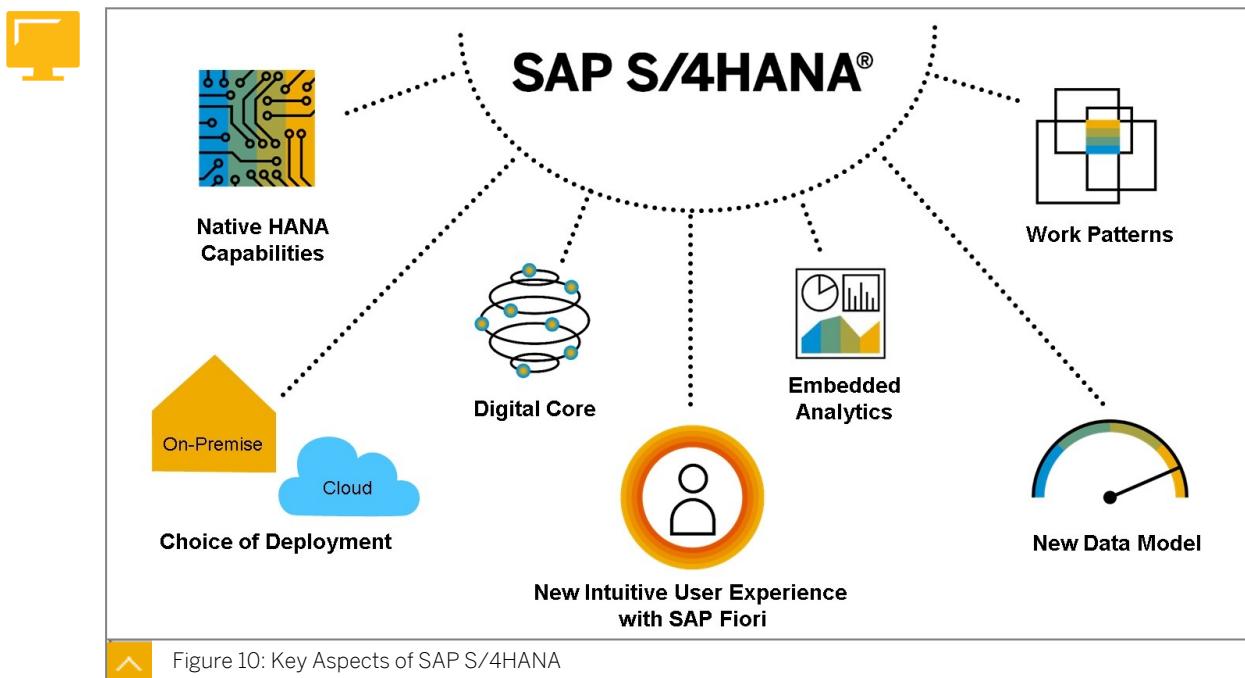
From a **business value perspective**, this means that SAP S/4HANA creates unique opportunities to reinvent business models and drive new revenues and profits. First, enterprises can now easily connect to people, devices, and business networks to deliver new value to their customers on any channel. The Internet of Things and Big Data become accessible to any business. Second, enterprises can dramatically simplify their processes, drive them in real-time and change them as needed to gain new efficiencies. No more batch processing is required. Lastly, business users can now get any insight on any data from anywhere in real-time, planning, execution, prediction, and simulation. Decisions may be made on the fly with a high level of granularity for faster business impact.

From an **IT value perspective**, this means that SAP S/4HANA creates unique opportunities to simplify the landscape and help reduce total cost of ownership (TCO), with SAP HANA as the great simplifier. First, enterprises can now reduce their data footprint and work with larger data sets in one system (for example with industry or application function re-integrated that was stand alone before, to save hardware costs, operational costs, time and reduce complexity. Second, innovation is also made simple with leveraging an open platform (SAP

BTP) to drive advanced applications. For example, predicting, recommending, and simulating, all while protecting existing investments. Third, business users can leverage a simple, and role-based user experience based on modern design principles, which minimizes training efforts while increasing productivity, as it combines information from various sources at the point where decisions are made.

SAP S/4HANA is only built on SAP HANA because, as of today, only the SAP HANA platform can deliver such level of massive simplifications and innovations.

Key Aspects of SAP S/4HANA



The figure, Key Aspects of SAP S/4HANA, highlights the most important aspects of SAP S/4HANA.

SAP S/4HANA is built on SAP HANA, so it inherits all the capabilities of this powerful in-memory data management and application platform. This includes advanced text mining, predictive analysis, simulations, and powerful real-time decision support, with access to any type of data in real-time.

A brand new user experience is delivered to improve the productivity and satisfaction of business users, and brings the interface up to a consumer-grade experience, optimized for any device.

SAP S/4HANA can be deployed on-premise, in the cloud, or a combination of both, to provide flexible consumption options to customers.

The data model has been massively simplified. This means that we have lost unnecessary tables and the data in those tables, to shrink the footprint dramatically and simplify the application design and extensibility.



LESSON SUMMARY

You should now be able to:

- Explain the need for a new business suite
- Describe the evolution of SAP S/4HANA

- Describe the key aspects of SAP S/4HANA

Learning Assessment

1. What are some of the trends driving the need for a re-engineered business suite built for the digital?

Choose the correct answers.

- A Massive increase in device connectivity
- B Business users are taking on more technical IT tasks
- C Increase in ownership of mobile devices
- D Adoption of cloud computing

2. Why was the application code completely re-written for SAP S/4HANA?

Choose the correct answers.

- A The optimized ABAP code that we developed for Suite on HANA would not work with SAP S/4HANA.
- B To take advantage of the simpler data model
- C SAP S/4HANA is now built with Java
- D To ensure that the code is optimized for SAP HANA

3. What is the name of the SAP S/4HANA core?

Choose the correct answer.

- A Enterprise Resource Management
- B Enterprise Management
- C Enterprise Central Component
- D Enterprise Line of Business (LoB)

4. What is SAP Fiori?

Choose the correct answer.

- A Mobile technology
- B User experience
- C Data model
- D Reporting tool

5. SAP S/4HANA is built to natively integrate with Business Networks such as:

Choose the correct answers.

- A SAP Ariba
- B LinkedIn
- C Concur
- D SAP Fieldglass
- E SAP Hybris

6. Which features of SAP HANA enable massive data footprint reduction for SAP S/4HANA?

Choose the correct answers.

- A Support for data aging strategies
- B Column store tables
- C On the fly aggregation from line item tables
- D Use of hierarchical cache

7. What characterizes the architecture of a simple application?

Choose the correct answers.

- A Use of dedicated aggregation tables
- B Works with any database
- C Push data intensive tasks to SAP HANA
- D Reduction in number of tables
- E No data redundancy

8. Which edition allows more extensive customer modifications?

Choose the correct answer.

- A On-premise
- B Cloud

9. Bonus question: What does the word Fiori mean? (Clue: it is an Italian word)

Choose the correct answer.

- A Fire
- B Flower
- C Fury
- D Fast

Learning Assessment - Answers

1. What are some of the trends driving the need for a re-engineered business suite built for the digital?

Choose the correct answers.

- A Massive increase in device connectivity
- B Business users are taking on more technical IT tasks
- C Increase in ownership of mobile devices
- D Adoption of cloud computing

Correct. Some of the trends driving the need for a re-engineered business suite built for the digital, are a massive increase in device connectivity, increase in ownership of mobile devices, and adoption of cloud computing.

2. Why was the application code completely re-written for SAP S/4HANA?

Choose the correct answers.

- A The optimized ABAP code that we developed for Suite on HANA would not work with SAP S/4HANA.
- B To take advantage of the simpler data model
- C SAP S/4HANA is now built with Java
- D To ensure that the code is optimized for SAP HANA

Correct. The application code was completely re-written for SAP S/4HANA to take advantage of the simpler data model, and ensure that the code is optimized for SAP HANA.

3. What is the name of the SAP S/4HANA core?

Choose the correct answer.

- A Enterprise Resource Management
- B Enterprise Management
- C Enterprise Central Component
- D Enterprise Line of Business (LoB)

Correct. The name of the SAP S/4HANA core is Enterprise Management.

4. What is SAP Fiori?

Choose the correct answer.

- A Mobile technology
- B User experience
- C Data model
- D Reporting tool

Correct. SAP Fiori is a user experience.

5. SAP S/4HANA is built to natively integrate with Business Networks such as:

Choose the correct answers.

- A SAP Ariba
- B LinkedIn
- C Concur
- D SAP Fieldglass
- E SAP Hybris

Correct. SAP S/4HANA is built to natively integrate with Business Networks, such as SAP Ariba, Concur, SAP Fieldglass, and SAP Hybris.

6. Which features of SAP HANA enable massive data footprint reduction for SAP S/4HANA?

Choose the correct answers.

- A Support for data aging strategies
- B Column store tables
- C On the fly aggregation from line item tables
- D Use of hierarchical cache

Correct. The features of SAP HANA that enable massive data footprint reduction for SAP S/4HANA, are support for data ageing strategies, column store tables, and on the fly aggregation from line item tables.

7. What characterizes the architecture of a simple application?

Choose the correct answers.

- A Use of dedicated aggregation tables
- B Works with any database
- C Push data intensive tasks to SAP HANA
- D Reduction in number of tables
- E No data redundancy

Correct. The architecture of a simple application is characterized by push data intensive tasks to SAP HANA, reduction in number of tables, and no data redundancy.

8. Which edition allows more extensive customer modifications?

Choose the correct answer.

- A On-premise
- B Cloud

Correct. On-premise edition allows more extensive customer modifications.

9. Bonus question: What does the word Fiori mean? (Clue: it is an Italian word)

Choose the correct answer.

- A Fire
- B Flower
- C Fury
- D Fast

Correct. The word Fiori means flower.

Lesson 1

Describing SAP S/4HANA Deployment

25

Lesson 2

Describing the Key Aspects of Footprint Reduction

31

Exercise 1: Optional: Explore the SAP HANA Database

39

Lesson 3

Describing Key Aspects of Work Patterns

45

UNIT OBJECTIVES

- Describe the key aspects of deployment
- Describe the key aspects of footprint reduction
- Explain the intelligent enterprise

Describing SAP S/4HANA Deployment



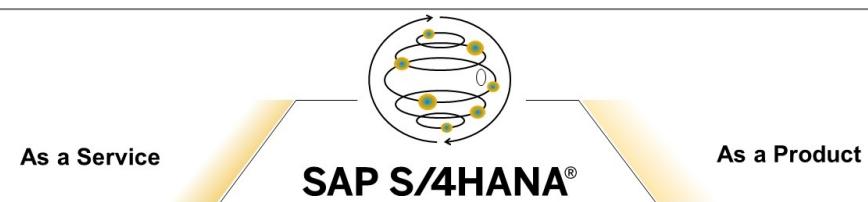
LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the key aspects of deployment

Key Aspects of Deployment

SAP S/4HANA – Operating Models



Degree of Standardization

Degree of Flexibility

Figure 11: SAP S/4HANA – Operating Models

The two operating models differ in terms of the “degree of standardization” and the “degree of flexibility”. The operating model SAP S/4HANA AnyPremise with its own data center, offers a completely different level of flexibility than its counterpart in the cloud. The flip side of this kind of flexibility is a lower level of standardization compared to the cloud version. There is no right or wrong. Each customer has to decide on their own preferences, according to flexibility and standardization. Nevertheless, there is a trend towards more standardization, due to the reduced total cost of ownership in the long run.

The four deployment options are explained in the following section.

Option 1: SAP S/4HANA Cloud Essentials Edition (ES)

This option is commonly used by net new customers that want the full cloud approach with regular quarterly upgrades that include new configuration and new software. This option is also used for subsidiaries alongside SAP on-premise implementations.

The main features of this option are as follows:

- Infrastructure: Public cloud shared with other customers and hosted and operated by SAP only.
- License: Subscription for Software as a Service.
- Upgrades: Managed by SAP. Quarterly fixed and mandatory (configuration and software). The upgrade of configuration each quarter is unique to the Essentials Edition. SAP and the customer do automated and manual regression tests.
- Scope: Core ERP (subset of full ERP), specific industries, and 42 countries.
- Extensibility: Key user extensibility and extensions through SAP Cloud Platform (side-by-side extensibility) with whitelisted APIs. See the PDF in SAP Note 2920697.
- Configuration: Use Self Service Configuration User Interfaces (SSCUIs) based on fit-to-standard workshops in the Explore phase.
- Implementation: Greenfield only (new implementation).
- SAP Activate Roadmap: SAP Activate Methodology for SAP S/4HANA Cloud.
- SAP Best Practices: Scope is selected from these cloud-specific Best Practices.
- Partner content: Partners can add configuration manually.

You can choose to use the Implementation Portal for SAP S/4HANA Cloud to manage your project.

Unlike all the other deployment options, the user interface is purely the SAP Fiori launchpad, and configuration is done using SSCUIs, not the IMG.

Option 2: SAP S/4HANA Cloud Extended Edition (EX)

This option has the advantages of the cloud, with more flexibility and control. It has standardized infrastructure processes, services, and SLAs. There must be more than a certain minimum number of users, that is, this option is for mid and large size customers.

The main features of this option are as follows:

- Infrastructure: Dedicated landscape on cloud infrastructure operated by SAP (SAP or Hyperscaler, for example, Microsoft Azure, AWS, Google Cloud).
- License: Subscription for Software as a Service.
- Upgrades: Two per year with flexibility (software). SAP and the customer manage the upgrade process, and SAP and the customer do regression testing.
- Scope: Same SAP S/4HANA functional scope as on-premise. 64 countries, 39 languages, and 25 industries. Some third-party add-on limitations.
- Extensibility: In-app extensibility including key user extensibility and some classic ABAP extensibility, but no modifications. Also extensions through SAP Cloud Platform (side-by-side extensibility). See the PDF in SAP Note 2920697.
- Configuration: Use the IMG based on fit-to-standard workshops in the Explore phase. Some restrictions apply, for example, SE80.
- Implementation: Greenfield (new implementation) or selective data transition.
- SAP Activate Roadmap: SAP Activate Methodology for SAP S/4HANA Cloud EX.

- SAP Best Practices: SAP Best Practices are available. Enterprise Management Layer is included in the subscription and is available for a production system, while others are currently available for sandbox only.
- Partner content: Partners can add configuration manually.

Customers use SAP Solution Manager to manage their project design.

Option 3: SAP S/4HANA AnyPremise Managed by SAP

SAP S/4HANA AnyPremise managed by SAP is an on-premise solution with individual and private hardware and infrastructure hosted by SAP, a hyperscaler, or in your own data center. Infrastructure management is delegated to SAP with flexible service offerings.

The main features of this option are as follows:

- Infrastructure: Customer-specific landscape on SAP HANA Enterprise Cloud in an SAP data center, or at a hyperscaler, or in your own data center (Customer Edition).
- License: Bring Your Own License and infrastructure subscription.
- Upgrades: Annual, and you choose your own speed of adoption (software). The customer is responsible for managing the upgrade.
- Scope: Full SAP S/4HANA functional, country, and industry scope, and partner add-ons.
- Extensibility: Customization, modification, and extensibility possible, as with ERP.
- Configuration: Use the full IMG based on a fit-to-standard approach in the Explore phase.
- Implementation: New implementation, system conversions, or selective data transition.
- SAP Activate Roadmap: Transition to SAP S/4HANA.
- SAP Best Practices: All SAP Best Practices are available.
- Partner content: Partner templates allowed.

Customers use SAP Solution Manager to manage their project design. Most customers use SAP Best Practices activated using SAP Solution Builder.

The SAP Activate roadmap has three approaches: new implementation, system conversion, or selective data transition. The term “selective data transition” is used instead of “landscape transformation” in the latest version of the roadmap. In this approach, there are tools to selectively transfer configuration and custom code from your old ERP system to a new SAP S/4HANA instance. System conversion involves converting your existing ERP system into SAP S/4HANA by migrating the database, applying software updates, and doing a data conversion from the old data model to the new S/4HANA data model.

Option 4: SAP S/4HANA Any Premise: On-Premise or Managed by Cloud Provider's Hyperscaler

This option consists of on-premise SAP S/4HANA managed by the customer in their own data centre, or managed by a third party.

The main features of this option are as follows:

- Infrastructure: Customer data center or hosted by hyperscaler (for example, Microsoft Azure, AWS, Google Cloud).
- License: Perpetual or Bring Your Own License.

- Upgrades: Annual, and you choose your own speed of adoption (software). The customer is responsible for managing the upgrade.
- Scope: Full SAP S/4HANA functional, country, and industry scope, and partner add-ons.
- Extensibility: Customization, modification, and extensibility possible, as with ERP.
- Configuration: Use the full IMG based on a fit-to-standard approach in the Explore phase.
- Implementation: New implementation, system conversions, or selective data transition.
- SAP Activate Roadmap: Transition to SAP S/4HANA.
- SAP Best Practices: All SAP Best Practices are available for sandbox systems.
- Partner content: Partner templates allowed.

Customers may use SAP Solution Manager to manage their project design. Many customers use SAP Best Practices activated using SAP Solution Builder.

What Will Influence Your Choice of Deployment Option?

Organizations that are completely new to SAP will do a new **greenfield** implementation, and can choose any of the options, 1 to 4.

If you are currently running the on-premise SAP ERP Business Suite and want to move to SAP S/4HANA, the route selected by 50% of customers is a **system conversion**, where your existing system is converted to SAP S/4HANA. This means option 3 or 4.

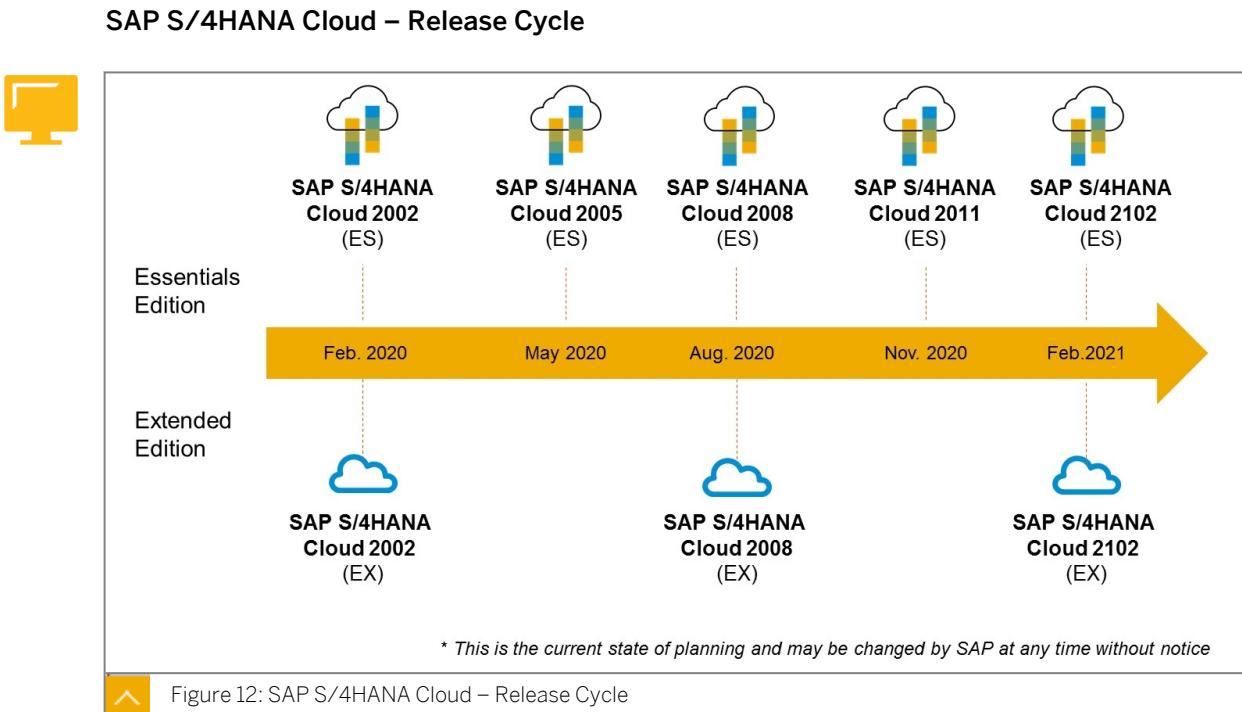
If you want to start again on a new page and do a **new implementation**, you can choose any deployment option.



Note:

Option 1 may not cover all of the processes and scope in your current solution.

The **selective data transition** approach allows you to take some of your existing solution into a new SAP S/4HANA instance. Option 2, 3, or 4 can be used. 5% of customers choose this approach.



SAP S/4HANA Cloud, essentials edition (ES): This variant was previously named SAP S/4HANA public cloud, or the multi tenant edition (MTE). It provides highly standardized, multi-tenant cloud services for selected line of business and industrial scenarios, as well as a comprehensive range of ERP functions. These main characteristics of this SaaS result in a low total cost of ownership.

SAP S/4HANA Cloud, extended edition (EX): This variant was previously named SAP S/4HANA private cloud or the single tenant edition (STE). The SAP S/4HANA Cloud EX operating model is characterized by the full range of functions, expandability, and the range of the SAP S/4HANA solution. In contrast to the SAP S/4HANA Cloud ES operating model, SAP S/4HANA Cloud EX includes the classic SAP S/4HANA ERP system with full functionality, and is therefore identical to the SAP S/4 HANA ERP AnyPremise operating model. This also includes available industry solutions and country versions. In addition, compared to the SAP S/4HANA Cloud ES, this operating model can be adapted, customized, and extended. Despite the high grade of flexibility, it is important to note that modifications to the source code are not possible. For the sake of extensions, the SAP S/4HANA Extensibility Framework and the SAP Cloud Platform offers large expansion options.

Ready-to-Go Integration with Existing Cloud Solutions

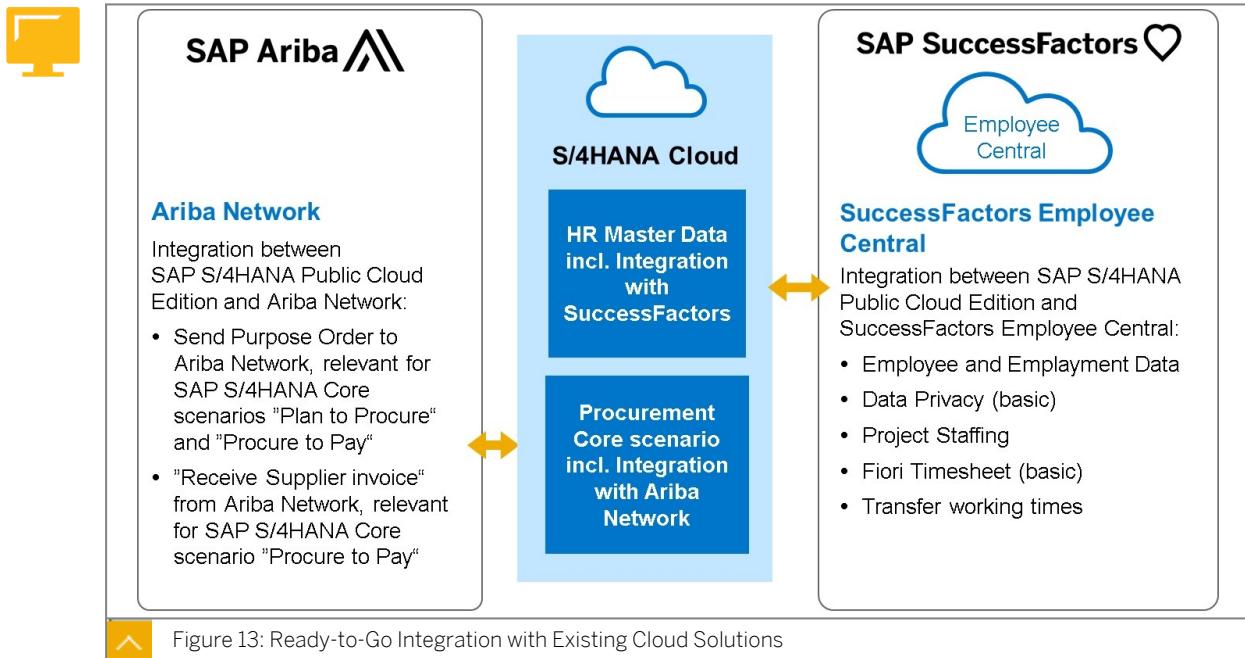


Figure 13: Ready-to-Go Integration with Existing Cloud Solutions

SAP S/4HANA can be natively integrated with the existing SAP Cloud solutions, such as SAP Ariba, SAP Concur, SAP Hybris, SAP SuccessFactors, SAP Cloud Analytics, and SAP Cloud for Customer.

Consider the following example to help illustrate what this might look like:

A customer deploys SAP S/4HANA in order to implement a core procurement process, such as purchase to pay. Employees are now happy that they can place requests for equipment that they need.

However, employees would really like to be able to read reviews from other purchasers of the same items, just as they do when they are at home using consumer applications, such as Amazon. The employees would also like to be able to ask vendors detailed questions about the items.

Integrating SAP S/4HANA with Ariba Network makes this possible. SAP provides best practices and tools to rapidly integrate SAP S/4HANA with all SAP cloud solutions, including SAP Business Networks.



LESSON SUMMARY

You should now be able to:

- Describe the key aspects of deployment

Describing the Key Aspects of Footprint Reduction



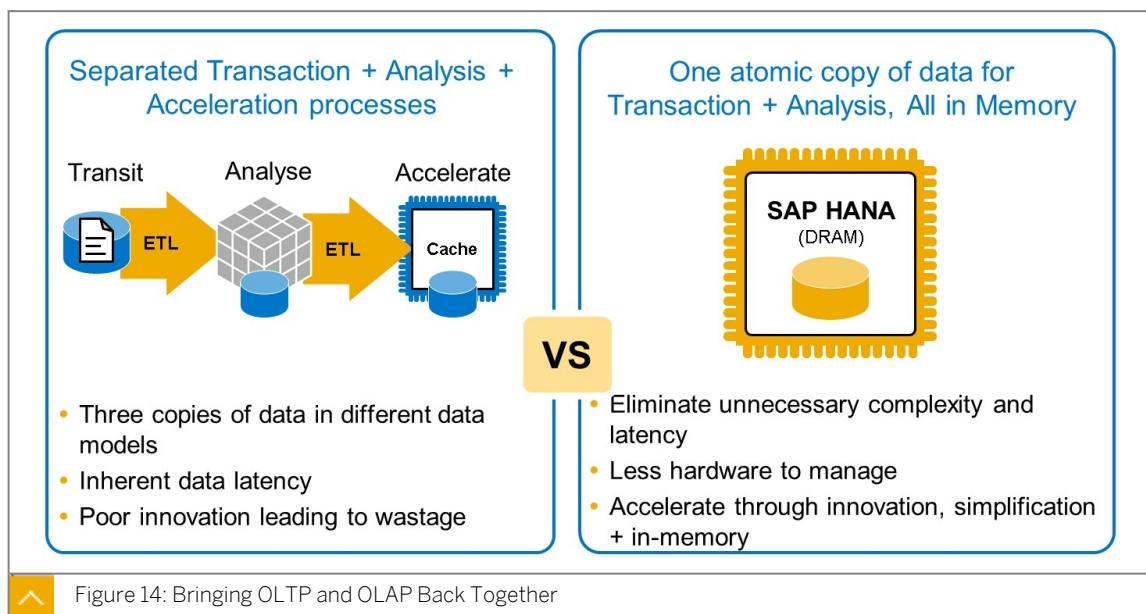
LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the key aspects of footprint reduction

Key Aspects of Footprint Reduction

Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP)



For more than 20 years, organizations have been using specialist software, usually with additional hardware, to extract, transform, and load (ETL) data from transaction systems to dedicated reporting systems. Based on the technology available, this has been the optimal way to provide an holistic view of business data with good response times, especially when you add accelerator software or hardware.

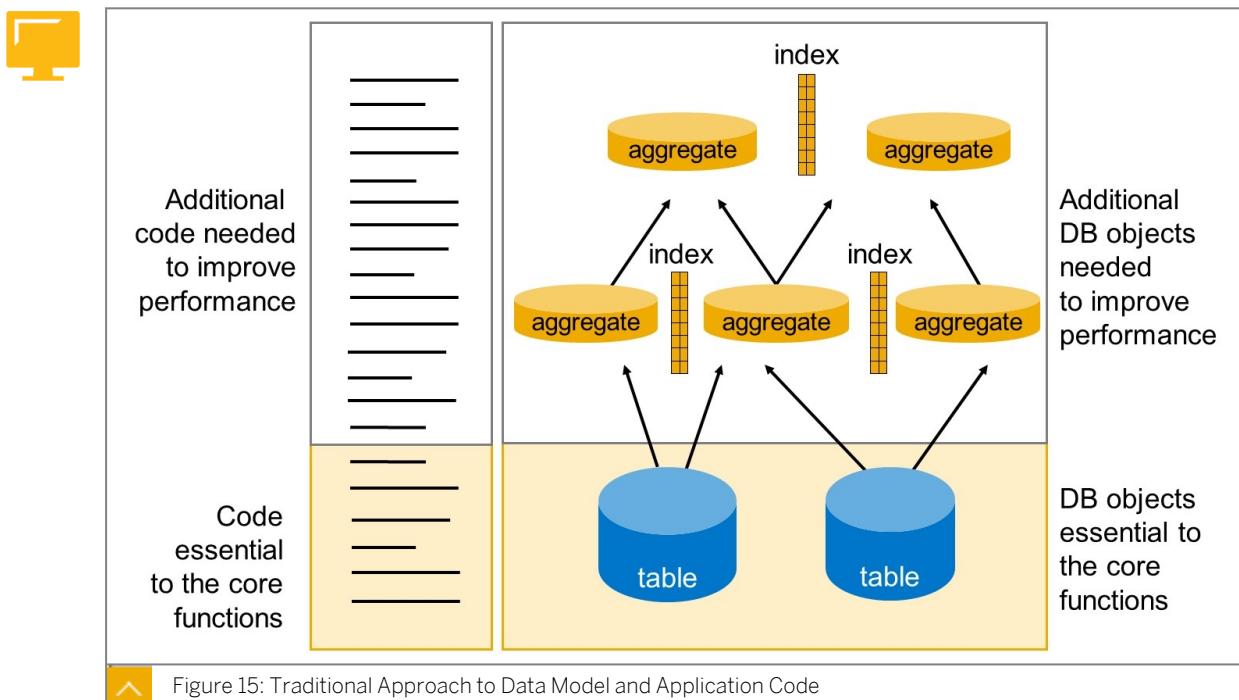
OLTP was separated from OLAP. This was due to the contrasting needs of the database design of OLTP and OLAP. Database models have been either built for OLTP optimization or OLAP optimization, but not both.

However, this has also bought with it complexity, redundancy, and latency. It has been common for today's business figures to be available only tomorrow for analysis, once the data has been extracted and loaded to a reporting system. Also, to help with reporting performance, we would usually summarize the data as we transferred it, thereby losing detailed information.

An example of this complexity can be found with SAP Business Suite (OLTP) passing data nightly to SAP BW (OLAP).

However, now the database that supports SAP S/4HANA (SAP HANA) can handle both OLTP and OLAP processing from a single data model, so there is no need to move transaction data to a separate system. This means that transaction and analytical applications run off the same tables, the same copy of data. In addition, data is available in real-time at every level of detail to analysis applications.

Traditional Approach to Data Model and Application Code



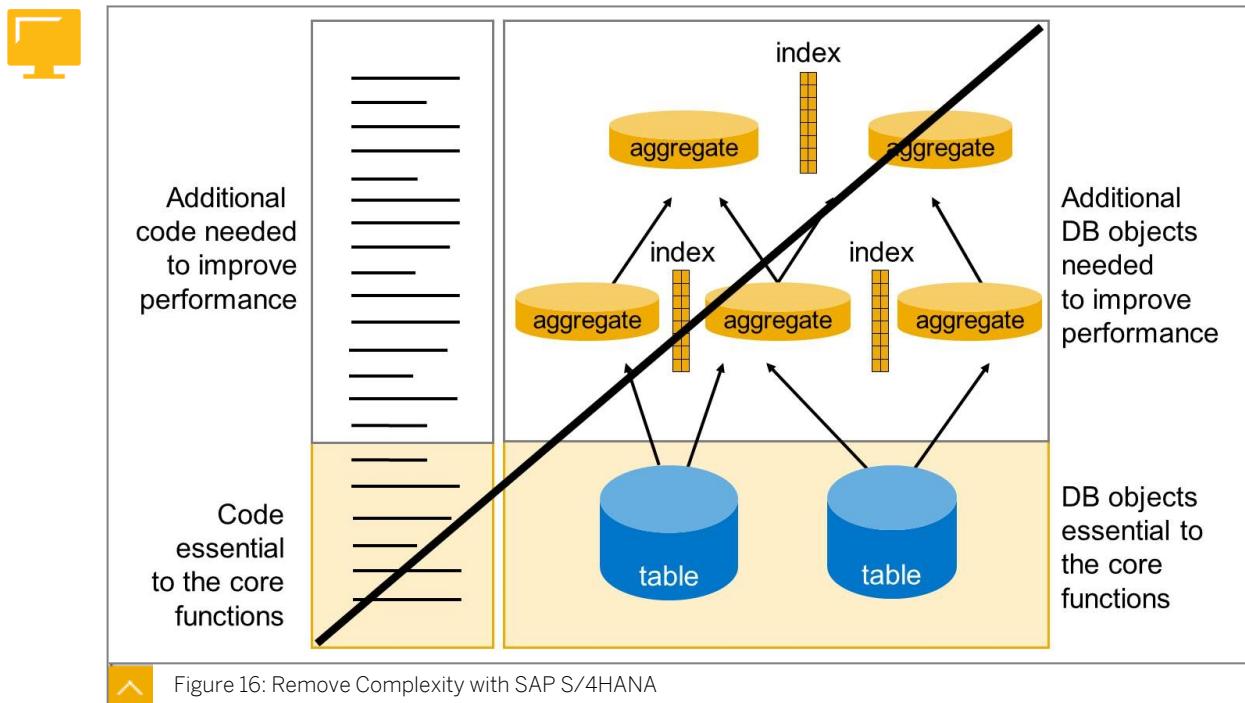
Traditional applications such as SAP Business Suite were built on a hierarchical data model. Detailed data was summarized into higher-level layers of aggregation to help system performance. On top of aggregates, more aggregates were built, as well as special versions of the database tables to support special applications. As well as storing the extra copies of data, application code had to be built to maintain extra tables and keep them up to date. These extra tables also needed to be backed up, so even the IT operations were impacted.

In addition to aggregates, another inefficiency needed to be removed. Database indexes improve access speed because they are based on common access paths to data. However, they need to be constantly dropped and rebuilt each time the tables are updated, and more code is needed to manage this process.

The traditional data model is complex, and a complex data model causes the application code to be complex. It has been found that up to 70% of application code is built specifically for performance of an application, and adds no value to the core business function.

With a complex data model and complex code, integration with other applications and enhancements is difficult, and not agile enough for today's fast-moving environment.

Remove Complexity with SAP S/4HANA

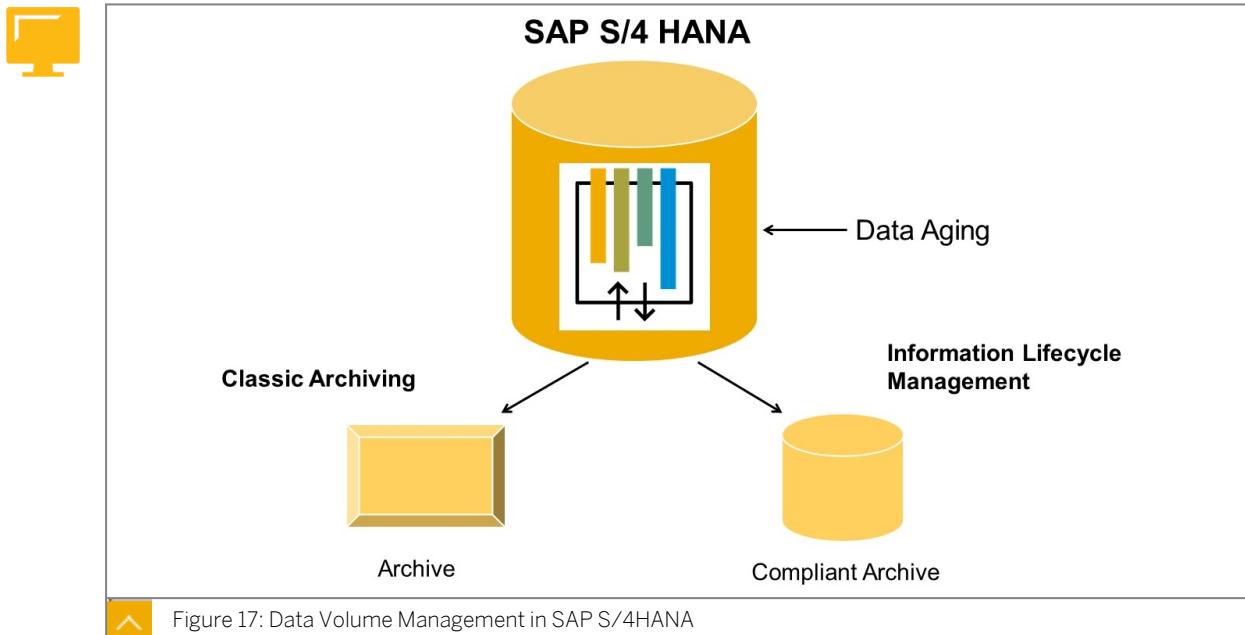


Using the raw power of SAP HANA, we can aggregate on the fly in sub-seconds from any line item table. There is no need for prebuilt aggregates. SAP HANA can generate any view of the data at runtime, all from the same source tables.

SAP HANA organizes data using column stores, which means indexes are usually not needed. They can still be created, but usually offer little improvement. Therefore, as well as losing the aggregates and indexes from the database, we can also lose huge amounts of application code that deal with aggregates and indexes.

We are left with a simplified core data model and simplified application code. It is now much easier to enhance the applications and integrate additional functions.

Data Volume Management in SAP S/4HANA

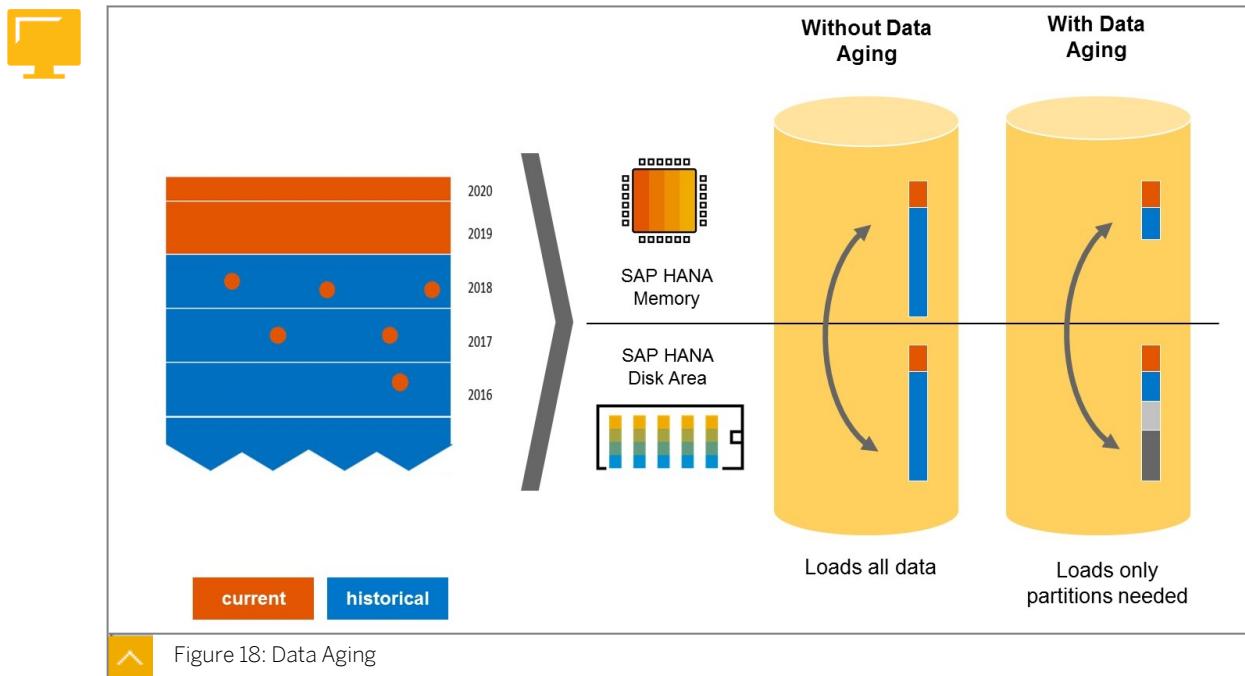


Data volume often dominates SAP HANA database size, and, eventually, the memory-footprint of SAP S/4HANA. A comprehensive data management strategy is a critical aspect for successful SAP S/4HANA transition.

Data Management Strategy for an SAP S/4HANA journey can be defined with following use cases:

- Data Aging
- Data Archiving
- Information Lifecycle Management (ILM)

Data Aging



Data Aging is a business data management concept for reducing the SAP HANA memory footprint. Data Aging offers the option of moving large amounts of data within a database to gain more working memory.

Data Aging moves data from the current area (main memory) to the historical area (secondary storage) of your database, making sure that only operationally-relevant data is loaded into main memory.

Data Archiving

Data Archiving functions to archive any completed business transactions that are no longer relevant for daily system operations. In the subsequent delete phase, the archived data is removed from the database using the delete program. Archived data can be stored in archive files to which the system has read-only access.

The archiving process has not changed in SAP S/4HANA. All of the standard SAP archiving programs can be used to archive FI documents in SAP S/4HANA systems as well. Classic Data Archiving plays an important role in SAP S/4HANA in limiting the size and growth of the SAP HANA database.

The data archiving concept in SAP S/4HANA is based on the archiving objects of the Archive Development Kit (ADK).

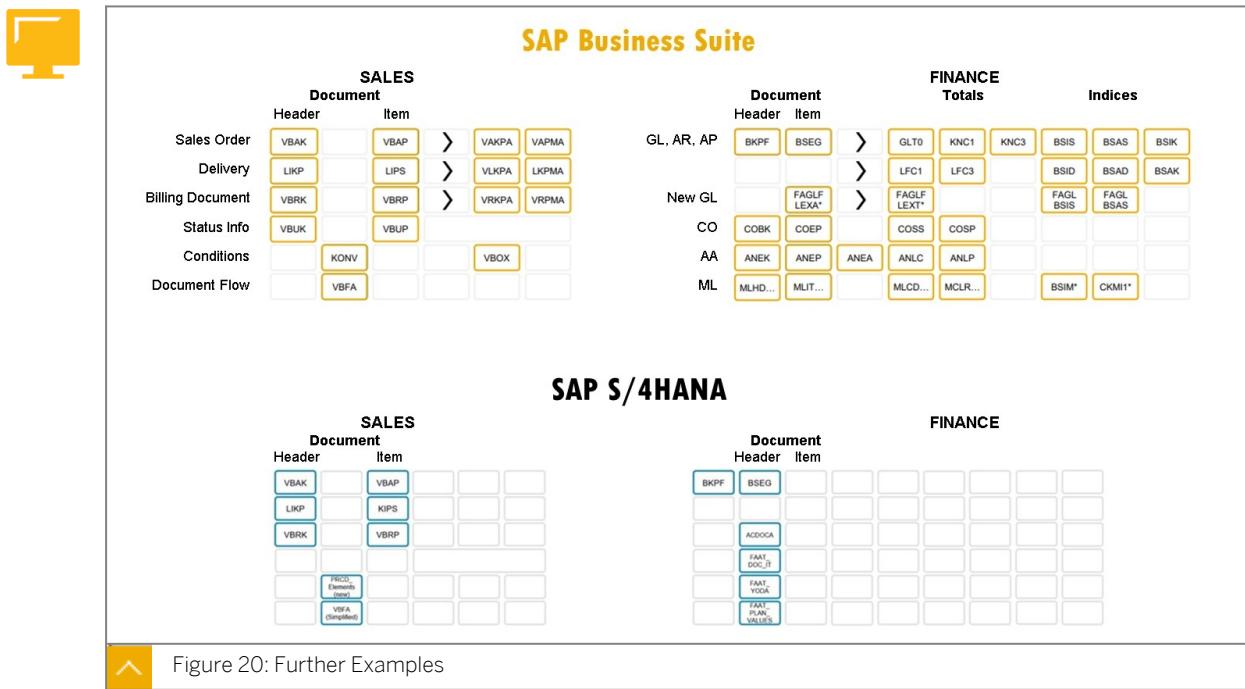
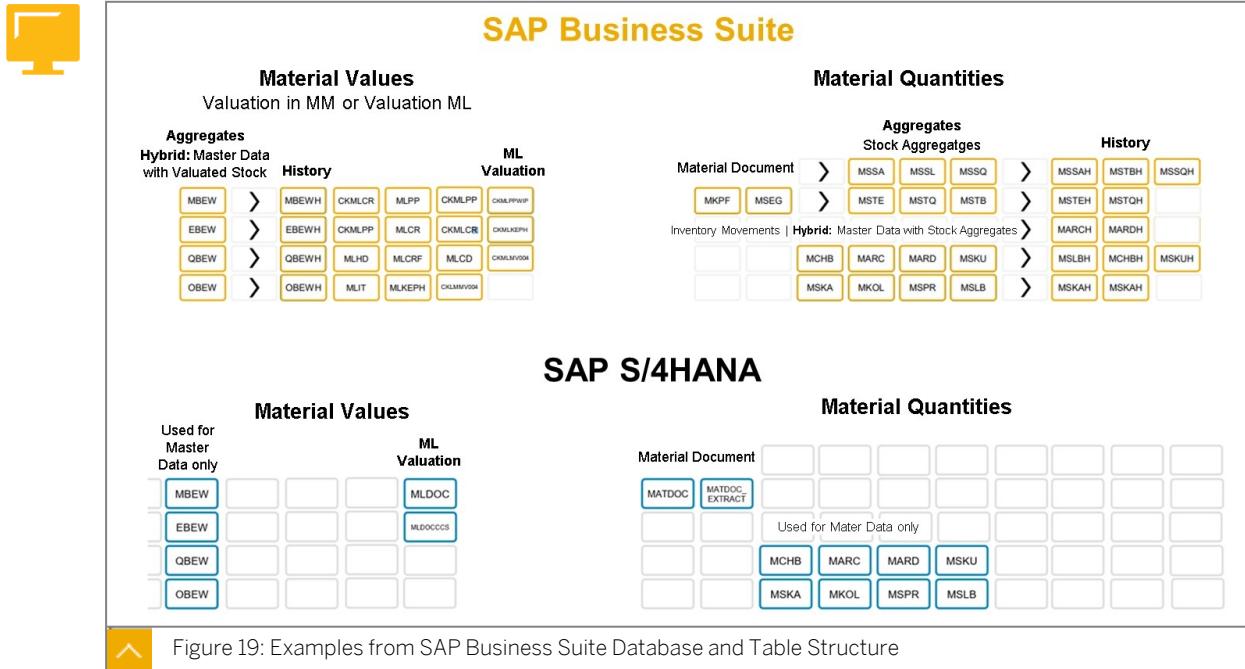
SAP Information Lifecycle Management (ILM)

The SAP Information Lifecycle Management (SAP ILM) component provides a broad range of advanced capabilities, including blocking and deletion, residence and retention management, consolidation of legacy data, and more, some of which are relevant to regulatory demands.

SAP ILM is used to support the entire data lifecycle including the storage, retention, blocking, and deletion of personal data for SAP S/4HANA on-premise. Archiving as part of ILM is used to manage blocking and deletion of transactional data. Archiving in this context is not only used as a solution for volume management, it fulfills blocking requirements in terms of data

privacy, because it efficiently restricts access to archived (and so blocked) data supported with an additional authorization concept.

SAP HANA – The Platform for SAP S/4HANA



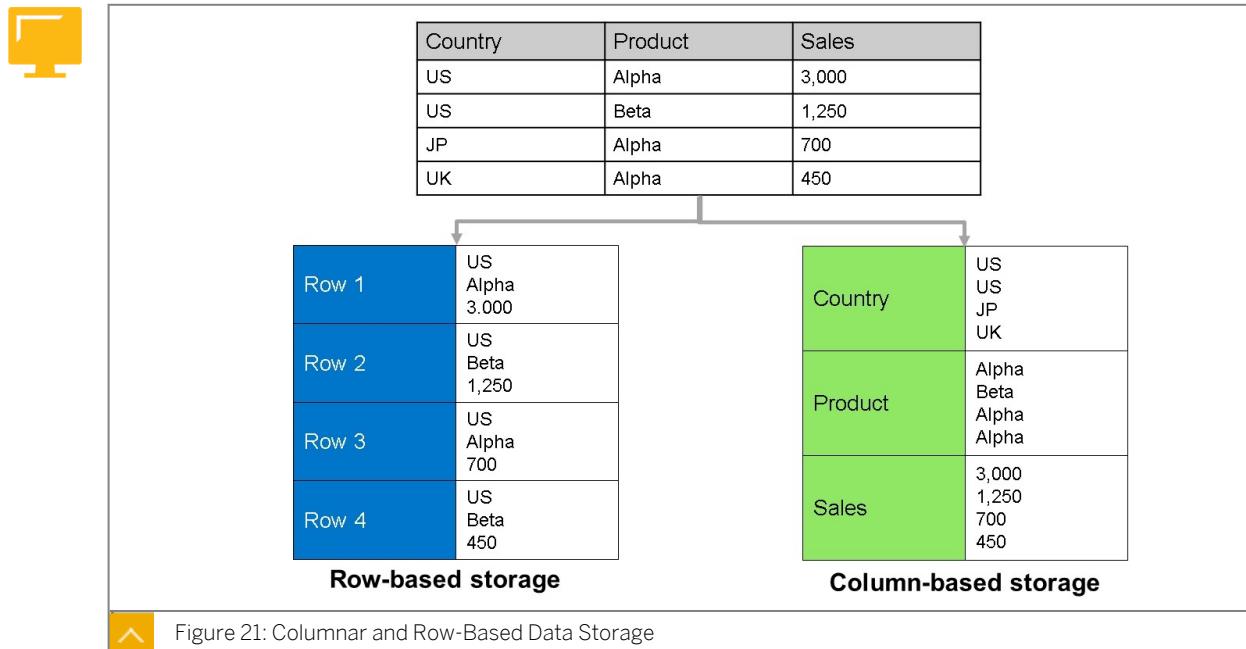
What does "simplification" imply from a technological perspective?

First of all, the new data model is simple, as follows:

- Only main tables remain, no redundancies
 - Clear separation of master data from transactional data
 - Reduced memory footprint

It operates around the principle of "One" – only one valuation method (Material Ledger), instead of two.

Columnar and Row-Based Data Storage



The SAP HANA database supports two types of tables – those that store data either column-wise (column tables), or row-wise (row tables). SAP HANA is optimized for column storage.

Conceptually, a database table is a two-dimensional data structure with cells organized in rows and columns. Computer memory however, is organized as a linear sequence. For storing a table in linear memory, two options can be chosen below. A row store stores a sequence of records that contain the fields of one row in the table. In a column store, the entries of a column are stored in contiguous memory locations.

In the SAP HANA database, tables that are organized in columns are optimized for high-performing read operations while still providing good performance for write operations. Efficient data compression is applied to save memory and speed up searches and calculations. Furthermore, some features of the SAP HANA database, such as partitioning, are available only for column tables. Column-based storage is typically suitable for big tables with bulk updates. However, update and insert performance is better on row tables.

Row-based storage is typically suitable for small tables with frequent single updates.

The following table outlines the criteria that you can use to decide whether to store your data tables as column tables or row tables:

Table 1: Data Storage

Storage Type	When to Use
1. Column store	<p>Calculations are typically executed on individual, or a small number of columns.</p> <p>The table is searched based on the values of a few columns.</p> <p>The table has a large number of columns.</p> <p>The table has a large number of rows, and columnar operations are required (aggregate, scan, and so on).</p> <p>High compression rates can be achieved because the majority of the columns contain only a few distinct values (compared to the number of rows).</p>
2. Row store	<p>The application needs to process only one single record at one time (many selects and /or updates of single records).</p> <p>The application typically needs to access the complete record.</p> <p>The columns contain mainly distinct values, so compression rate would be low.</p> <p>Neither aggregations nor fast searching are required.</p> <p>The table has a small number of rows (for example, configuration tables).</p>

Unit 2

Exercise 1

Optional: Explore the SAP HANA Database

Log on to the SAP HANA platform, and explore key SAP S/4HANA database tables.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Launch the SAP HANA Studio, and open the *Administration Console*.
2. Add a system connection using the following details:

Field Name	Value
Host Name	wdflbmt2261.wdf.sap.corp
Instance Number	03
User	STUDENT##
Password	Training1

3. Open the *Administration Console*, and observe the memory status of the SAP HANA platform.
4. Check that all SAP HANA services are running on our landscape.
5. Locate the VBAK table in the SAPHE4 schema.
6. How many records does this table contain?

7. Is VBAK a row or column table?

8. How many records were created by the user (column ERNAM) SALESREP?

9. Explore the table MATDOC and MSEG in the back-end T41 in the DBA Cockpit.

Start the SAP Logon from the *Windows apps* menu, and log on to the T41 system using the following data:

Field	Value
Client	400
User	S4H01-##
Password	Welcome1
Language	EN

10. Explore the Replacement Object of MSEG in the ABAP-Dictionary.

Unit 2 Solution 1

Optional: Explore the SAP HANA Database

Log on to the SAP HANA platform, and explore key SAP S/4HANA database tables.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Launch the SAP HANA Studio, and open the *Administration Console*.
 - a) From the Windows *Start* button, locate and launch the SAP HANA Studio.
 - b) When the *StartUp Tool-HANA Studio* prompt appears, choose *Submit*.
 - c) On the *Workspace Launcher* prompt, choose *Launch*.
 - d) If the *Secure Storage — Password Hint Needed* prompt appears, choose *No*.
 - e) On the *Welcome* screen, choose *Open Administration Console*.
 - f) Close and start transaction `se16n`.
 - g) Enter `NSDM_E_MSEG`
 - h) Execute with `F8` and the structure will be shown.
2. Add a system connection using the following details:

Field Name	Value
Host Name	<code>wdf1bmt2261.wdf.sap.corp</code>
Instance Number	03
User	<code>STUDENT##</code>
Password	<code>Training1</code>

- a) Right-click anywhere inside the *Systems* tab, and choose *Add System*.
- b) Enter the values provided in the table. Choose *Next* when you have entered the *Host Name* and *Instance Number* to go the next screen to enter the *User* and *Password* information.
- c) Choose *Finish*.
You see the new system entry with four nodes (Catalog, Content, and so on), on the *Systems* tab.
3. Open the *Administration Console*, and observe the memory status of the SAP HANA platform.

- a) Within the *Systems* view, highlight the newly-added system by clicking once (H41).
 - b) At the top of the *Systems* view, click once on the *Administration* icon (looks like tools).
 - c) Observe the green bars indicating the usage of memory.
4. Check that all SAP HANA services are running on our landscape.
 - a) Choose the *Landscape* tab inside the *Administration Console* view.
 - b) Observe the green lights under the *Active* column that confirms that all SAP HANA services are running.
5. Locate the **VBAK** table in the *SAPHE4* schema.
 - a) Expand the *Catalog* node within the *System View* on the left hand side.
 - b) Expand the *SAPHE4* schema.
 - c) Right-click the *Tables* node, and choose *Filter*.
 - d) Enter **VBAK** and choose *OK*.
 - e) Expand the *Tables* node and in the filtered list, you will see the table **VBAK**.
6. How many records does this table contain?

The number will vary if records were recently added.

- a) Right-click the **VBAK** table, and choose *Open Definition*.
 - b) Choose the *Runtime Information* tab on the right hand side.
The *Number of Entries* displays.

7. Is **VBAK** a row or column table?

The table type is *Column*.

- a) On the top-right corner of the screen, the table type *Column* is shown.
8. How many records were created by the user (column *ERNAM*) **SALESREP**?

The number of records where the user (column *ERNAM*) matches the filter value will vary.

- a) Right-click the **VBAK** table, and choose *Open Data Preview*.
 - b) In the filter field (you will find it in the Tab *Raw data* on the right hand side), enter **SALESREP**, and press Enter.
You see the records where the user (column *ERNAM*) matches the filter value.
 - c) Close the SAP HANA Studio.
9. Explore the table **MATDOC** and **MSEG** in the back-end T41 in the DBA Cockpit.
Start the SAP Logon from the *Windows apps* menu, and log on to the T41 system using the following data:

Field	Value
Client	400
User	S4H01-##
Password	Welcome1
Language	EN

- a) Start the transaction **DBACOCKPIT**.
 - b) From the left folder tree, select *Diagnostics* → *SQL-Editor Paste*, and double-click *SQL-Editor*.
 - c) In the Input query section on the right side, enter the following code:

```
Select count(*) from MATDOC where mandt = '400';
```
 - d) Choose *Execute* or press F8.
 - e) Choose the *Result* tab.
 On the right side, you will see the number of table entries.
 - f) Repeat steps c and d, but now with the entry **MSEG**.
 You will see the result is now 0.
10. Explore the Replacement Object of **MSEG** in the ABAP-Dictionary.
- a) Start the transaction **/SE11** in T41.
 - b) In the Database Table Selection field, enter **MATDOC**.
 - c) Choose *Display* and then *Menu Path* → *Extras* → *Replacement Objects, no Replacement*.
 The object exists and is blank.
 - d) In the Database Table Selection field, enter **MSEG**.
 - e) Choose *Display* and then *Menu Path* → *Extras* → *Replacement Objects*.
 We have a *Replace Object* called **NSDM_E_MSEG**.
 - f) Close, and go one step back to the selection screen.
 - g) In the Selection field, enter **NSDM_E_MSEG**.
 - h) Choose *Display* again.
 The source code will be shown.



LESSON SUMMARY

You should now be able to:

- Describe the key aspects of footprint reduction

Describing Key Aspects of Work Patterns



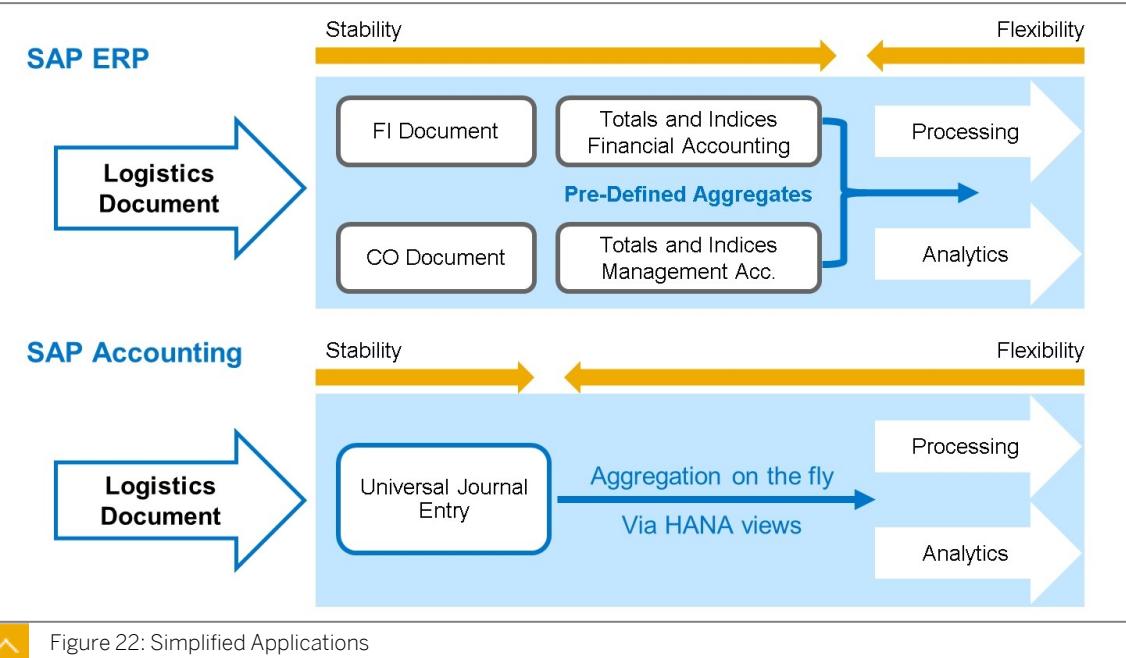
LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Explain the intelligent enterprise

The Intelligent Enterprise

Simplified Applications: Finance Example



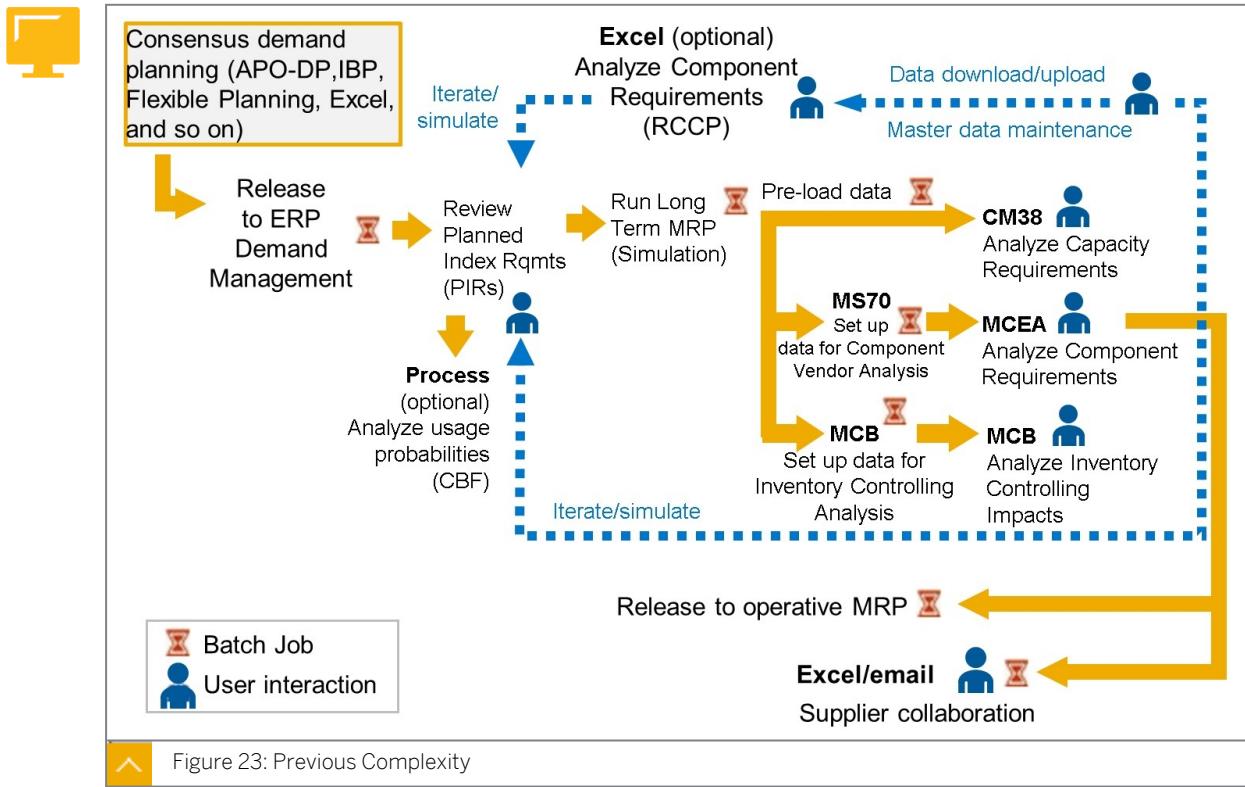
We have already covered the simplification of applications from the technical side. Now we will look at how simplification also applies to the business side, with an example from finance.

In traditional SAP ERP finance, financial postings have been supported by two key documents, the Finance (FI) document and the Controlling (CO) document. These documents provide the required views of the finance data from a legal perspective (FI), and also an internal management accounting perspective (CO). There is a lot of overlap between these documents. Application code has had to deal with these two types of postings whenever a business event has occurred that triggered a financial outcome, for example, a material receipt.

With SAP S/4HANA Finance, we now have only one document. This is called the Universal Journal Entry. A single financial posting is made to one table, which holds all information that is needed by both legal and management accounting. The application code is simplified and

any views of the data that are required, are created on the fly by SAP HANA. We do not lose any business meaning, but we lose the underlying complexity of the application.

Simplified Applications: MRP Example

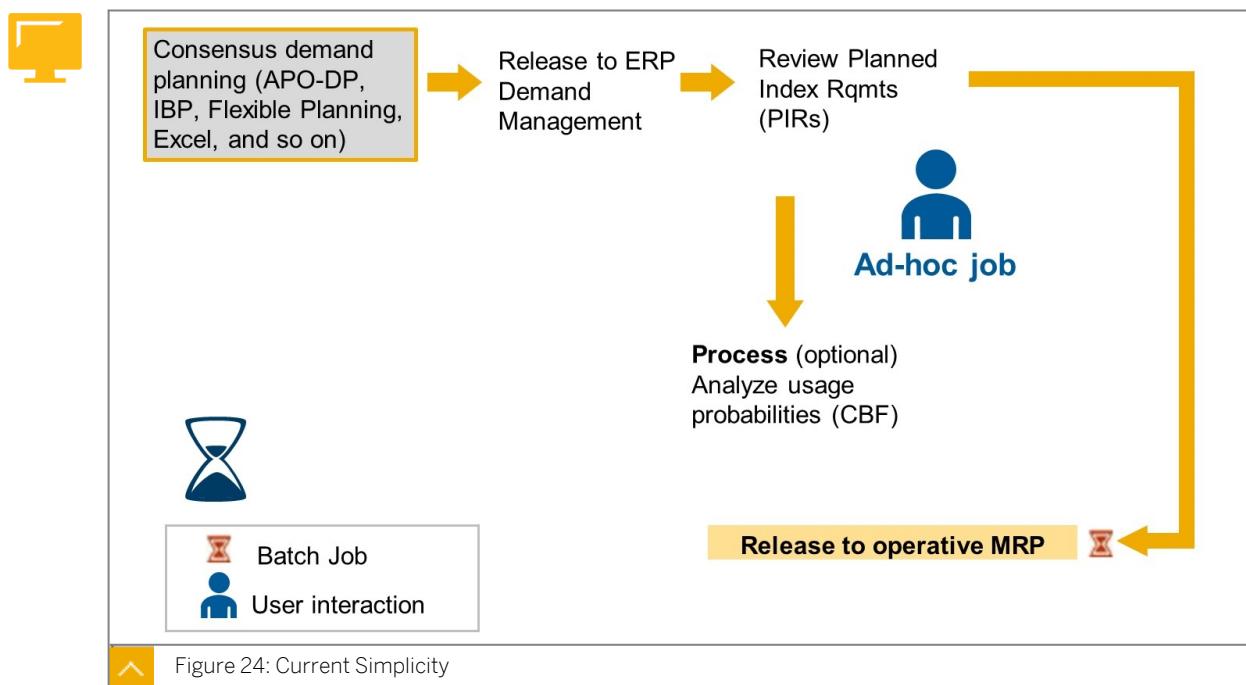


One example of application simplification relates to material requirements planning (MRP).

Usually, this key business process is very complex with many steps and, as a result, can run for a long time before results are produced.

MRP is an iterative process. It involves identifying the components needed to satisfy demand, checking resource capacity to procure those components, then readjusting the plan. This can take a lot of time, and by the time the processes have completed, the data can already be out of date. For example, you collected the demand data an hour ago and ran MRP to calculate the raw materials, but the demand picture changed while you waited for these results – so the information is already out of date.

Therefore, real-time MRP is impossible, and you are always operating and making decisions on out-of-date results. In a fast-moving business where agility is essential, this is not acceptable.



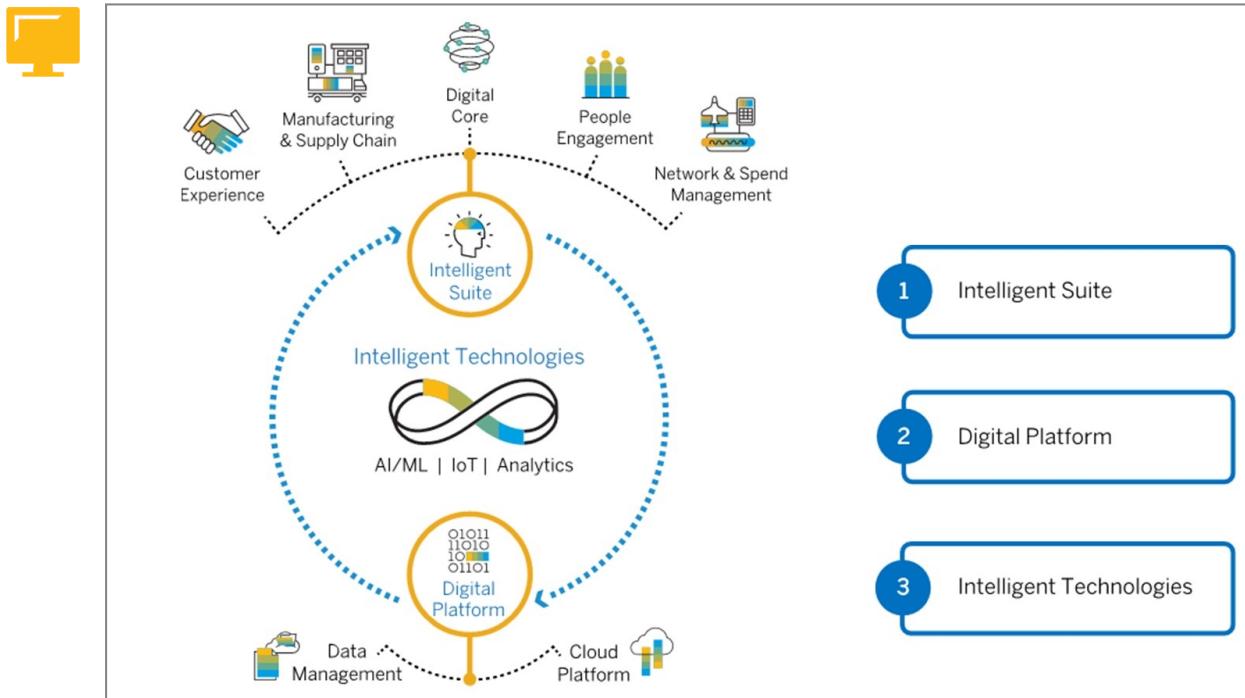
With SAP S/4HANA, MRP is a real-time process.

This is achieved because of the raw power available with SAP HANA, and the dramatically simplified data model and application code that runs faster.

MRP is no longer a painful batch process, which means you can run it whenever an individual change occurs in the inventory position, right down to the BOM component level. This means MRP is always live.

Also, with SAP S/4HANA, you can now plan right down to a lot size of one. If a customer order is taken, you can immediately determine the effect on all the dependent subcomponents' requirements, but only for that single order. This means the inventory department can immediately begin working on the procurement of the missing items, and do not have to wait until the next MRP run to tell them that subcomponents are missing and need to be ordered.

The Intelligent Enterprise



SAP S/4HANA is a key component in SAP's Intelligent Enterprise. The Intelligent Enterprise lays out all the key elements required to support the digital transformation of an organization.

The three pillars of the Intelligent Enterprise are:

- 2 © Copyright. All rights reserved.
- Intelligent Suite — intelligent, real time, integrated industry-focused applications
 - Digital Platform — a platform based on SAP HANA and SAP Data Management Suite to provide all services to all applications on a common platform
 - Intelligent Technologies — machine learning, IoT, blockchain and other technologies that can be embedded in the business processes to provide predictive capabilities and more

SAP S/4HANA fits into the Intelligent Suite pillar and is the centerpiece that provides the digital core on which innovative applications can be built. S/4HANA provides support for all the key business processes that are found in most organizations, such as sales, finance, and procurement. Organizations can add industry and line of business (LoB) applications that make sense for their business. These SAP-provided LoB solutions are fully integrated with S/4HANA, such as Supply Chain Management, Management, Ariba, SuccessFactors, and so on.

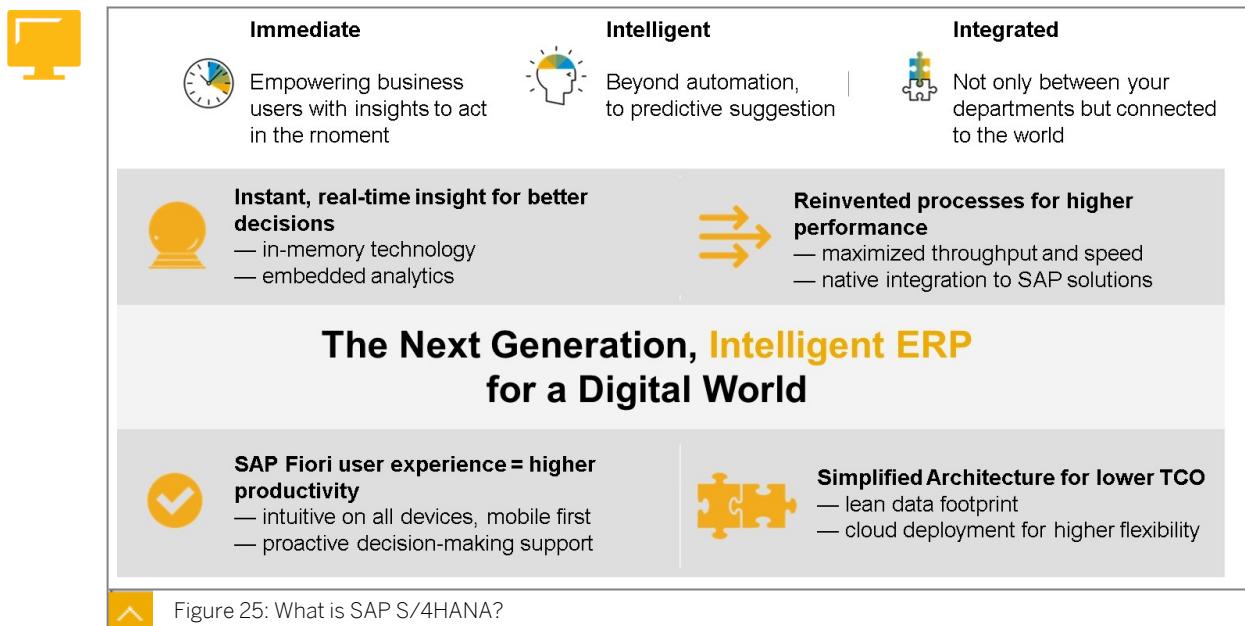


Figure 25: What is SAP S/4HANA?

SAP S/4HANA is a next-generation ERP suite. Its key features include the following:

- Real-time data for all processes
- Access on any device using a modern interface
- A cloud option for lower total cost of ownership (TCO)
- New processes that include embedded analytics in the workflow



LESSON SUMMARY

You should now be able to:

- Explain the intelligent enterprise

Learning Assessment

1. Unlock the Intelligent Enterprise means that companies build a new platform for core business processes, and bring together business processes with analytics in real-time.

Determine whether this statement is true or false.

- True
- False

2. What are the key functionalities in SAP Cloud Platform?

Choose the correct answers.

- A Open APIs
- B Integration
- C Edge Computing
- D Microservices

Learning Assessment - Answers

1. Unlock the Intelligent Enterprise means that companies build a new platform for core business processes, and bring together business processes with analytics in real-time.

Determine whether this statement is true or false.

True

False

Correct. Unlock the Intelligent Enterprise means a new digital platform with real-time insights in the core processes.

2. What are the key functionalities in SAP Cloud Platform?

Choose the correct answers.

A Open APIs

B Integration

C Edge Computing

D Microservices

Correct. Open APIs, integration, and microservices are the key functionalities of SAP Cloud Platform.

UNIT 3

User Experience

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UNIT OBJECTIVES

- Describe the next generation user experience for SAP S/4HANA
- Describe the SAP Fiori launchpad
- Describe SAP Fiori apps, groups, and catalogs
- Describe an SAPUI5 application
- Describe SAP Screen Personas
- Describe Joule

Unit 3

Lesson 1

Describing the Next Generation User Experience for SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the next generation user experience for SAP S/4HANA

New User Experience



The screenshot shows a traditional SAP user interface for a sales order. At the top, there are fields for 'Standard Order' (value 2), 'Net value' (250,00), 'EUR', 'Sold-To Party' (10100001), and 'Inlandskunde DE 1 / Lindenstraße 2 / 74214 Schöntal'. Below this, 'Ship-To Party' (10100001) and 'Inlandskunde DE 1 / Lindenstraße 2 / 74214 Schöntal' are listed. A 'PO Number' field contains 'mh1'. The interface includes a 'Sales' tab and other tabs like 'Item overview', 'Item detail', 'Ordering party', 'Procurement', 'Shipping', 'Fast data entry', and 'Reason for rejection'. Below the tabs, there are several data entry fields: 'Req. deliv.date' (19.11.2015), 'Deliver.Plant' (empty), 'Total Weight' (5 KG), 'Delivery block' (empty), 'Volume' (0,000), 'Billing block' (empty), 'Pricing date' (19.11.2015), 'Payment card' (empty), 'Exp.date' (empty), 'Card Verif.Code' (empty), 'Payment terms' (0004 as of end of month), 'Incoterms' (EXW), 'Walldorf', and 'Order Reason' (empty). At the bottom, a table titled 'All items' shows a single row for 'Item' (10100001), 'Material' (Handelsware 0011, PD, Reguläre...), 'Order Quantity' (5 PC), 'Un' (checked), 'S' (checked), 'Description' (Handelsware 0011, PD, Reguläre...), 'Customer Material Num' (TAN), 'ItCa' (empty), 'DGIP' (empty), 'HL Itm' (0), and a 'Details' button. A caption at the bottom left reads 'Figure 26: Traditional User Interface'.

It does not matter how good an application is, if the user experience is poor.

In the past, user interfaces all suffered from the same problem – they were too complicated. The main reason for this is that interfaces were often designed around the business function, and not around the person. The result was a cluttered screen that tried to provide many features to many different job roles.

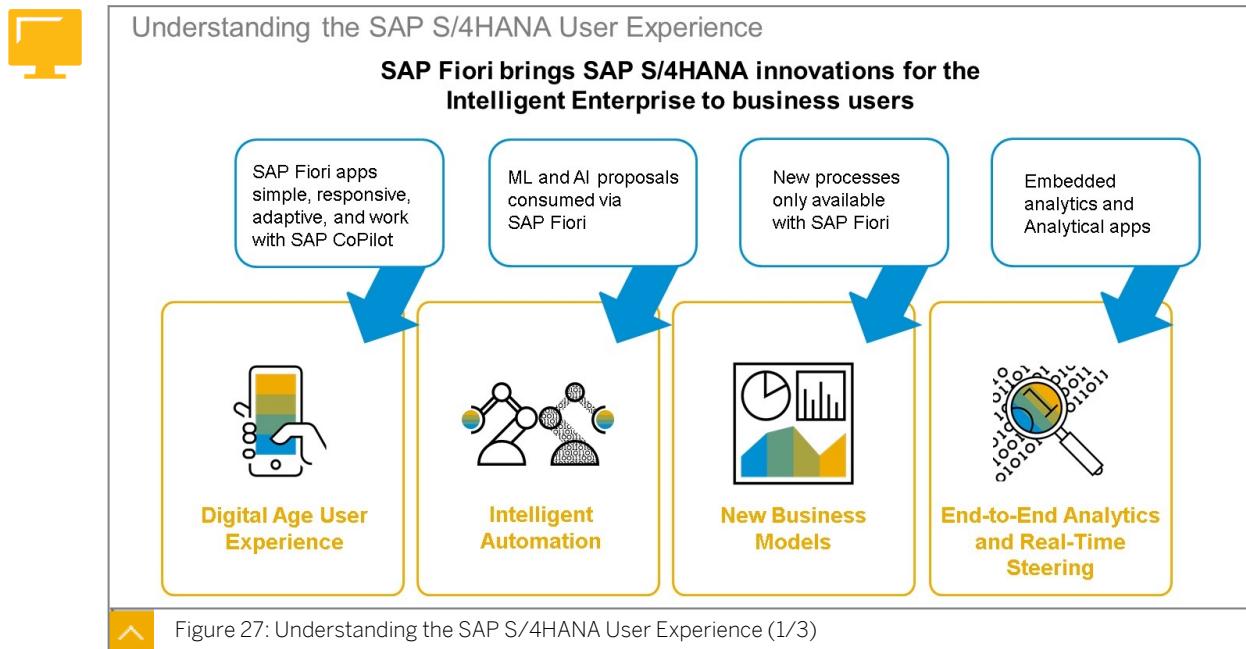
For example, take a sales order screen. How many job roles does this screen support? You might assume one – the sales order entry clerk. However, the reality is that the same screen is used by a large number of people who need to either check information or make adjustments to an existing order. Some examples are as follows:

- A quality assurance worker in the delivery department needs to release a blocked item in the order.
- A finance person needs to adjust tax assignments.
- A salesperson needs to adjust discounts.
- A marketing person needs to apply promotion codes.

- A project manager needs to check that costs have been assigned to the correct project phases.

Each of these people could find themselves using the same screen, but only a small part of the screen. The screen ensures that they all work hard to navigate to the specific area they need, ignoring the options that they do not need. Many clicks are required to complete the task.

SAP Fiori



SAP Fiori is a design system that enables companies to create business apps with a consumer-grade user experience, turning casual users into SAP experts with simple screens that run on any device. By using the SAP Fiori design guidelines and tools that we use at SAP, customers can easily build and customize their own apps that are consistent with what we ship with SAP S/4HANA and our other enterprise software solutions.

SAP Fiori is important because SAP Fiori is how business users access the new business value of SAP S/4HANA.

That includes:

- The new user experience itself
- Embedded analytics, such as Smart Business KPIs and Overview Pages
- Intelligent features such as chatbots, machine learning, robotic process automation, and Situation Handling
- New business processes such as Group Reporting, Central Procurement, and Demand-driven MRP

Let us take a closer look at the new Group Reporting in SAP S/4HANA, and how SAP Fiori Apps support this new process.

Financial closing can be a stressful task. Organizations often use numerous different tools for their accounting, which result in non-value-added reconciliation processes, and leave substantial room for error. When head office requires financial insights, they are held back by manual adjustments, data silos, and different reporting standards. SAP S/4HANA® Finance for group reporting, leverages the simplified data model of SAP S/4HANA to offer a high level

of transparency and fast in-group consolidation. With unified group reporting as part of your SAP S/4HANA software, you can close the books quickly while maintaining high confidence in the accuracy and completeness of the reported results. Fiori Apps support the process in a great way by providing functionality for the closing and analytical capabilities.

Group Reporting Data Collection such as Fiori Apps for:

- Manage Scenarios
- Define Data Mapping
- Run Data Mapping
- Enter Group Reporting Data
- Define Forms
- Define Data References
- Define Ad Hoc Items

Examples for Consolidation Settings Fiori Apps are:

- Set Global Parameters
- Change Validation
- Define Reporting Rules
- Schedule Jobs for Consolidation Tasks

The last category for Group Reporting-relevant Fiori Apps belongs to the group of the consolidation of master data:

- Set Global Parameters
- Manage Global Hierarchies
- Manage Group Structure
- Consolidation Groups

All Fiori Apps have been designed to support the new Function Group reporting in an optimal way by using all the native SAP Fiori Apps features, will be discussed in the next lessons.

Business Analyst - Group Reporting

Important roles:

SAP_BR_GL_ACCOUNTANT_GRP: General Ledger Accountant - Group Reporting

SAP_BR_GRP_ACCOUNTANT: Group Accountant

SAP_BR_ADMINISTRATOR_GRP: Administrator - Group Reporting

SAP_BR_EXTERNAL_AUDITOR_GRP: External Auditor - Group Reporting

SAP_BR_BUSINESS_ANALYST_GRP: Business Analyst - Group Reporting

In a nutshell, Demand-Driven Replenishment helps you plan and manage supply chains efficiently based on customer demand, rather than through traditional MRP procedures. You do this by strategically decoupling material flows, becoming less vulnerable to disruptions in the supply chain, and by protecting the flow through dynamically-managed buffer (stock) levels for relevant products.

Optimally, your target is to ensure high customer service levels at the lowest possible inventory. With sufficient data to model customer demand, products or components relevant to Demand-Driven Replenishment can be sufficiently well-stocked to meet customer demand, but still stocked in low enough quantities to prevent excessive annual storage costs or losses due to expiry.

Decoupling material flows at strategic locations can help avoid the Bullwhip Effect, which refers to increasing swings in inventory along the supply chain in response to changes in customer demand. These swings in inventory can expand exponentially up a supply chain, and can cause excessive storage costs or losses due to expiry along all the levels of a supply chain.

In order to run this process, Configuration and Set Up Apps are used, as well as Operational Apps.

Configuration and Set Up Apps:

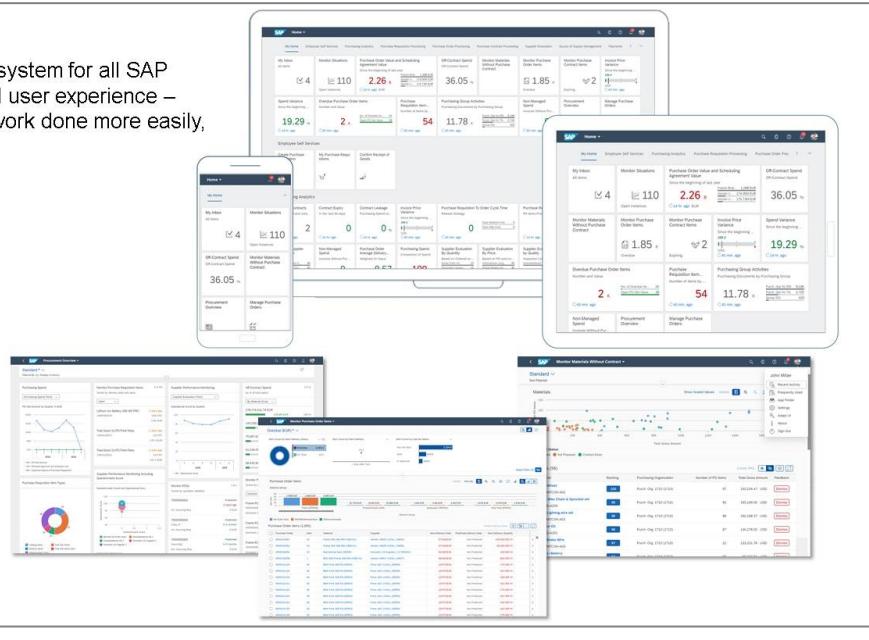
- Schedule Product Classification (DD)
- Mass Maintenance Products (DD)
- Schedule Lead Time Classification of Products (DD)
- Schedule Buffer Proposal Calculation

Operational Apps:

- Manage Buffer Levels
- Replenishment Planning
- Replenishment Execution



SAP Fiori is the design system for all SAP products, for a delightful user experience – helping users get their work done more easily, on any device.



SAP Fiori has the following benefits:

- Increased productivity, fast, direct access to relevant information and apps
- Timely notifications and transparency on items needing your attention

- Helps users decide what needs to be done next
- Allows users to take quick and informed actions
- Increased user satisfaction

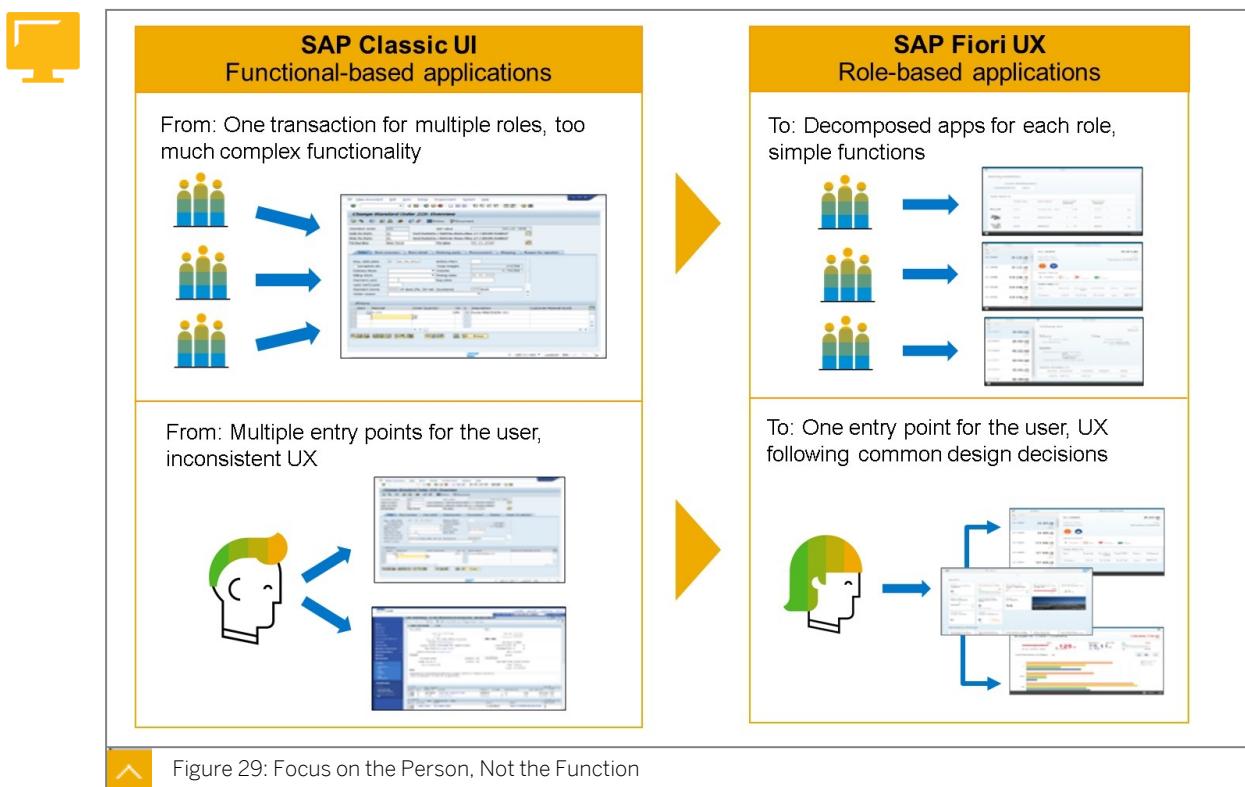
A key theme of SAP S/4HANA is simplification, and this certainly applies to the user experience. We use the term "user experience" (UX), rather than "user interface" because we need to consider the overall experience of the user, rather than only the look of the screen. For example, if you went to a restaurant that was strong on food presentation, but where the service was poor, you would say that the overall experience was not good, and you would not be keen to repeat it.

It is important to provide not only a great-looking user interface, but also features that help the user become more productive, resulting in a good overall experience. This is what SAP Fiori delivers.

SAP Fiori is a completely new user experience, rather than an upgrade to any existing interface, such as SAP GUI, SAP Portal, or SAP Business Client.

SAP Fiori works on any device that allows users to have the same experience, regardless of the device they choose to use. They can set up a basic sales order in the office using their desktop, then visit the customer to complete the configuration and agree pricing using a tablet. SAP Fiori provides the same look, feel, and productivity features on all devices.

SAP Fiori apps are designed using a methodology called Design Thinking, which is a user-centric and solution-based approach to software and user interface design.



A big switch in the design approach with SAP Fiori compared to the traditional interface design, is that the focus is now on the user, rather than the function.

SAP Fiori apps are always role-based. There are many applications to choose from, and they are organized in easy-to-use catalogs supplied with SAP S/4HANA. You need to assign the roles to the users.

Each SAP Fiori app is built around the user, rather than the function. As a result, the screens are very simple and uncluttered. A key goal of any SAP Fiori app is to ensure that a user can complete a task with as few clicks as possible.

Very little training is required, as the screens are incredibly simple and intuitive, with only the essential information and options available that make sense for the user. In the past, users could find themselves working with many different interfaces with a completely different look and feel in order to complete a task.

Imagine checking a customer inquiry from SAP CRM using the SAP Portal interface, and then moving to SAP GUI to check the stock availability in ERP. Completely different interfaces are used with their own style and features. They have different buttons, menus, and tools. With SAP Fiori, users work with just one design.

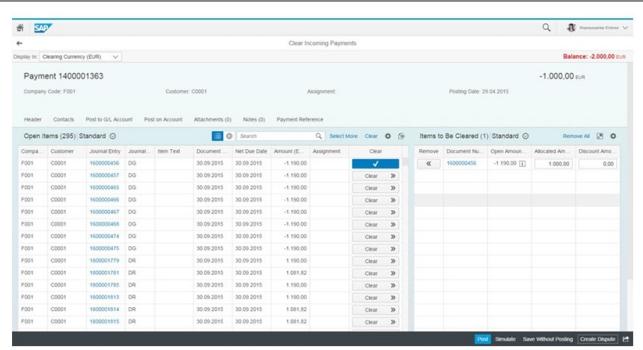
SAP GUI is still available with the on-premise edition, the SAP S/4HANA Cloud extended edition (EX), and can be used alongside SAP Fiori, but we recommend using SAP Fiori in order to take full advantage of the features of SAP S/4HANA.

Not all transactions from ERP are converted to SAP Fiori apps, so the SAP GUI must still be used in some cases. However, SAP S/4HANA Cloud uses only SAP Fiori apps, and there are no classic SAP GUI screens.



SAP Fiori

Offering a beautiful, role-based, integrated user experience with modern usability, based on the mobile-first principle.



Example: Clear incoming payments

User Activity	SAP GUI	SAP Fiori	% Reduction
Duration	2:25 min	1:07 min	53%
Clicks	49	22	55%
Screen changes	26	1	96%
Fields filled	9	3	60%

Figure 30: Simplified User Experience with SAP Fiori

It has been mentioned that a key goal of any SAP Fiori app, is to ensure a user can complete a task with as few clicks as possible.

In the figure, Simplified User Experience with SAP Fiori, we see the dramatic reduction in clicks, but also the reduction in screen changes, and fields that need to be filled with SAP Fiori when working with incoming payments.

This is especially important when the applications run on mobile devices and users expect the most streamlined task possible.

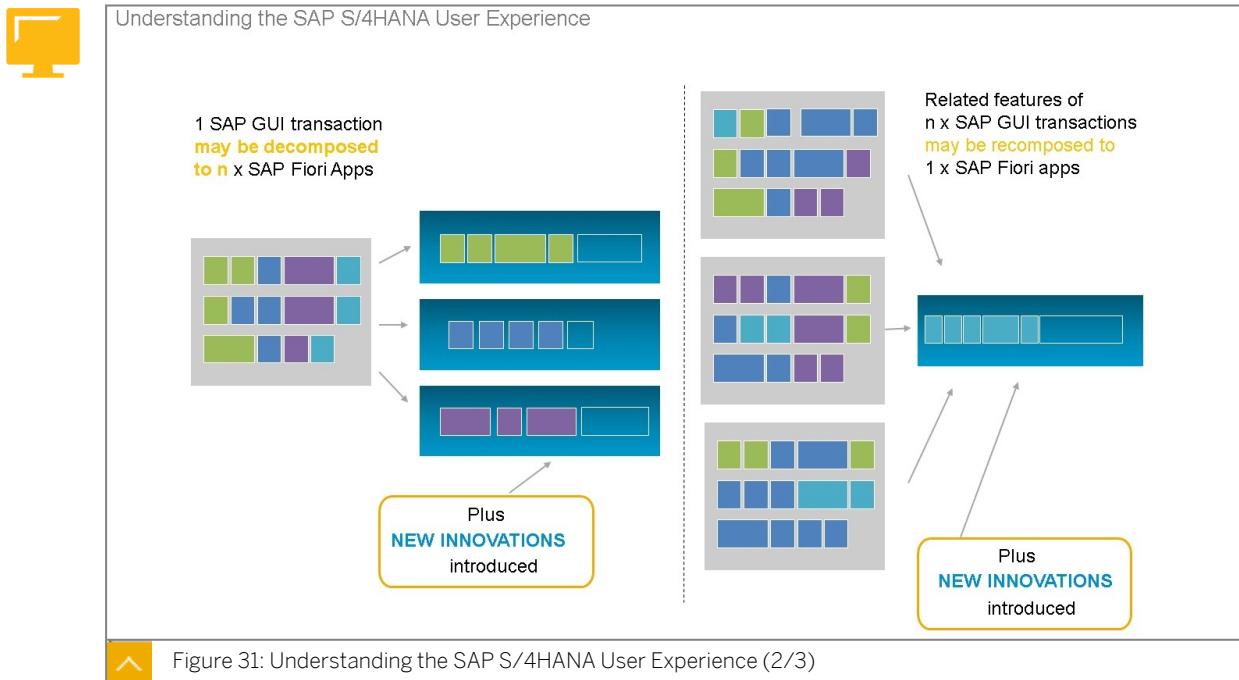


Figure 31: Understanding the SAP S/4HANA User Experience (2/3)

Unlike SAP GUI transactions, SAP Fiori apps are designed to be a more precise fit to the tasks of a specific business role. So you should check both the SAP Fiori app features and the intended SAP Business Role to verify if the app meets your needs. Therefore we can conclude, that a SAP Fiori Apps are not simple a 1 to1 replacement of classic user interfaces all the time.

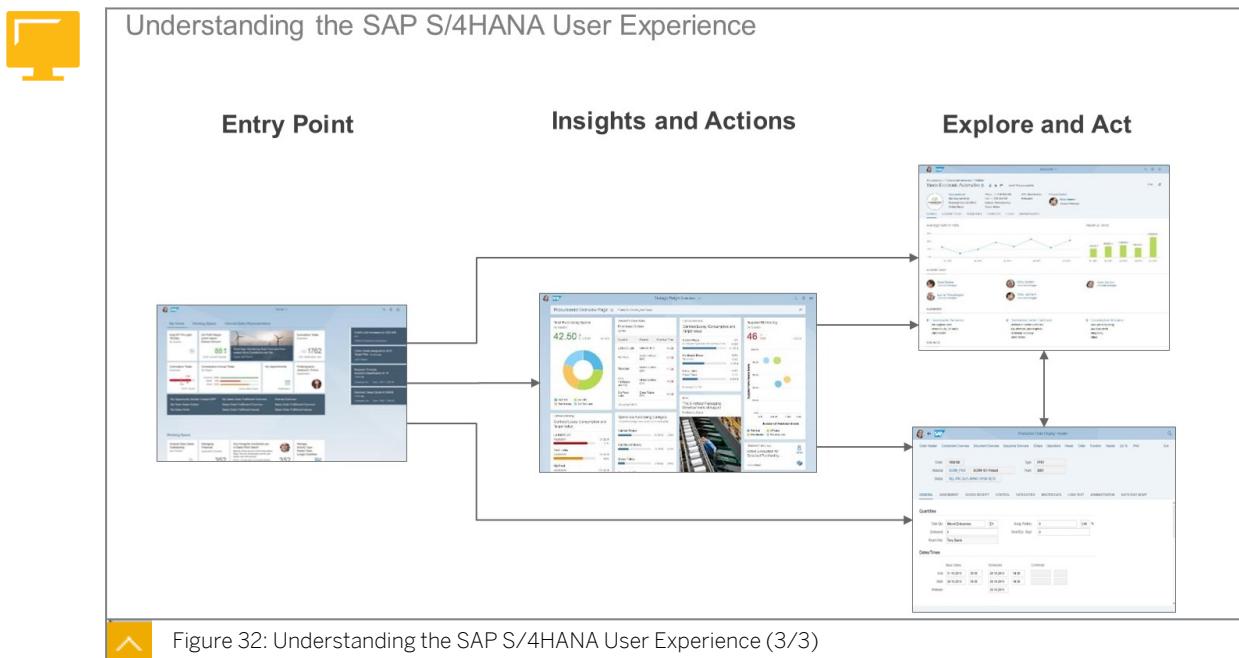


Figure 32: Understanding the SAP S/4HANA User Experience (3/3)

Entry Point

Navigate easily to your most frequently used apps.

Insights and Actions

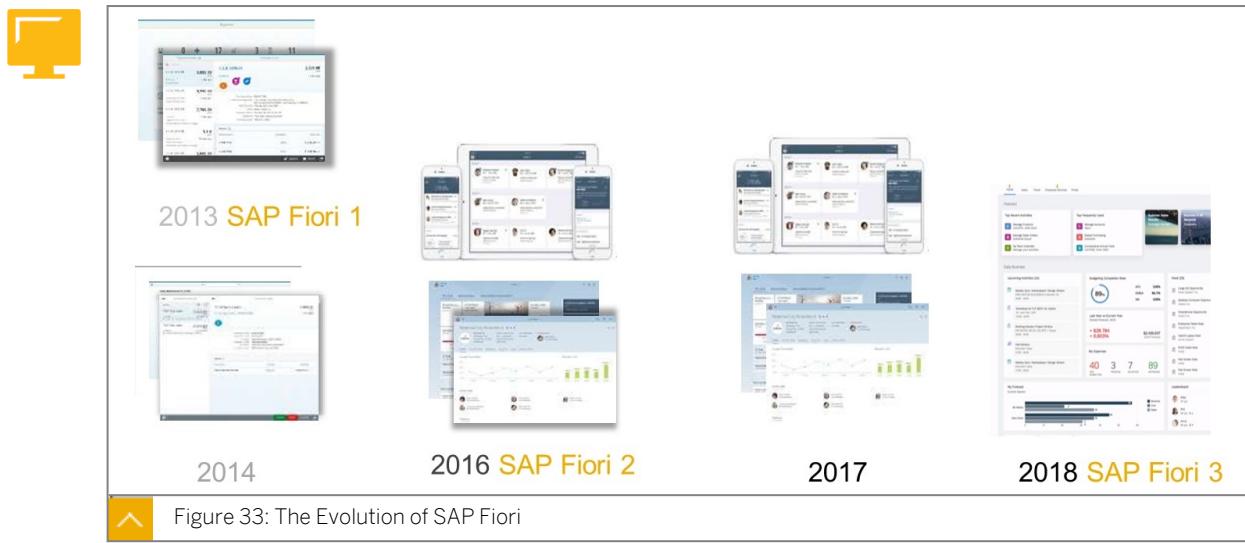
Gain insights and decide what action to take.

Trigger quick actions or drill down to related apps.

Explore and Act

View details and perform actions.

Easily navigate to related apps and UIs.



2013: SAP Fiori 1

- Frequently used apps with everyday touch point
- Extended for professional use cases with 81 simple finance apps

2016: SAP Fiori 2 Professional Use Cases with SAP S/4HANA 16.10

- 600 SAP Fiori apps, 7022 visually harmonized classic applications, and a greater scalability with SAP Fiori Element
- Introduction of SAP Fiori iOS apps

2017: Conversational UI with SAP CoPilot on the SAP Cloud Platform

- SAP Fiori Design Language adoption for CRM, SAC, SFSF, Hybris Marketing, and so on

2018: SAP Fiori 3

- Harmonized design: Common visual design elements across products
- Structure: Flexible content structure via sites to provide multi-level navigation
- Content: Scalable static and dynamic building blocks, for example, cards
- Grid: Selected common layouts

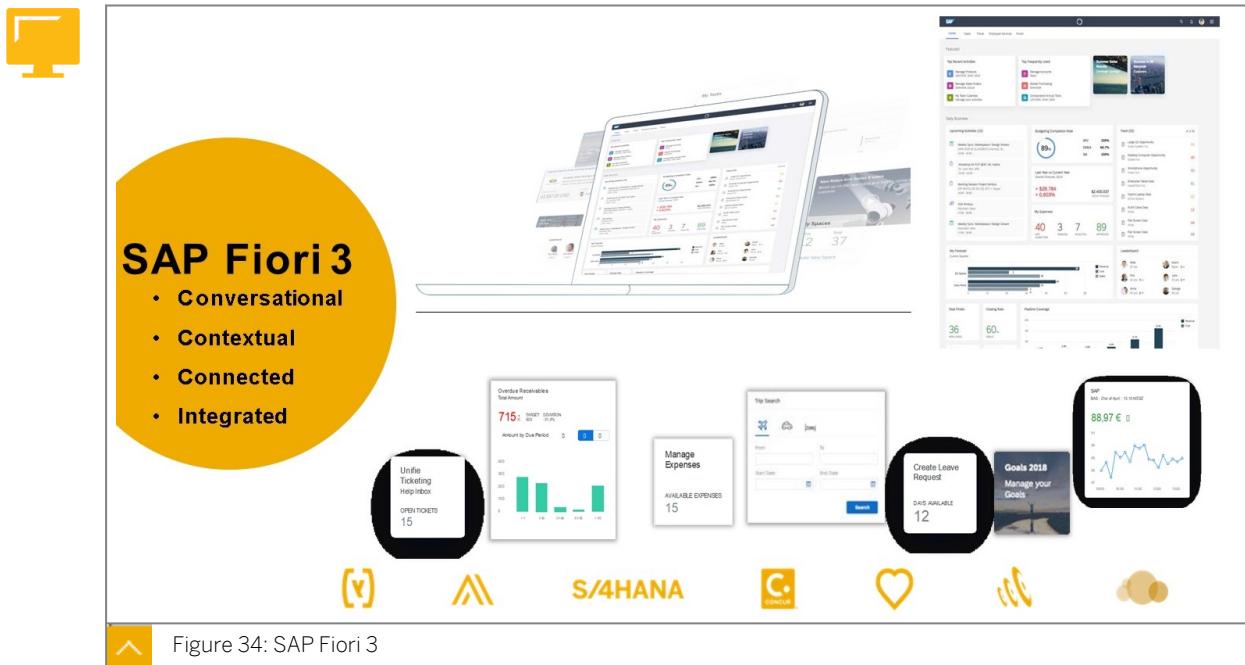


Figure 34: SAP Fiori 3

SAP Fiori 3 is SAP's new target design system, which evolves the SAP Fiori design for all SAP products to fully support the Intelligent Suite, running on any device. It has been defined jointly with all the various SAP product units. They took SAP Fiori 2.0 as a starting point, and established which aspects would need to be added to best support them all.

In addition to a new theme with a fresh, modern look and feel, the design of the home pages was revised. A further part is that natural language interaction and machine intelligence will become a key part of the experience by integrating them into the foundation of the design.

Features

- Common visual design elements across products
- Structure:
Flexible content structure via sites to provide multi-level navigation
- Content:
Scalable static and dynamic building blocks, for example, cards
- Grid:
Selected common layouts
- CoPilot:
Connects content and services from different products

Cards and Layout

One of the most requested new aspects was being able to provide more information on home pages, which the design, and now also UI5, are supporting via cards.

Cards can be integrated into the central home, and allow you to create custom pages. In addition to the title and a short description of the app, they also show a preview of the information the end user can find in the specific app. UI5 provides six predefined types of these Integration Cards, each designed in a different style, and containing various content formats, as follows:

- [Object Card](#)
- [Table Card](#)
- [List Card](#)
- [Timeline Card](#) (not available in OpenUI5)
- [Analytical Card](#) (not available in OpenUI5)
- [Component Card](#)

With Integration Cards, you can choose between several predefined visualizations. The benefit of using Integration Cards is that each card has its own configuration file (manifest.json), which can be bound to different data sources, following a declarative approach.

Unit 3 Exercise 2

Use Transactions, SAP Fiori Apps, and SAP GUI for HTML

In this exercise, you will explore the similarities and differences between the still-existing GUI transactions, the SAP GUI for HTML (which dynamically emulates SAP transaction screens in a Web browser by automatically mapping SAP screen elements to HTML via the Internet Transaction Server [ITS]), and the newly-developed SAP Fiori apps.

Start a transaction from the back-end T41, the corresponding SAP GUI for HTML, and a newly-available SAP Fiori app in the SAP Fiori launchpad.



Note:

In this exercise, when a value includes ##, replace ## with the number that your instructor assigned you.

1. Use SAP Logon to gain access to the SAP system, and navigate in the SAP system. Start the SAP Logon from the Windows apps menu. Log on to the T41 system using the following data:

Field	Value
Client	400
User	S4H01-##
Password	Welcome1
Language	EN

2. Use transaction MM03 to display material master data for the material number **T-F100**.

Note the units of measure in the following table:

Units of Measure
•
•
•

3. Start the SAP Fiori launchpad home page from the Windows apps menu, using your user **S4H01-##** and password **Welcome1** again.

4. Start the *Display Material* application in the *Master Data* group, or with the enterprise search function at the top right of the SAP Fiori launchpad.
5. In the *Display Material* application, search for the material number **T-F100**. Note the units of measure in the following table:

Units of Measure
•
•
•

6. In the *Manage Product Master* application, search for the product **T-F100**. Note the units of measure in the following table:

Units of Measure
•
•
•

Unit 3 Solution 2

Use Transactions, SAP Fiori Apps, and SAP GUI for HTML

In this exercise, you will explore the similarities and differences between the still-existing GUI transactions, the SAP GUI for HTML (which dynamically emulates SAP transaction screens in a Web browser by automatically mapping SAP screen elements to HTML via the Internet Transaction Server [ITS]), and the newly-developed SAP Fiori apps.

Start a transaction from the back-end T41, the corresponding SAP GUI for HTML, and a newly-available SAP Fiori app in the SAP Fiori launchpad.



Note:

In this exercise, when a value includes ##, replace ## with the number that your instructor assigned you.

1. Use SAP Logon to gain access to the SAP system, and navigate in the SAP system. Start the SAP Logon from the Windows apps menu. Log on to the T41 system using the following data:

Field	Value
Client	400
User	S4H01-##
Password	Welcome1
Language	EN

- a) Choose the Windows  button, and choose SAP Logon.



Figure 35: SAP Logon

- a) Choose the Windows  button, and choose SAP Logon.
 - b) Choose the T41 system, and choose Enter.
 - c) Enter the data provided in the table.
 - d) Choose Enter.
 - e) If necessary, read the messages that are displayed, and choose Continue.
2. Use transaction MM03 to display material master data for the material number **T-F100**.

Note the units of measure in the following table:

Units of Measure
•
•
•

- a) Start the transaction MM03 Display Material Master by navigating to the SAP Access Menu *Logistics* → *Material Management* → *Material Master* → *Material* → *Display Current*.
 - b) In the *Material* field, enter the material number **T-F100**.
 - c) Choose *Basic View1*, and confirm with *Enter*.
 - d) Choose the *Additional Data* button, and then *Units of Measure*.
 - e) Use the table provided in the step to note the units of measure.
3. Start the SAP Fiori launchpad home page from the Windows apps menu, using your user **S4H01-##** and password **Welcome1** again.
 - a) Choose the Windows  button, and choose *Fiori Launchpad* to start the SAP Fiori launchpad home page.



- b) Enter your user **S4H01-##** and password **Welcome1**.
 - c) Choose the language **EN**.
 - d) Choose *Log On*.
4. Start the *Display Material* application in the *Master Data* group, or with the enterprise search function at the top right of the SAP Fiori launchpad.

- a) Choose  (Search) on the top right of the screen.

Result

The *Search* field opens.

- b) From the dropdown menu next to the *Search* field, choose *Apps*.



- c) In the Search field, enter **Display Material**, and choose Enter.

Result

Application tiles appear in the result.

- d) Choose the application.



Note:

You may see *SAP GUI for HTML* on the top left of the screen for a moment when the application starts.

5. In the *Display Material* application, search for the material number **T-F100**. Note the units of measure in the following table:

Units of Measure
•
•
•

- a) In the *Material* field, enter the material number **T-F100**, and press Enter.

- b) Choose *Basic Data 1*, and confirm with Enter.

- c) Choose the *Additional Data* button, and then *Units of Measure*.

- d) Use the table provided in the step to note the units of measure.

- e) Choose the *Personalize* icon on the top right.

- f) Choose *I About*.

- g) Note the *Technical Component ID*: **MM03**.

6. In the *Manage Product Master* application, search for the product **T-F100**. Note the units of measure in the following table:

Units of Measure
•
•

Units of Measure
•

- a) Choose  (Search) on the top right of the screen.

Result

The Search field opens.

- b) From the dropdown menu, choose Apps.



Figure 38: Choose Apps

- c) In the Search field, enter **Manage Product Master**, and choose Enter.

Result

Application tiles appear in the result.

- d) Choose the application.

- e) In the *Product* field, enter the material number **T-F100**, and choose Go in the top-right corner.

- f) On the left of the line with the product name, select the checkbox and then choose the arrow on the right  to view the details.

- g) Scroll down until you see the *Units of Measure* section.

- h) Use the table provided in the step to note the units of measure.

- i) Choose the *Personalize* icon on the top right.

- j) Choose *I About*.

- k) Note the *ID: F1602*.



Note:

You can use this ID in order to search in the SAP Fiori App Library and ensure that your SAP Fiori App Library entry matches with the Fiori App you are operating. This is important because sometimes Fiori App names sounds very similar and the ID you have has a unique identifier.



LESSON SUMMARY

You should now be able to:

- Describe the next generation user experience for SAP S/4HANA

Unit 3

Lesson 2

Describing the SAP Fiori Launchpad



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the SAP Fiori launchpad

SAP Fiori Launchpad

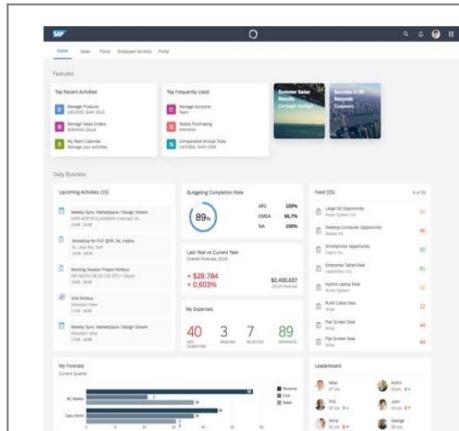


Figure 39: SAP Fiori Launchpad

The SAP Fiori launchpad presents a role-based starting point for users.

What do users see when they log on to SAP S/4HANA?

The SAP Fiori launchpad presents job-relevant content organized by tiles. Tiles are organized by tile catalogs, and tile catalogs are assigned to user roles (PFCG). This means that when you assign a user to a role, the user immediately has access to the tiles in launchpad. Users can decide if they want to hide certain tiles, and even rename them.

The tiles are more than just buttons to launch an application. They can expose key information right on the tile surface. For example, a tile to launch the application to unlock orders, shows on the surface how many orders are blocked. Before you even click the tile, you know how many orders you need to work through.

Therefore, the launchpad is a collection of tiles that provide a ready-made cockpit of key information to a user, with the ability to click any tile to either launch an application, or to drill down for deeper analysis.

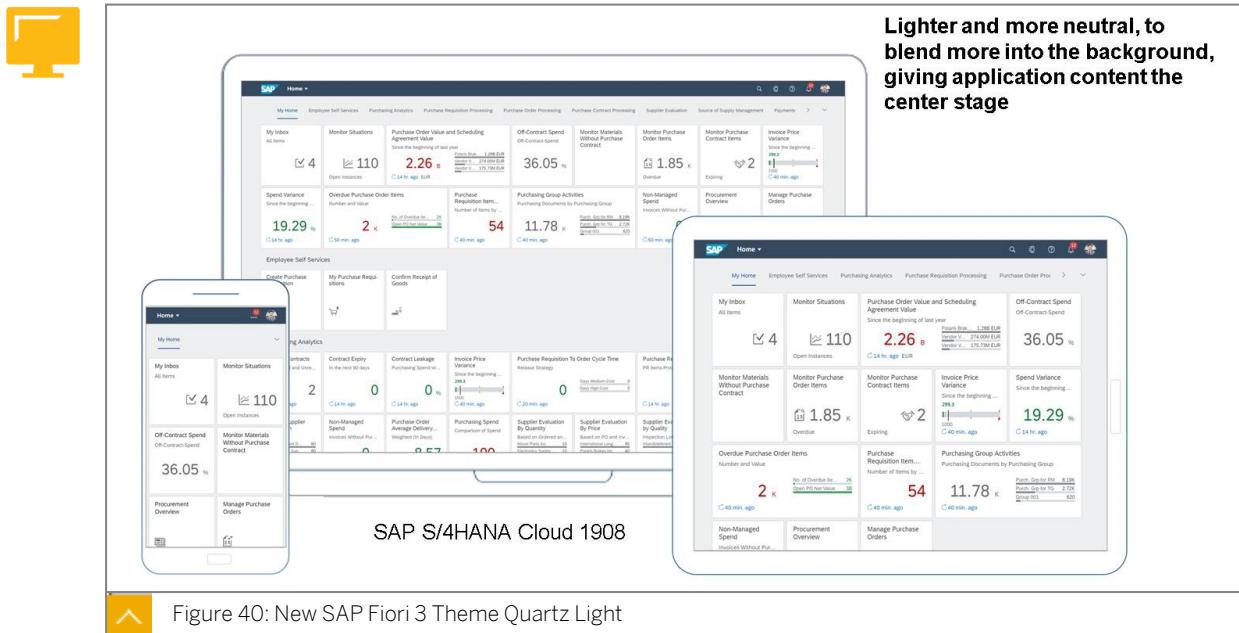
The SAP Fiori launchpad also provides a great enterprise search. A user can search for an application or even a business object, such as an employee or sales order. If a customer calls with a delivery reference number, you can simply type this into the launchpad search field, and in moments you have every document that refers to the delivery number right in front of you.

Users can select applications from tile catalogs, and customize their launchpad to organize their own tiles into groups to improve their productivity.

Tiles can be used to launch reports, web links, documents, and more.

Customers can change the look and feel of the launchpad to follow their own corporate branding.

New SAP Fiori 3 Theme Quartz Light



SAP Fiori 2.0

With SAP Fiori 2.0, the main theme was called Belize, which was mostly blue, and came in a light and a dark mode.

SAP Fiori 3

With SAP Fiori 3, the Quartz theme has been added, which is mostly gray, and more neutral.

Why?

The new Quartz theme is even more neutral, giving focus to the app and making it a little easier for you to adjust it quickly to your corporate theme.

Worth Knowing

The main theme of SAP Fiori 2, Belize, is still supported, along with High Contrast Black and High Contrast White.

You can still use UI Theme Designer to create custom themes based on Quartz, Belize, High Contrast Black, and High Contrast White, so, for example, you can change the logo to your corporate logo. For more information, see [UI Theme Designer](#).



Note:

UI Theme Designer is delivered as part of your SAP S/4HANA solution.

SAP Fiori Elements



Most use cases in the enterprise space involve providing an overview, lists of business objects and management of these business objects.

List report page

Work on a list of business objects

Object page

Manage individual business objects

Figure 41: What is SAP Fiori Elements?

To remain agile, make optimal use of limited development resources, and respond to rapid changes in market conditions, every organization will need the ability to build apps quickly. The capacity to scale in a cost-effective way requires a new way of thinking about app development. SAP Fiori elements offers development teams a way to create intuitive apps with a consistent user experience by leveraging a proven framework that relies on metadata, rather than traditional coding methods, to generate the user interface.

Enterprise software only has value if people use it as the system of record. Driving adoption is much easier if the software is easy to use with a quick learning curve. A consistent user experience plays a major role in determining usability. In addition to increasing adoption, UX consistency improves business user productivity, decreases training time, improves data quality, and enhances user satisfaction. UX consistency includes the fonts and colors, the layout of information on the screen, and all the interaction patterns. Even with a robust UX design specification, it can be hard to align large groups of developers to follow the same UX standards. SAP had this issue several years ago, which is why we created SAP Fiori elements. When building enterprise applications, developers typically focus on either the back end or front end.

Back end

The foundation of any enterprise app is the back end. Apps need a way to read, edit, create, or delete entries in some database. This is also where the business logic (algorithms and business rules) of the app resides. SAP has invested heavily in this area for all lines of business across many industries. SAP Fiori elements apps rely on OData as the standard to access data in the back-end ERP system, which is typically SAP S/4HANA, but does not have to be. To take full advantage of the power of SAP's back ends, we recommend using either the SAP Cloud Application Programming Model (CAP) or the ABAP RESTful Application Programming Model (RAP).

This is how users interact with the app. To many people, the app is the user interface (UI). Creating a good UI requires design resources and specialized skills in writing UI code. SAP Fiori elements generates the UI for you based on your data structures and metadata, so you can focus on the business logic.

How SAP Fiori elements accelerates development and enforces UX consistency

What is SAP Fiori elements?

To simplify the process of creating thousands of SAP Fiori apps with a consistent user experience (UX), SAP needed a framework that makes it easy to scale development. SAP Fiori elements is a UI library that provides several standard templates that significantly boost productivity by reducing the amount of user interface (UI) code that developers need to write and maintain. You choose the SAP Fiori elements template based on the requirements of your app. While the template determines the overall layout of your app, metadata allows you to fine-tune what information is displayed within the floorplan of the app that you generate using the template. You use metadata to describe the semantics, so you can create SAP Fiori apps with minimal coding. This metadata-driven approach to application development boosts your development efficiency since you focus only on the business logic. SAP maintains this UI layer, so as SAP's design system evolves, your SAP Fiori elements.

SAP Fiori elements uses SAPUI5 technology as its foundation. SAPUI5 is a modern Web framework that makes it easy to create cross-platform SAP Fiori apps with a single code line. Using SAPUI5 for your Web apps has several advantages:

- Gives you the SAP Fiori user experience today and as the design system evolves
 - Includes built-in support for SAP's enterprise-grade product standards such as security, integration, internationalization, and accessibility
 - Allows you to write your apps once and use them on desktop as well as mobile devices
- Business benefits

SAP Fiori elements templates reduce the amount of front-end development required to create your application. This allows you to focus on the back-end services while leveraging our proven UI concepts. SAP Fiori elements includes simple operations, such as navigation between pages or between apps, along with searching, sorting, and filtering capabilities in lists. It also contains more complex functionality such as draft and variant management. Getting all your developers aligned on design specifications is difficult without a robust set of standards. The SAP Fiori elements floorplans enforce UX consistency across custom and standard SAP apps. This reduces the time spent on design reviews to ensure that your apps follow the guidelines you have set. UX consistency drives user adoption, since end users feel confident that they will be able to use a new app if it is similar to apps they're already using. UX consistency covers several attributes:

- Look and feel: color, fonts, etc.
- Layout: how the different controls are positioned on the screen. End users expect to find similar functions at the same position on the screen (e.g. the ribbon with Microsoft Office) so that they won't have to look for it.
- Behaviors: consistency is not only about visual characteristics, but also how people interact with the app. For example, end users expect the same confirmation dialog when cancelling changes, with the same message and the same buttons. They don't want to read the message each time to understand which button to click as this would lead to lots of errors. They have similar expectations for filtering capabilities on lists.

SAP Fiori elements includes all these dimensions as part of its templates. Since the SAP Fiori elements templates are developed and maintained by SAP, you get the same user experience we ship with our standard SAP Fiori apps. It also means that your development investment is protected going forward. SAP handles the UI updates, so your apps always comply with SAP's latest design standards.

Furthermore, apps that are built using SAP Fiori elements are automatically enterprise-grade apps. Our framework ensures high quality, stable, optimized UI code. It also provides many features out of the box that are expected in the enterprise space but are typically expensive to implement, for example, accessibility, internationalization, and mobile compatibility.

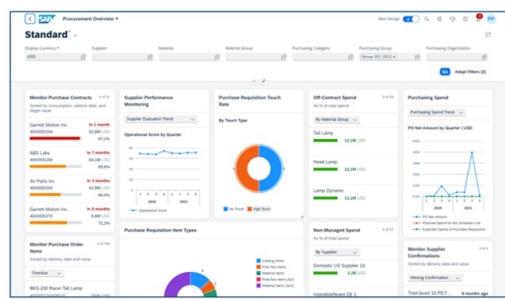
Several templates cover most business scenarios

Most scenarios in the enterprise involve some combination of providing an overview of business data, listing data in various formats, entering data, and managing the data. We developed the SAP Fiori elements templates to cover the majority of these use cases. These are the distinct templates that SAP Fiori elements provides, including the ability to create a custom page with the flexible programming model.



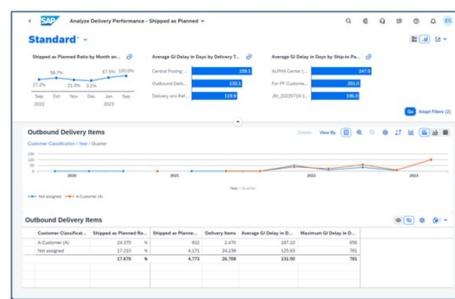
Most use cases in the enterprise space involve providing an overview, lists of business objects and management of these business objects.

Overview page



Provides overview on business relevant data

Analytical list page



The analytical list page work with a large set of items

Figure 42: U3_L2_SAP_Fiori_elements_2.pptx

The analytical list page is a specialized form of list report. It has additional analytics capabilities to visualize the data and allows you to filter using interactive charts.

The overview page provides an overview of a certain business area or role. This overview is the starting point for a business process and allows the user to navigate to other apps.

The list report allows the user to filter and sort a large set of items and drill down for more information on a single item. This is generally combined with an object page. When you generate the app, it's called list report object page.

The worklist page is a simplified version of a list report, optimized for processing a list of tasks. The object page contains details about a business object. This might consist of text, charts, graphs, images, or other forms of information. You typically access an object page by clicking on a row in a list report.

The form entry object page is a specialized type of object page that allows end users to perform data entry into the page.

The custom page uses the flexible programming model as the starting point, allowing you to combine standard building blocks with your own SAPUI5 code to meet your specific needs.

These fundamental templates cover most business scenarios that customers encounter when using SAP software to run their businesses. In fact, SAP uses SAP Fiori elements to create roughly 80% of new SAP S/4HANA apps. If the standard templates do not meet your

needs, the custom page based on the flexible programming model allows you to create exactly what you need. With complete control of how objects appear on the screen.

SAP Fiori 3: The Shell Header Bar

The screenshot illustrates the SAP Fiori 3 Shell Header Bar. Key components labeled are:

- Logo replaces Home button**: The SAP logo is displayed in the top left corner.
- Navigation**: The top navigation bar includes links for "Monitor Materials Without Contract", "Standard", "Not Filtered", and "Materials".
- Product-specific actions**: A callout points to the right side of the header, which contains links for "Recent Activity", "Frequently Used", "App Finder", "Settings", "Edit Home Page", and "Sign Out".
- User action menu replaces Me area**: A callout points to the "User Action Menu" icon in the top right corner, which is a small blue square with a white person icon.

Figure 43: SAP Fiori 3: The Shell Header Bar

One of the central motivations of SAP Fiori 3 was the development of a design that could be adopted across all products at SAP, leading to a more consistent and integrated experience across the entire portfolio, so as to provide a consistent user experience across the various SAP products (both on-premise and SAP Cloud solutions) that an end user needs to work with. Many of the design changes were motivated by this goal.

To ensure this, SAP Fiori 3 has been designed and developed jointly with all product design teams. Some common rules have been agreed upon and are planned to be followed across all products, such as the consistent use of the new theme and shell bar, but also more detailed aspects like a consistent iconography, terminology, or placement of common actions across all products – so that your end users have a better user experience overall, not just for SAP S/4HANA or SAP S/4HANA Cloud.

User Action Menu

The screenshot shows the SAP Fiori 3 User Action Menu open. Key sections labeled are:

- User Action Menu**: The main title of the menu.
- Generic options:** Access to App Finder, Settings, Sign Out.
- Context-specific options:** Edit Home Page (only on Home Page), App Settings (only on App with settings).
- Recently used activities**: (apps and searches).
- Frequently used apps**: A list of frequently used applications.

Figure 44: User Action Menu

Personalization has moved from the Me Area viewport to the User Action menu.

In SAP Fiori 2.0, clicking on the person icon on the top left took you to the Me Area viewport where all your personalization options and app-specific settings, and (my personal favourite) the support lifesaver About icon were located.

For more information, see <https://blogs.sap.com/2018/06/01/fiori-for-s4hana-finding-the-technical-name-of-an-app/>.

In SAP Fiori 3, the Me Area options have moved to the User Actions menu available towards the right of the header menu.

Why?

Settings are always available and a little easier to find.

Reduced animations make it easier for some users who are motion-sensitive, or where network bandwidth is poor, and on low-end devices.



Note:

Your SAP Fiori launchpad administrator can configure additional options, such as *Contact Support* and *Give Feedback*.

You can even add custom options and plug-ins. For more information, see the SAP Fiori Launchpad Administration Guide > *Configuring the launchpad* at <https://help.sap.com/viewer/a7b390faab1140c087b8926571e942b7/201809.002/en-US/71a403f2b55d4f33bfff16b93d7672d9b.html>.

SAP Fiori With Embedded Analytics



Analytical insights for users doing their daily business



reddot design award

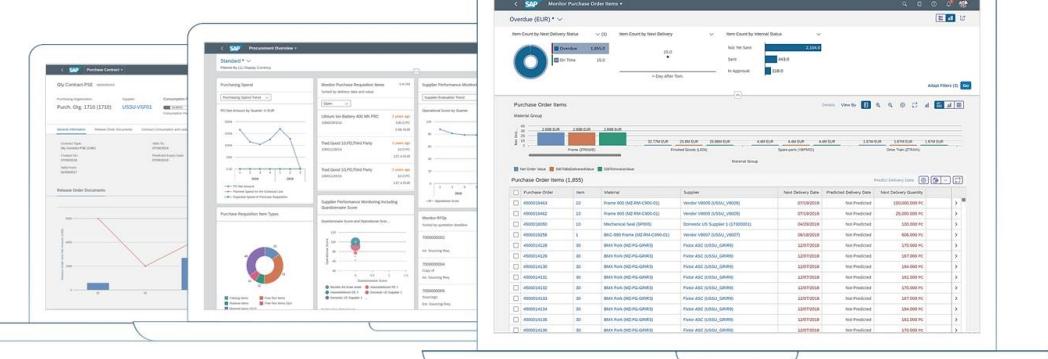


Figure 45: SAP Fiori With Embedded Analytics

External

Embedded analytics bring both analytical and transactional scenarios together in SAP Fiori apps built on SAP S/4HANA. With the SAP HANA Platform, it is now possible to embed analytical scenarios into transactional applications, which enables the user to intuitively and quickly filter through large amounts of real-time data. In addition, the system will provide suggestions and key insights for the user to be better informed, which in turn will lead to

better business decisions and an increase in efficiency – because the user can make a business decision without leaving the context of the business task.

When additional KPIs or filters are required, the user will be able to adapt the analysis without needing any additional skills. The capabilities of visualizing essential data, drill down, and complex filtering without leaving the transactional context, will improve the delightful experience of end users.

With analytical data being integrated into daily operational work, the data must be available in real-time. As an example, if the user needs to make a decision about which supplier to pick for an order, the supplier's data must be up-to-date. In addition, if an order has been placed, the historic analytical data must reflect this placed order within a short period of time.

SAP's vision is to have the separation of the transactional and analytical world disappear, as well as enabling end users to intuitively adapt the analytical component for standard use cases without the need to access and learn the respective design tool.

Internal

SAP Fiori design, in combination with the power of SAP HANA, makes it possible for the analysis and the transactional processes to merge. Analytics can be seamlessly embedded into business operations. Embedded analytics serve the user to enrich the information and increase the business insight during a business task.

The user can take a business decision without leaving the context of the business task. When additional KPIs or filters are required, the user will be able to adapt the analysis without additional skills needed. The capabilities of visualizing essential data, drill down, and complex filtering without leaving the transactional context, will improve the delightful experience of end users.

With analytical data being integrated into daily operational work, the data must be available in real-time. As an example, if the user needs to make a decision about which supplier to pick for an order, the supplier's data must be up to date. In addition, if an order has been placed, the historic analytical data must reflect this placed order within a short period of time. Only if real-time data is available will the user trust the system, stay in the business context, and leverage the additional insight of embedded analytics.

Currently, we target the following components to be embeddable:

- Tables
- Pivot
- Grid
- Charts

Our vision is to have the separation of the transactional and analytical world disappear, as well as enabling end users to intuitively adapt the analytical component for standard use cases, without the need to access and learn the respective design tool.

Notifications



Notifications support the user in keeping track of important events without distracting them from their current tasks.

Sort by date, by type (with grouping), or by priority

Navigate directly to the underlying app

Perform actions on all members of a group, for example, dismiss all

Figure 46: Notifications

SAP Fiori 2.0

Notifications appeared in a right-hand viewport.

SAP Fiori 3

Notifications appear in a right-hand dialog box from the SAP Fiori launchpad header.

Why?

Reduced animations make it easier for some users, and on certain devices.

Later in the SAP Fiori 3 journey, it is planned that notifications will be provided from multiple systems, including both on-premise and cloud solutions.



Note:

You can promote or hide notifications by type in your *Settings*.

For more information, see the SAP Fiori Launchpad User Guide > *Using the Launchpad* > *Working with Notifications* at <https://help.sap.com/viewer/a7b390faab1140c087b8926571e942b7/201809.002/en-US/8a56c34ef855453b9768e0bb9ffac739.html>.

Finding Apps: Home Menu, App Finder, and Search

Users can easily find less-frequently used apps, which are not on the Home Page – three options:

- Search
- Home navigation menu
- App Finder

Figure 47: Finding Apps: Home Menu, App Finder, and Search

With SAP Fiori 3, the options to find an app have been expanded. Now, it is also possible to search for an app with the *Home* navigation menu.

User Assistance

Figure 48: User Assistance

SAP Fiori 2.0

User Assistance help appeared as a horizontal overlay bar.

SAP Fiori 3

User Assistance help now appears as a vertical sidebar on the right.

Why?

This reduces the need to open and close the help, as it no longer obscures part of the app.



Note:

You can configure the correct help against your launchpad. For more information, see the UI Technology guide for your version at https://help.sap.com/doc/61634ead9e5144b89e7eca2b1d4b8bce/1809.002/en-US/UITECH_OP1809_FPS02.pdf.

If you want to extend the provided help, you can do that with SAP Enable Now.

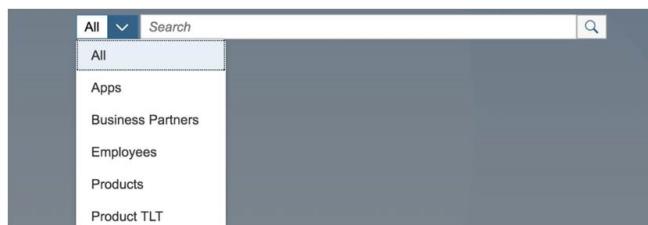
Enterprise Search



Figure 49: Enterprise Search



When choosing the search icon in the shell bar, the search field and the type selector appear.



The search can be restricted to objects of a particular type.

This can be done before the search is triggered, either by using the type selector or by typing the object type into the search field and selecting the respective suggestion.

To filter a result list by object type, users can select the type tabs or the respective section in the filter panel.



Figure 50: Enterprise Search Selection

The SAP Fiori launchpad offers an enterprise search function that searches across all apps and business objects, such as materials, customers, and maintenance plans. The search icon is displayed in the shell bar of the launchpad, and is always readily available at the top of the screen.

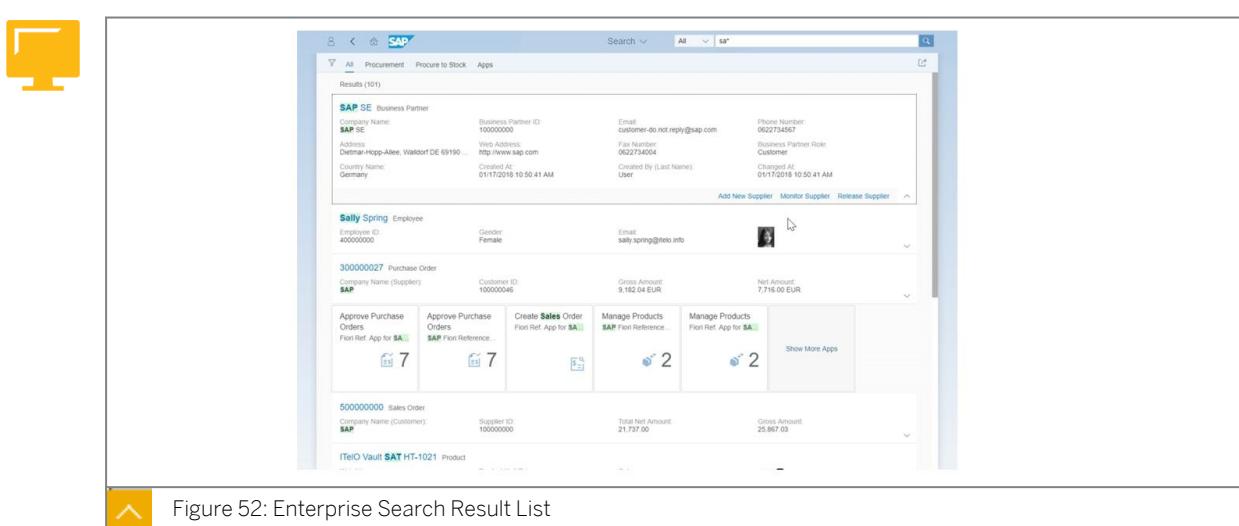
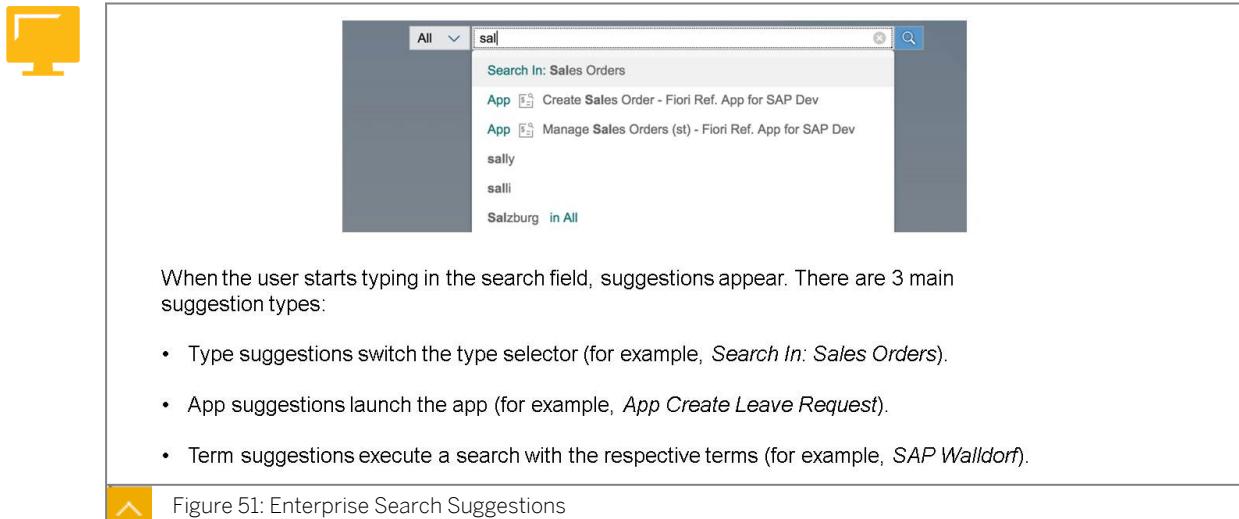
After entering a search term, users can trigger the search by pressing Enter on their keyboard, by clicking the magnifier icon, or by selecting one of the suggestions. A search for All can be achieved by pressing Enter in an empty search field or by using the * query.

If the search field is left empty, choosing the search icon closes the search field.



Note:

Some customers may not yet have business objects enabled for search. In this case, the UI adapts accordingly to search for apps only. In particular, the type selector is not visible and the filter functionality is more limited.



The result list is a ranked list of all matching items. Different object types can have different representations. Apps are shown as tiles and can be launched.

Business objects are summarized in a few lines. Pressing the title link of an object shows a full-screen representation of that object, such as an object page or a document viewer.

If additional summary attributes area are available, clicking the down arrow on the right will show them. This will also reveal navigation shortcuts to apps that can handle the business object.

The tabs at the top of the result list allow users to filter by object type. The tabs are sorted by the number of hits. Categories with the most hits appear first.

If the results have been limited to a certain object type, additional actions appear in the upper right-hand corner. Here, users can change the sort order, or switch to a table representation with the option to show or hide specific columns.



A filter icon in the top left-hand corner offers additional options for filtering the search results. When the user clicks or taps the icon, a filter panel appears on the left-hand side. In this panel the user can change the object type, which may also be depicted as a hierarchy (depending on the system configuration).

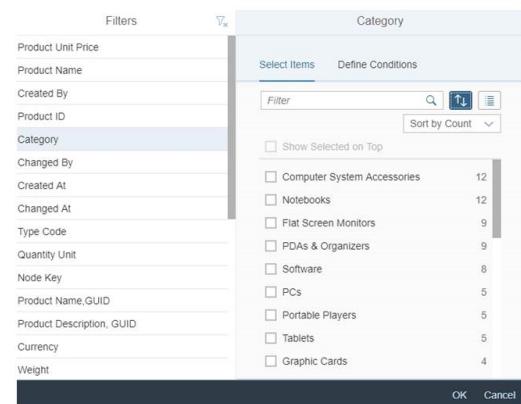


Figure 53: Enterprise Search Filters

Once the results have been limited to a certain object type, thereby ensuring a homogeneous result set, result-specific filters are offered. Only meaningful filters are included. For example, if all results are for the same country, the country filter is not shown.

Up to five one-click options are available for each filter. You can show the selection options in a list, or visualize them in a bar chart or pie chart. Multiple selection is supported for all visualizations. Once the filter panel has been closed, the applied filters are visible in an info bar above the result list. On the right of the info bar, all filters can be cleared without reopening the filter panel.



This feature allows the system to track the user's search behavior in order to personalize and improve future rankings for search results.

Algorithms analyze the user's behaviors and interests, and adapt accordingly to support the user by focusing on context-relevant information.

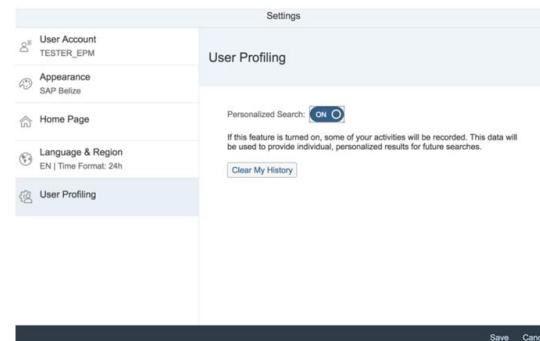
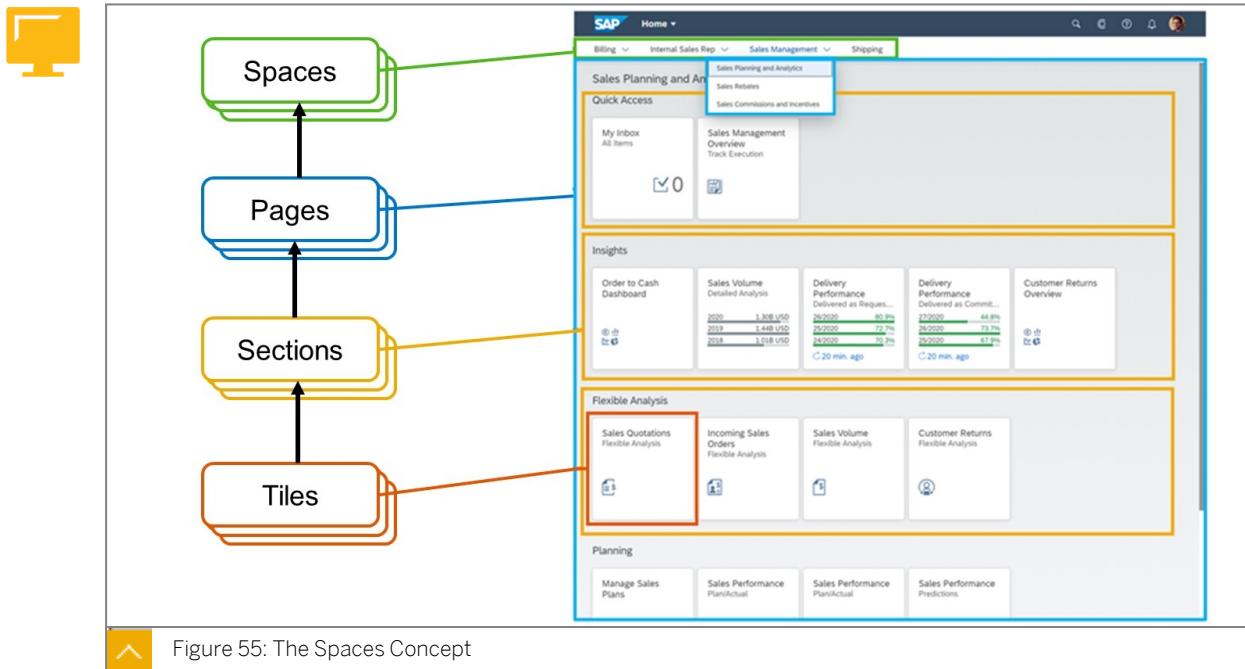


Figure 54: Enterprise Search – Personalized Search

The Spaces Concept



Within the scope of the recent SAP Fiori 3 innovations, there is an important innovation for the SAP Fiori launchpad: the spaces concept. With this new concept, we introduced the possibility to define the layout of the pages of whole user groups. This allows to consume the content of the launchpad in an easier and more structured way than before. This means, no overloaded home pages anymore, which led users to get lost with too much content, and no more confusion because of a missing structure.

Layout Elements

These are the layout elements to achieve this: spaces and pages.

Space: defines the navigation structure and provides the overall context for the displayed content

Page: contains apps for a business role, grouped in sections to guide users through work contexts

This helps increasing the flexibility in content structuring by providing several role-based pages to users instead of just one home page. For every role, one or more spaces are made available to users where they can find pages with their most important entry points and information. Those spaces can be found in the menu bar on top of the launchpad. Tiles in pages can be grouped into sections.

For the time being, spaces represent an alternative layout in comparison to the home page. This means, that the home page is still available and used per default and spaces can be used instead of them. At some point in time, the spaces will completely replace the home page.



LESSON SUMMARY

You should now be able to:

- Describe the SAP Fiori launchpad

Unit 3

Lesson 3

Describing SAP Fiori Apps, Groups, and Catalogs



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe SAP Fiori apps, groups, and catalogs

SAP Fiori Apps, Groups, and Catalogs

SAP Fiori App

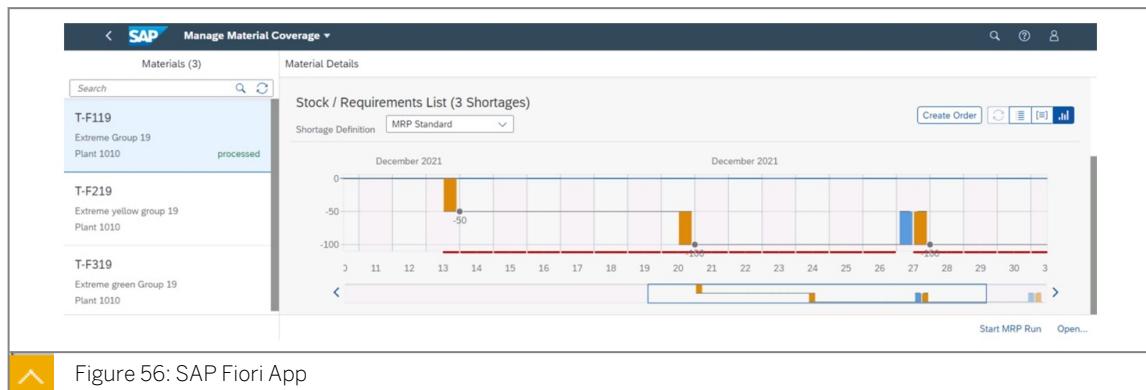


Figure 56: SAP Fiori App

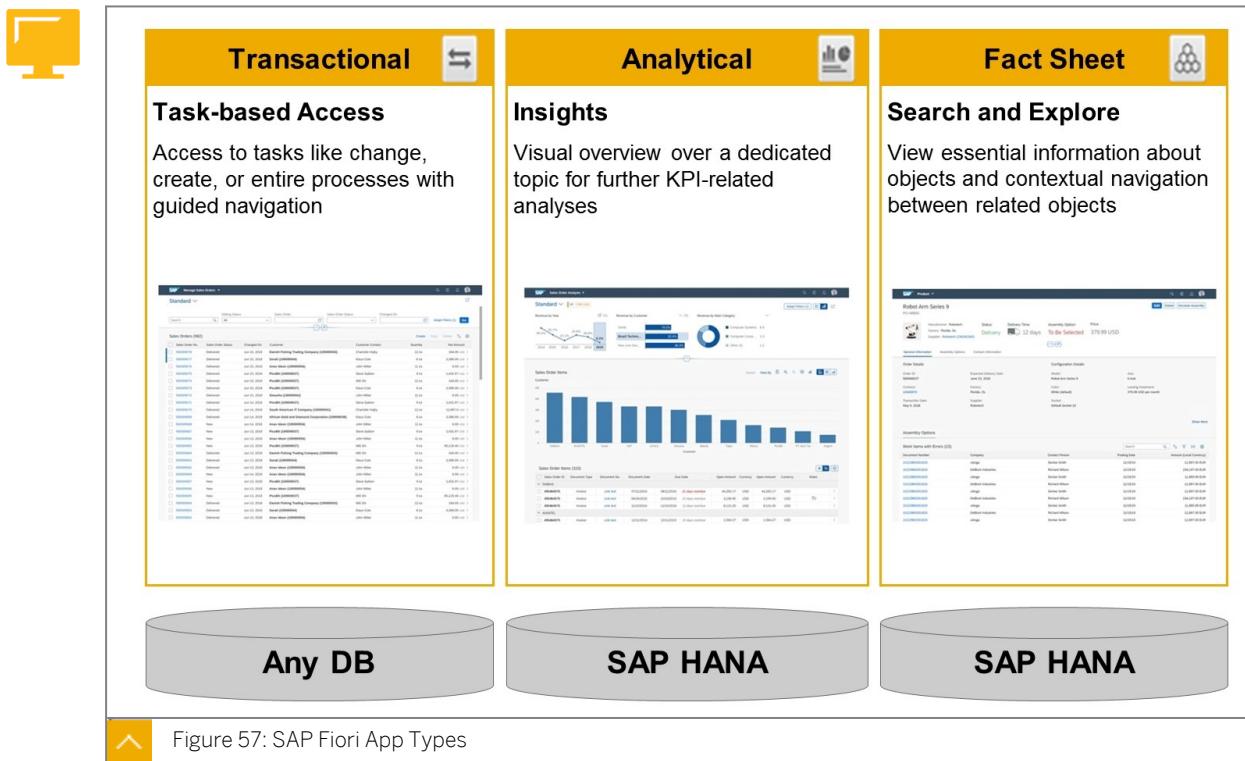
Some key features of an SAP Fiori app are as follows:

Key Features of an SAP Fiori App



- Exception-driven: Only shows orders that need attention, rather than the ones that are fine.
- Fewest clicks to complete a task: No excessive navigation.
- Embedded analytics: A transaction should include all relevant analytics to support in-line decision making. Analytics should be clickable to drill into more detail.
- Next actions: Context-relevant next action buttons offer the user only the possible choices when they select an item, with no grayed-out items.
- Fuzzy search: User begins to enter the first few letters of an employee name and SAP Fiori immediately shows the possible choices for completion.
- Provide continual feedback on user's progress: Users can see a reducing list of outstanding items as they work through them.
- Works on any device: Desktop, tablet, and smartphone.

SAP Fiori App Types



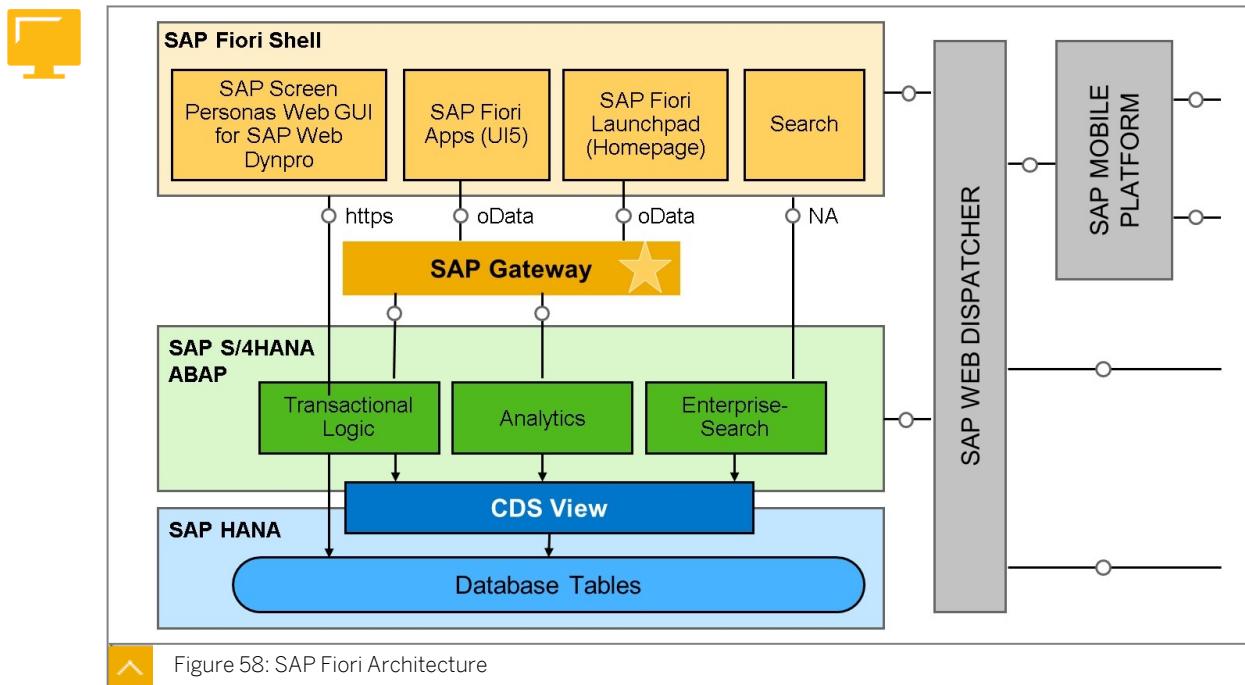
SAP Fiori apps can be classified into different types. Examples include the following:

- **Transactional:** These follow an optimal design for fast transaction processing, such as purchase receipt entry.
- **Analytical:** Provides tools required for analysis, graphs, charts, exploration, data mining, and drill down.
- **Factsheet:** Provides a 360-degree view of all key information related to a business subject. For example, enter an employee name and all information about that employee appears, such as working hours, vacation, pay, performance, manager, and awards.

This is a good example of the SAP Fiori approach, which is to use a limited number of consistent interfaces to keep things simple.

When a developer creates a new SAP Fiori app, they begin by selecting a template that is based on transactional, analytical, or factsheet, so they have a consistent look and feel.

SAP Fiori Architecture



One of the key technical principles of SAP Fiori architecture, is to decouple the interface logic from the back-end application logic. This means that, technically, SAP Fiori can be used by any back-end application, as it uses industry-standard methods of connecting the applications to the interface. In this case, the back end is an ABAP-based application (SAP S/4HANA).

Front-end components identify the calling device (phone, tablet, and so on), so you know which native template to use to present the application optimally to the device. The front end also identifies the type of foundation for the application, for example, whether the call comes from launchpad, an SAP Fiori app, or Personas.

For applications that access the back end via OData services, the SAP Gateway server is used. Otherwise, HTTPS is used directly with the back end.

The Gateway component can be installed on the AS ABAP back-end server, but for production purposes, we do not recommend this. The Gateway should be deployed on its own ABAP server. Otherwise, performance conflicts could arise. The database for the front-end server can be SAP HANA, SAP Adaptive Server Enterprise (ASE), or SAP MaxDB. The back-end server DB is always SAP HANA.

The data can be exposed to the ABAP SAP S/4HANA application directly from SAP HANA tables, but it is more likely to be exposed through CDS views. CDS views provide a business-ready view of the data ready for consumption, and is a new approach to reusable data entities. The CDS views sit on top of the database tables.



Note:

For more information about SAP Fiori technology, see the training courses with the code SAPUI5 (SAPUI5) and GW100 (SAP Gateway).

SAP Fiori Apps Reference Library

Figure 59: SAP Fiori Apps Reference Library

The SAP Fiori apps reference library is a comprehensive library of all relevant SAP content for the SAP Fiori launchpad.

The SAP Fiori apps reference library enables you to explore, plan, and implement SAP Fiori apps, as well as classic applications based on SAP GUI and Web Dynpro. The SAP Fiori apps reference library provides the following information:

- Overview of all SAP Fiori apps available today
- Key information for each app, including the technical data you need for installation and configuration
- Configuration information required to integrate classic SAP GUI and Web Dynpro applications into the SAP Fiori launchpad
- Data for previous app versions
- Aggregated installation and configuration information for a selection of apps
- Direct navigation to related resources, such as app documentation, Product Availability Matrix, and maintenance planner
- Recommendations for SAP Fiori apps fitting to your needs

[SAP Fiori Apps Reference Library \(ondemand.com\)](https://fioriappslibrary.hana.ondemand.com/sap/fix/externalViewer/)

<https://fioriappslibrary.hana.ondemand.com/sap/fix/externalViewer/>

Complimentary Executive Report version available on request at

<https://www.sap.com/far>

Unit 3

Exercise 3

Discover SAP Fiori Apps

Use the SAP Fiori Apps Library to find SAP Fiori apps for your role, and learn about them.

1. Open the SAP Fiori Apps Library.
 2. Locate and display the *Manage Product Master Data* app using the search features.
 - 3.
 4. Identify the name of the Business Catalogs (launchpad) to which this app belongs.
 5. What role must I be assigned to in order to use this app?
-
-
-

Discover SAP Fiori Apps

Use the SAP Fiori Apps Library to find SAP Fiori apps for your role, and learn about them.

1. Open the SAP Fiori Apps Library.
 - a) Open a browser (Google Chrome or Internet Explorer).
 - b) Enter the URL <https://fioriappslibrary.hana.ondemand.com/sap/fixed/externalViewer/>. Alternatively, you can use Google to search for **fioriapps**.
2. Locate and display the *Manage Product Master Data* app using the search features.
 - a) On the left pane, choose *All Apps*.
 - b) On the left pane, choose *Sales*.
 - c) In the *Search by App name* field, enter **F1602** (it is not case sensitive), and choose the *Search* button to the right.

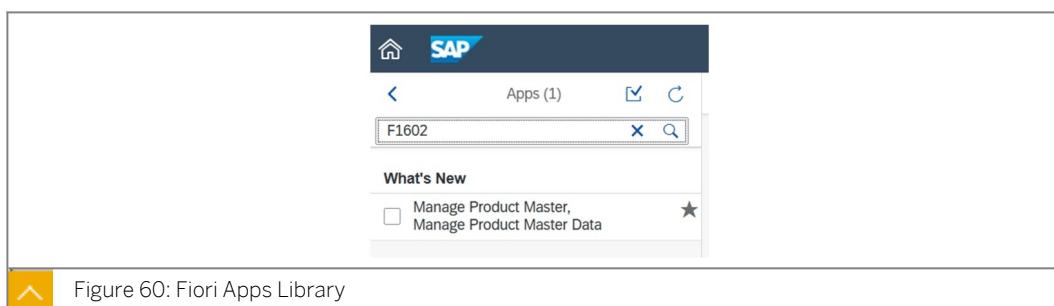


Figure 60: Fiori Apps Library

- d) In the result area, choose the app.
The main area of the screen displays information about this app.
3. a) Scroll down in the Tab Product Features. You will realize the description of the App, and at the end, you will find a link called *Read More in App Documentation*.
b) Select the *Read More in App Documentation* link. A new browser page opens. After studying the documentation, close the browser page.
4. Identify the name of the Business Catalogs (launchpad) to which this app belongs.
 - a) Select the *Implementation Information* tab.

PRODUCT FEATURES **IMPLEMENTATION INFORMATION**

Under the *Technical Configuration* section, you can see the business catalogs, for example, **SAP_CMD_BC_PRODUCT_DSP**.

5. What role must I be assigned to in order to use this app?

Roles are displayed alongside the PFCG role for Business Catalog. In this case, the app belongs to numerous roles such as, SAP_BR_BATCH_MASTER_SPCLST and SAP_BR_PRODMASTER_STEWARD.

SAP Fiori Apps (Classic)

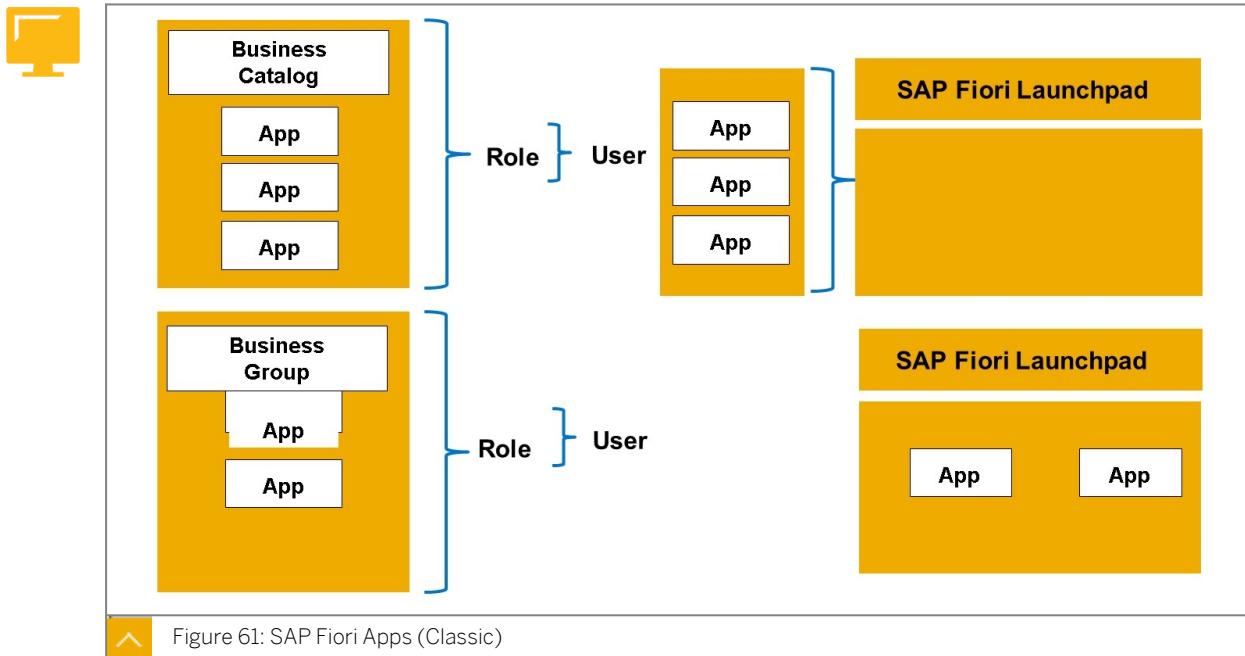


Figure 61: SAP Fiori Apps (Classic)

Catalog

A catalog is a set of apps that you want to make available for one role. Depending on the role and the catalog assigned to the role, the user can browse through the catalog, choose apps from this catalog, and add them to the entry page of the SAP Fiori launchpad.

Group

A group is a subset of catalog that contains the apps visible on the SAP Fiori launchpad entry page. Which tiles are displayed on a user's entry page depends on the group assigned to the user's role. In addition, the user can personalize the entry page by adding or removing apps to pre-delivered groups or self-defined groups.

Roles (PFCG)

A role contains references to catalogs and groups, and provides users with access to the apps in these groups and catalogs.

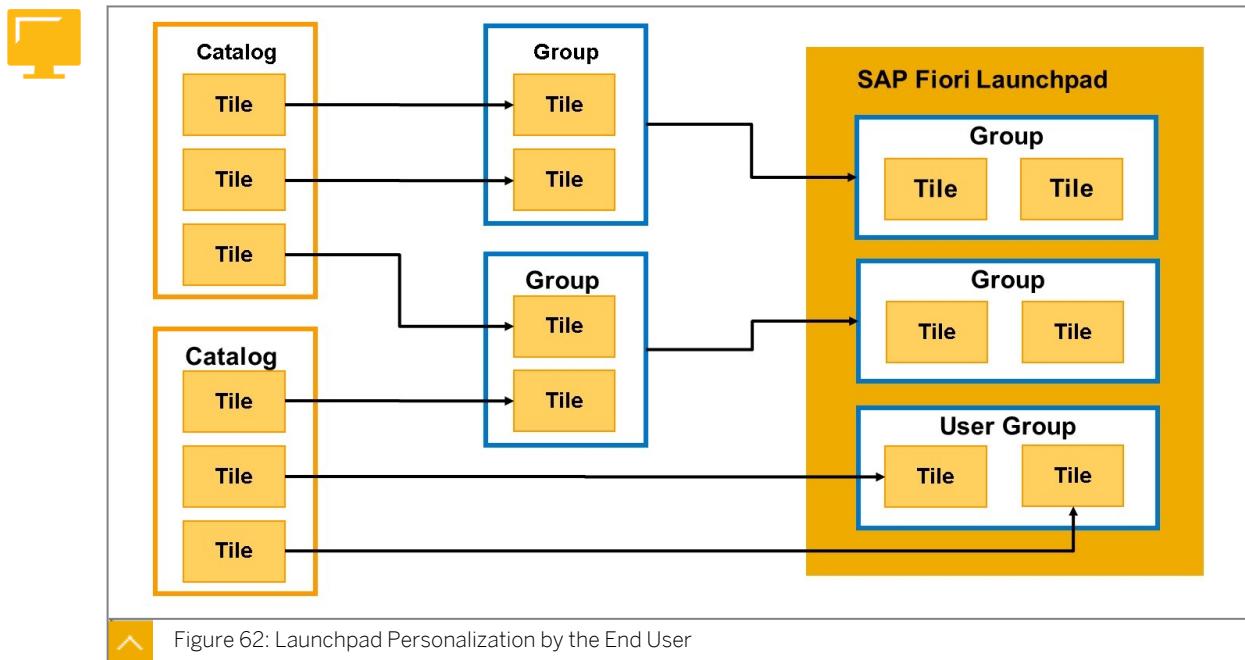
Activities

Use the technical catalogs delivered by SAP as repositories to create your own catalogs as an administrator.

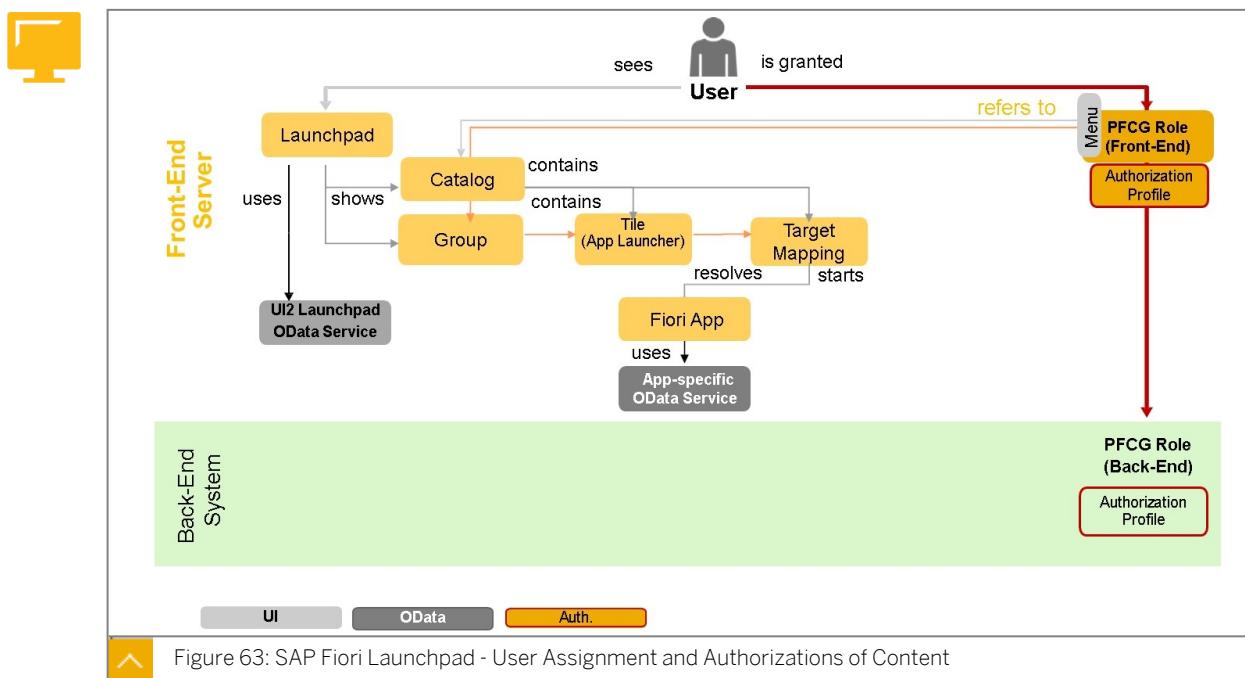
To display specific apps to a user by default in the entry page of the SAP Fiori launchpad, create a group. Then add apps from your catalog to the group.

Both the catalog and the group must be assigned to users. Do this by assigning groups and catalogs to users' PFCG roles. The business PFCG roles with the assigned catalogs and groups serve as examples based on which you can create your own business catalogs, groups, and roles.

Launchpad Personalization by the End User



End users can personalize their own variant of the SAP Fiori launchpad. Besides general settings such as language, they can also rearrange groups and tiles, create new groups, and add or delete tiles in an existing group.



Launchpad, Catalog, Group, and Tiles

Tiles are created in catalogs that collect all apps of one solution area, and the Launchpad shows it. Apps, tiles, and catalogs are delivered by SAP, but they can also be created by customers. Tiles of catalogs can be assigned to groups combining and representing all tasks of one usage type or user role. Groups do not add any additional settings to the tiles and have no direct connection to the apps.

User sees the Launchpad and access is granted by roles

Both catalogs and groups can then be assigned to user roles. This works like adding transactions to user roles, and grants the user role access to all tiles of the catalog or group.

SAP also delivers template groups and roles. However, these should be adapted to the needs of the customer or, to be more precise, the needs of the users of the customer. Roles can be investigated in the Fiori Launchpad – see here also the Implementation tab for a particular Fiori App, and expand Configuration, scroll below to identify groups, roles, catalogs, and so on. Also, the *Get SAP Fiori Recommendation* on the SAP Fiori App Reference Library landing page will provide you with some ideas about appropriate roles, catalogs, and groups. System analyst, System administrators, Authorization experts, and also SAP Fiori App developers, will support Business Users to figure out their right Fiori App set, and grant the right authorizations.

Target mapping starts Fiori Apps

A tile connects the Fiori launchpad with the app implementation in the system. This is exactly what the target mapping does. It contains the information about which app to start, with what parameters, mentioned before, and on what device types. They are identified by its intent, the combination of semantic object, and action. If the user chooses a tile, the intent-based navigation defined in the tile is started. The suitable target mapping then calls the target app that is defined.

Target Mapping can be investigated in the Fiori Launchpad – see here also the Implementation tab for a particular Fiori App and expand Configuration, scroll below to identify Target Mappings.

The Fiori App uses App-Specific OData Services

The activation of the OData services and of the ICF services are required to initially set up the SAP Fiori launchpad and the SAP Fiori launchpad designer. SAP Gateway provides the infrastructure for the OData services used by the SAP Fiori launchpad, and the SAP Fiori apps. An OData service has to be enabled in SAP Gateway, which establishes a mapping between the technical OData service name and the corresponding back-end service. If you are interested in a particular OData Service, you can also here, access the Implementation tab for a particular Fiori App and expand Configuration, scroll below to identify OData Services.



Note:

The creation of target mappings, OData Services catalogs, groups, and roles had already been done by SAP, but can be changed or newly created by customer's UX specialists. This is not a task end and/or key-users have to do.

One exception is the personalization of the SAP Fiori Launchpad by Business Users. Prerequisite is here, the user has the rights to do so.

Unit 3 Exercise 4

Operate the SAP Fiori Launchpad and SAP Fiori Apps

Search for objects and apps via the enterprise search, create groups, and add apps to your new groups in the SAP Fiori launchpad. In addition, you will set up default values for your sales organization.



Note:

In this exercise, when a value includes ##, replace ## with the number that your instructor assigned you.

1. Start the SAP Fiori launchpad from the Windows apps menu, using your user **S4H01-##** and password **welcome1**.
2. Find all objects which are related to the material **TG11** using the search feature.
3. Create a custom tile group with the name **Plan to Produce**, and assign the following app to your new tile group: *Monitor Material Coverage - Net and Individual segments*.
4. Create a custom tile group with the name **Order to Cash**, and assign the following apps to your new tile group:
 - *Manage Sales Order Version 2*
 - *Create Outbound Deliveries*
 - *Pick Outbound Delivery*
 - *Create Billing Documents*
 - *Track Sales Order*
5. Create a custom tile group with the name **Procurement to Pay**, and assign the following apps to your new tile group:
 - *Procurement Overview*
 - *Manage Purchase Contracts*
6. Create a custom tile group with the name **Finance**, and assign the following apps to your new tile group:
 - *Create Billing Documents*
 - *Manage Journal Entries (Old Version)*

- *Post Incoming Payments*
 - *Overdue Payables Today*
 - *Overdue Receivables Today*
7. Create a custom tile group with the name **Analytics**, and assign the following apps to your new tile group:
- *Sales Order Fulfilment Analyze and Resolve Issues*
 - *View Browser*
8. Use the ? icon to explore the help functionality, XRAY, that is part of SAP Fiori.
9. Without opening any SAP Fiori apps, use the Enterprise Search to answer the following question: What is the postal code for customer T-OVW## (where ## is replaced by the group number assigned to you by your instructor)?

10. Set up a default value, **1010**, for your sales organization.

Operate the SAP Fiori Launchpad and SAP Fiori Apps

Search for objects and apps via the enterprise search, create groups, and add apps to your new groups in the SAP Fiori launchpad. In addition, you will set up default values for your sales organization.



Note:

In this exercise, when a value includes ##, replace ## with the number that your instructor assigned you.

1. Start the SAP Fiori launchpad from the Windows apps menu, using your user **S4H01-##** and password **Welcome1**.
 - a) Choose the Windows *Start* button, and then choose the arrow pointing downwards to see a list of all apps listed alphabetically. Choose *Fiori Launchpad*.
 - b) Enter your user **S4H01-##** and password **Welcome1**.
 - c) Choose *Log on*.
2. Find all objects which are related to the material **TG11** using the search feature.
 - a) Choose the search icon at the top right of the screen.
The *Search* field opens.
 - b) In the *Search* field, enter **TG11**, and press Enter.
Result
Numerous objects appear in the context of the material TG11, for example, sales orders and good movements.
 - c) Choose the SAP button in the top-left part of the screen.
 - d) Open a new Fiori Launchpad session by right clicking in the SAP-symbol, and choosing *Open link in new tab*.



Figure 64: Open Link in New Tab

3. Create a custom tile group with the name **Plan to Produce**, and assign the following app to your new tile group: *Monitor Material Coverage - Net and Individual segments*.

- a) Start the personalize mode by choosing  (Personalize) on the top right of the screen.
- b) Choose *Edit Home Page*.

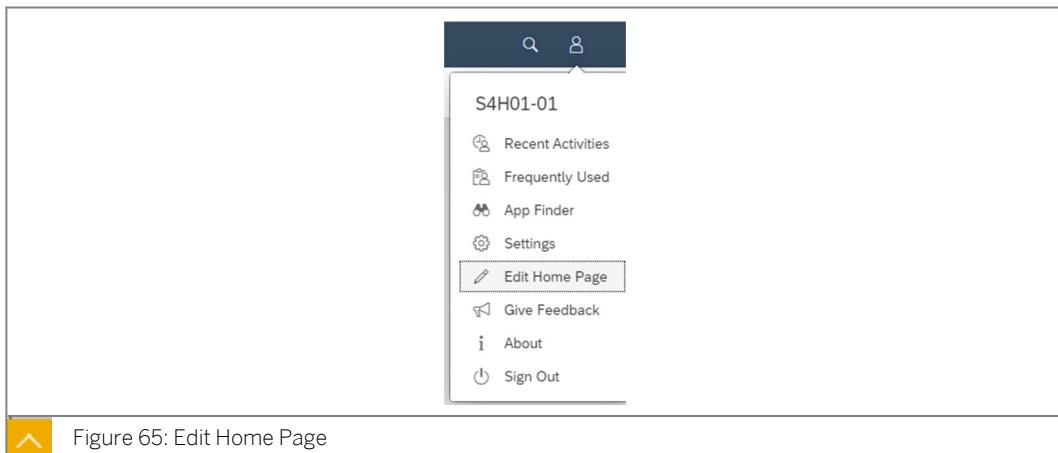


Figure 65: Edit Home Page

- c) Create a new tile group by choosing  (+ Add Group), and enter **Plan to Produce**.
- d) To add an app, choose the + sign within the new group.

You should be now on the *App Finder* page and no longer on the SAP Fiori landing page. On the left hand side, you will find all catalogs dedicated to your user via the profile.

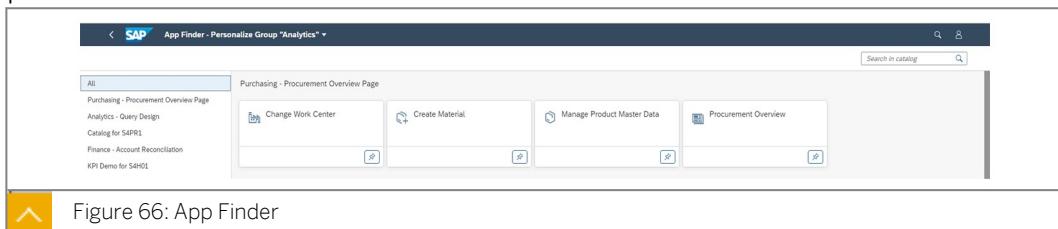


Figure 66: App Finder

- e) Use the *Search in catalog* search function on the top right of the screen by entering **Monitor Material Coverage** in the *Search in catalog* field.

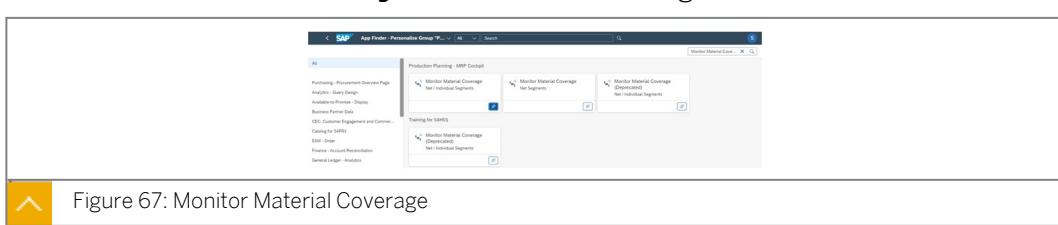


Figure 67: Monitor Material Coverage

Please, if not done select the **ALL** catalog entry on the left hand side.

- f) Choose the *pin* icon on the *Monitor Material Coverage Net / individual segments* app to add it to your group.
- You might experience by adding Fiori Apps to the next coming groups, that a Fiori App will be shown several times. Realize, even we are in different catalogs, it is still the one Fiori App. Therefore, choose only one time, a Fiori App, does not matter from which catalog, you have been asked for in the exercise.

4. Create a custom tile group with the name **Order to Cash**, and assign the following apps to your new tile group:

- *Manage Sales Order Version 2*
 - *Create Outbound Deliveries*
 - *Pick Outbound Delivery*
 - *Create Billing Documents*
 - *Track Sales Order*
- a) Create a new tile group by choosing **+ Add Group**, and enter **Order to Cash**.
 - b) To add an app, choose the **+** sign within the new group.
 - c) Choose the pin icon on the app to add it to your group.
 - d) Choose the pin icon to add it to your group.
 - e) Choose the pin icon on the *Manage Sales Order Version 2* app to add it to your group.
 - f) Choose the pin icon on the *Create Outbound Deliveries* app to add it to your group.
 - g) Choose the pin icon on the *Pick Outbound Delivery* app to add it to your group.
 - h) Choose the pin icon on the *Create Billing Documents* app to add it to your group.
 - i) Choose the pin icon on the *Track Sales Order* app to add it to your group.
 - j) On the left, choose the SAP logo to return to the personalize screen.
5. Create a custom tile group with the name **Procurement to Pay**, and assign the following apps to your new tile group:
 - *Procurement Overview*
 - *Manage Purchase Contracts*
 - a) Create a new tile group by choosing **+ Add Group**, and enter **Procurement to Pay**.
 - b) To add an app, choose the **+** sign within the new group.
 - c) Choose the pin icon on the *Procurement Overview* app to add it to your group.
 - d) Choose the pin icon on the *Manage Purchase Contracts* app to add it to your group.
 - e) On the left, choose the SAP logo to return to the personalize screen.
 6. Create a custom tile group with the name **Finance**, and assign the following apps to your new tile group:
 - *Create Billing Documents*
 - *Manage Journal Entries (Old Version)*
 - *Post Incoming Payments*
 - *Overdue Payables Today*
 - *Overdue Receivables Today*
 - a) Create a new tile group by choosing **+ Add Group** and enter **Finance**.

- b) To add an app, choose the + sign within the new group.
 - c) Choose the pin icon on the *Create Billing Documents* app to add it to your group.
 - d) Choose the pin icon on the *Manage Journal Entries* app to add it to your group.
 - e) Choose the pin icon on the *Post Incoming Payments* app to add it to your group.
 - f) Choose the pin icon on the *Overdue Payables Today* app to add it to your group.
 - g) Choose the pin icon on the *Overdue Receivables Today* app to add it to your group.
 - h) On the left, choose *Back* (the arrow pointing left) to return to the personalize screen.
7. Create a custom tile group with the name **Analytics**, and assign the following apps to your new tile group:
- *Sales Order Fulfilment Analyze and Resolve Issues*
 - *View Browser*
- a) Create a new tile group by choosing *+ Add Group*, and enter **Analytics**.
 - b) To add an app, choose the + sign within the new group.
 - c) Choose the pin icon on the *Sales Order Fulfillment Analyze and Resolve Issues* app to add it to your group.
 - d) Choose the pin icon on the *View Browser* app to add it to your group.
 - e) On the left, choose *Back* (the arrow pointing left) to return to the personalize screen.
 - f) Choose *CLOSE* on the bottom right of the screen.
8. Use the ? icon to explore the help functionality, XRAY, that is part of SAP Fiori.
- a) To open the help functionality, choose the ? icon in the upper-right corner of the screen.
 - b) Select the circle that displays on your screen.
- Result**
- The available help information for the highlighted object displays. You can try out this XRAY functionality in more apps, if you want.
- c) Close the *Help* field by choosing the cross sign at the top right in the *Help* area.
9. Without opening any SAP Fiori apps, use the Enterprise Search to answer the following question: What is the postal code for customer T-**OVW##** (where ## is replaced by the group number assigned to you by your instructor)?

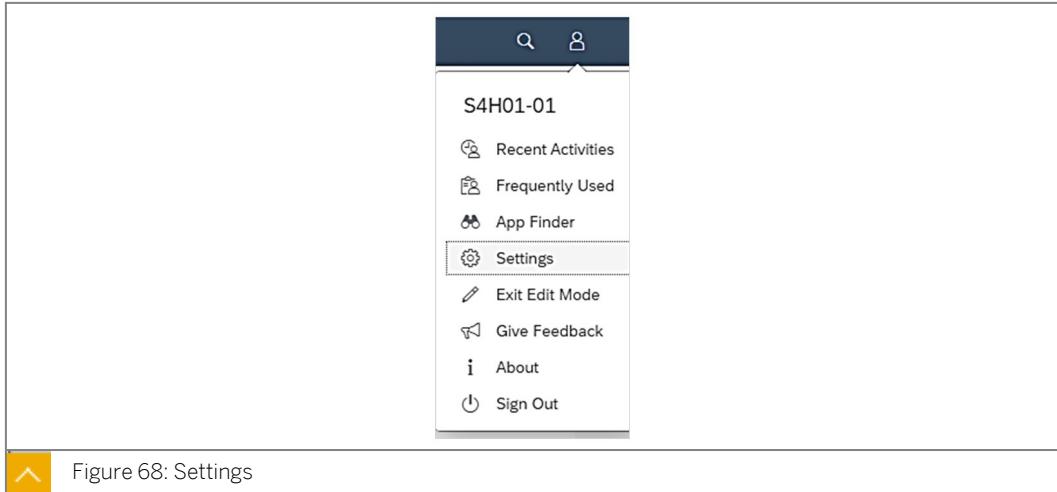
The postal code is 68161.

- a) Choose the *Search* icon in the shell bar.
- b) When the search field and the type selector appear, choose the type *Customer*.
- c) Enter customer **T-ovw##**, and press Enter.

Result

The basic address information is displayed.

10. Set up a default value, **1010**, for your sales organization.
- Choose the *Personalize* icon on the top right.
 - Choose *Settings*.



- c) On the left side of *Default values*, choose *Next*, scroll down in the settings list, and enter the value **1010** for the *Sales Org*.
- d) Choose *SAVE*.



LESSON SUMMARY

You should now be able to:

- Describe SAP Fiori apps, groups, and catalogs

Unit 3

Lesson 4

Describing an SAP UI5 Application



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe an SAPUI5 application

SAPUI5 Applications



The screenshot shows the SAPUI5 Customers application. The main view displays a list of customers with their details. A specific customer, 'DUMON', is selected and shown in detail on the right side of the screen. The detail view includes a photo of the customer and a map of Nantes, France. The interface is designed with a modern, responsive layout, featuring tabs for different data sources and a sidebar for navigation.

Figure 69: Describe an SAPUI5 Application

As well as SAP Fiori applications, SAP S/4HANA contains many new SAPUI5 applications. What are these, and how do they differ from SAP Fiori applications?

SAPUI5 is the family name of the tools and technologies used to develop SAP S/4HANA user experiences. SAP Fiori uses SAPUI5 as the technology, but with strict design and development guidelines to ensure a consistent user experience. Only a subset of all design items in the SAPUI5 library is allowed for SAP Fiori.

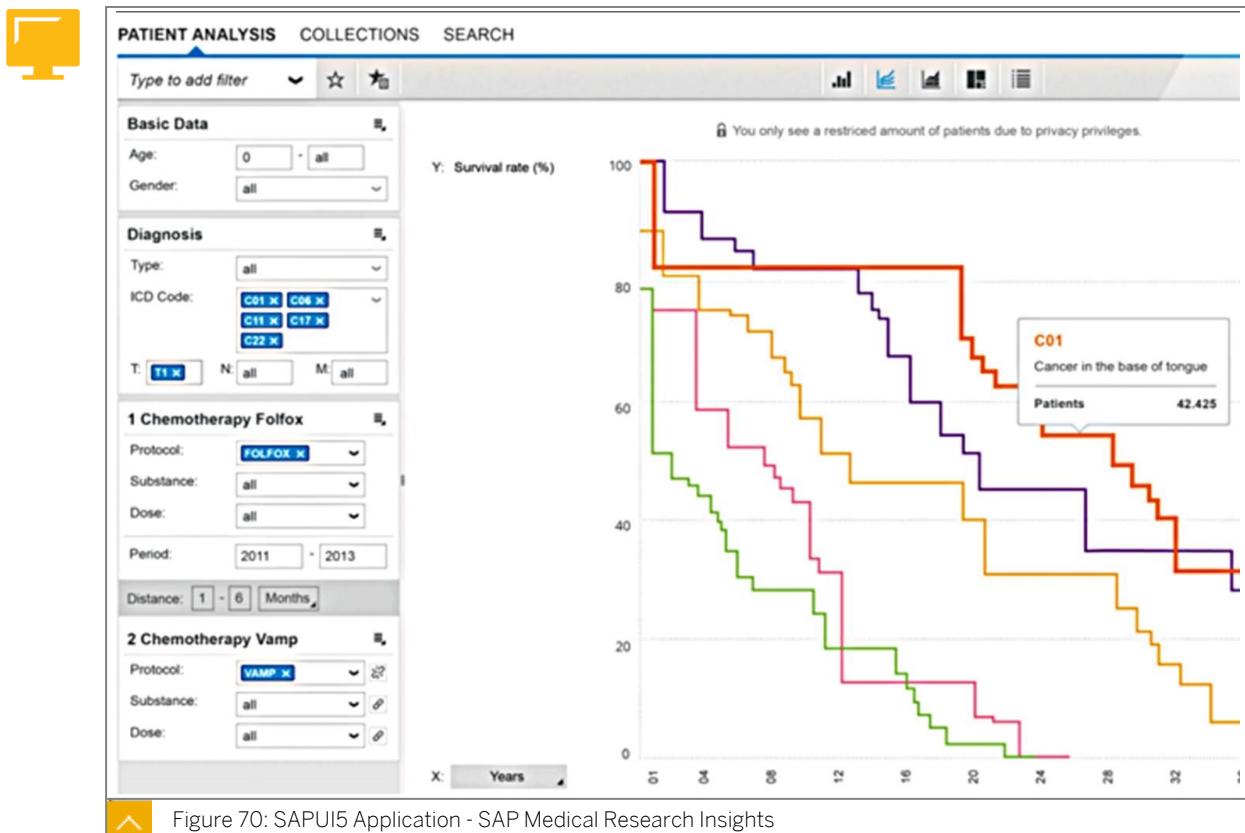
However, not all SAP S/4HANA applications are built using SAP Fiori. Some applications have a different design approach that does not need to follow the SAP Fiori design principles, and may need more library design items than are allowed for SAP Fiori. For example, there are cockpits in SAP S/4HANA, as shown in the figure.

A cockpit can provide a central area for a user to react to a variety of customer questions (similar to a call center), or an HR cockpit can have a helpdesk to provide support to employees who have payroll questions. As you can see, there are various tabs, hiding many features that may at some time be needed.

The aim of an SAPUI5 application is to create a great user experience, but this type of application is more suited to a key decision-maker than a task worker, because more flexibility is needed in an ad hoc environment.

SAPUI5 applications can be called from the SAP Fiori Launchpad. You can create custom cockpits for employees to use in their day-to-day tasks.

SAPUI5 Application Example - SAP Medical Research Insights



Healthcare is one aspect of our lives that will be impacted the most by information technology in the coming years. Trends such as personalized medicine, based on in-depth analysis of the human genome, proteome, and other biological data, will change the way diseases are diagnosed and treated.

This is where the software developed by SAP partner Molecular Health comes into play, as it creates an individual tumor data analysis for each patient. This application was built using SAP HANA and SAPUI5. It is another example of SAPUI5 in action.

SAPUI5 Application - Targeted Search

Figure 71: SAPUI5 Application - Targeted Search

This SAPUI5 application is based on a sophisticated text mining scenario. The figure, SAPUI5 Application - Targeted Search, shows a search for documents that contain a series of matching words.

SAP HANA provides the in-memory search engines, and SAPUI5 provides the user experience.

SAP has built a library of example SAPUI5 applications that developers can study and copy to accelerate the build of their own applications. These include shopping baskets, text search, and cockpits.



LESSON SUMMARY

You should now be able to:

- Describe an SAPUI5 application

Unit 3

Lesson 5

Describing SAP Screen Personas



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe SAP Screen Personas

SAP Screen Personas



Figure 72: SAP Screen Personas

Customers can use SAP Screen Personas to simplify their existing SAP GUI screens or Web Dynpro ABAP applications to meet their unique needs, and increase productivity.

SAP Screen Personas can be used to customize both SAP and customer-created screens, and is available only with the on-premise edition of SAP S/4HANA, and not the cloud edition, where there are no classic screens provided.

SAP provides design guides and SAP Fiori-inspired sample content for SAP Screen Personas. This means you can adjust existing screens to align more to the feel of SAP Fiori, so users truly have a consistent experience, as they move between natively built SAP Fiori applications and SAP Fiori-influenced classic interfaces.

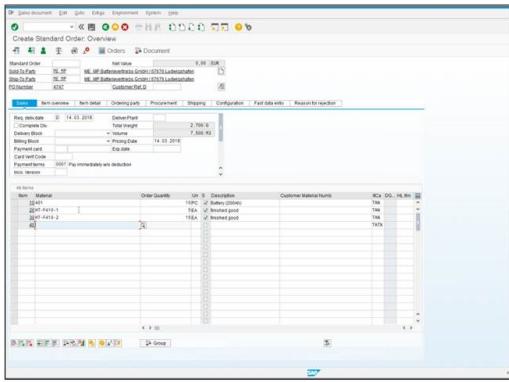
SAP Screen Personas Improvements

Examples of improvements include the ability to do the following tasks:

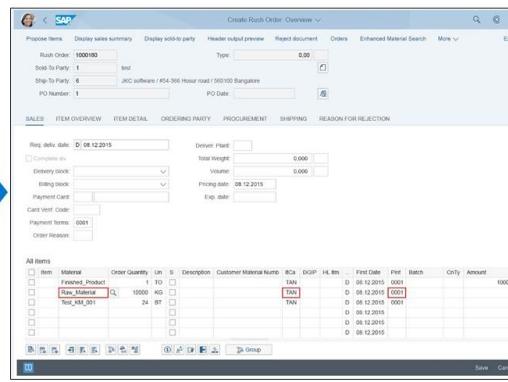


- Remove unwanted fields and tabs
- Rename fields and other screen text
- Add graphics and colors to brighten up the screen
- Add dropdown lists to screens, and prepopulate with suitable values
- Add a video link to launch a tutorial
- Add a button to kick off a sequence of actions or launch a related transaction

SAP Fiori Theme for Classical Transactions



Example screen from transaction VA01 in SAP GUI for Windows



SAP Fiori theme for SAP GUI for HTML

Existing SAP users get productive quickly in SAP S/4HANA with SAP Fiori-themed web-enabled classical transactions. Expert users waste no time in transitioning to SAP S/4HANA.

- Existing SAP customers get a non-disruptive upgrade to SAP S/4HANA without having to necessarily change the way they do business.
- The SAP Fiori theme for classical UIs also provides a solution to most of our customers' custom screens (~60%).
- Customers can easily apply SAP Screen Personas should they need further simplification on top of SAP Fiori-themed web-enabled classical UIs.

The long-term goal of the SAP UX strategy is to offer all business and all analytic applications on SAP HANA, with SAP Fiori as the unified UI. However, it will take some time to realize this for the thousands of different transactions and applications.

Example – Streamline Change Sales Order

In SAP S/4HANA, there are many SAP Fiori applications that are based on ABAP Web Dynpro. This means that the layout of the screen remains largely unchanged since the classic SAP GUI of ERP. Sales order create, change, and display is an example. However, it is not difficult to dramatically improve the application interface using SAP Screen Personas.

To get started, you simply launch a Web Dynpro application from the SAP Fiori launchpad and choose the *SAP Screen Personas* button at the top of the screen. Then you arrange the fields as you require. You can create as many personas as you need to align to different business scenarios.

Example – Streamline HR Master Data – Before

A company wishes to simplify the notoriously complex HR transaction, PA30 (Maintain HR Master Data).

The employee record information is all contained in this single transaction, but it takes many clicks to get the complete set of HR master data, including employment history, salary information, and organizational data.

Example – Streamline HR Master Data – After

It is possible to greatly simplify the screens using SAP Screen Personas. Behind the scenes, you can use Personas scripting to go to different areas of the transactions and consolidate the employee HR record onto a single screen.

While it used to take 3-4 minutes to see all of an employee's information, it now takes a single click. The information populates the screen in about six seconds.

Some Helpful SAP Fiori Transaction Codes



- /UI2/FLP:
SAP Fiori launchpad
- /UI2/LPD_CONF:
SAP Fiori launchpad designer (cross-client)
- /UI2/LPD_CUST:
SAP Fiori launchpad designer (client-specific)
- /UI2/FLC:
SAP Fiori launchpad checks
- /UI2/LIA:
SAP Fiori launchpad intent analysis
- /UI2/FLP_CONTCHECK:
SAP Fiori launchpad – content checks
- /UI2/FLP_INTENTCHECK:
SAP Fiori launchpad – intent checks
- /UI2/CACHE_DEL:
Delete cache entries



Figure 74: Screen Personas

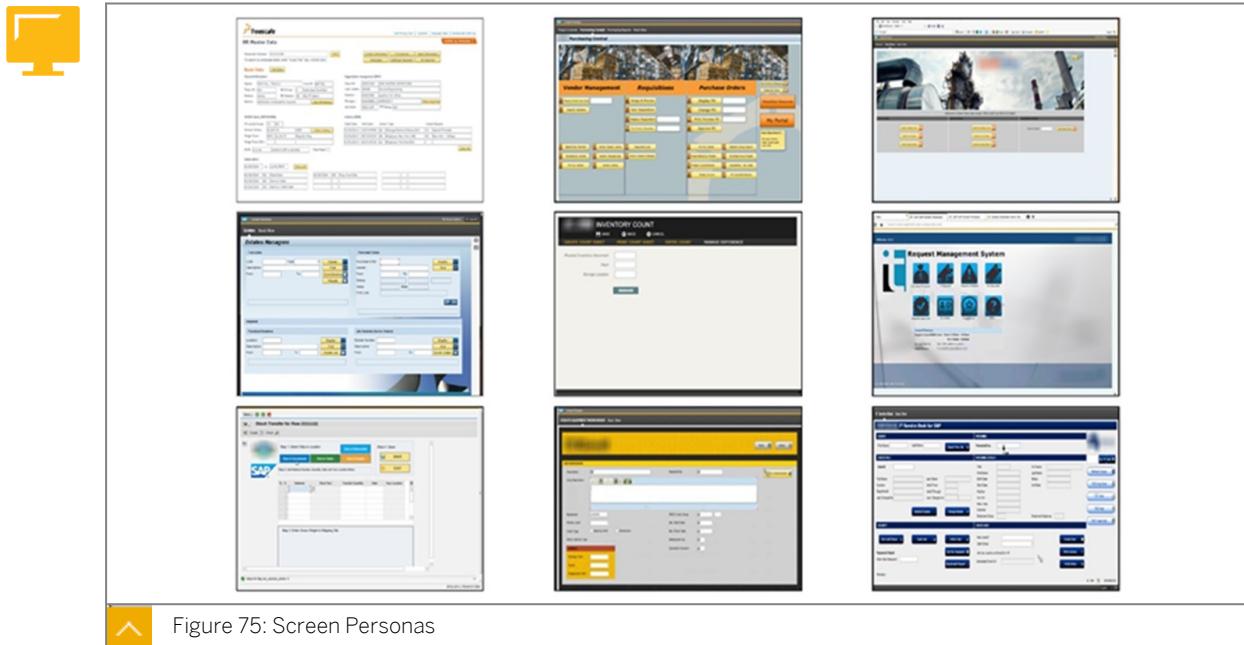


Figure 75: Screen Personas



LESSON SUMMARY

You should now be able to:

- Describe SAP Screen Personas

Unit 3

Lesson 6

Describing Joule



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe Joule

Describing Joule



SAP Business AI Approach

Relevant | Reliable | Responsible

Joule

A copilot that truly understands your business

Embedded AI capabilities

Cloud ERP

Human capital management

Spend management & business network

Customer relationship management

Business Technology Platform

AI Foundation

on Business Technology Platform

AI ecosystem partnerships and investments



ANTHROPiC



cohere



databricks



DataRobot



Google Cloud



Hugging Face



IBM



Microsoft



Figure 76: SAP Business AI Approach

Context:

The value of AI for business increases exponentially when combined with industry-specific data and deep process knowledge, and this is exactly what SAP does.

Lastly, SAP embeds Joule, an advanced, generative AI copilot, across its cloud-enterprise portfolio. It works by quickly sorting through and contextualizing data from multiple systems to surface smarter insights, employees will simply need to ask Joule questions or frame a problem, in plain language. In response, Joule will deliver intelligent answers drawn from the wealth of business data from across the SAP portfolio, and third-party sources, retaining context.

What is Joule: An AI copilot that truly understands the customers business. Joule revolutionizes how the customer interacts with their SAP business systems, making every touchpoint count and every task simpler. Joule is an advanced, It will be embedded throughout SAP's cloud enterprise portfolio to deliver proactive and contextualized insights from across the breadth and depth of SAP's solution portfolio and third-party sources. Joule helps people get work done faster and drive better business outcomes in a secure, compliant way.

Features:

- Integration with SAP applications of a digital assistant: Conversational UI integrated with SAP Fiori
- Enterprise readiness: Out-of-the box integration with the backend systems, compliant with AI ethics, GDPR and privacy controls
- Automatic updates

Benefits:

- Streamline tasks with an AI assistant that knows the customers unique role and acts as their work copilot across SAP applications
- Get quick answers and smart insights on-demand, facilitating faster decision making without bottlenecks.
- Just ask and get excellent content for job descriptions, coding assistance, and more...
- Maintain full control over decision-making and the data privacy while accessing generative AI in a safe environment.

Roadmap:

- Q4 2023: SAP SuccessFactors
- Q1 2023 SAP S/4HANA Cloud (public)
- Finance, Supply Chain, SAP Ariba, CX and SAP BTP to follow....

Language: Joule will be available in English first with additional languages following.

License: For free up to a certain limit

Architecture: Joule will be only available for Cloud customers (no on-prem offering planned)

Extensibility: Customization of Joule is currently not planned

Business Example:

A manufacturer asks Joule for help to understand the sales performance better. Joule can identify under-performing regions, link to other data sets that reveal a supply chain issue and automatically connect to the supply chain system to offer potential fixes for the manufacturer's review



About

SAPs AI copilot Joule transforms the user experience in SAP S/4HANA Cloud, public edition by leveraging generative AI to empower users executing their everyday tasks more efficiently.

Capabilities

- Intelligent Access to Information
- Navigation to apps for Finance, Procurement, Professional Services and Sales
- Role-based transactional content for three personas: operational purchaser, cost center owner and shipping specialist

Availability

Phased roll-out in SAP S/4HANA Cloud, public edition 2402

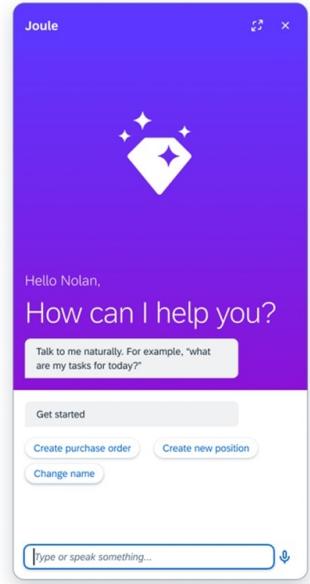


Figure 77: SAP AI copilot - Joule
^

Some facts about Joule:

Integration with SAP applications

Joule provides a conversational user interface that is integrated with SAP applications. It is a rich web client that renders assistant responses using SAP Fiori compliant UI controls.

Enterprise-readiness

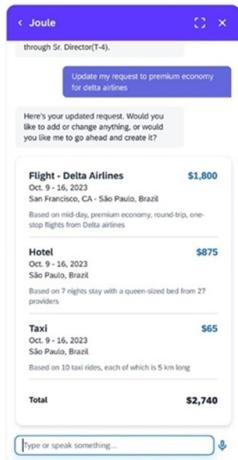
Joule provides an Out-of-the-box integration with SAP backend systems. It is compliant with AI ethics, GDPR, and privacy controls while maintaining SOC-II compliance.

Automatic updates

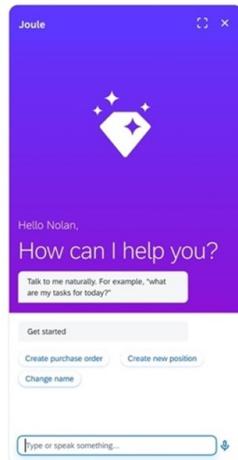
Joule gets automatically updated whenever the capabilities are added or changed.



Informational Pattern



Navigational Pattern



Transactional Pattern

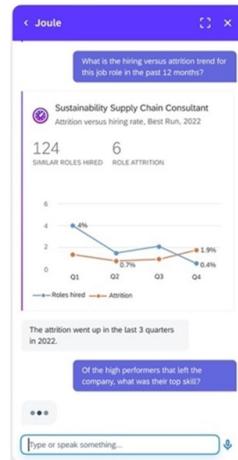


Figure 78: Use cases in Joule
^

Different patterns are available: Information, Navigational and Transactional patterns.

Informational Pattern

Joule provides concise summaries of help content to effectively address user inquiries expressed in natural language

Navigational Pattern

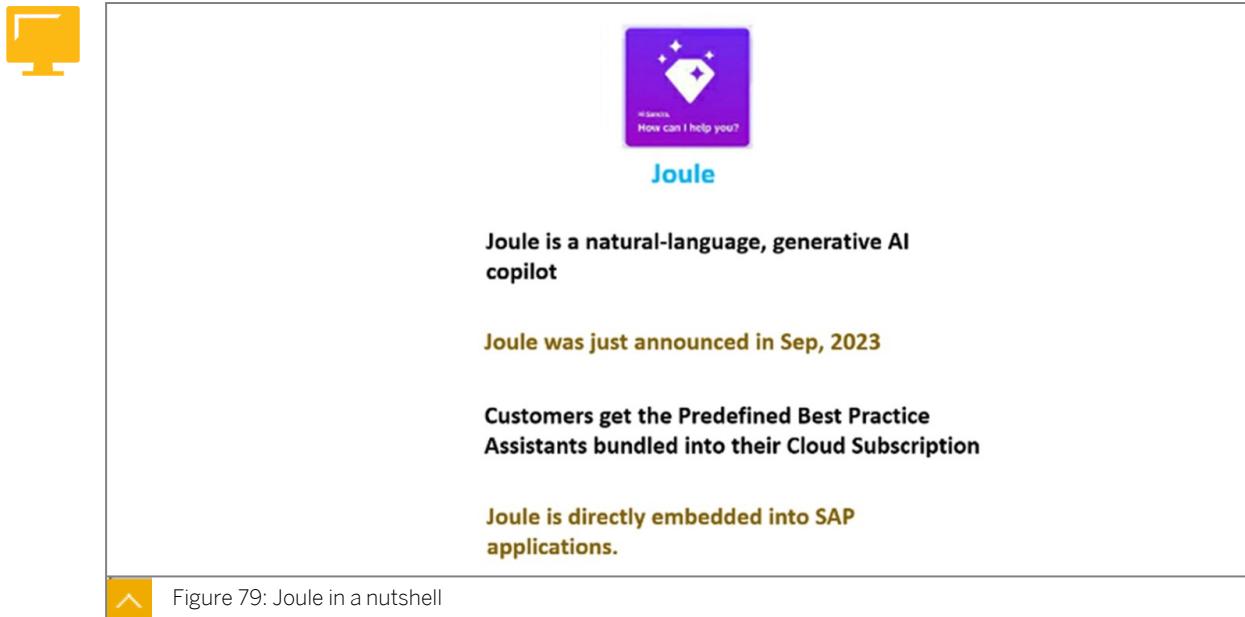
Joule recommends relevant applications and facilitates seamless navigation to empower users in executing their business processes

Transactional Pattern

Joule offers insightful information about business objects, eliminating the necessity of opening the corresponding application

An example for added value of SAP Business AI Approach

Imagine, for example, a manufacturer asking Joule for help understanding sales performance better. Joule can identify under-performing regions, link to other data sets that reveal a supply chain issue, and automatically connect to the supply chain system to offer potential fixes for the manufacturer's review. Or in HR it may help write unbiased job descriptions and generate relevant interview questions.



<https://blogs.sap.com/2023/11/16/demystifying-joule-saps-new-generative-ai-assistant/>

In the ever-evolving landscape of technology, the introduction of Joule in September 2023 marks a significant milestone. Joule is not just another AI tool; it's a transformative natural-language, generative AI copilot that promises to revolutionize the way businesses run.

What is Generative AI?

Generative AI is a type of artificial intelligence(AI) **that can create new things, like artwork, music, or even realistic images, without being explicitly told what to create.**

Generative AI can create new content by learning patterns from existing data. It's like having a creative machine that can imagine and generate new things, such as art, music, or text, without directly copying from the data it has seen.

Example:

Imagine you have a Generative AI program that can draw different types of animals. You show it lots of pictures of cats, dogs, and birds. Now, with this knowledge, the program can draw a completely new animal, like a "cat-dog-bird" combination.

It doesn't copy any existing image; instead, it uses its understanding of what makes cats, dogs, and birds unique to create something entirely new.



LESSON SUMMARY

You should now be able to:

- Describe Joule

Learning Assessment

1. Identify some of the benefits of SAP Fiori.

Choose the correct answers.

- A Increases productivity
- B Allows users to take quick and informed actions
- C Focuses on business function
- D Increases user satisfaction

2. Which of the following are not SAP Fiori elements?

Choose the correct answers.

- A List Report
- B Object Page
- C Overview Page
- D Analytical List Page

3. What are the different types of SAP Fiori apps?

Choose the correct answers.

- A Transactional
- B Factsheet
- C Analytical
- D Personas

4. Only a subset of all design items in the SAPUI5 library is allowed for SAP Fiori.

Determine whether this statement is true or false.

- True
- False

Learning Assessment - Answers

1. Identify some of the benefits of SAP Fiori.

Choose the correct answers.

- A Increases productivity
- B Allows users to take quick and informed actions
- C Focuses on business function
- D Increases user satisfaction

Correct. SAP Fiori increases productivity by providing fast, direct access to relevant information and apps. It allows users to take quick and informed actions and also increases user satisfaction. In addition, it also provides timely notifications and helps users decide what needs to be done next.

2. Which of the following are not SAP Fiori elements?

Choose the correct answers.

- A List Report
- B Object Page
- C Overview Page
- D Analytical List Page

Correct. None of the following are SAP Fiori elements.

3. What are the different types of SAP Fiori apps?

Choose the correct answers.

- A Transactional
- B Factsheet
- C Analytical
- D Personas

Correct. SAP Fiori apps can be classified into different types - Transactional, Factsheet, and Analytical.

4. Only a subset of all design items in the SAPUI5 library is allowed for SAP Fiori.

Determine whether this statement is true or false.

True

False

Correct. SAP Fiori uses SAPUI5 as the technology, but with strict design and development guidelines to ensure a consistent user experience. Only a subset of all design items in the SAPUI5 library is allowed for SAP Fiori.

Lesson 1

Viewing SAP HANA Key Technologies

125

Lesson 2

Describing How SAP HANA Ensures 100% Uptime

135

Lesson 3

Describing Further SAP HANA Data Management Capabilities

137

UNIT OBJECTIVES

- Describe the key technologies of SAP HANA
- Describe how SAP HANA ensures 100% uptime
- Describe further SAP HANA data management capabilities

Viewing SAP HANA Key Technologies

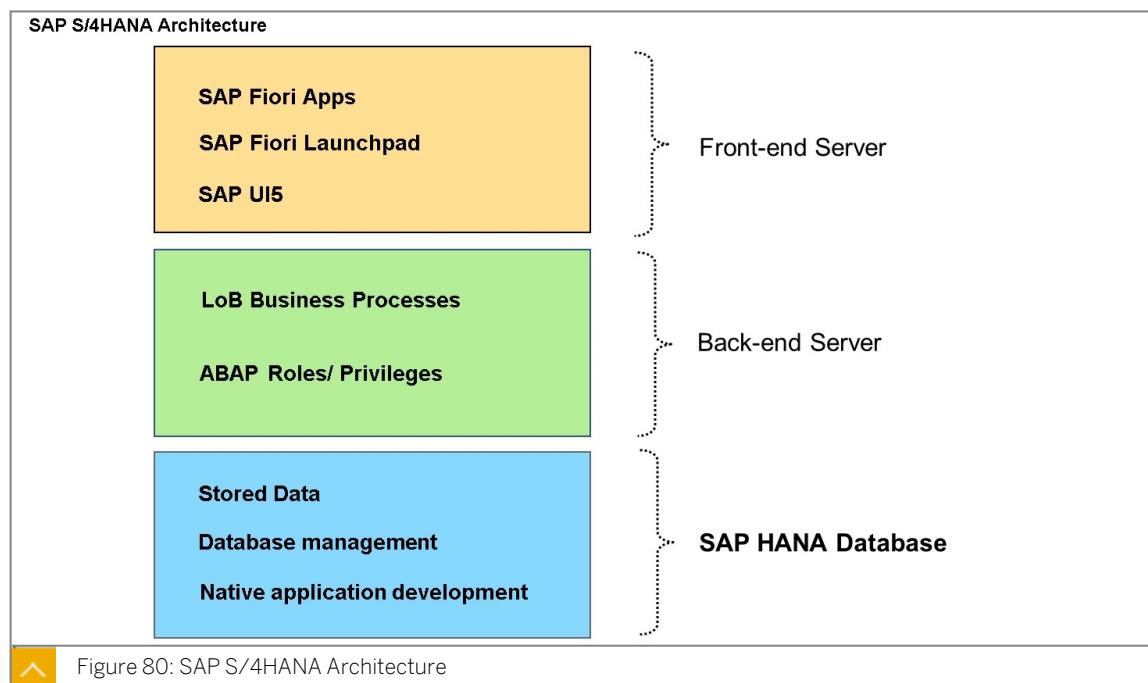


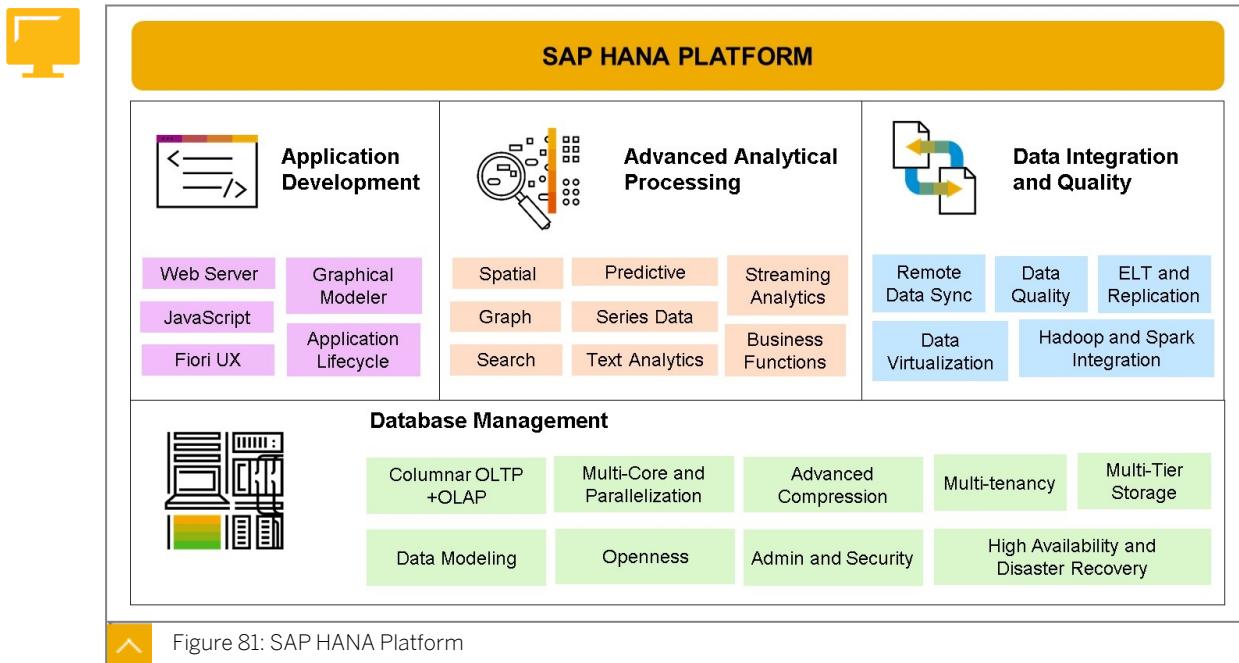
LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the key technologies of SAP HANA

SAP HANA Key Technologies





Note:

As of January 2021, SAP HANA, standard edition, and the options for SAP HANA, standard edition are not available for purchase. For existing customers, they will remain available and supported until further notice.

SAP HANA, Active/Active Read-Enabled Option

The active/active read-enabled feature enhances the existing high availability and disaster recovery capabilities of SAP HANA system replication. In an active/active read-enabled configuration, reporting load is taken from the primary system and executed on the secondary systems.

Database Services

Using the database services of the SAP HANA platform, you can store and access data in-memory and column-based, provision databases, scale system load, ensure high availability and disaster recovery, monitor and troubleshoot databases, test workloads, model data, and secure data and systems.

SAP HANA Dynamic Tiering

SAP HANA dynamic tiering adds smart, disk-based extended storage to your SAP HANA database. Dynamic tiering enhances SAP HANA with large volume, warm data management capabilities.

Integration Services

Using the integration services of the SAP HANA platform, you can load data, perform data virtualization, access SAP HANA databases, and do various types of advanced data access.

Application Services

Using the application services of the SAP HANA platform, you can develop applications and manage their lifecycle.

SAP Operational Process Intelligence powered by SAP HANA

SAP Operational Process Intelligence powered by SAP HANA enables you to gain transparency into your business operations, resulting in improved operational efficiency, as well as real-time support for making tactical and strategic decisions.

SAP HANA, Spatial and Graph Option

With SAP HANA Spatial, you can access, manipulate, and analyze spatial data using various types, methods, and constructors. With SAP HANA Graph, you can model different kinds of networks and linked data coming from many industries, such as logistics and transportation, utility networks, knowledge representation, text processing, and so on. The spatial and graph option for SAP HANA is included in SAP HANA, enterprise edition, or it can be purchased individually in addition to SAP HANA, standard edition.

SAP HANA, Data Privacy Option

SAP HANA data privacy provides additional protection for sensitive and confidential data. It is included in SAP HANA, enterprise edition, or it can be purchased individually in addition to SAP HANA, standard edition.

SAP HANA, Search and Text Option

With SAP HANA search functionalities, you can build search applications, define search models, and conduct text searches, as well as process files to make their content searchable. You can use text analysis to discover and classify entities and facts in individual documents. You can use text mining to make semantic determinations about the overall content of a document relative to other documents, such as identifying key terms in it, and assigning it to a category. The search and text option is included in SAP HANA, enterprise edition, or it can be purchased individually in addition to SAP HANA, standard edition.

SAP HANA, Information Management Option

The information management option includes SAP HANA smart data integration and SAP HANA smart data quality, which help to enhance, cleanse, and transform data to make it more accurate and useful. With the speed advantages of SAP HANA, SAP HANA smart data integration and SAP HANA smart data quality can connect with any source, provision and cleanse data, and load data into SAP HANA on-premise or in the cloud. The option is included in SAP HANA, enterprise edition, or it can be purchased individually in addition to SAP HANA, standard edition.

SAP HANA, Predictive Option

The SAP HANA predictive analysis library (PAL) comprises native procedures to address classic predictive and machine learning scenarios, encompassing the algorithm categories of classification, regression, cluster analysis, time series analysis, association analysis, social network analysis, recommender systems, as well as data pre-processing and statistics. SAP HANA Automated Predictive Library (APL) allows business users (who don't have to be experienced data scientists) to create, deploy, and maintain predictive models for classification, regression, clustering, time series forecast, recommendation, or social network analysis. The External Machine Learning Library (EML) lets you integrate an external machine learning framework (TensorFlow) with SAP HANA. Integration of the SAP HANA database with R allows you to use the R environment for specific statistical functions. The predictive option is included in SAP HANA, enterprise edition, or it can be purchased individually in addition to SAP HANA, standard edition.

SAP HANA, Streaming Analytics Option

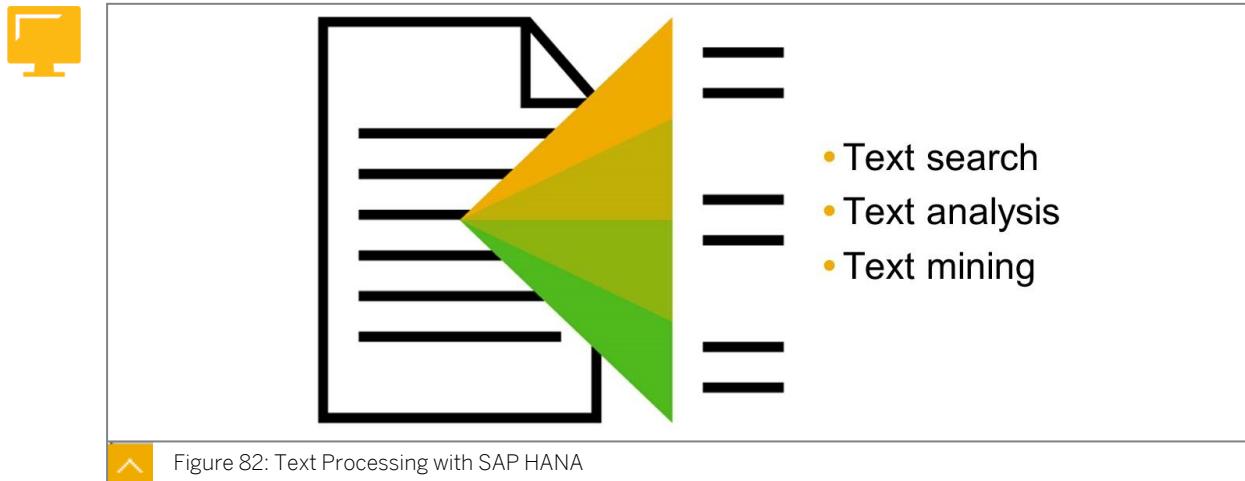
SAP HANA streaming analytics (also known as SAP HANA smart data streaming) applies complex processing logic to identify patterns, calculate aggregates, detect problems, and generate alerts by combining real-time streams of data with the appropriate historic and reference data using an in-memory stream processing engine. Integrated machine learning capabilities provide SAP HANA streaming analytics with the ability to generate and use predictions in real-time. SAP HANA streaming analytics is included in SAP HANA, enterprise edition, or it can be purchased individually in addition to SAP HANA, standard edition.

SAP HANA, Data Replication Option

SAP HANA replication provides technologies for replicating data from any supported source system to the SAP HANA database, for example, trigger-based data replication using SAP Landscape Transformation Replication Server or SAP Data Integrator. The data replication option is included in SAP HANA, enterprise edition, or it can be purchased individually in addition to SAP HANA, standard edition.

SAP S/4HANA inherits the built-in capabilities of SAP HANA. This is evident throughout the new SAP S/4HANA applications.

Text Processing with SAP HANA



Did you know that between 70% and 80% of data in an organization is unstructured, and most of this unstructured data is text based?

The majority of the most powerful and insightful business information is locked up in text. Unlocking it should be taken seriously. SAP HANA has native text-processing capabilities. These include the following:

- Text search: Fuzzy search (Google-like searching) helps users with fault-tolerant searches during data input. It helps to improve data quality by suggesting spellings and codes. It helps to avoid duplication by suggesting similar matches before a user creates another customer account.
- Text analysis: Identifies key entities in text. For example, how many times was company x mentioned this week in tweets that also mentioned words relating to acquisition? Aggregated sentiment analysis of a new product helps you to learn what consumers think, so you can react and make improvements.
- Text mining: Which documents cover similar topics? What is the key subject being discussed in a series of documents or emails?

SAP HANA text processing handles multiple languages. It can identify the language automatically from the text, and apply appropriate linguistic rules.

SAP HANA text-processing capabilities are already very well exploited in SAP S/4HANA applications, and customers can develop their own applications using the same capabilities.

Spatial Analysis with SAP HANA

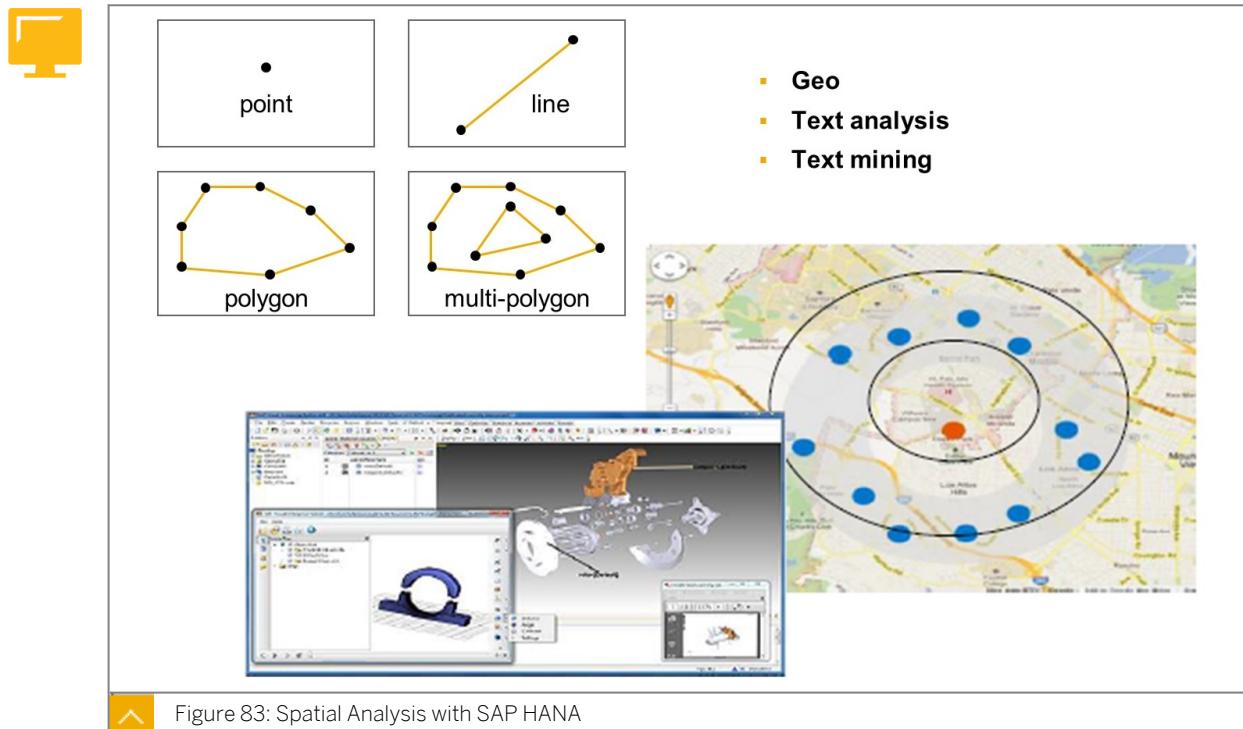
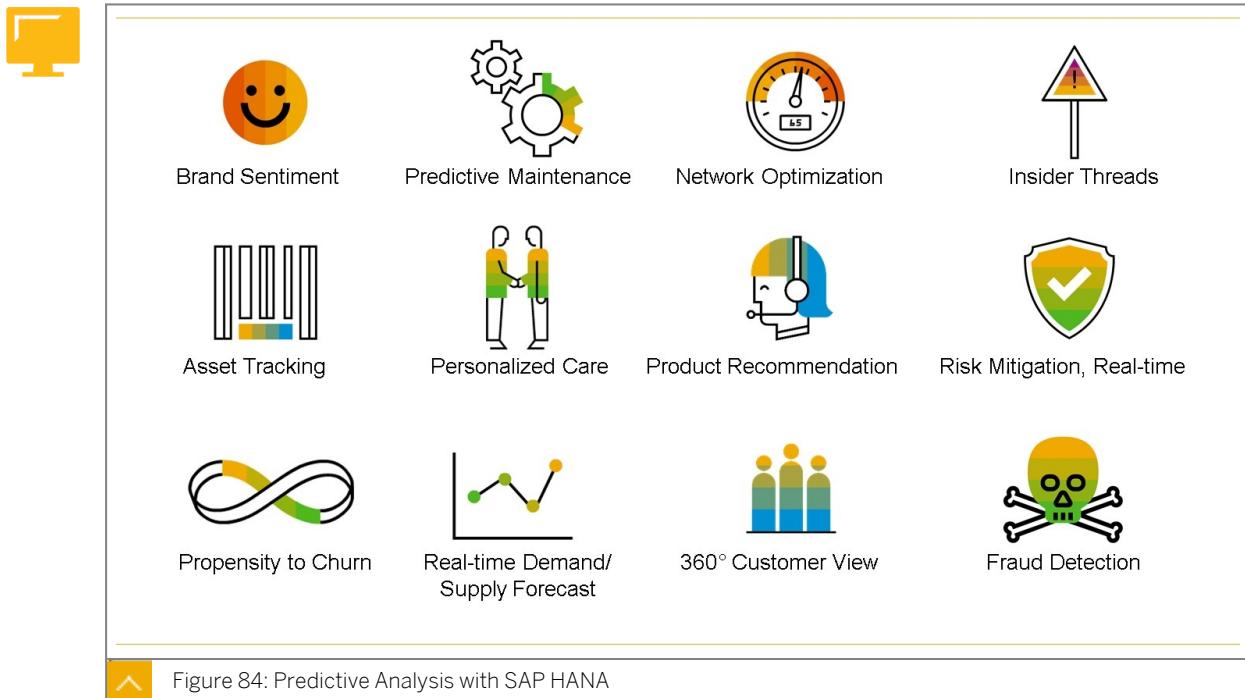


Figure 83: Spatial Analysis with SAP HANA

SAP HANA can store and process spatial data. For example, we can identify the exact location of each customer – and when the customer is browsing our online catalog, we can suggest the nearest pickup location.

SAP HANA is fully integrated with industry leading partners who specialize in spatial processing. These include Google, ESRI, Pitney Bowes, and Tom Tom.

Predictive Analysis with SAP HANA



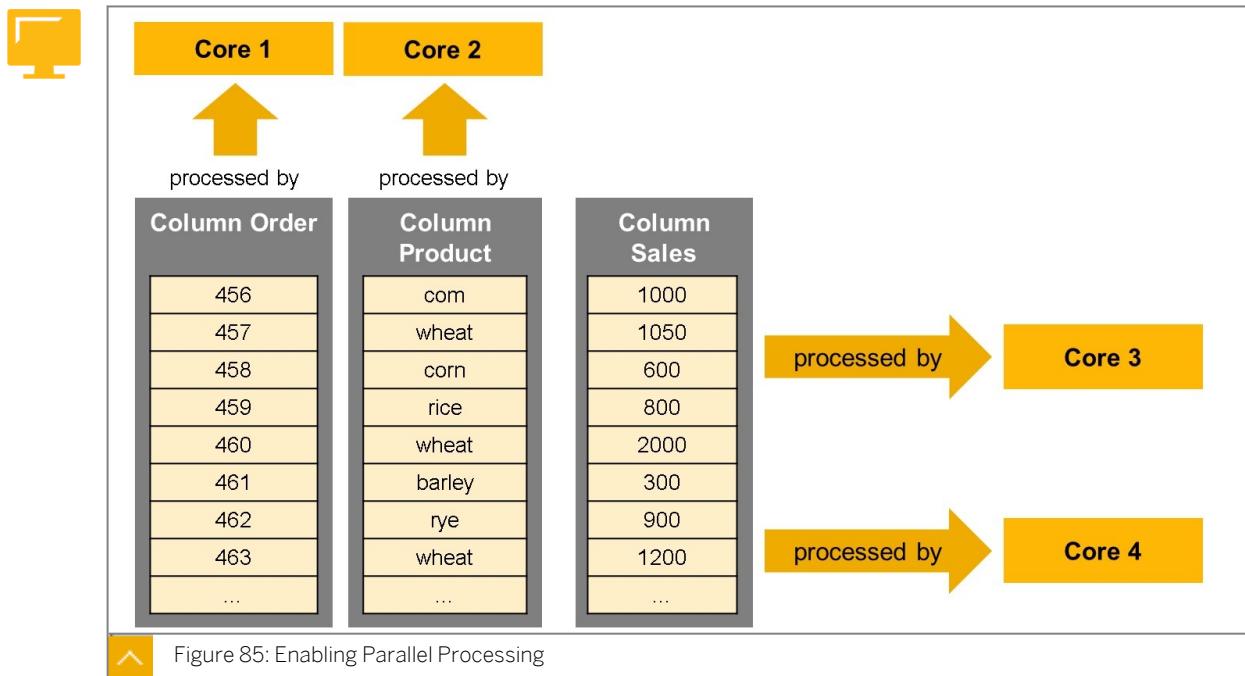
A key theme running through SAP S/4HANA is embedded analytics. In many cases, this means adding in predictive capabilities to a transaction flow. Customers can continue to build their own applications that embed predictive capabilities. For example, an administrator is providing security clearance to sensitive data for a new employee. However, during the clearance process, SAP HANA identifies and alerts the administrator to a suspicious pattern of system access by the employee that does not fit the profile of this type of worker.

SAP HANA has an extensive built-in library of powerful predictive algorithms and business functions to suit different analysis scenarios, as shown in the figure, Predictive Analysis with SAP HANA.

In addition to the built-in algorithms, SAP HANA is integrated with the 'R' public libraries, where thousands of additional algorithms can be found.

With SAP HANA's ability to manage huge data volumes, and at speed, real-time predictive analysis is possible, and can add huge value to business transactional processing to offer decision support online. You can find many examples of embedded predictive analysis in SAP S/4HANA applications.

Parallel Processing



A key theme of SAP HANA is parallel processing. With the new hardware architecture, especially utilizing the new multi-core processors, you can ensure instant responses by spreading out the processing tasks across the cores.

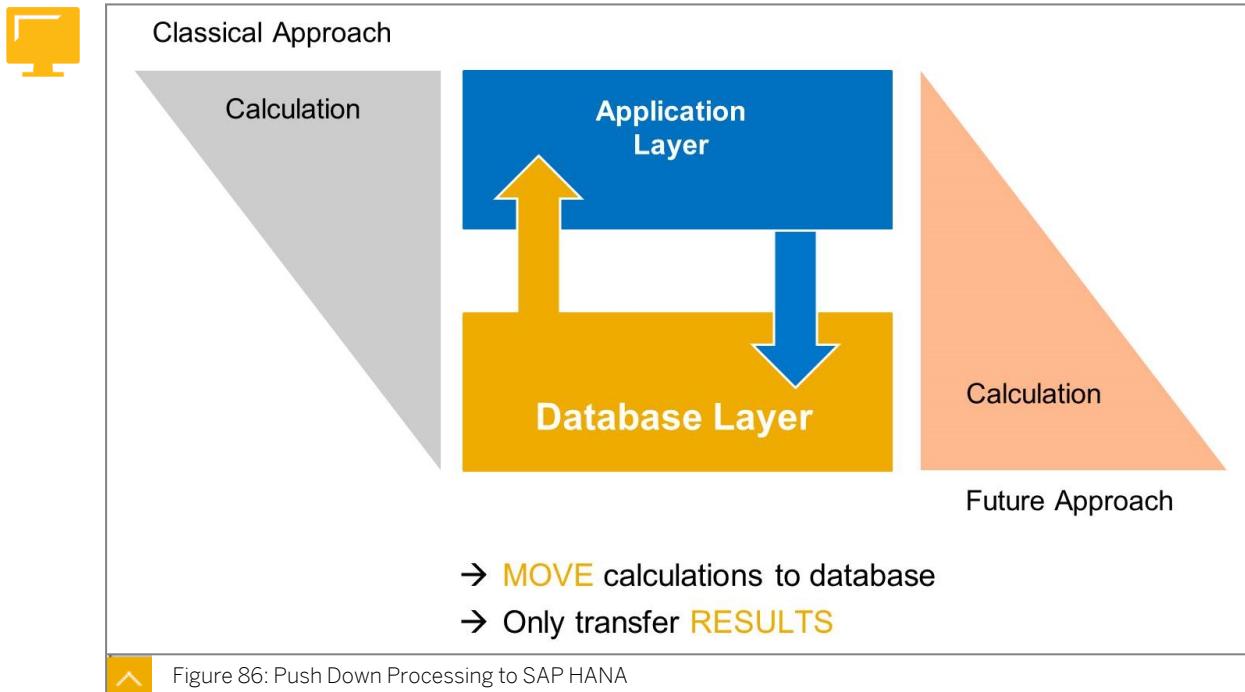
SAP HANA automatically spreads the workload across all processors, and ensures all parts of the hardware are contributing to the throughput.

SAP HANA is scalable, which means you can add more processors as required to increase the parallelization, and therefore the speed, of processing.

In addition, you can manually partition column tables to influence the parallelization based on common business values that are accessed frequently.

Parallel processing is a key enabler for real-time processing, on which many new SAP S/4HANA applications are based.

Push Down Processing to SAP HANA



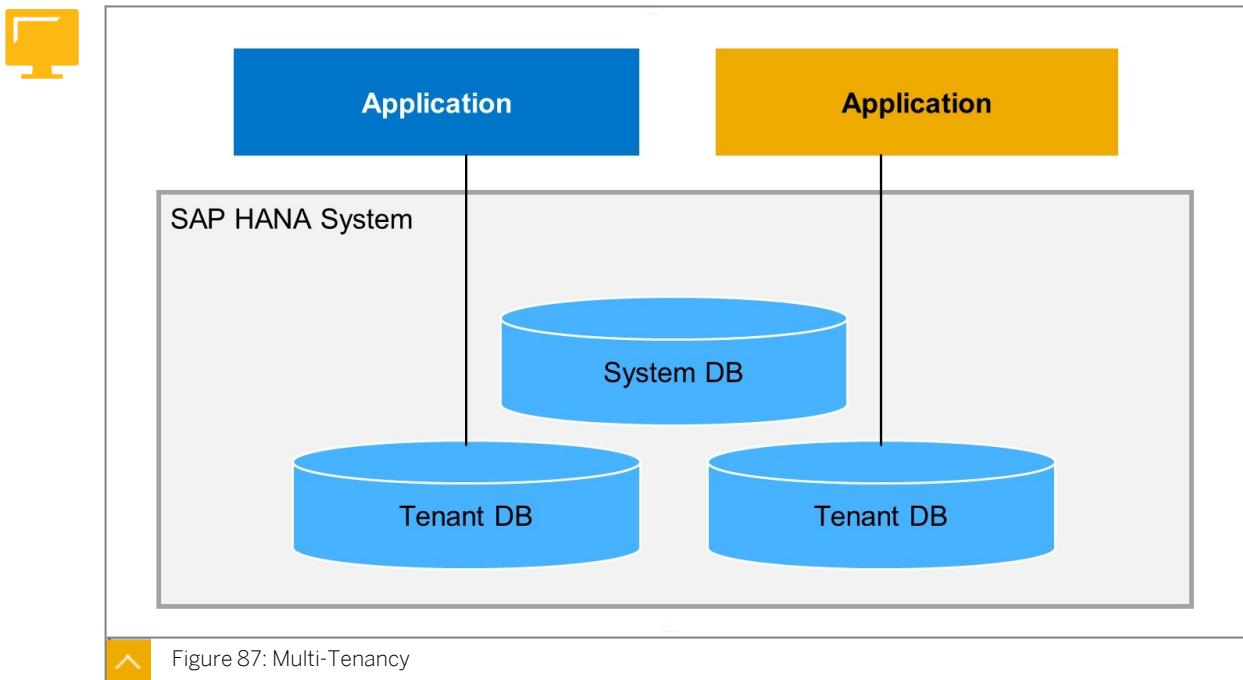
In the past, the key job of the database layer was to listen out for requests for data from the application server and then send that data to the application server for processing. Once the data had been processed, the results were sent back down to the database layer for storage.

SAP HANA is capable of taking over many of the processing tasks from the application server. All data-related tasks, such as aggregation, filter, sort, calculate, and predict, can be handled by SAP HANA.

Now the application layer simply needs to tell SAP HANA what is to be done on the data, and SAP HANA processes the data and send only the results. This is done in-memory, so speeds can be impressive. We call this code-to-data, as opposed to the traditional way, which was data-to-code.

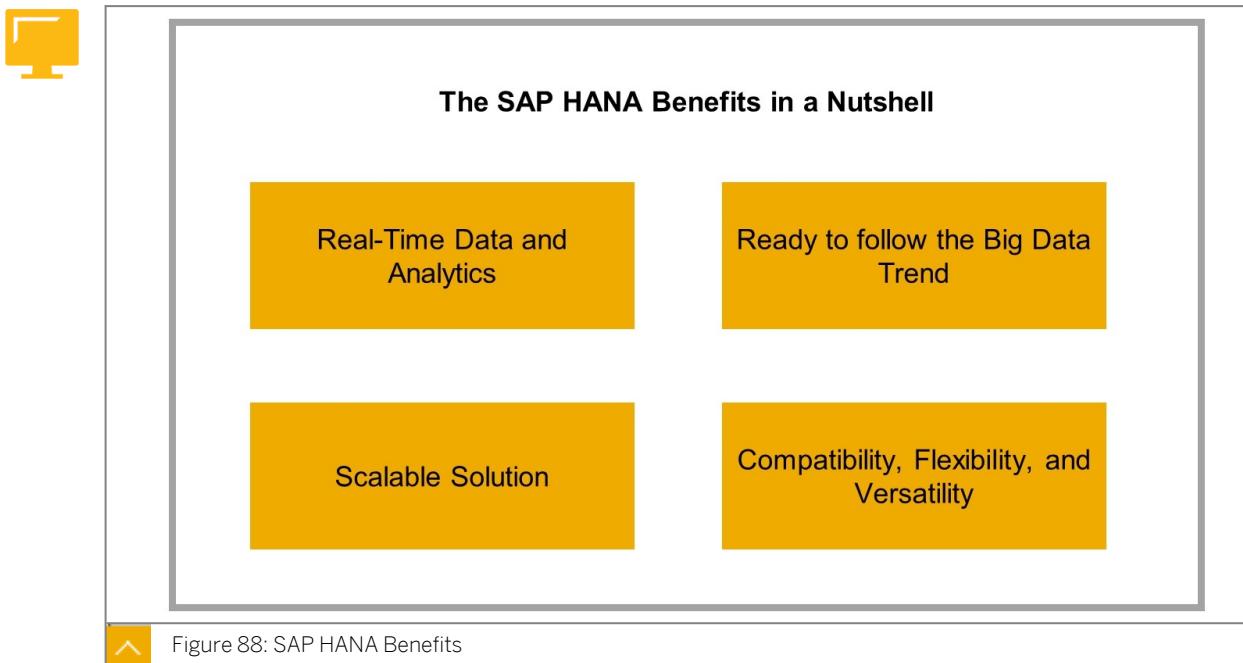
The application layer is still needed with SAP S/4HANA to handle the complex business logic that must be programmed in a business programming language. In the case of SAP S/4HANA, this is ABAP. However, many simpler applications can be built directly on SAP HANA, with no need for an additional application server.

Multi-Tenancy



SAP HANA can run multiple isolated applications within the same hardware and software infrastructure. There is a strong separation of business data and users, and they must be kept apart. Each tenant has its own database, and business users have no idea that they are sharing a system with others. The system layer is used to manage the system-wide settings and cross-tenant operations, such as backups.

The benefit of a multi-tenancy platform is the ability to host multiple applications on a single infrastructure and share common resources. This is the basis for cost-efficient cloud computing.





LESSON SUMMARY

You should now be able to:

- Describe the key technologies of SAP HANA

Describing How SAP HANA Ensures 100% Uptime



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe how SAP HANA ensures 100% uptime

Zero Downtime



Auto-recovery when power is interrupted

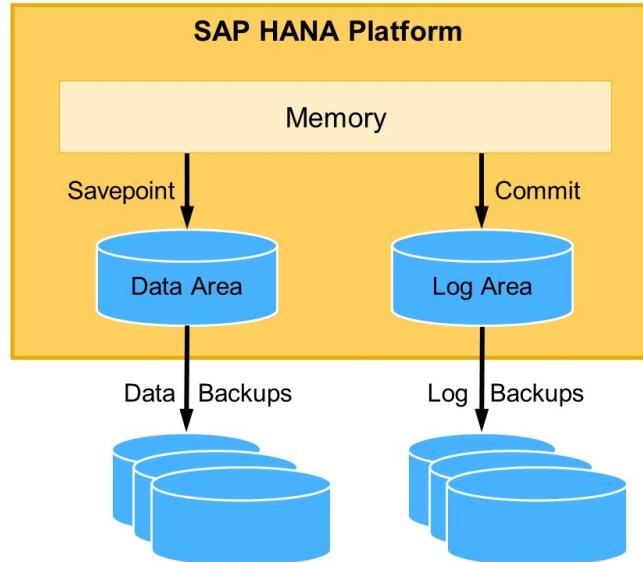


Figure 89: SAP HANA - Always Running

SAP HANA utilizes memory for storage and once the power is gone, we lose the data in memory.

How does SAP HANA ensure we do not lose data when the power goes, and how does it get back up and running quickly? SAP HANA's solution for zero-downtime is based on a two-phase approach.

Every few minutes, SAP HANA automatically takes a snapshot of the entire memory and stores this on a disk layer. This is called a savepoint.

What happens if the power goes off between savepoints? Do we lose this data? We do not lose data because between savepoints, every committed transaction is also saved to a log area. This log area is often based on flash memory (SSD) to ensure lightning speed, so every update to the database is captured.

When power is restored, SAP HANA automatically readies the last savepoint, and also re-applies the transactions from the log since that savepoint occurred, to ensure the system is exactly where it was when the power was lost.

This all happens invisibly in the background.

If a server fails, SAP HANA can automatically swap it out to a standby server.

Standby servers can be on warm standby, which means they are ready to go immediately and do not need to be started. The data is loaded to memory from a backup server. SAP HANA uses the savepoints and log to bring the warm standby server up to date with the data.

Standby servers can also be on hot standby, which means the standby server is always in sync with the live server, usually by continually replaying the database log. If it is necessary to swap over, this can happen with almost no interruption to processing.

For mission-critical applications and where SLAs are implemented, you can ensure customers' systems are always running by implementing this approach. This auto-recovery approach is referred to as failover.



LESSON SUMMARY

You should now be able to:

- Describe how SAP HANA ensures 100% uptime

Describing Further SAP HANA Data Management Capabilities



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe further SAP HANA data management capabilities

SAP HANA Data Management Capabilities

Data Archiving

Data Archiving functions to archive any completed business transactions that are no longer relevant for daily system operations. In the subsequent delete phase, the archived data is removed from the database using the delete program. Archived data can be stored in archive files to which the system has read-only access.

The archiving process has not changed in SAP S/4HANA, all the standard SAP archiving programs can be used to archive FI documents in S/4 systems as well. Classic Data Archiving plays an important role in SAP S/4HANA, in limiting the size and growth of the SAP HANA database.

Data archiving concept from SAP S/4HANA is based on the archiving objects of the Archive Development Kit (ADK).

SAP Information Lifecycle Management (ILM)

The SAP Information Lifecycle Management (SAP ILM) component provides a broad range of advanced capabilities, including blocking and deletion, residence and retention management, consolidation of legacy data, and more – some of which are relevant to regulatory demands.

SAP ILM is used to support the entire data lifecycle including the storage, retention, blocking, and deletion of personal data for S/4HANA On-Premise. Archiving as part of ILM is used to manage blocking and deletion of transactional data. Archiving is in this context, not only used as a solution for volume management, instead it fulfills blocking requirements in terms of data privacy, as it restricts efficiently the access to archived (and so blocked) data supported with an additional authorization concept.

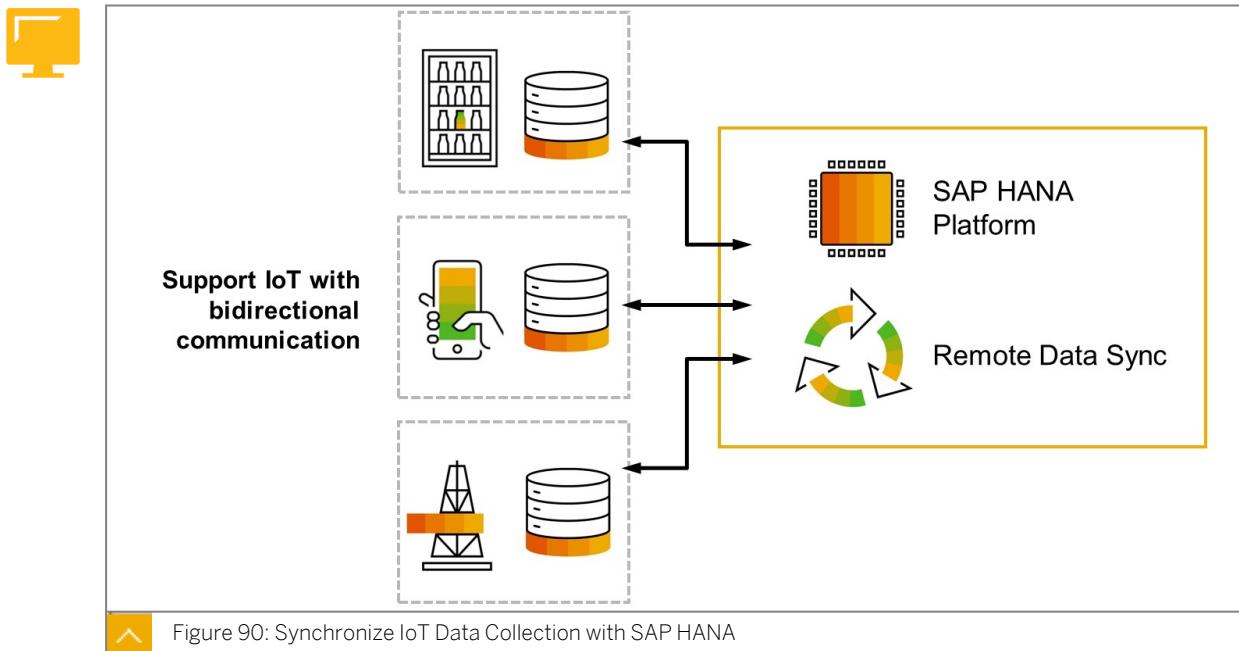


Figure 90: Synchronize IoT Data Collection with SAP HANA

SAP HANA can communicate with devices (IoT) using remote data sync. Often, such devices do not need to be continually online with SAP HANA. We call this "occasionally connected".

Devices can collect data locally, with their built-in light databases, and SAP HANA can periodically collect this data. For example, every hour, a vending machine passes its stock data to SAP HANA. When an item is running low, SAP HANA can pass back a message to the vending machine that a refill is on its way. Remote data sync is bidirectional.

The same technology is used to connect SAP HANA to remote environments that may operate in hostile conditions, or where the signal is not reliable, such as an engineer working in a lift shaft where the signal is poor, or an oil rig where a satellite passes only once per day to provide communication back to HQ.

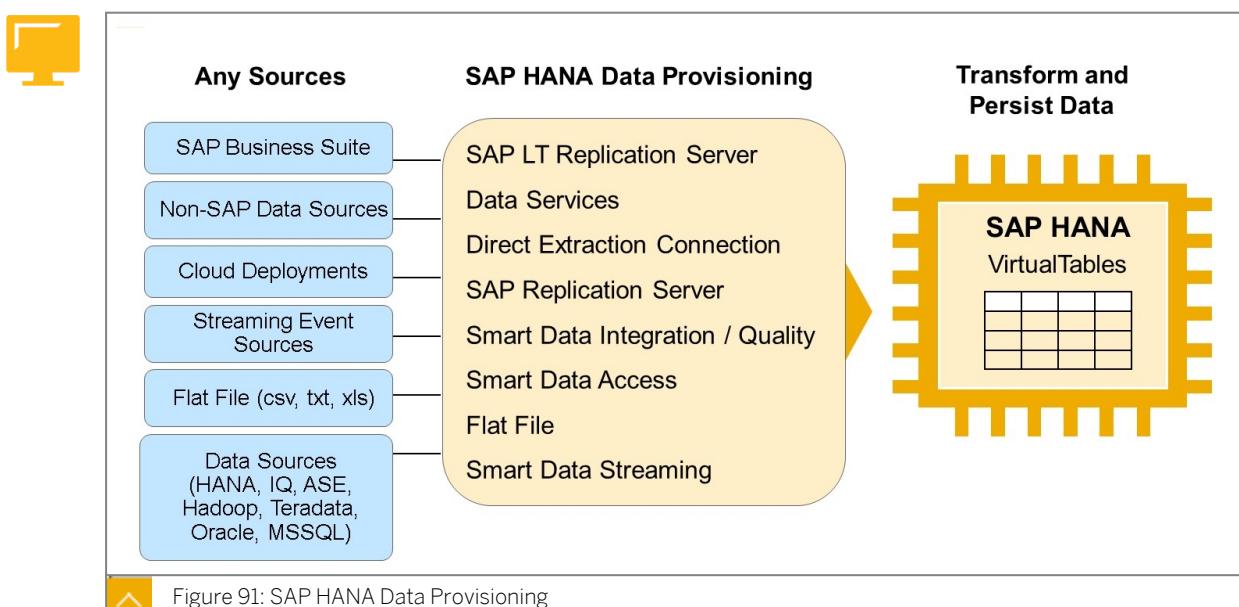


Figure 91: SAP HANA Data Provisioning

As well as real-time streaming and remote data sync, SAP HANA has many other options for data provisioning.

SAP HANA smart data access allows SAP HANA to access remote database tables and files from any source, as if the data was loaded to SAP HANA. A great use case for this is the integration of Hadoop or data archives, where occasional access to data is required.

SAP HANA smart data integration and SAP HANA smart data quality provide real-time data replication from any source, with the option of enhancing the data quality during the loading process.

SAP HANA is fully integrated with existing and well-known data-loading tools, such as SAP LT Replication Server and SAP Data Services for real-time and batch data loading.

Follow-On Courses

For continued learning in these topics, consider the following courses:

- HA100 – SAP HANA Introduction
- HA200 – SAP HANA Administration and Operations
- HA300 – SAP HANA Modeling



LESSON SUMMARY

You should now be able to:

- Describe further SAP HANA data management capabilities

Learning Assessment

1. Which recent hardware architecture trends does SAP HANA exploit?

Choose the correct answers.

- A Multi-core processors
- B Cheaper and larger memory size
- C Faster disk speeds
- D Multi CPUs working in parallel

2. What type of table storage does SAP HANA support?

Choose the correct answers.

- A Column
- B Row
- C Vector
- D Flat

3. What type of tasks does SAP HANA typically take over from the application server?

Choose the correct answers.

- A Filter
- B Aggregate
- C Validate screen input
- D Sort

4. Even though SAP HANA utilizes a full in-memory database, disk storage is still required.

Determine whether this statement is true or false.

- True
- False

5. SAP HANA automatically takes a snapshot of the entire memory every few minutes and stores this on a disk layer. This is called a _____.

Choose the correct answer.

- A warm standby
- B savepoint
- C hot standby
- D failover

6. Standby servers can be on hot standby, which means they are ready to go immediately and do not need to be started.

Determine whether this statement is true or false.

- True
- False

Learning Assessment - Answers

1. Which recent hardware architecture trends does SAP HANA exploit?

Choose the correct answers.

- A Multi-core processors
- B Cheaper and larger memory size
- C Faster disk speeds
- D Multi CPUs working in parallel

Correct. The hardware architecture trends that SAP HANA exploits are multi-core processors, cheaper and larger memory size, and multi CPUs working in parallel.

2. What type of table storage does SAP HANA support?

Choose the correct answers.

- A Column
- B Row
- C Vector
- D Flat

Correct. The types of table storage that SAP HANA supports, are column and row.

3. What type of tasks does SAP HANA typically take over from the application server?

Choose the correct answers.

- A Filter
- B Aggregate
- C Validate screen input
- D Sort

Correct. The type of tasks that SAP HANA typically takes over from the application server are filter, aggregate, and sort.

4. Even though SAP HANA utilizes a full in-memory database, disk storage is still required.

Determine whether this statement is true or false.

True

False

Correct. Even though SAP HANA utilizes a full in-memory database, disk storage is still required.

5. SAP HANA automatically takes a snapshot of the entire memory every few minutes and stores this on a disk layer. This is called a _____.

Choose the correct answer.

A warm standby

B savepoint

C hot standby

D failover

Correct. SAP HANA automatically takes a snapshot of the entire memory every few minutes and stores this on a disk layer. This is called a savepoint.

6. Standby servers can be on hot standby, which means they are ready to go immediately and do not need to be started.

Determine whether this statement is true or false.

True

False

Correct. Standby servers can be on warm standby, which means they are ready to go immediately, and do not need to be started. The data is loaded to memory from a backup server. Standby servers can also be on hot standby, which means the standby server is always in sync with the live server, usually by continually replaying the database log.

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UNIT OBJECTIVES

- Describe SAP S/4HANA Enterprise Management
- Describe procurement in SAP S/4HANA
- Describe manufacturing in SAP S/4HANA
- Describe sales in SAP S/4HANA
- Describe the supply chain in SAP S/4HANA
- Describe services in SAP S/4HANA
- Describe research and development/engineering in SAP S/4HANA
- Describe asset management in SAP S/4HANA
- Describe finance in SAP S/4HANA
- Describe human resources in SAP S/4HANA
- Describe the SAP S/4HANA simplification list

Unit 5

Lesson 1

Describing SAP S/4HANA Enterprise Management



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe SAP S/4HANA Enterprise Management

Enterprise Management with SAP S/4HANA



Sell from Stock Process embedded in the Exercises

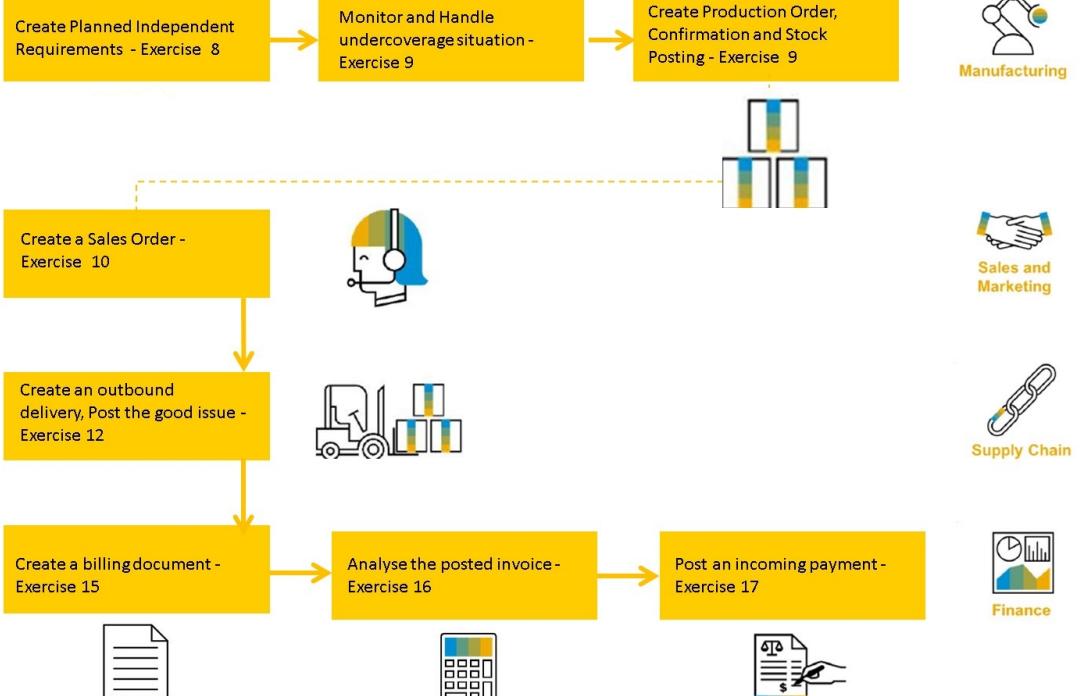
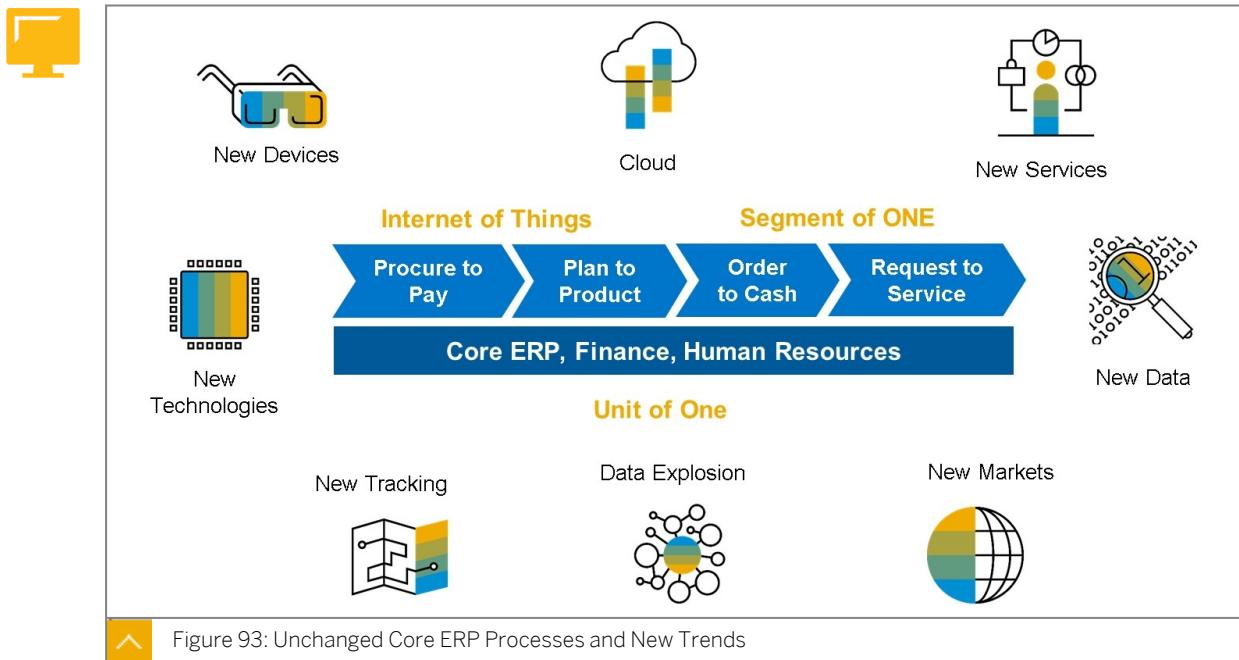


Figure 92: Exercise Journey (Sell from Stock Process)



Core ERP operational processes have remained largely unchanged. It is still necessary to support the operations of a business in the core areas of sales, procurement, manufacturing, and service. However, we now live in the digital world and there are new market trends due to the digital transformation.

Although the processes have not changed hugely, the way they are executed has changed. For example, the multi-channel methods the consumers now use to order goods and services have changed. The speed at which they expect their orders to be fulfilled has changed. The speed and visibility of customer feedback, good and bad, has changed.

As more and more sensors show up in a variety of devices, there are new opportunities to monitor, trace, and track everything in your operations.

Further changes include Big Data, and more opportunities to develop deeper insights to help us continually improve the efficiency of our operations.

Organizations are keen to optimize their core processes, and this is usually the highest priority. However, they are also very keen to explore new business models that modern business systems such as SAP S/4HANA support.

To stay relevant in these times of massive disruption, enterprises are forced to review how their current core systems are supporting the new business realities. Consequently, enterprise management has to adapt to this changing digital world.

Here, we focus on how SAP S/4HANA Enterprise Management supports core operational processes.

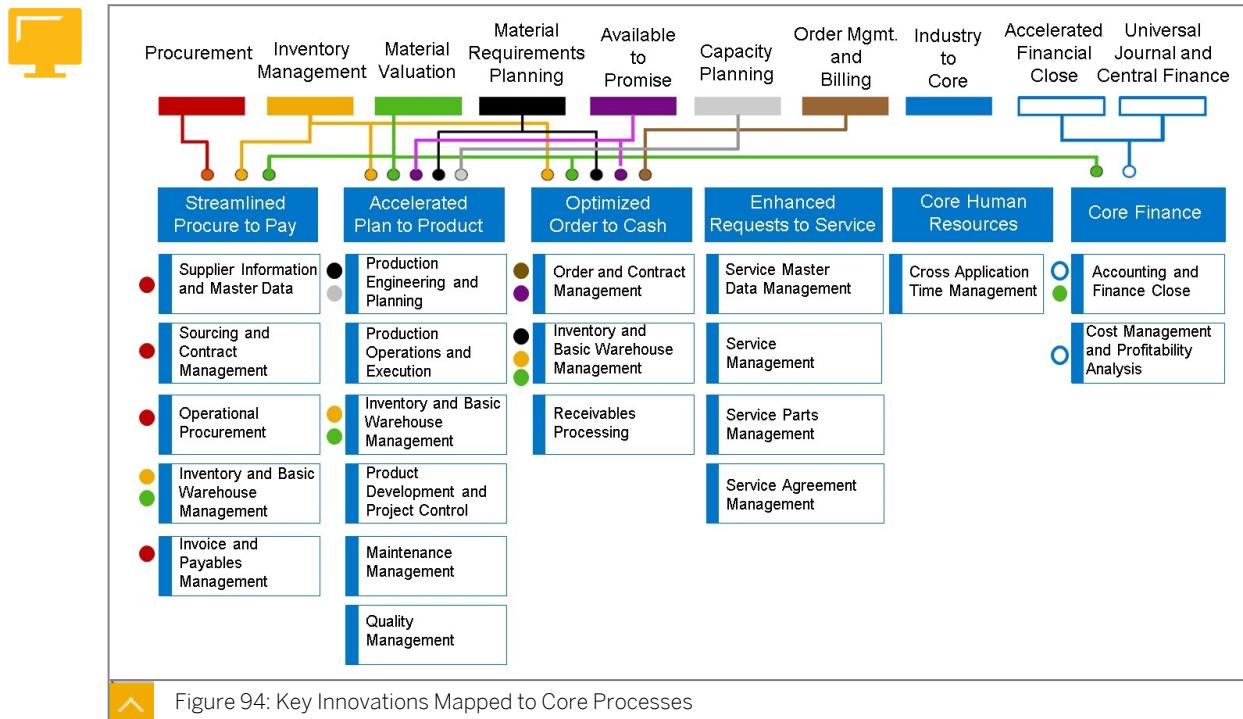
SAP has worked closely with customers to identify where digitized operations could provide the most value. The result is a massive wave of simplification and innovation in the core that covers critical business processes in finance, sales, service, sourcing and procurement, manufacturing, supply chain, asset management, research and development, and human resources.

SAP S/4HANA Enterprise Management represents the core solution, covering all mission-critical processes of an enterprise. It represents the foundational core solution, natively built on the SAP HANA platform and designed with SAP Fiori UX.

SAP S/4HANA Enterprise Management is broad, and includes the following:

- Procure to pay
- Plan-to-Product
- Order-to-Cash
- Request to service
- Core human resources
- Core finance

Key Innovations Mapped to Core Processes



The figure, Key Innovations Mapped to Core Processes, shows how the various innovations appear throughout the core processes for Materials Management and Operations. This provides a better view of what is covered in Materials Management and Operations.

SAP S/4HANA is a process-oriented solution. This means that the business functions, such as available-to-promise, overlap with multiple processes. For example, notice how this function appears in both Plan-to-Product and Order-to-Cash. Both processes require stock availability checking functions, and have only one common function that deals with all types of material availability checks, regardless of who is requesting the check.

With regard to logistics, SAP S/4HANA Enterprise Management comprises generally the functionality covered by SAP ERP 6.0 logistics.

Major simplifications have been made in the following areas:

- Inventory management
- Material requirements planning
- Capacity planning
- Sales and distribution

- Procurement

SAP S/4HANA Enterprise Management is complemented by capabilities of:

- SCM
- CRM
- PLM
- SRM

SAP S/4HANA Enterprise Management supports digital trends such as the Internet of Things (IoT) and business networks.

Several areas within SAP S/4HANA Enterprise Management are affected from business innovations compared to former ERP solutions.

Focusing on the logistics area, we mainly consider the following three core processes: Plan-to-Product, Order-to-Cash and Procure-to-Pay.

The following components have been re-architected for the in-memory platform:

- Material Requirements Planning
- Inventory Management
- Material Valuation (integrated to FI)

New responsive user experience design has been implemented for the following roles:

- Sales representative order management and billing
- Procurement clerk
- Material planner

Finally, the following functionality has been unified in the core:

- Available to promise and backorder processing
- Capacity planning
- Industry solutions have been moved to the core

SAP S/4HANA 1909 - Digital Core

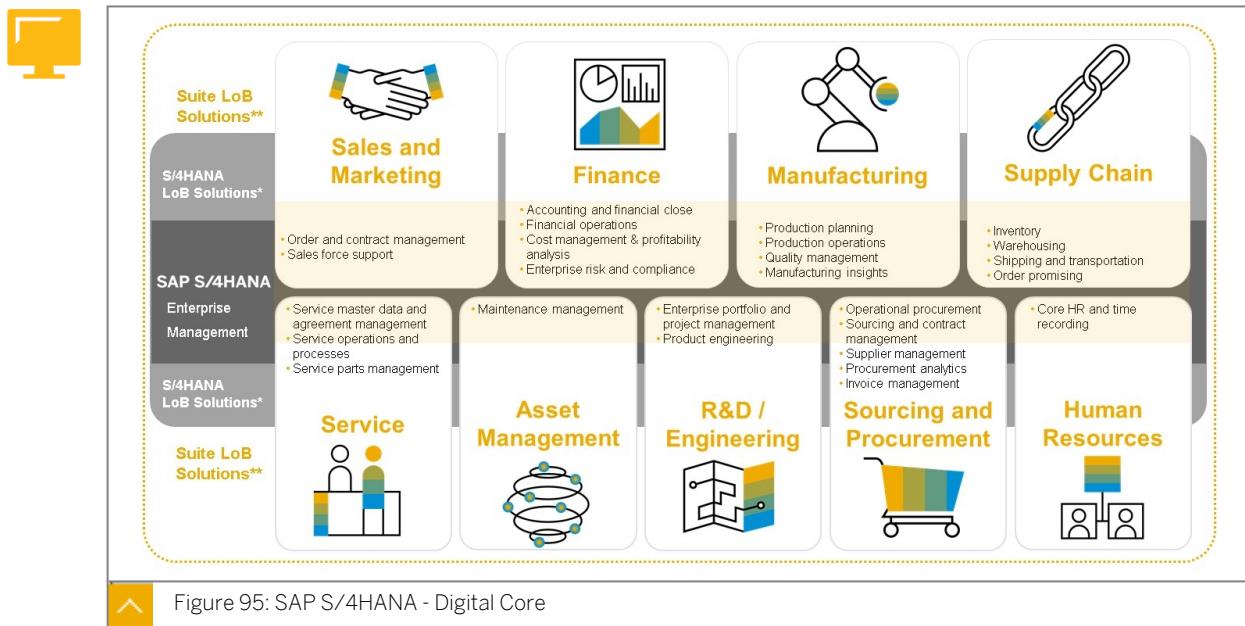


Figure 95: SAP S/4HANA - Digital Core

In this unit, we will have a closer look at all business areas in the digital core, highlighted in the figure above. We will discuss the challenges for the particular business area, their SAP S/4HANA solutions and capabilities. In addition, we will also learn in a nutshell what has been simplified in SAP S/4HANA from the solution perspective and what are the relevant SAP Notes, also provided for each business area.

Selected Cross-Application Changes in SAP S/4HANA

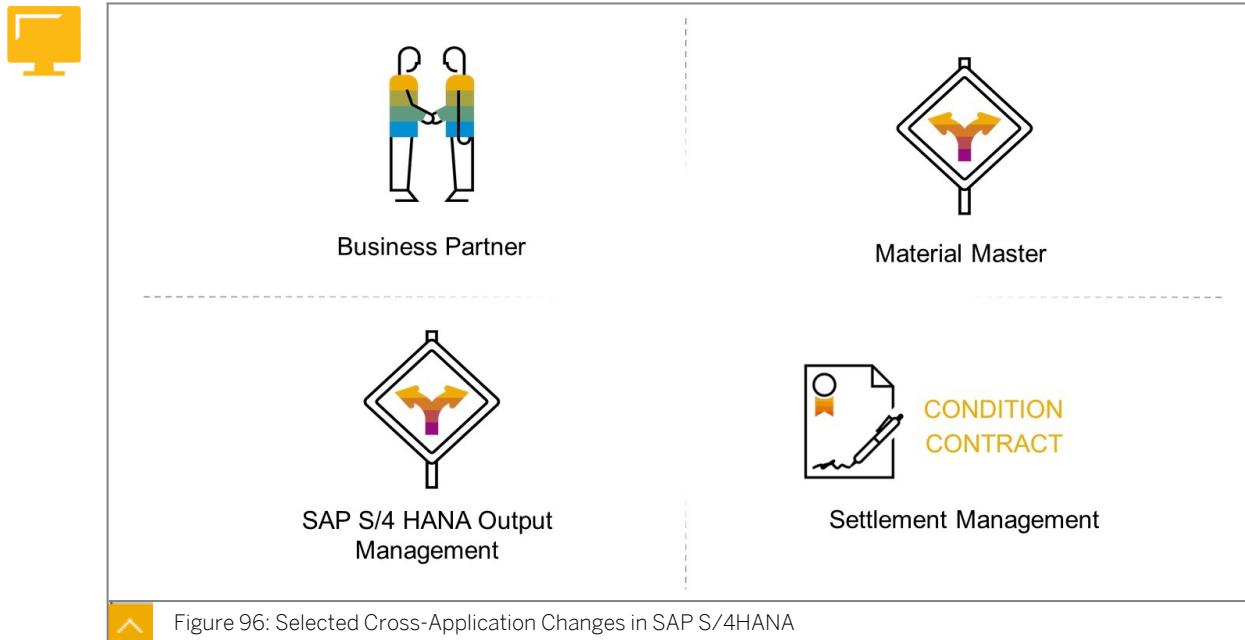


Figure 96: Selected Cross-Application Changes in SAP S/4HANA

Business Partner

Business partners are parties in which your company has a business interest. You can create and manage your business partners centrally for different business transactions, and reflect the different roles they play, such as sold-to party and ship-to party.

Material Master in SAP S/4HANA

In SAP S/4HANA, the following changes apply to the tabs in the Create/Change/Display Material transactions (MM01, MM02 and MM03):

1. In the screen area called Other data on the Purchasing tab, the Quota Arrangements Usage indicator field is switched off. This is because quota arrangements are always considered.
2. Foreign trade data on Intl Trade: Import tab. The commodity code can no longer be maintained in the material master record. The SAP Fiori app Classify Product needs to be used instead.
3. Lot size data on the MRP 1 tab: the unit of measure group is switched off, because it is only considered in an SAP retail system.
4. Procurement data on the MRP 2 tab: quota arrangements usage is switched off because it is always considered.
5. Storage Location MRP data on the MRP 4 tab: the fields for Storage Location MRP have been removed because this functionality is no longer supported. Customers have to use MRP areas instead.
6. Prices and values on the Accounting 1 tab: The Material Ledger is mandatory in SAP S/4HANA. The prices for all shown currencies need to be maintained. In the General Valuation Data area on this tab, there is a link to the material price analysis (such as, a button called Mat. Price Analysis). This analysis displays the price history for the moving average price on a transactional level. This helps a customer to easily identify the reason for variances in the moving average price.

Material Type SERV: Lean Services

Material type SERV (Services) has been introduced.

Material number

In SAP S/4HANA, the material number field length has been extended from 18 to 40 characters. This change was first implemented in SAP S/4HANA, on-premise edition 1511 and affects this release and higher releases.

SAP S/4HANA Output Management

SAP S/4HANA output management (using BRF+) is the strategic output management framework in SAP S/4HANA. Future developments will be delivered using this framework. Adobe XFA is the default technology for form templates delivered within this framework, but legacy forms (SAPscript, SmartForms, Adobe Forms) are still supported. The main benefits of the BRF+-based approach are the following:

- Extensibility: broad usage of CDS views
- BRF+: flexible and powerful output parameter determination
- Unified solution across many applications: SD, MM, Finance, and so on
- SAP Fiori: full integration with SAP Fiori apps
- State-of-the-art email support: flexible configuration, multiple recipients, and email templates
- In contrast to NAST-based output management, SAP S/4HANA output management supports only the print, email, XML and IDoc (for on-premise) channels



Note:

SAP S/4HANA output management is not going to rebuild NAST. NAST is still available and SAP S/4HANA output management is recommended, but not mandatory.

Condition Contract Management (CCM) part of Settlement Management

Condition Contract

This is a very important part of Settlement Management because it allows for the storage of agreements between the various business partners involved in a certain process. A condition contract contains important information such as prices, conditions, and the validity of the agreement. It forms the basis for settling claims or rebates with suppliers, or payables to customers. Furthermore, the condition contract can be used to handle pricing conditions only for the order-to-cash or the procure-to-pay process.

The general process in CCM differs from traditional SAP ERP rebate processing, in that the process does not start with the creation of a rebate agreement. Instead, there are (types of) condition contracts that are created and released. A condition contract combines all information relevant to a certain agreement, such as the condition grantor or owner of the condition contract, the list of eligible partners, and special conditions such as discounts or prices. It can be used to grant discounts for meeting quantity or value targets for sales or purchasing volumes. An enhancement in the system for pricing ensures that the system only finds the relevant conditions for the eligible partners listed in the condition contract.

[Note 2535889 – CCM – Description of delivered configuration](#)

[Note 2481672 – Condition Contract Management – Useful Documents](#)

[Note 2564353 – Condition Contract Management: Product Overview Documents](#)

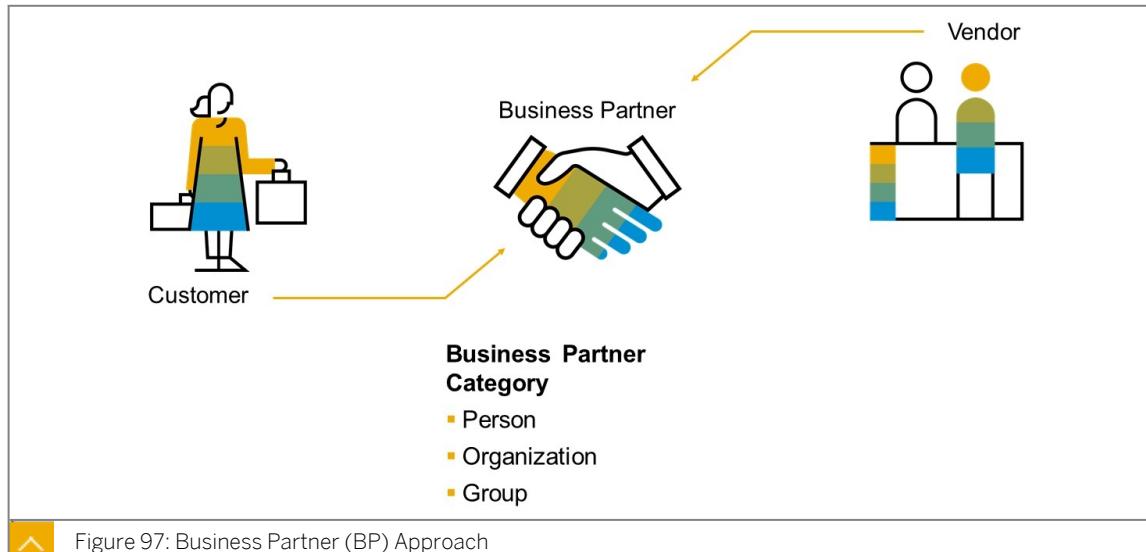


Figure 97: Business Partner (BP) Approach

In SAP, master data is created centrally, and is available to all applications and all authorized users. Storing master data centrally means data records are always consistent, up to date, and free of redundancy. Master data is organized into views that are assigned to organizational units (for example, plant, organizational unit, and so on). The segmented structure of master records makes it possible to flexibly depict the various organizational structures of an operation.

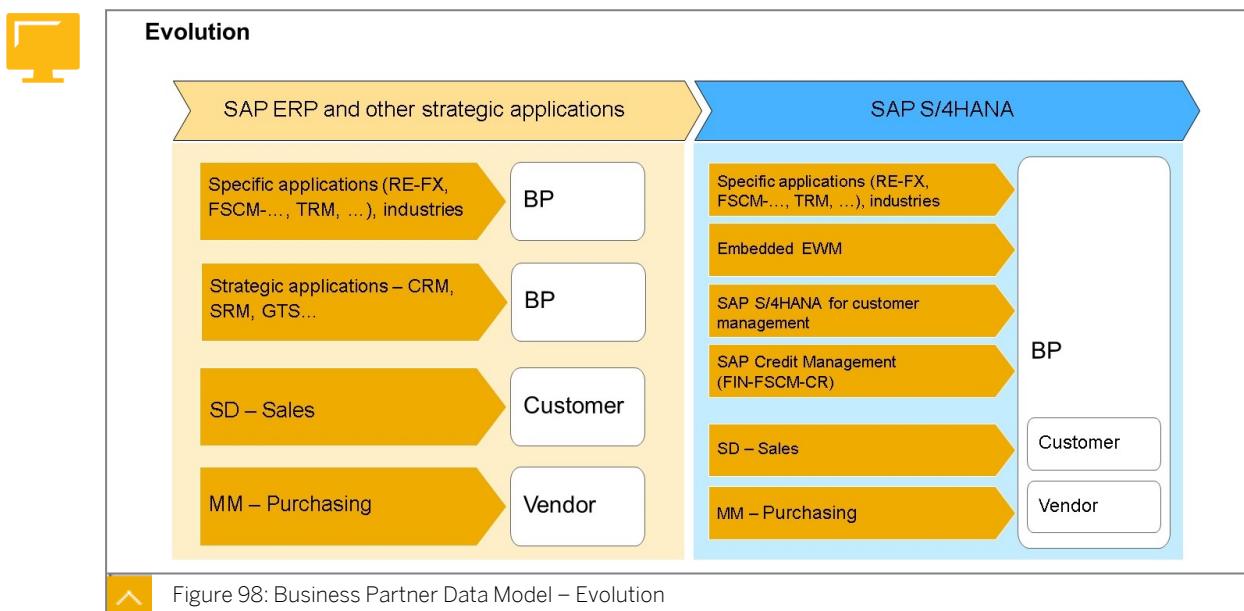
When the corresponding data (such as information on business partner or materials) is integrated in one single database object, data redundancy is no longer an issue, and data integrity is enhanced. All areas use the same stored data, including sales, purchasing, inventory management, materials planning, invoice verification, finance, and human resources.

In SAP ERP, customer master data and vendor master data must be maintained separately. This means that if a certain BP acts as a customer in some processes and as a vendor in other processes, master data for this business partner has to be maintained twice. The (mandatory) target approach in SAP S/4HANA is the BP approach. By using this approach, it is possible to centrally manage master data for customers and vendors.

In SAP S/4HANA, BP master data can be maintained with the transaction **BP**, or by using a corresponding app from the SAP Fiori launchpad.

The **BP** transaction is the single point of entry to create, edit, and display master data for BP, vendors, and customers.

A BP can be categorized as a person, group, or organization (a legal person or part of a legal entity, for example, a department). A group represents a shared living arrangement, such as a married couple, or an executive board. An organization represents units such as a company, a department of a company, or an association. “Organization” is an umbrella term used to map every kind of situation in day-to-day business activities. Furthermore, the BP can be maintained for several roles, such as vendor, FI vendor, or customer. This ensures that the relevant master data for the various processes can be recorded correspondingly, and that the BP can be used for the respective functions, such as sold-to party.



Note:

In preparation of a technical SAP S/4HANA conversion, it is mandatory to convert (CVI conversion) Customers and Vendors into Business Partners. Maybe you struggle with merge of Customer and Vendor into one Business Partner at CVI conversion. This CVI conversion has to be processed in ECC environment as a preparation step for technical SAP S/4HANA conversion. CVI Cockpit will guide you through this process.

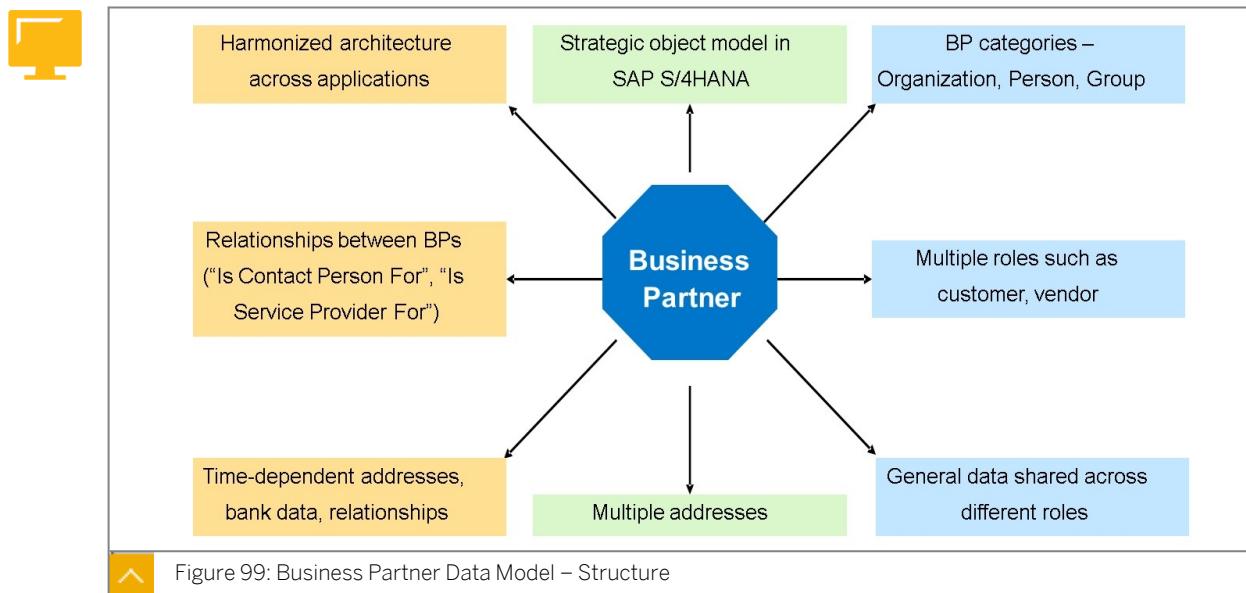


Figure 99: Business Partner Data Model – Structure

Business Partners

Use

Business partners are parties in which your company has a business interest. You can create and manage your business partners centrally for different business transactions, and reflect the different roles they play, such as sold-to party and ship-to party.

A business partner can be any of the following:

Account

An account is a company, individual, or group with which you have a business relationship. An account can be, for example, a customer, prospect, vendor, or competitor. Accounts are subdivided into the following types:

- Corporate accounts (companies or organizations)
- Individual accounts (private individuals)
- Account groups (any groupings, such as households)

Contact

A contact is a person with whom you have a business relationship, and is mostly assigned to a corporate account.

Employee

An employee is a member of your company, and involved in the interactions between your company and customers, prospects, vendors, and other parties.

“Business partner” is the generic term used to refer to the parties involved in your interactions with customers. This term is used primarily in technical documentation, and does not generally appear on the UI.



Categories



Person

- Private Person
- Personal Data
 - First Name/Last Name, Academic Title, DOB, and more.



Organization

- Company, Subsidiary
- Company Data
 - Name, Legal Form, Industry, and more.



Group

- Household, Joint Residence
- Group
 - Data Name, Group Type, and more.

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Figure 100: Business Partner Data Model - Categories

Business Partner Category

Definition

The business partner category denotes whether a business partner is a natural person (private individual), organization (legal person/entity or part of a legal entity, such as a department), or a group.

Use

When you create a business partner, you have to select a business partner category. Depending on the business partner category, a certain set of fields has to be filled with data.

The selection of name fields available is defined by the business partner category. You can enter the following data:

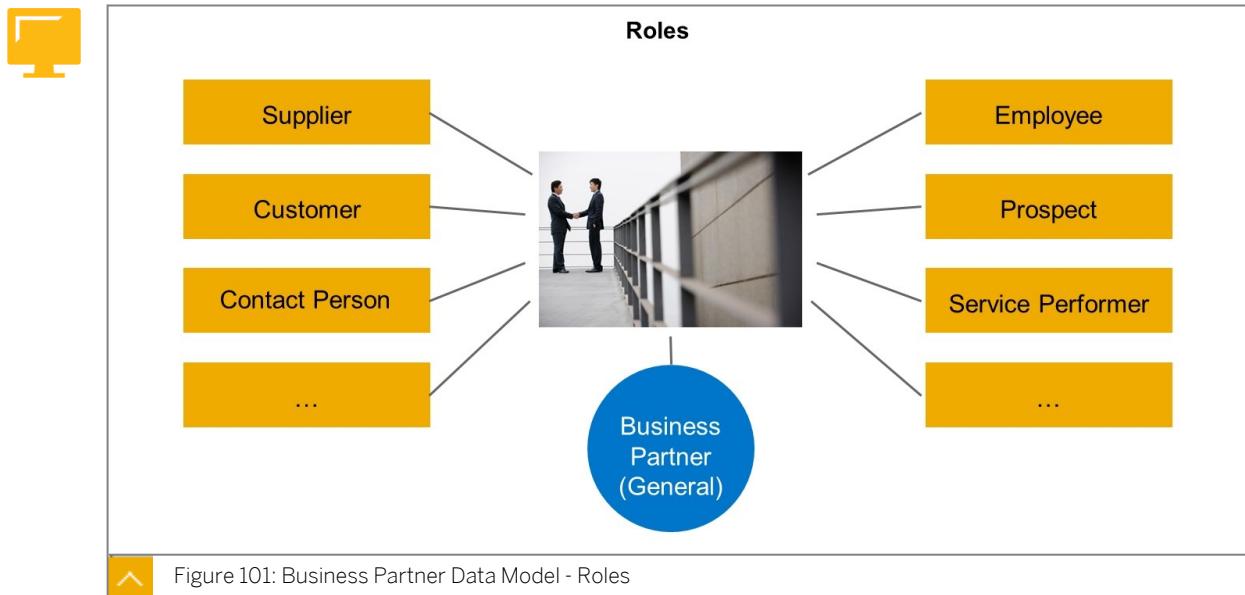
- Organization: Form of address, name, legal form, industry, legal entity
- Person: Form of address, first and last name, other name components (such as name prefixes and affixes and academic title), gender
- Groups: Form of address, two names, partner group type (marriage, shared living arrangement)

Structure

The standard business partner categories are:

- Natural person (private individual)
- Organization (for example, company, department in a company, club, association)
- Group (for example, married couple, shared living arrangement)

It is not possible to create any other business partner categories. You cannot alter the business partner category at a later stage.



Definition

Rights and obligations taken on by a business partner in different business transactions.

Use

A business partner role is used to classify a business partner in business terms. The roles you assign to a business partner reflect the functions it has and the business transactions in which it is likely to be involved.

A business partner role is used for classification purposes during data exchange with SAP ERP.

Features

The business partner role determines which assignment blocks are available. The roles **Internet User** and **Competitor**, for example, comprise specific assignment blocks that are not available in other roles. You can therefore, use roles to make available a specific selection of assignment blocks.

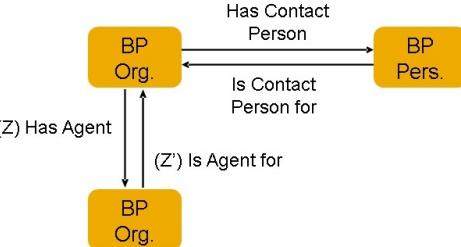
The business partner role assigned to a business partner is used to derive the sales classification to be assigned. The assignment is not visible on the UI, but is implicit. This classification is decisive for data exchange between SAP CRM and SAP ERP, and determines in what form the data transferred from SAP CRM is created in SAP ERP.



Relationships

Business partners can be linked via relationships

- Predefined relationship categories
- Possible to create own relationship categories
- Time-dependent
- Display of relationships as list/hierarchy/network



Relationships are displayed in two ways:

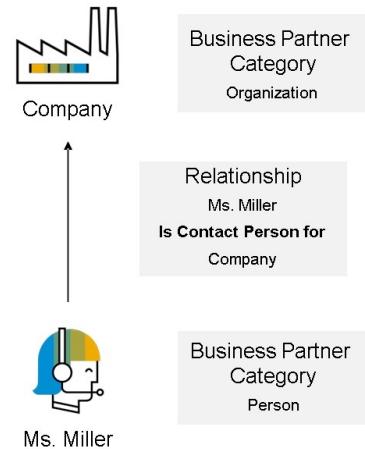
- D Hierarchy**: Shows a list of relationships. For example, for relationship category FBUR001 Has Contact Person (2), it shows Business Partner 17100001 (Domestic US Customer 1) linked to Business Partner 0017910005 (Susan Miller) and 0017910006 (James Smith).
- C Network**: Shows a network diagram where nodes represent business partners and edges represent relationships. For example, for relationship category FBUR001 Has Contact Person (2), it shows a network where node 0017910001 (Domestic US Customer 1) is connected to nodes 0017910005 (Susan Miller) and 0017910006 (James Smith).

 Figure 102: Business Partner Data Model – Relationships

This business object is used to map the business connection between two business partners and to store information such as the type of relationship between the business partners. Examples of business partner relationships are: contact person, shareholder, and marriage relationship. Depending on the type of relationship, other information can be stored, such as address information.



Categories, roles, and relationships



Company		
BP General Address Payment Data Client	Customer Shipping Condition Incoterms Sales Area	Customer Payment Terms Reconciliation Account Company Code

Ms. Miller	
BP General Name Address Client	Contact Person Correspondence Language Client

 Figure 103: Business Partner Data Model – Categories, Roles, and Relationships

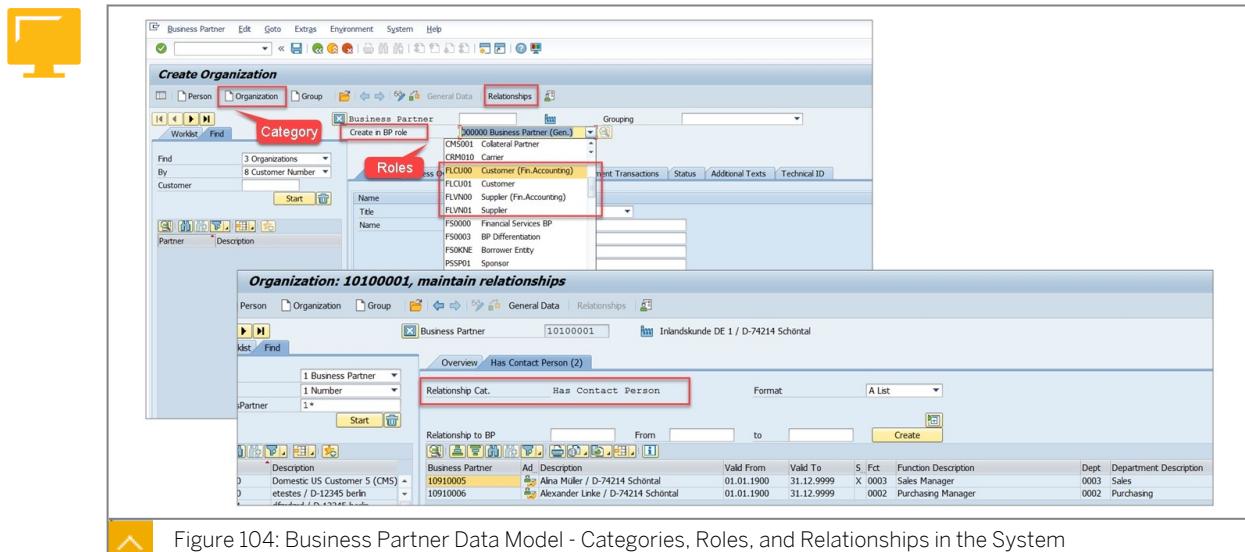


Figure 104: Business Partner Data Model - Categories, Roles, and Relationships in the System

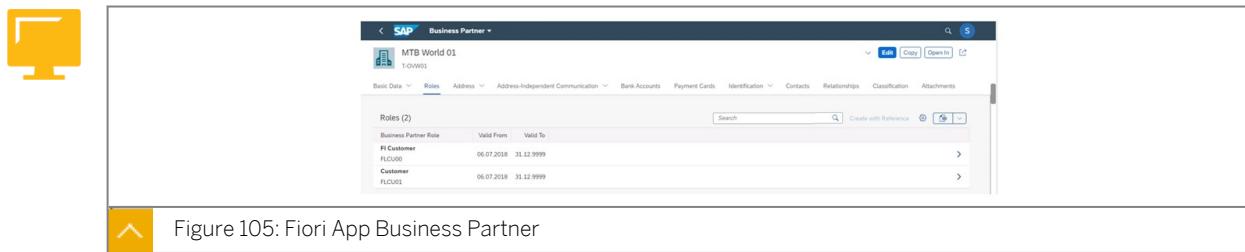


Figure 105: Fiori App Business Partner

With this app, you can manage business partner master data. You can create, change, search, display, and copy business partner master data. You must have assigned the business role Master Data Specialist - Business Partner Specialist SAP_BR_BUPA_MASTER_SPECIALIST.

Key Features

Create Business Partner Master Data

Use the **Create** button to create new Business Partner master data. You can choose **Person** or **Organization** from the drop down menu.

The Create Person/Organization dialog box that appears lets you to quickly add the basic fields. If you want to add more details, click **OK**, and navigate to **Details** page.

Enter values in the relevant fields such as **Basic Data**, **Roles**, **Address**, and so on.

Save the entries.

Edit Business Partner Master Data

Open a Business Partner master data record from the **List Report** page.



Note:

You can also use the **Search** field and choose the **Go** button to find the Business Partner master data to change.

Click **Edit** button. This opens the Business Partner data in draft mode for you to change the values.

Save the changes.

Copy Business Partner Master Data

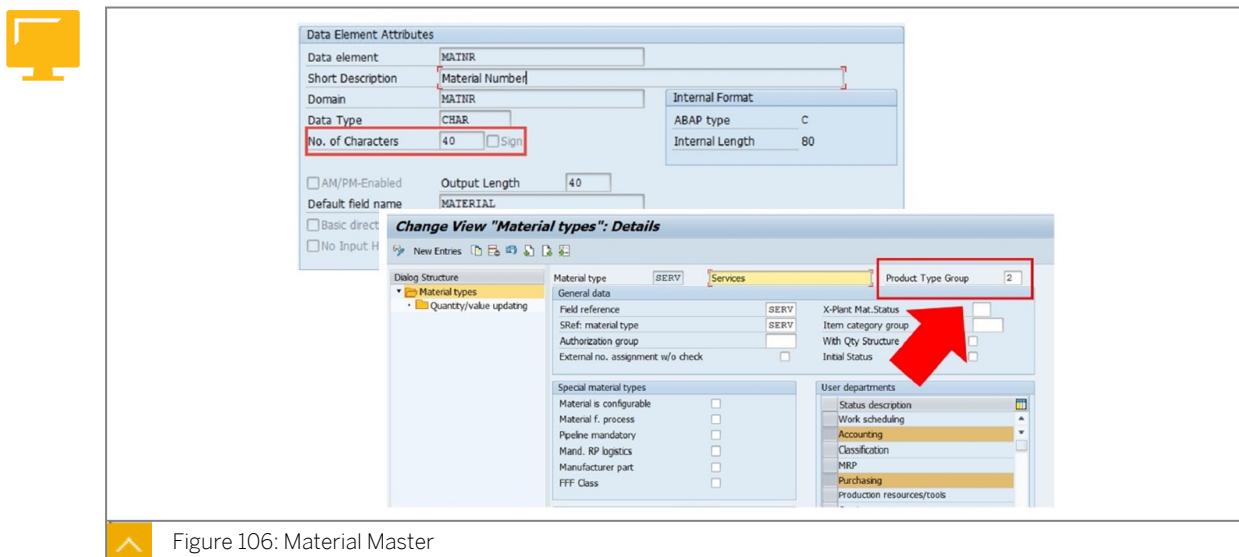
You can use this option to create a new Business Partner master record if a Business Partner master record already exists with similar data.

Choose a Business Partner master from the **List Report** page.

Choose the **Copy** button. By default, all data is selected to copy. The new Business Partner master data page is displayed with all the details of the Business Partner that you selected previously, except the business partner number, in draft mode.

Edit the values as per your requirement.

Save the entries. The Business Partner master data is saved with a new business partner number.



Material type SERV (Services) provides an alternative way to define service master data in SAP S/4HANA. In the configuration details for a material type, there is now an SAP S/4HANA-specific field available, which is called Product Type Group. For a material type, the product type group defines whether the material type represents a material (entry blank, or 1) or a service (2).

When using material type SERV, some fields and departments that are irrelevant in SAP S/4HANA are configured as hidden, by default. This provides all transactions related to material master maintenance for a SERV (Services) material (like MM01, MM02 and MM03), with a leaner and simplified look and feel.

Supported user departments for a SERV material are:

- Basic Data
- Classification
- Purchasing
- Accounting
- Sales

The following fields and tabs are, for example, not available for material type SERV in SAP S/4HANA:

Basic Data 1 -

Fields: EAN/ UPC, EAN Category, Product allocation, Assign Effect values, Matl Grp
Package Matls

Basic Data 2

Sales General/Plant -

Fields: Replacement part, Availability check, Material freight grp, Shipping Data, Packaging
material data, General plant parameter

Purchasing -

Fields: Material freight grp., Other data

Accounting 1 -

Fields: Valuation Class for Sales Order Stock, Valuation Class for Project Stock, Price control -
value S (Standard Price), Periodic Unit Price, Total Stock, Inventory Value, Valuation based on
the batch-specific unit of measure

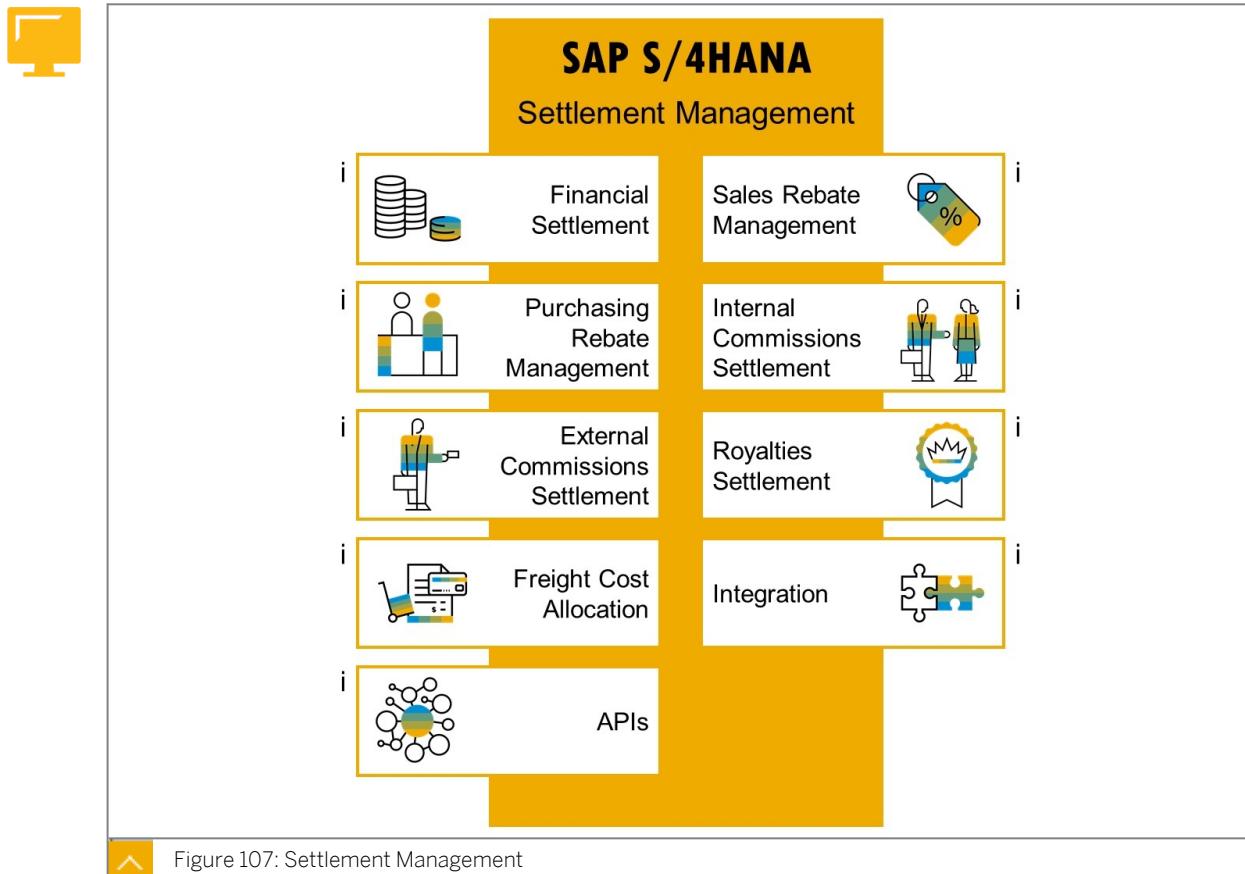
Accounting 2

Sales: Sales Org. 1 -

Fields: X-distr. Chain status, Valid from, Dchain-spec status, Valid from, Min. dely qty.,
Delivery Unit

Sales: Sales Org 2 -

Fields: Matl statistics group, Product attributes

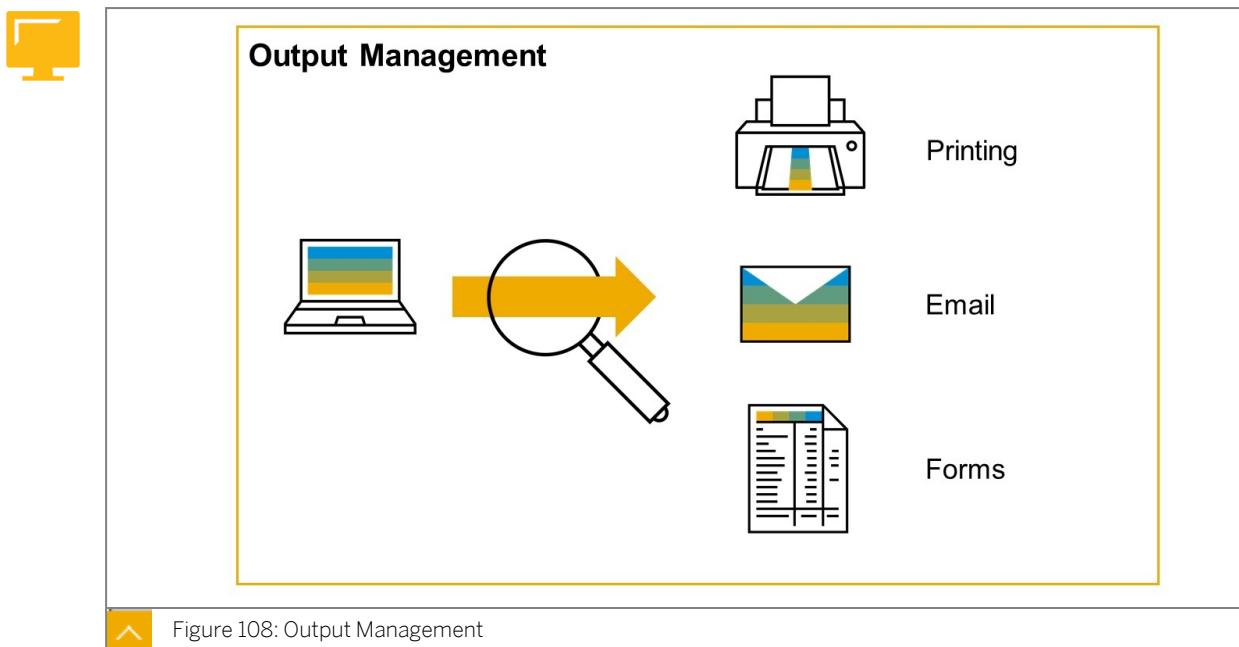


Settlement Management is a comprehensive and flexible SAP S/4HANA solution that supports the settlement of rebates and external commissions, the processing of employee commissions and incentives, as well as the settlement of royalties.

The Settlement Management component supports all types of settlement processes, including core business processes that need to be fully integrated in the order-to-cash cycle or within a procure-to-pay scenario, such as rebate settlement, as well as standalone processes, whereby you provide special financial settlement services for your business partners.

Financial settlement processes are typically required if you handle settlement transactions between third parties, such as brokers and payment agencies. You can offer benefits or services to the parties involved, such as del credere guarantees or simplified payment transactions, and perform settlement accounting for commissions in the system.

In pooled payment, the agency negotiates, for example, purchase price conditions and payment processing between the supplier and customer. The agency takes a commission from the customer and/or the supplier for services rendered. Transactions relating to the actual merchandise, for example, purchase orders and deliveries, can be carried out completely independently of the agency. For payment processing and calculating commission, the agency enters incoming invoices and remuneration settlements in settlement management documents.



What is Output Management?

When you ask people from different business or technical areas what output management is, you get different answers. You will hear something around PDFs, printing, form templates, or email, just to name a few. However, it will always be a description of what output means in their particular area. So, everybody interprets it a little differently. Some need just one small feature, others need whatever can be offered (and even more).

This is how I look at it: Output Management in SAP S/4HANA is not a product or a framework. It's a generic term, grouping various features for the output of documents.

The term also includes already two main aspects:

When describing features like print, form templates, or email, you actually describe just the first part – Output (meaning output-related features).

What about the **Management**?

Depending on the use case, managing output can also vary a lot. It can describe that the application is orchestrating all different output features on its own. It can mean an application is using a dedicated reuse service for output. It's even sometimes used when an application just consumes an API to send an email.

Why a New Output Solution?

The vision of SAP S/4HANA output management is to **Enable business users to perform all relevant output-related tasks**

In order to reach this vision, the existing output solutions such as, NAST, PPF, and so on. have been evaluated. However, they are either too generic and/or only available in certain business areas.

Customers have to learn, set up, and maintain multiple frameworks in order to perform output. This creates high TCO, and very different user experiences across the product. Therefore, SAP has decided to implement a new output solution that overcomes these challenges. The SAP S/4HANA output management.

Its main characteristics are:

- It runs in a cloud or an on-premise environment
- It offers a unified solution for all output-related tasks across the product
- It supports ready-to-use output scenarios (pre-delivered configuration)
- It supports standard extensibility for configuration and documents (form & email templates)
- It provides central monitoring tools for key users

What's New in SAP S/4HANA?

There are no mandatory actions for customers regarding output management in on-premise. The entire output management scope of the SAP Business Suite is still available in SAP S/4HANA. Currently, there are no plans to deprecate functionality.

SAP has introduced a new output management solution which is optional, for on-premise. Customer/partner decide whether you want to change something or just continue using your existing output solution. What's actually new, is the output solution SAP S/4HANA output management.

Unit 5

Exercise 5

Display a Business Partner



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Start the *Manage Business Partner Master Data* app from the SAP Fiori launchpad.
2. Search for your customer **T-OVW##**, and complete the table with the values according to your customer master data:

Field name	Value
<i>Business Partner</i>	T-OVW##
<i>Name</i>	
<i>Postal Code/City</i>	
<i>Country</i>	
<i>Region</i>	

3. Which roles have been maintained for your business partner?

Unit 5

Solution 5

Display a Business Partner



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Start the *Manage Business Partner Master Data* app from the SAP Fiori launchpad.
 - a) To start the app, enter **Manage Business** in the enterprise search field and select the app from the search results below the enterprise search field.



2. Search for your customer **T-0VW##**, and complete the table with the values according to your customer master data:

Field name	Value
Business Partner	T-0VW##
Name	
Postal Code/City	
Country	
Region	

- a) In the *Business Partner* filter field, enter **T-0VW##**, and choose Go.
- b) Select the radio button for the customer.
- c) To show the details, choose the arrow on the right.
- d) To find the address data of the customer, choose the *Address* tab at the top of the screen.

Result

The customer data should be as follows:

Field name	Value
Business Partner	T-0VW##
Name	MTB World ##

Field name	Value
Postal Code/City	68161 Mannheim
Country	DE (Germany)
Region	BW

- e) To find the maintained business roles, scroll to the role section.

Result

Here you will find the roles FI Customer FLCU00 and Customer FLCU01.

3. Which roles have been maintained for your business partner?

- a) These roles are maintained for your business partner:

Table 2: Roles Maintained for your Business Partner

Field	Value
FI Customer	FLCU00
Customer	FLCU01



LESSON SUMMARY

You should now be able to:

- Describe SAP S/4HANA Enterprise Management

Unit 5

Lesson 2

Describing Procurement in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe procurement in SAP S/4HANA

Procurement in SAP S/4HANA

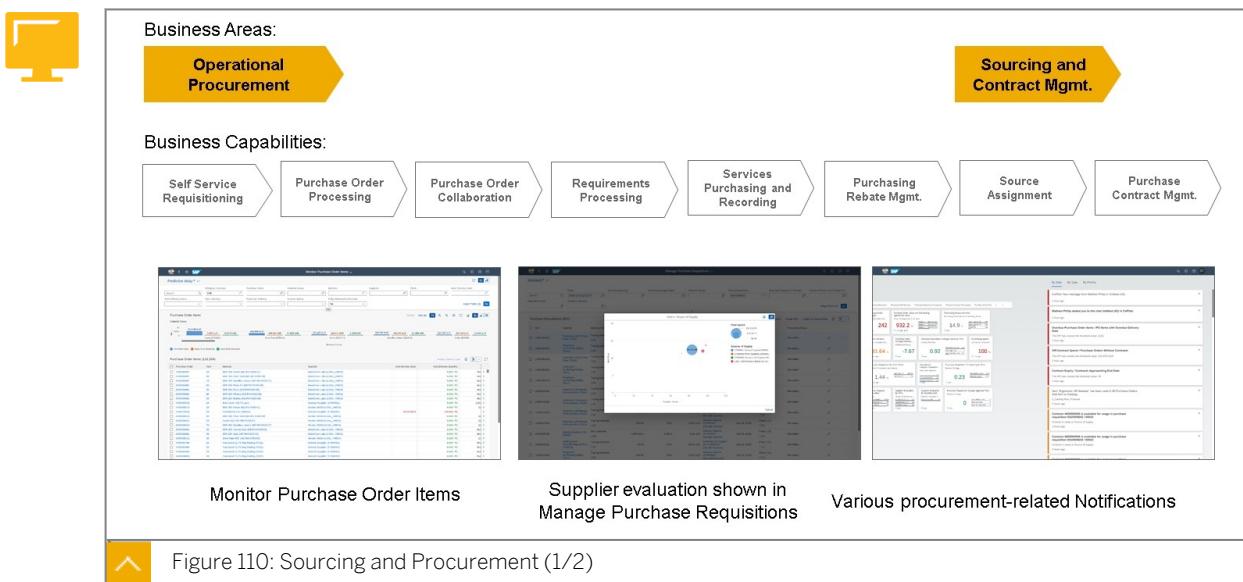


Figure 110: Sourcing and Procurement (1/2)

Self Service Requisitioning

- Consumer-grade UX and cross-catalog search, enabling employees to adopt procurement processes and policies.
- Flexible workflow configurable without development.
- Workflow inbox SAP Fiori app and Notification Center to facilitate efficient approval process.

Purchase Order Processing and Collaboration

- Indirect and direct procurement leveraging integration with other business areas, automation, and harmonized UX.

Requirements Processing

- Control over automation and manual intervention where appropriate.
- Human decision making supported by analytical visualization, embedded within transactional applications.

Service Purchasing and Recording

- Harmonized UX for both goods and service purchasing processes.
- Simplified limit (value-only) PO items to control over “unplanned” services, and record details via SAP Fiori service entry sheet application.

Purchasing Rebate Management

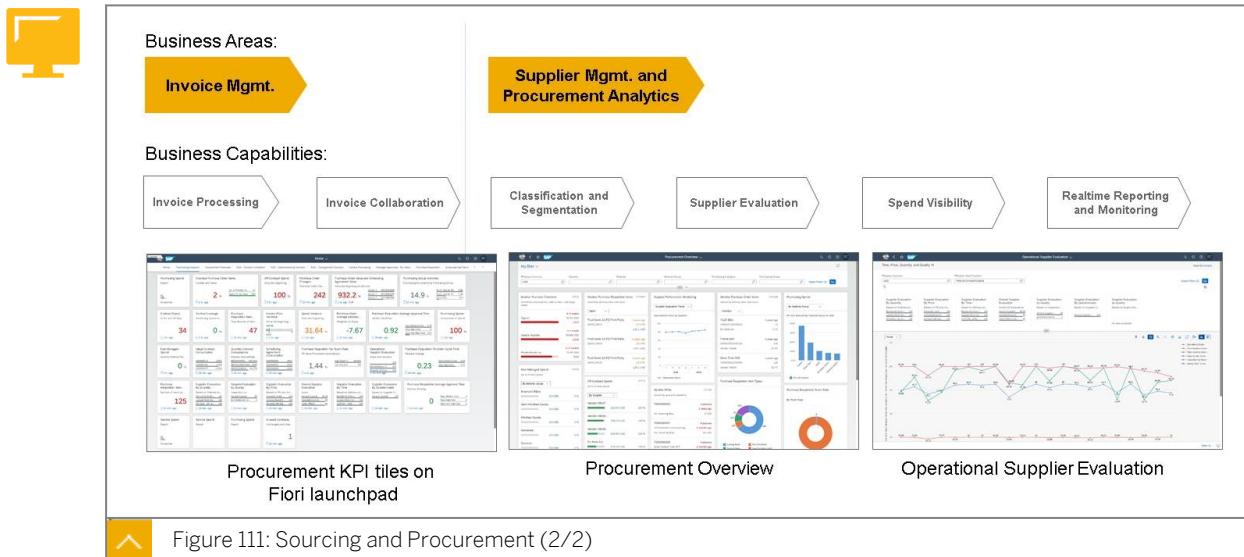
- Manage the purchasing rebate lifecycle, from planning to tracking, settling, and analyzing rebate agreements.

Source Assignment

- Analytics apps to monitor RFQs, and compare supplier quotations. For full online RFQ process support, use simple offline RFQ apps to seamlessly integrate with sourcing.

Purchase Contract Management

- Analytic apps manage the status of contracts and agreements.
- Predictive algorithm to monitor contracts to help plan contract negotiations.
- Templates and mass changes to increase efficiency in managing a large number of contracts.



Invoice Processing and Invoice Collaboration

- SAP Fiori apps to help manage supplier invoices and payment blocks.
- Upload scanned invoice copies for manual invoice processing (optional integration with OCR via OpenText).
- Native integration with Business Network.

Classification and Segmentation Supplier Evaluation

- Purchasing categories to classify spend and suppliers from purchasing perspective.
- Real-time supplier evaluation analytics automatically generated from transactional data.

- Manage activities with suppliers, or internal employee survey to additional perspective on supplier evaluations.

Spend Visibility and Real-time Reporting and Monitoring

- Real-time multi-dimensional spend report that can be manipulated, like “pivot table” with drill-down capability.
- KPI tiles and Procurement Overview app that provide “at-a-glance” visualization of multiple analytical apps.

SAP Ariba Complements and Extends the SAP S/4HANA Digital Core

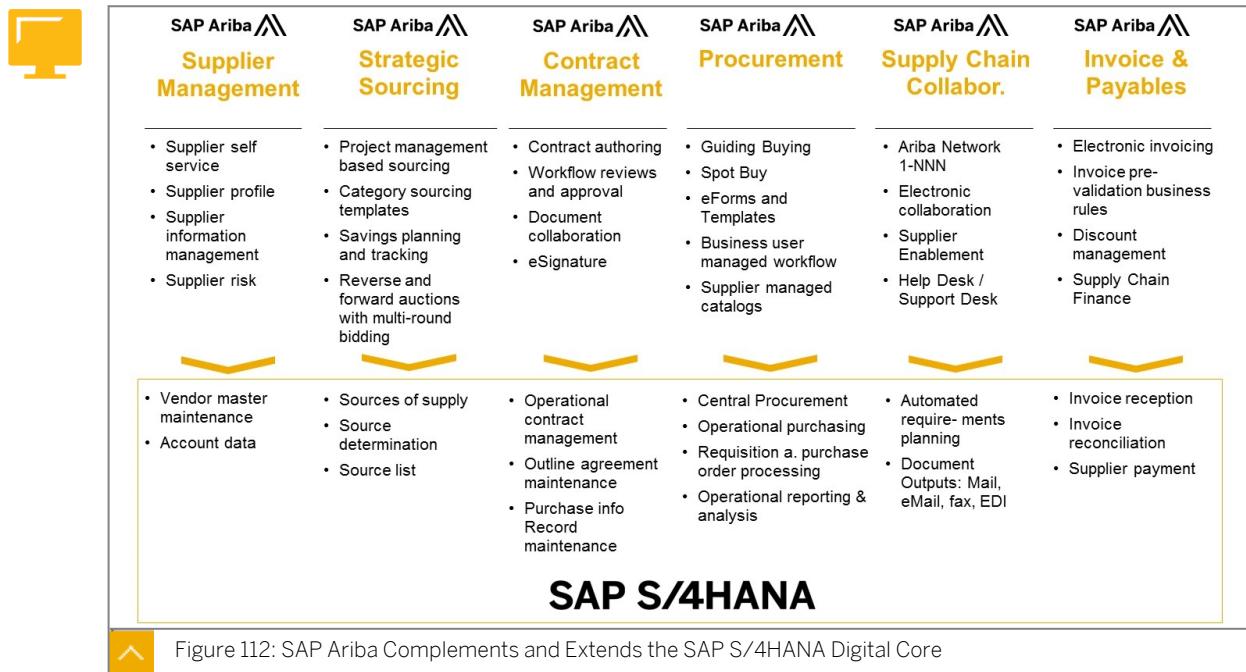


Figure 112: SAP Ariba Complements and Extends the SAP S/4HANA Digital Core

SAP ERP landscapes in particular, can be very complex for large enterprises, with no two being exactly alike. But that does not mean that there cannot be a consistent and simple approach to integration using SAP S/4HANA. It enables SAP Ariba to offer many different integration scenarios to support many business processes – the most typical process being purchase order (PO) and invoice automation.

Benefits

- Best-in-class, seamlessly integrated procurement business process
- Minimize the overall integration costs
- Faster creation of supplier relationships

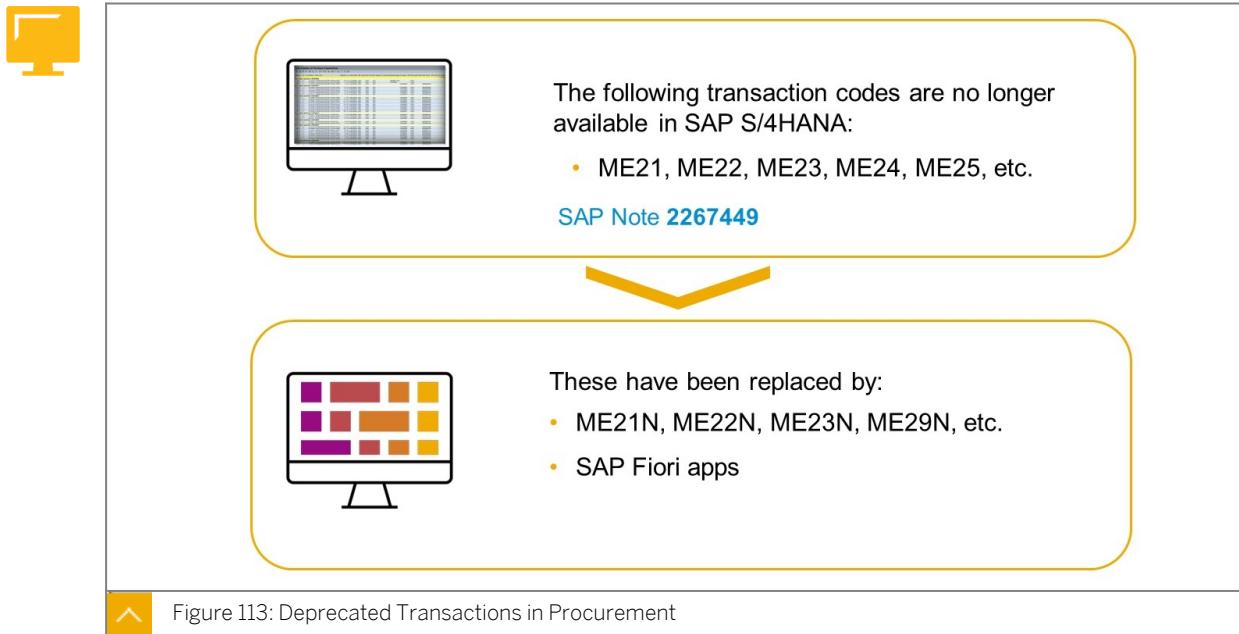


Figure 113: Deprecated Transactions in Procurement

Impact after transition to SAP S/4HANA

Most of the deprecated transaction codes still work. However, they are no longer supported. It is highly recommended to shift either to successor transactions or **SAP Fiori apps**. For other workstream deprecated transactions, refer to the [simplification list](#) document

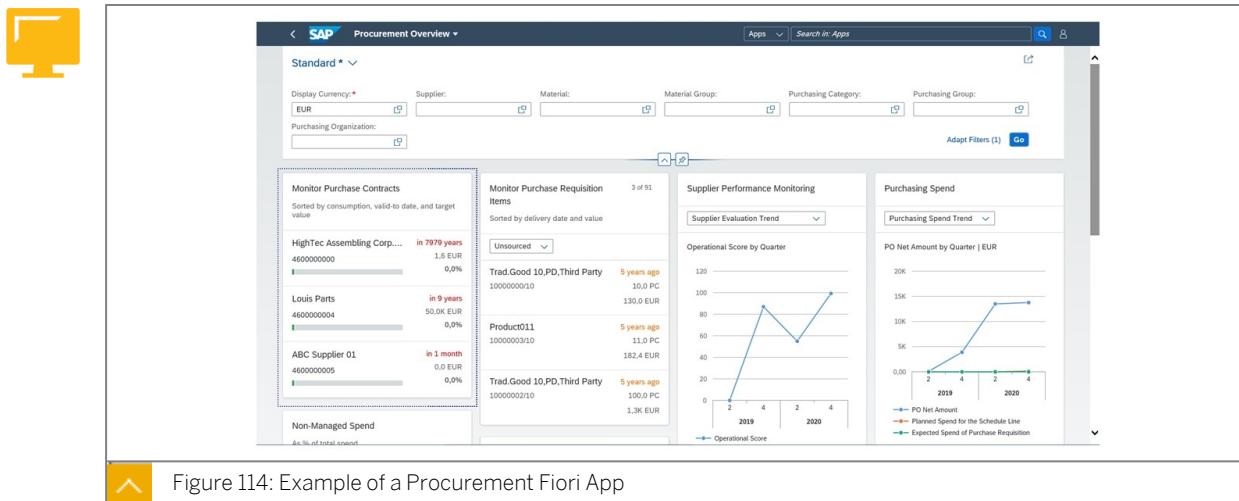


Figure 114: Example of a Procurement Fiori App

The **Procurement Overview** shows, at a glance, the most important information and tasks relevant for you right now. The information is displayed on a set of actionable cards. You can therefore focus on the most important tasks, enabling faster decisions and immediate action.

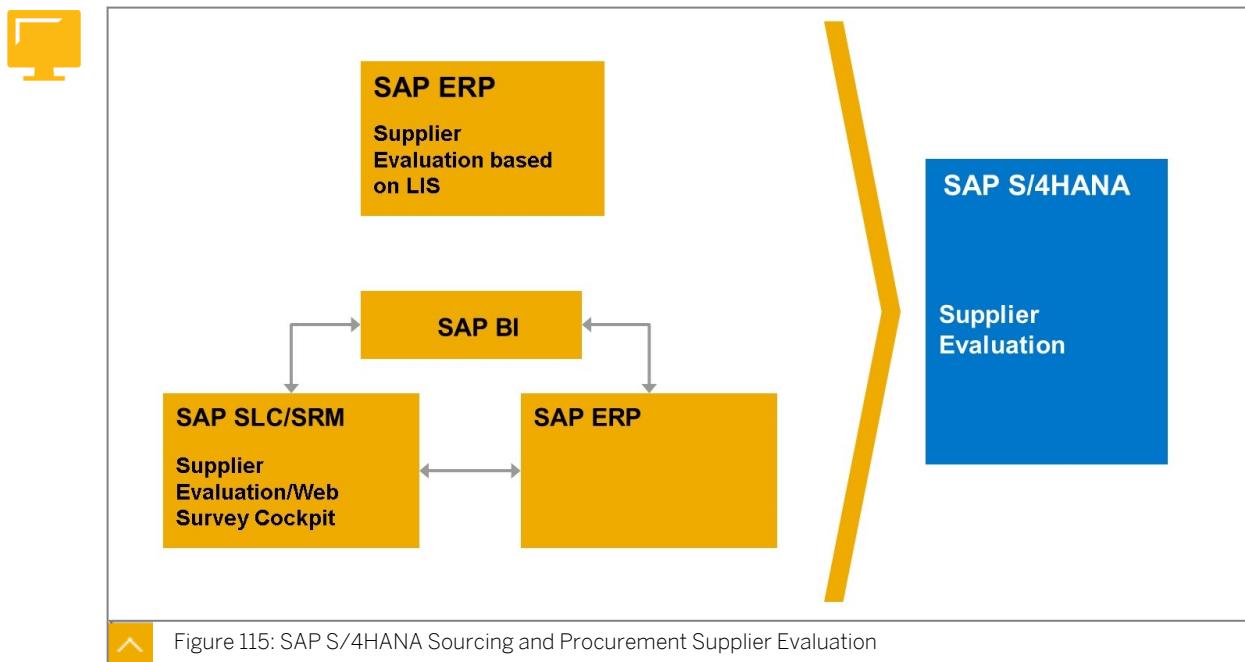
The cards show you the most important information ranked according to relevance. For example, on the **Monitor Purchase Contracts** card, you can see the consumption and expiry date per contract. You can then decide to change a contract by selecting it.

You can use the global filter to filter the entire **Procurement Overview** by supplier or material group, for example. You then see all urgent contracts, purchase requisitions, or spend information according to the specified filter criteria.

For list cards, selecting the header of a card brings you to the app itself, while selecting an item brings you to more detailed item information.

For graphical or analytical cards, selecting the card brings you to more detailed analytical information.

To use the **Procurement Overview**, you require the Business Catalog Role SAP_BCR_MM_PRC_OVP_PC assigned to your user.



In Purchasing analytics, the following are examples of SAP Fiori apps/KPIs that are available in the area of Supplier Evaluation:

1. Overall Supplier Evaluation:

This app determines the score of a supplier in an organization based on the operational scores (hard facts) and questionnaire scores (soft facts). The score is calculated for the period previous year to date. It combines scores from the weighted hard facts (price, time, and quantity), and the soft facts available from questionnaire results.

2. Operational Supplier Evaluation (Version 2):

This app determines the score of a supplier in an organization based on the weighted average of the quantity variance, price variance, and time variance. The score is calculated for the period previous year to date. The overall score is calculated from the variance available from the different criteria, and then the weighting is applied. It is possible to adjust the scores with the app Adjust Operational Supplier Evaluation Score.

3. Supplier Evaluation by Quantity (Version 2):

With the Supplier Evaluation by Quantity app, it is possible to determine the quantity variance, which is based on the variance between the ordered quantity and the delivered quantity of items. Both the over and the under delivered quantities are considered as variances. The score is determined for the period previous year to date.

4. Supplier Evaluation by Time (Version 2):

This app can be used to determine the score of a given supplier in an organization based on the difference in time between the ordered date of items and delivered date of items.

The score is calculated for the period previous year to date. Both the late and early deliveries of items are considered as a variance. It is also possible to see the time variance by delivery date.

5. Supplier Evaluation by Price (Version 2):

With the Supplier Evaluation by Price app, it is possible to determine the score of a given supplier in an organization based on the variance in the price of ordered items and invoiced items. The score is calculated for the period previous year to date and is based on the difference in the purchase order amount and invoice amount. Both the excess price and the lower price are considered as variances. This is completely different when compared to the LIS-based supplier evaluation, where the price score is based on the info record prices.

6. Supplier Evaluation by Quality (Version 2):

With the Supplier Evaluation by Quality app, it is possible to determine the overall quality score of a supplier based on inspection results. Each inspection lot is recorded, and the purchase order and purchase order item are used to track the supplier. The score is determined for the period previous year to date.

7. Supplier Evaluation by Quality (for Quality Notification) (Version 2):

With this app, it is possible to evaluate suppliers on the basis of quality complaints received. The suppliers with the least amount of complaint notifications received can be identified and thus the suppliers with higher quality evaluation scores. This helps a company to determine the suppliers with the best performance and reliability. This app can also help a company to decide which supplier to select if the purchasing conditions such as quality and price of a material, and delivery time are the same.

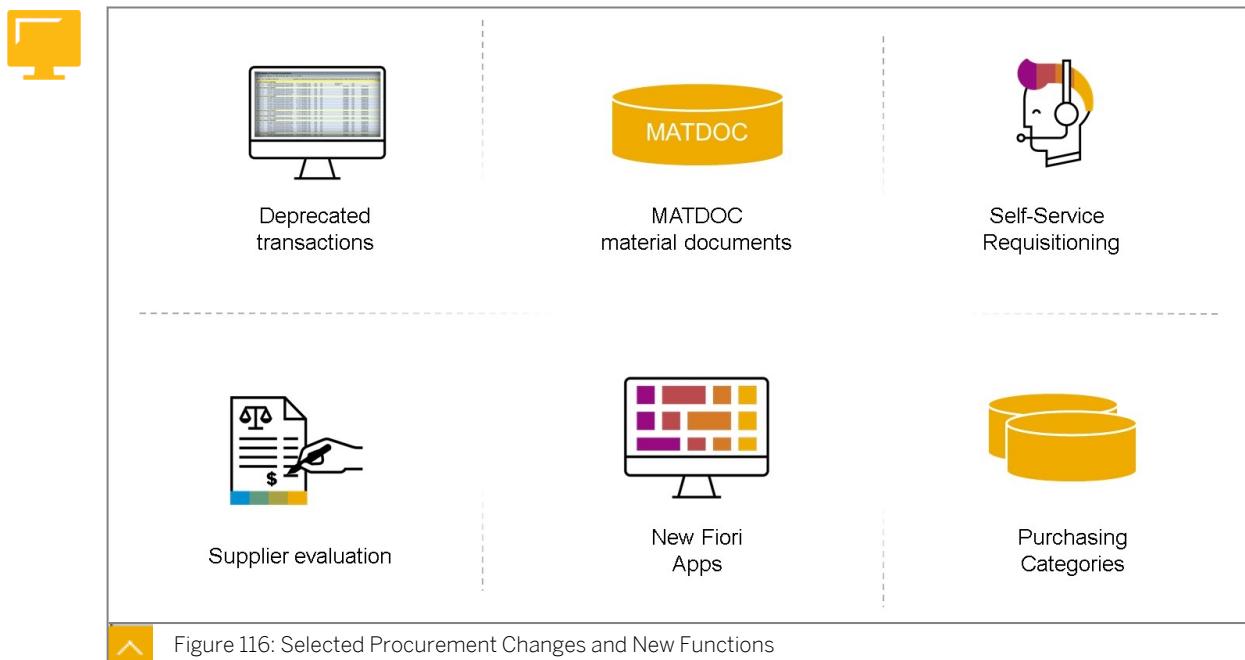
Detailed information available in these SAP Notes:

2267414 – S4TWL – Vendor evaluation based on LIS

2228247 – SAP S/4HANA Simplification Deprecation of Vendor evaluation based on LIS

2200411 – MM-Transition to S/4: Vendor Evaluation in MM-PUR

2271188 – S4TWL – Dedicated SAP Supplier Lifecycle Management (SAP SLC) business processes



Self-Service Requisitioning in SAP S/4HANA

Self-Service Requisitioning is a functionality that was introduced with SAP S/4HANA. It replaces the shopping cart functionality of the SAP ERP system, which was available as of Enhancement Package 6 for SAP ERP. In SAP S/4HANA, the self-service requisitioning functionality has been completely integrated into the existing purchase requisition data structures.

In SAP S/4HANA, four SAP Fiori apps are available for an employee to carry out a self-service requisitioning process:

- Create Purchase Requisition
- My Purchase Requisitions
- Confirm Receipt of Goods - New

Note:

This SAP Fiori app was introduced with SAP S/4HANA release 2020. The app Confirm Receipt of Goods was deprecated with the release of SAP S/4HANA 2021.

MATDOC

With SAP S/4HANA, this data model has been changed significantly. The new de-normalized table MATDOC has been introduced, which contains the former header and item data of a material document as well as a lot of further attributes. Material document data will be stored in MATDOC only, and not in MKPF and MSEG anymore. Additionally, the aggregated actual stock quantities will not be persisted anymore in the hybrid or replaced aggregation tables. Instead, actual stock quantity data will be calculated on-the-fly from the new material document table MATDOC, for which some of those additional special fields are used. Hence, with the new MM-IM data model, the system will work on database level in an INSERT only mode, without DB locks. Nevertheless, for stock decreasing processes, there will be still ABAP locks to ensure stock consistency. A further advantage of the new MM-IM data model is the

capability of simple and fast reporting, because the most information is all in one place: MATDOC.

Purchasing Categories

In SAP S/4HANA, similar expenditure items can be grouped into so-called Purchasing Categories. Purchasing categories were not available in SAP ERP. Customers can group material groups into purchasing categories to help organize and analyze spend. Examples could be office furniture or hardware. Purchasing categories are used in a Supplier Evaluation process, for example, for questionnaires (soft facts), and in purchasing real-time analytics as a separate reporting level.

New Fiori Apps

For Procurement and Sourcing relevant Fiori apps, please visit the SAP Fiori Apps Reference Library.

Further SAP Notes:

Replacement of classical GUI transactions (SAP Note 2267449)

Pricing Data Model Simplification (SAP Note 2267442)

Native Integration with Ariba (SAP Note 2341836)

For more information, see the documentation for SAP Ariba Cloud Integration Gateway on SAP Help Portal at https://help.sap.com/viewer/product/SAP%20Ariba%20Cloud%20Integration%20Gateway/CIG_2019_09/en-US.

Use the Procurement Overview App

Business Example

You are a purchase manager. To get an overview of your purchase operations at a glance, you use the *Procurement Overview* SAP Fiori app.

1. Check the number of *Purchase Order Items* which are overdue, and navigate to the SAP Fiori app, *Monitor Purchase Order Items*.
2. Figure out the *Off-Contract Spends* according to the material groups.
3. Adapt your Procurement Overview-App.

Use the Procurement Overview App

Business Example

You are a purchase manager. To get an overview of your purchase operations at a glance, you use the *Procurement Overview* SAP Fiori app.

1. Check the number of *Purchase Order Items* which are overdue, and navigate to the SAP Fiori app, *Monitor Purchase Order Items*.
 - a) Start the SAP Fiori App Procurement overview from the enterprise search.
 - b) Enter the currency USD in the filter bar.
 - c) On the card, *Monitor Purchase Order Items*, you will find the number of overdue items. Overdue should be the default category. Therefore, if it is not, switch from *In Approval* to *Overdue*.
2. Figure out the *Off-Contract Spends* according to the material groups.
 - a) Choose the top segment of the card, *Off-Contract Spend*. You will be directed to the SAP Fiori app, *Off-Contract Spend*.
 - b) Change from a bar-chart diagram to a pie-chart diagram by clicking the Chart symbol on the right hand side.
3. Adapt your Procurement Overview-App.
 - a) Choose the arrow next to the SAP logo to navigate back to the *Procurement Overview Page*.
 - b) Choose the S at the top right, choose *Manage Cards*, and hide the card, *Monitor Purchase Contracts*.

Unit 5 Exercise 7

Use the Manage Purchase Contracts App

Business Example

You are a purchaser who is accountable for managing purchase contracts. You know about the analytical and transactional capabilities in the *Manage Purchase Contracts* SAP Fiori app. To save time and get an overview at a glance, you use this app.

1. Check the contracts in your purchase organization with the *Manage Purchase Contracts* app.
2. What is the validity status of the first contract?

3. Who is your supplier?

4. Complete the following table:

Field	Value
Contract Type	
Valid From....Valid to	
Purchasing Group	
Purchasing Organization	
Purchasing Organization	

Unit 5 Solution 7

Use the Manage Purchase Contracts App

Business Example

You are a purchaser who is accountable for managing purchase contracts. You know about the analytical and transactional capabilities in the *Manage Purchase Contracts* SAP Fiori app. To save time and get an overview at a glance, you use this app.

1. Check the contracts in your purchase organization with the *Manage Purchase Contracts* app.
 - a) In the SAP Fiori launchpad, choose the corresponding tile with the help of the enterprise search functionality.
To get a complete overview, do not use any filters, and in the top-right corner, choose *Go*.
2. What is the validity status of the first contract?

3. Who is your supplier?

4. Complete the following table:

Field	Value
Contract Type	
Valid From....Valid to	
Purchasing Group	
Purchasing Organization	
Purchasing Organization	



LESSON SUMMARY

You should now be able to:

- Describe procurement in SAP S/4HANA

Unit 5

Lesson 3

Describing Manufacturing in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe manufacturing in SAP S/4HANA

Manufacturing in SAP S/4HANA

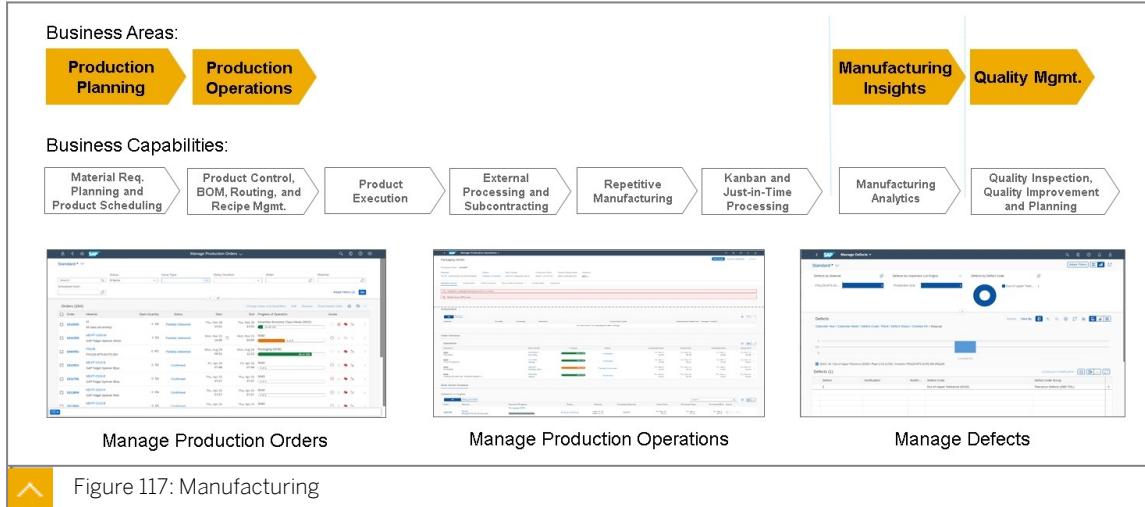


Figure 117: Manufacturing

- Material Requirements Planning and Product Scheduling:
 - Optimize material flow for external and internal requirements (MRP) with system-generated solution proposals.
 - Manage and track change requests for orders.
 - One single MRP if all downstream materials are advanced planning-relevant. Monitor production schedules and queues.
- Product Control, BOM, Routing, and Recipe Management:

Control full shop floor production for handling materials, BOM, recipes, routings, batches, parts, components, work centers, and resources all the way up to the finished products using central cockpits to minimize bottlenecks and mitigate risk.
- Product Execution:

Streamline schedules with real-time data from suppliers and the plant floor. Monitor released production and process orders efficiently, confirm progress and trigger production WIP and settlement with complete log info.
- External Processing and Subcontracting:

Integrate external workforce into Production Execution and manage the subcontracting process from planning to execution and monitoring in real-time.

- Repetitive Manufacturing:

Benefit from a simplified processing in repetitive scenarios with mass processing and streamlined financial controls in periodic actions.

- Kanban and Just-in-Time Processing:

Run your production in many different flavors to support Kanban replenishment methods, as well as just-in-time processing streamlined for Inbound and Outbound.

- Manufacturing Analytics:

Use real-time alerts based on production bottlenecks, such as time or component delays or resource bottlenecks, to reduce shortfalls and scrap with high efficiency.

- Quality Inspection, Quality Improvement and Planning:

Use an integrated holistic solution to perform quality planning performs inspections, collect results to enable timely-informed decisions, and therefore support ensuring product compliance and quality.

New MRP Run: MRP Live

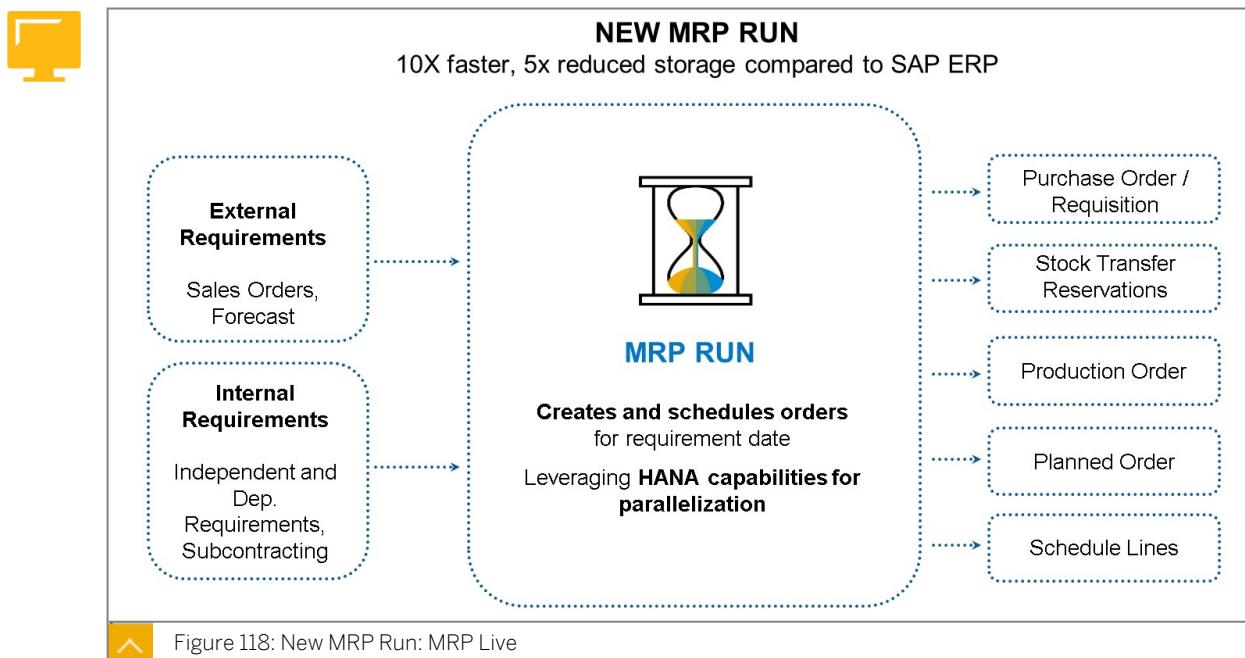


Figure 118: New MRP Run: MRP Live

Using MRP Live, you can benefit from improved performance and execute the planning run in much shorter cycles. This means that you can execute several planning runs daily providing the MRP controller with the following benefits, for example:

- More up-to-date supply and demand information on which to base decisions.
- Faster reaction to demand changes reduces the risk of stock-outs, and means that you can reduce safety stocks.
- Match demand and supply more efficiently than was previously possible.
- Identify and react to issues faster than was previously possible.

When to Plan in MRP Live and When to Plan with Classic MRP

During the planning run, the system plans the materials according to the sequence determined by the low-level codes that are defined in the bill of materials. That is, for the first low-level code (0), the system determines which materials can be included in MRP Live on HANA, and plans these first. In a second step, the system determines the materials with the same low-level code that could not be planned in MRP Live on HANA, and then automatically plans these materials using classic MRP. Included in this second step are also the materials that were planned in MRP Live on HANA but for which an error occurred. Both the planning in MRP Live on HANA and classic MRP has to be completed for one low-level code before the system commences the planning of the next low-level code (1).

That is, during the planning process, the system divides the materials into groups, as follows:

- Materials that can be planned using MRP Live on HANA
- Materials that still have to be planned in classic MRP because they require a planning feature that is not yet supported by MRP Live.

For more information, see SAP Notes [1914010](#) and [MRP Live: Incompatible Changes](#).

You have set the *Plan in Classic MRP* indicator in transaction `MD_MRP_FORCE_CLASSIC`. In this report, the system displays all materials with active MRP views in the material master, and you can define that the planning run is to be executed using classic MRP for individual materials. You should check which materials require the processing of a Business Add-In (BAI) during the MRP run, and always set this indicator for these materials.

- Materials that cannot be planned in either MRP Live on HANA or in classic MRP because of inconsistent master data, for example. The system creates exception MRP lists for such materials that cannot be planned.

Introduction to Predictive MRP (Material and Resource Planning)

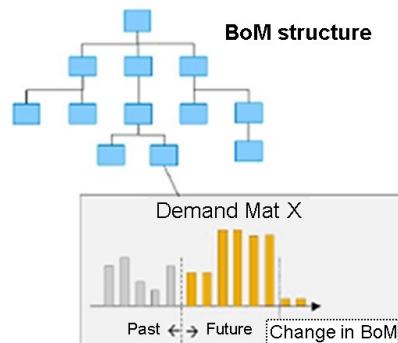
Predictive MRP (pMRP) helps you to identify capacity issues and solve them early in the planning process.



Detailed, simulative MRP for mid- to long-term planning

Positioning

Mid- to long-term demand scenario simulation for capacity, production, purchasing, and internal material flow in production plants on detail level
Successor of classic ERP 'Long-term planning', but not with identical functionality



Approach

- Simple and fast infinite MRP run for planning scenarios**
- Based on demand versions for finished goods (material variants)
 - With simplified MRP logic (no lot sizing, always plan-driven)
 - Exploding complete Bill of Materials and 'Bill of Operations', considering simplifications effectively
 - Natively leveraging the full potential of SAP HANA



Result

- Interactive planning via capacity adjustment, sourcing decisions and demand leveling



Figure 119: SAP S/4HANA Predictive MRP

The goal of predictive material and resource planning is to identify potential capacity issues, and to evaluate possible solutions as early as possible, based on a simplified requirements plan using a simplified material requirements algorithm. It can also be used as an input for strategic and operational purchasing. As a result of the simulation, production planners are prepared to take decisions on changed conditions, for example, with regard to requirement planning, resource plans, preproduction, or make-or-buy decisions.

SAP S/4HANA Predictive MRP - Data View

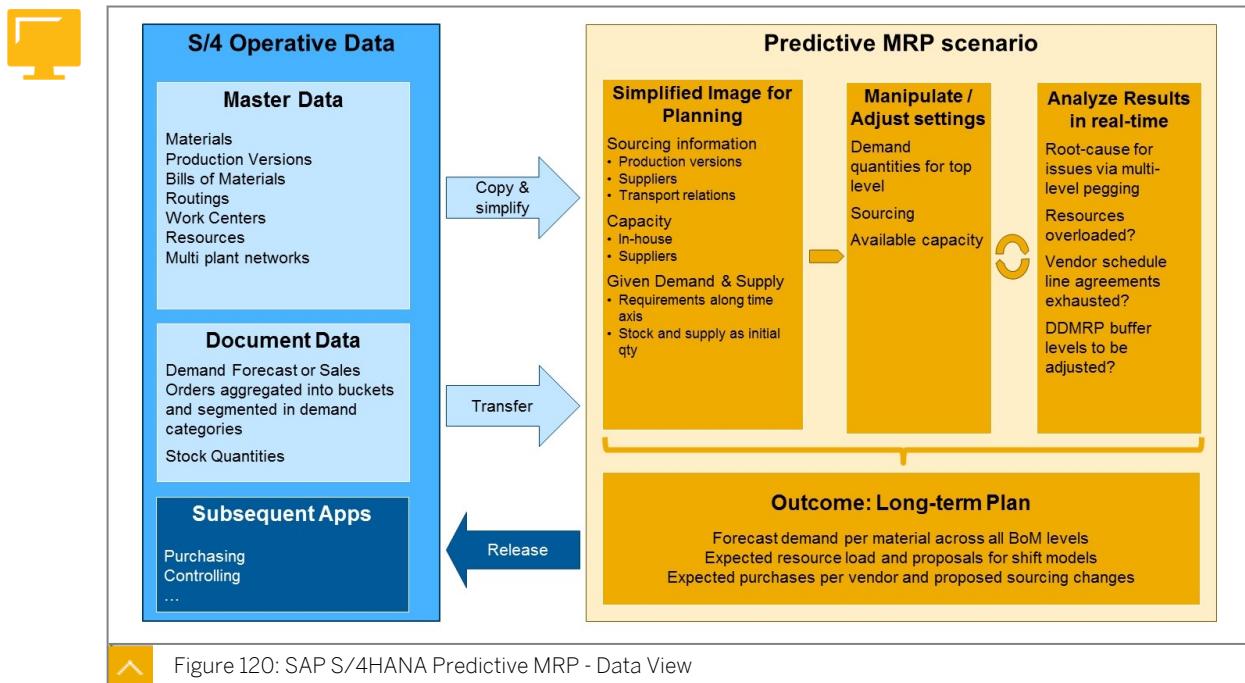


Figure 120: SAP S/4HANA Predictive MRP - Data View

In this app, you define which reference data is to be considered as reference data for a simulation. Then, you start the creation of a simulation. If you want to use the same reference data in an additional simulation, you need to copy the simulation based on the reference data. Then, you make the changes you want to simulate, and compare the two simulations.

All relevant demands are distributed over the specified bucket data and displayed in the simulation plan as defined in this app.

Create Planned Independent Requirements (PIRs)

Business Example

In this exercise, you will create some Planned Independent Requirements (PIRs) for a material. These PIRs will be planned using an MRP Live planning run in the next exercise of this course.



Note:

This course uses the characters **##** as a placeholder for your group number.

Whenever you see **##** in an exercise step, replace it with your group number.

1. Log on to your SAP Fiori launchpad home page and start the SAP Fiori app called *Maintain PIRs*.
2. Select your MRP controller **0##** for plant **1010**. Change to weekly periods and select your finished product **T-F1##** with description **Extreme group ##**. Maintain PIRs of 50 pieces starting in the current week from today, for the next four weeks. Save your PIRs.



Note:

The *My Area of Responsibility* screen automatically opens. If you later want to return to this screen and change some of the settings, you can do so from within the *Maintain PIRs* app by clicking on your user icon and selecting *App Settings* → *Area of Responsibility* and clicking on the arrow icon next to this option.

Create Planned Independent Requirements (PIRs)

Business Example

In this exercise, you will create some Planned Independent Requirements (PIRs) for a material. These PIRs will be planned using an MRP Live planning run in the next exercise of this course.



Note:

This course uses the characters ## as a placeholder for your group number.

Whenever you see ## in an exercise step, replace it with your group number.

1. Log on to your SAP Fiori launchpad home page and start the SAP Fiori app called *Maintain PIRs*.
 - a) Choose and start the Maintain PIRs app from the enterprise search function.
 - a) Choose the *Maintain PIRs* app. You can find this app in tile group *Manufacturing*.



Note:

If you get a system message to set your area of responsibility, execute the following steps:

- i. Start the personalize mode by choosing *Personalize* on the top right of the screen.
- ii. Choose *MRP-Settings*.
- iii. Choose *Area of Responsibility*.
- iv. Plant 1010
- v. MRP controller 0##

- b) Choose *OK* to close the following welcome message you see on your screen:
 - c) In the field *Material*, enter **T-F1##**. Make sure the *Version Active* field has the value *n/a*.
2. Select your MRP controller **0##** for plant **1010**. Change to weekly periods and select your finished product **T-F1##** with description **Extreme group ##**. Maintain PIRs of 50 pieces starting in the current week from today, for the next four weeks. Save your PIRs.



Note:

The *My Area of Responsibility* screen automatically opens. If you later want to return to this screen and change some of the settings, you can do so from within the *Maintain PIRs* app by clicking on your user icon and selecting *App Settings* → *Area of Responsibility* and clicking on the arrow icon next to this option.

- a) Choose the *Expand Header* icon and enter **1010** in the field *Plant* and **0##** in the field *MRP Controller*. Using the switch in the field *AOR Status* switch on this combination (that is, switch it to status *AOR Is Assigned*).
- b) Choose *Back* to return to the *Maintain PIRs* app.
- c) Choose the *Expand Header* icon and change the *Period Indicator* to **Weekly (W)** periods.
- d) In the field *Material*, enter **T-F1##**. Make sure the *Version Active* field is empty (that is, empty it if there is still a value visible in this field), and choose *Go*.
- e) Select the line for your finished product **T-F1##** and choose the *>* icon at the right side of the screen next to the selected line.
- f) Choose *Edit*, and maintain Planned Independent Requirements (PIRs) of 50 pieces starting in the third week from today for the following four weeks.
- g) At the top of the screen, under *General Information*, toggle the switch *Version Active* to **Yes**, and choose *Save*.
- h) Choose the *Home* button to navigate back to the SAP Fiori launchpad home page.

Unit 5 Exercise 9

Monitor and Handle Undercoverage Situations

Business Example

You have to create another sales order to simulate an undercoverage situation, which will be monitored with the *Monitor Material Coverage* app, and solved with an MRP run.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Check your material coverage with the *Monitor Material Coverage* app. Use the following information:

Field	Value
Material	T-F1##
Plant	1010
Shortage Definition	MRP-Standard

2. Convert the first planned order into a production order and release it with the Fiori App *Manage Production Order*.
3. Confirm the planned production quantity on production order header level in the T41 system.

Monitor and Handle Undercoverage Situations

Business Example

You have to create another sales order to simulate an undercoverage situation, which will be monitored with the *Monitor Material Coverage* app, and solved with an MRP run.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Check your material coverage with the *Monitor Material Coverage* app. Use the following information:

Field	Value
Material	T-F1##
Plant	1010
Shortage Definition	MRP-Standard

- a) In the SAP Fiori launchpad, start the *Monitor Material Coverage - Net* app from the group *Plan to Produce*.
- b) Enter the data from the table.
- c) Select the material with the checkbox on the left, and choose the *Manage Material* button.
- d) Start the MRP run by choosing the button.
- e) Navigate back.
- f) Which type of element has been created in order to cover the shortage situation?

A planned production order has been created.

- g) Convert the first planning order into a production order by selecting the arrow next to the word *Edit* in the line of the planned order that you want to convert. Now, choose *Convert*, and confirm the conversion into the production order by choosing *OK*.



Note:
MRP Live: Control Parameters

Use

You use the control parameters to determine how the planning run is to be executed, and which results are to be produced.

- h) Check the MRP-run parameters by selecting the person symbol in the top-right and then choose the MRP-settings.
2. Convert the first planned order into a production order and release it with the Fiori App *Manage Production Order*.
- a) Open the Fiori App – Manage production orders via the enterprise search you are familiar with.
 - b) Choose *OK* to close the welcome message you see on your screen concerning the assignment of an area of responsibility. You are now on the screen where you can set your area of responsibility.
 - c) Close the *Quick Tour* window and enter **Plant 1010** and **Production Supervisor YB1** and select **GO**. If the AOR status is not **ON**, Switch the AOR Status to **ON**, if it is already **ON** or you have changed now to **ON**, then go back to the Fiori App *Manage Production Order* by selecting the arrow to the right, next to the SAP log.



Note:
The *My Area of Responsibility* screen automatically opened. If you later want to return to this screen and change some of the settings, you can do so from within the *Manage Production Order* app by choosing your user icon and selecting *App Settings* → *Area of Responsibility* and choosing the arrow icon next to this option.

- d) Find your production order by setting the filter *Status* field to *All statuses*, *Issue Type* to *no filter* and *Delay Duration* to *>= 0 Hours.*, enter your Production order number in the field *Order* and select **GO**.
 - e) Choose your Production order by selecting the checkbox on the left hand side and then select the *Release button*.
 - f) Leave the Fiori App.
3. Confirm the planned production quantity on production order header level in the T41 system.
- a) Log-on to the T41 system and enter **/CO15** in the command field and enter your production order number in the field *order*.
 - b) Do not change any data, if the *Yield Quantity* field has not data, enter **10** and then select **SAVE**, otherwise simply select **SAVE**.



LESSON SUMMARY

You should now be able to:

- Describe manufacturing in SAP S/4HANA

Unit 5

Lesson 4

Describing Sales in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe sales in SAP S/4HANA

Sales in SAP S/4HANA

Order and Contract Management



Business Areas:

Order and Contract Mgmt.

Business Capabilities:

Sales Master Data Mgmt.

Price Mgmt.

Sales Contract & Quotation Mgmt.

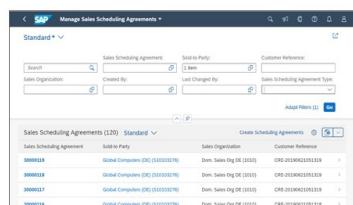
Sales Order Mgmt. and Processing

Sales & Solution Billing

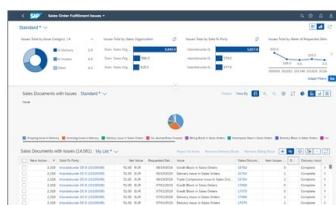
Sales Rebates Mgmt. & Incentive and Commissions Mgmt.

Claims, Returns and Refund Mgmt.

Sales Monitoring and Analytics



Manage Sales Scheduling Agreement



Sales Order Fulfillment Issues



Billing Document

Figure 121: Order and Contract Management

Sales Master Data and Price Management

- Leverage a simplified data model and a central Business Partner approach.
- Create, modify, or display sales master data in a harmonized user experience.
- Control price master data definition and execute price calculation.

Sales Contract and Quotation Management

- Manage contract types, such as sales contract, condition contract for settlement management, scheduling agreement, and trading contract for Global Trade Management.
- Use real-time and predictive analytics to effectively manage Sales Contracts and Sales Quotations.

Sales Order Management and Processing

- Provides a 360-degree view of sales order execution. Maximize low-touch order rate, leveraging exception-based order management.
- Prevent overall delivery delay with embedded predictive analysis. Streamline sales processes with workflow.

Sales and Solution Billing

- Cover manual and automated billing and invoicing scenarios.
- Combine external billing data with sales documents into one single invoice.

Sales Rebates Management and Incentive and Commissions Management

- Manage business volume-based sales rebate with condition contract settlement.

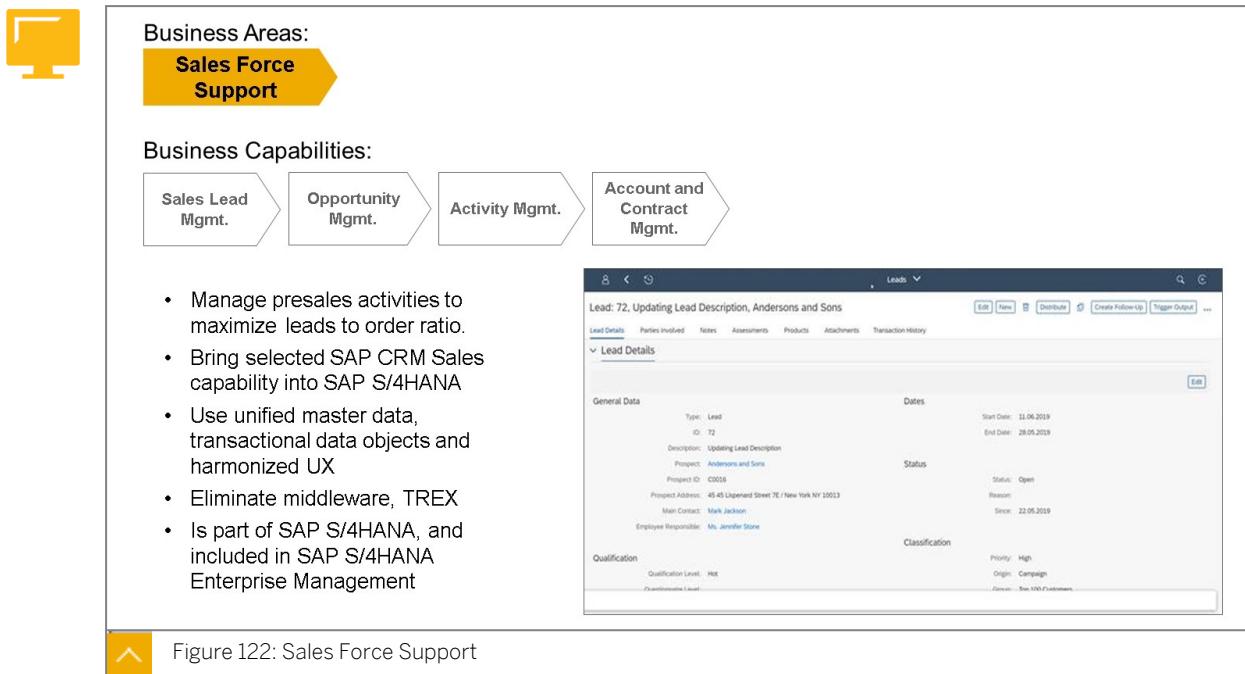
Claims, Returns and Refund Management

- Reduce customer service and support cost by streamlining return processes and customer return analysis.

Sales Monitoring and Analytics

- Monitor and analyze core sales business processes, from quotations and contracts, to sales orders, including their fulfillment up to invoices.
- Sales KPIs integrated in SAP Cloud Analytics.

Sales Force Support



Sales Lead Management

Collects any potential sales information at the beginning phase of sales pipeline.

Opportunity Management

Records recognized sales possibilities and tracks the progress across the sales cycle.

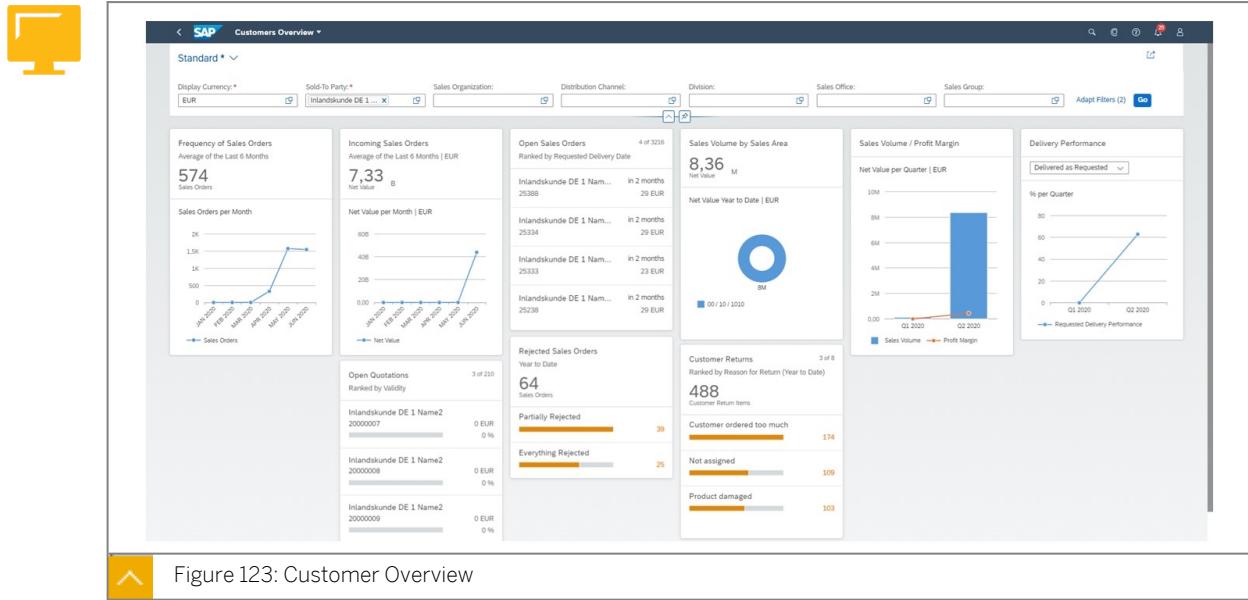
Activity Management

Plan, track, and organize sales activities throughout the entire customer relationship life cycle.

Account and Contract Management

Delivers sales force an holistic view of each customer with identified key contact and account data.

Sales Monitoring and Analytics



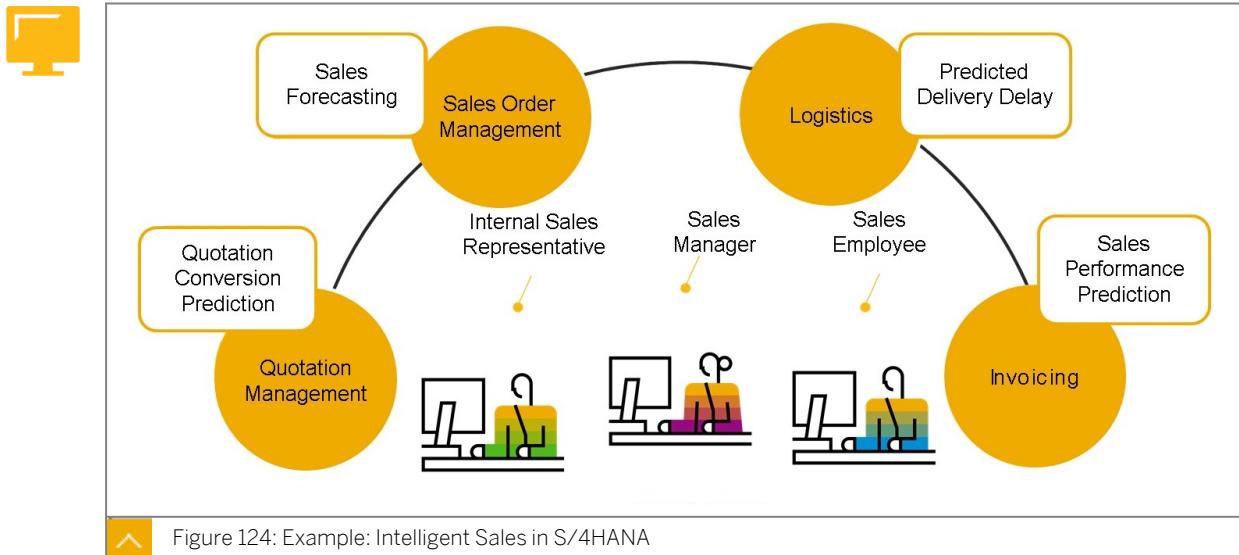
The figure, Customer Overview, provides an overview of the main key performance indicators in SAP S/4HANA.

The new *Customers Overview* for SAP Fiori app displays the most important sales numbers of selected customers, including the following information:

- Frequency and average net value of incoming orders
- Sales volume and margin
- Open and rejected sales orders
- Latest returns
- Open quotations
- Delivery performance of the last few quarters

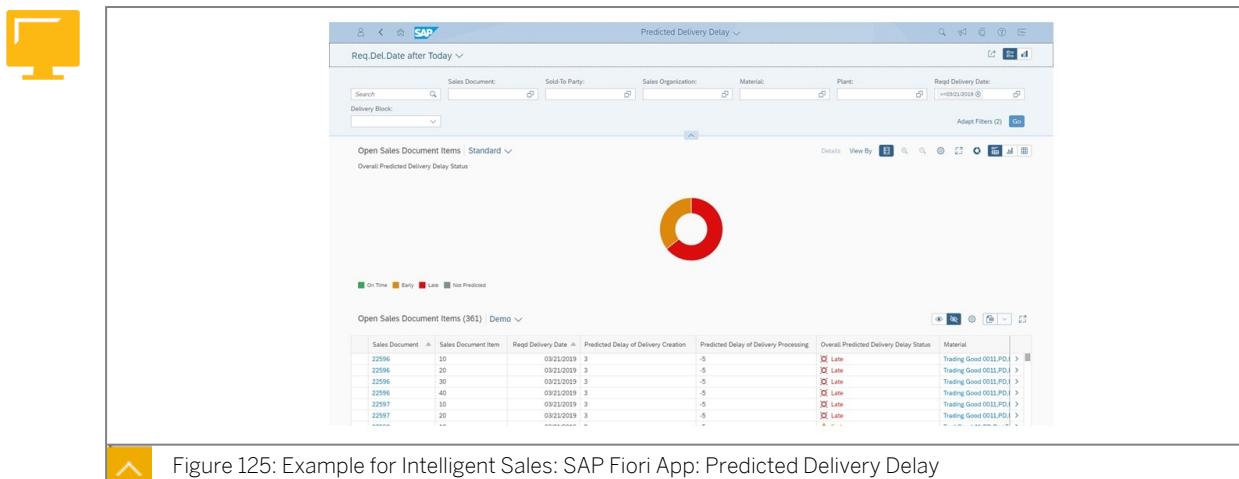
The benefits of the *Customers Overview* are as follows:

- Immediate domain-specific overview of customer sales situations
- Intuitive forward navigation to the related application for further analysis



SAP S/4HANA Sales contains analytical applications that enable a company to monitor and analyze all business data. The embedded real-time sales monitoring and analytical capabilities offer a full coverage of features across all core sales processes. Top-class performance is provided by leveraging Core Data Serviced (CDS) views and SAP HANA capabilities.

Embedded analytics relieves people working in sales from repeated manual tasks. Instead of having to run multiple reports to get a feel for the performance of a product group for example, it is possible to see real-time performance information using just one embedded analytical application in SAP S/4HANA Sales.



The predicted delivery Fiori App allows a company to identify the risk of potential delays for its open sales orders. It provides important insights into the current sales order fulfillment situation. The goal is to be able to take action early on to avoid the predicted delays. The app does this by focusing on the predicted delay of delivery creation and the predicted delivery processing delay. The system can predict the delivery delay based on what it has learned from its training of the predictive model.

For the training of the predicted delay of delivery creation, the system uses the planned delivery creation date of deliveries as follow-up documents to open sales orders. To do this, the system compares the planned delivery creation date from a confirmed schedule line of a

sales order item (that has already been delivered), with the actual delivery creation date of the corresponding delivery.

For the training of the predicted delivery processing delay, the system uses past data to compare the planned goods issue date of all deliveries for which the goods issue is completed, with the actual goods movement date of the follow-up deliveries. This calculation is carried out for every delivery for a corresponding sales order item. The system then takes the maximum delivery processing delay of the analyzed deliveries. This means the delivery with the highest delay as the predicted delivery processing delay.

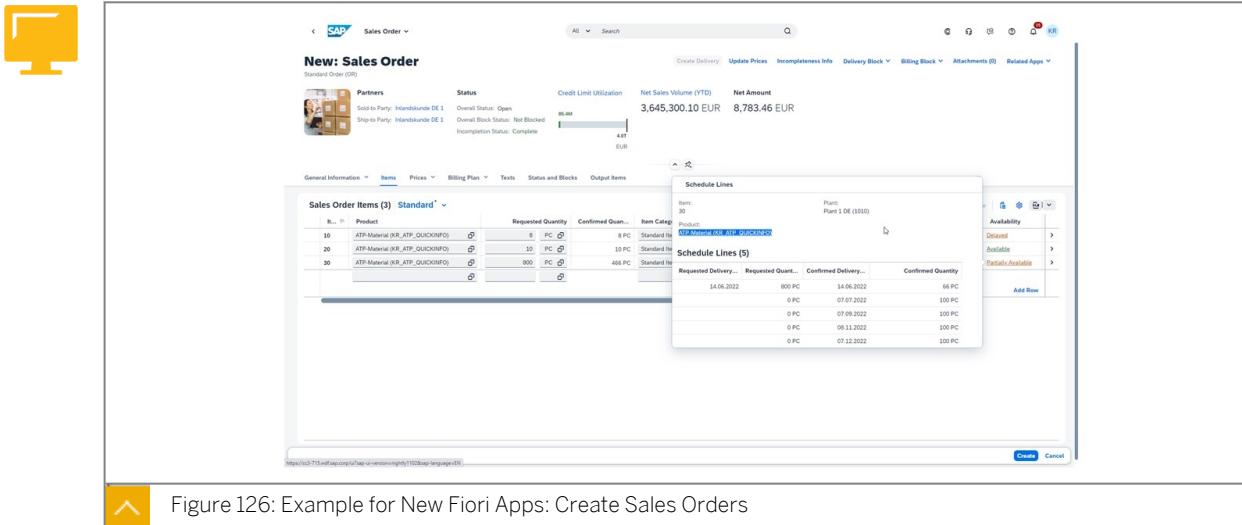


Figure 126: Example for New Fiori Apps: Create Sales Orders

The sales function is at the heart and soul of any business, and SAP S/4HANA Cloud covers the needed sales and distribution lifecycle, from pre-sales activities, sales order processing, to shipping and billing. It provides an organization with greater visibility of real-time data (customer orders, pending delivery, delivery block, and so on) across multiple locations.

There are different ways you can process sales orders in the SAP system, depending on your specific needs.

Professional users are confronted with complex scenarios, and for this SAP recommends using the Create Sales Orders SAP Fiori app (Transaction VA01!). This app is an SAP GUI for HTML transactions offering an HTML Graphical User Interface, with a broad offering of features and functions of a sales order. These transactions are available in the SAP Fiori theme to support a seamless user experience across the SAP Fiori launchpad.

With SAP S/4HANA 2021 release, SAP delivers the first version of the new SAP Fiori app "Create Sales Orders". Fiori App ID: F3893

Please note that this app is not a true successor of the Create Sales Orders app (VA01), as it does not contain all the fields that the original app contains, and this application is now offering an SAP Fiori User Interface with a limited offering of features and functions compared to the HTML GUI application. It simplifies the daily work of sales employees, and presents all important information on a single screen – including easy navigation and optimized visualization, and allows people to do what they do best – be innovative and creative.

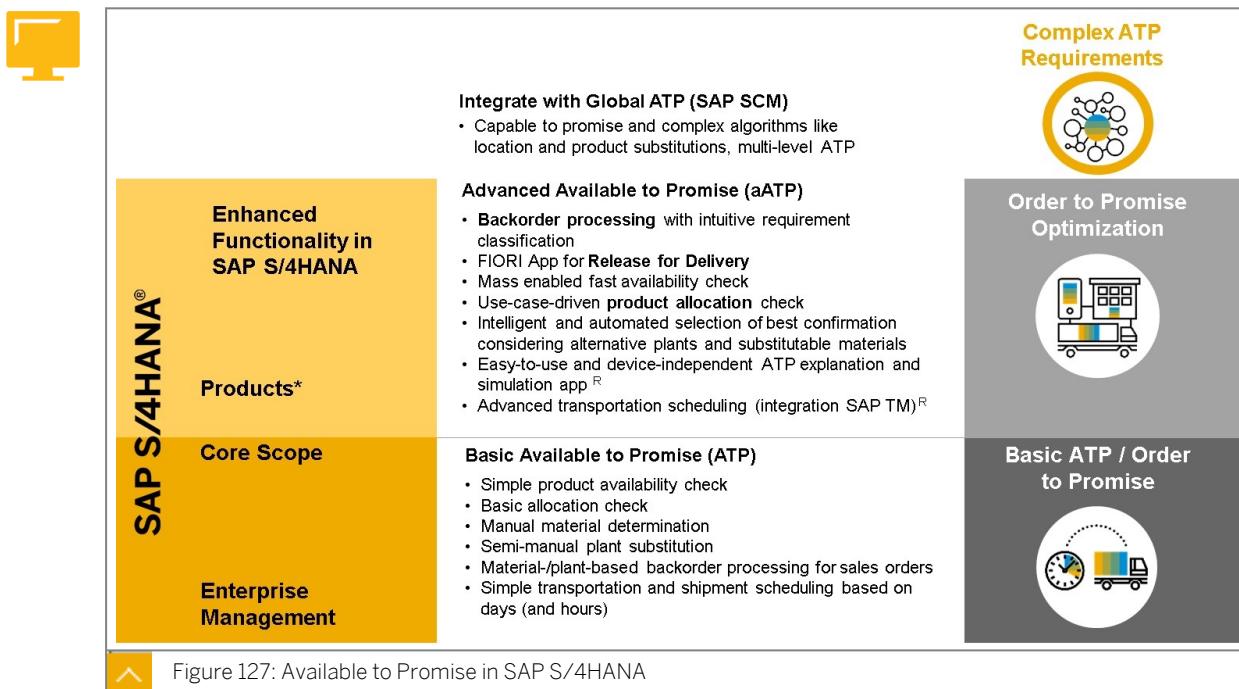
The new Fiori app is fully integrated with other customer-facing apps, and enables straightforward navigation to related apps such as credit risk, sales volume analysis, and sales orders.

The clear, intuitive user interface significantly minimizes training requirements for users, and ensures higher throughput in sales, as the functionalities offer high transparency and a good overview. Keyboard navigation allows sales orders to be processed more quickly and

efficiently. The header area and the items have a clear structure. This means that a lot of relevant data is visible at a glance. Customer KPIs can be added or removed as needed. Relevant data such as credit limit and net sales can objectively support decisions in the sales process.

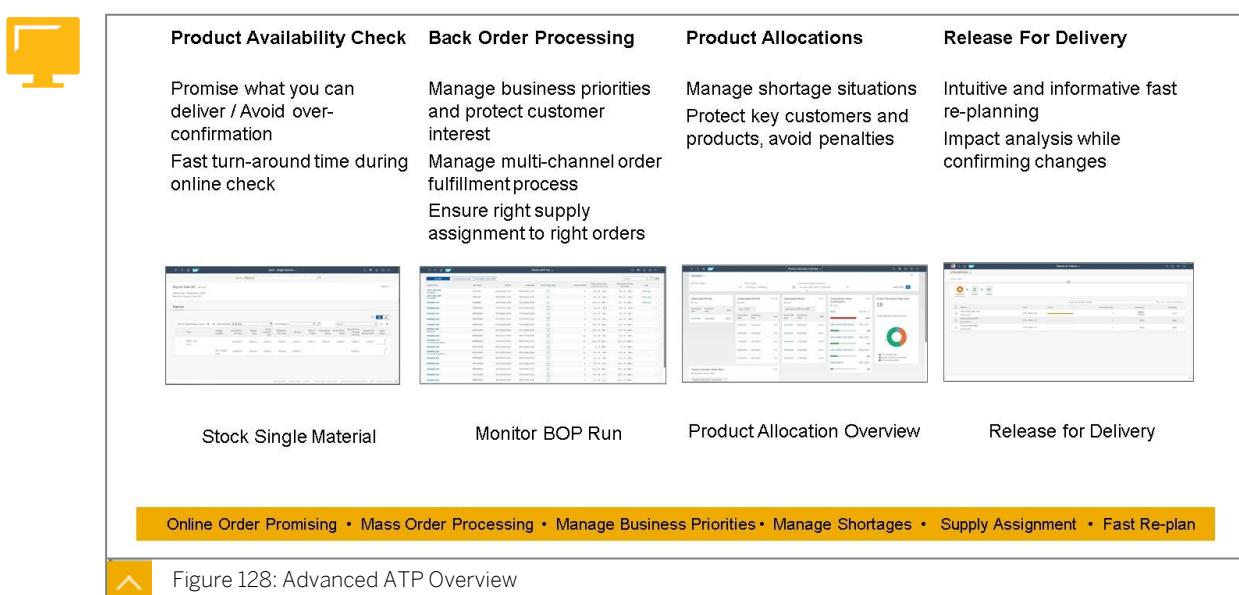
As known from the document chain, the process flow is displayed graphically and with semantic colors. Users recognize critical situations immediately, and can take countermeasures.

Available to Promise in SAP S/4HANA



The figure shows available to promise (ATP) in SAP S/4HANA.

Advanced ATP Overview



Product Availability Check

- Alternative-Based Confirmation: Initial determination of best plant to confirm a newly-created sales order requirement across multiple plants
- Time-phased check of availability of the desired product for the required quantity at the requested location
- Mass-enabled check against all kinds of supply elements
- Checks for SO and STO
- Support special stocks and batches

Back Order Processing

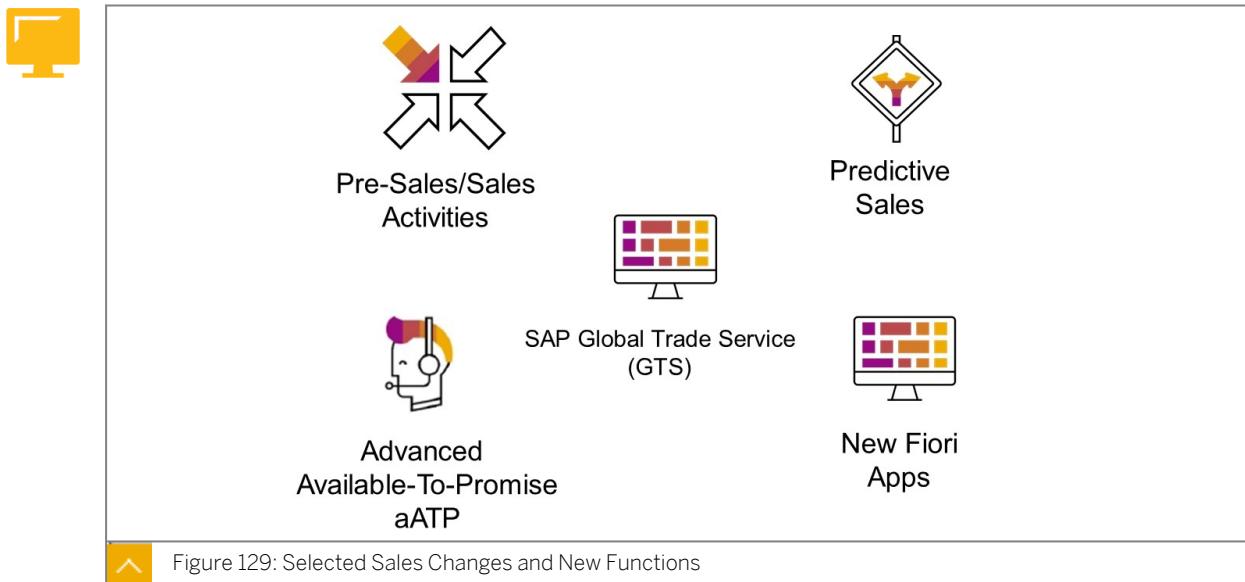
- Based on requirement segmentation and classification Win, Gain, Redistribute, Fill and Lose
- Filter and sorter for each segment
- SAP Fiori-based set up and result monitor
- Supply assignment
- Significantly faster than traditional rescheduling

Product Allocations

- Use Product Allocation Overview apps for analyzing and understanding the product allocation situation
- Download and upload assignment data in XLSX and CSV file format
- Easily delete multiple assignments
- Leverage field extensibility for product allocation object and sequence (including APIs)
- Use custom and additional standard fields as characteristics for stock transport orders

Release for Delivery

- Visualize constraints imposed by delivery groups
- Visualize the time zone of the delivering plant
- SAP Fiori-based interactive changes to sales order confirms amounts before releasing the orders to delivery
- Impact simulation of current ATP situation
- Direct navigation to Sales Order



Pre-Sales Support

Computer-Aided Selling (SD-CAS) is not available in SAP S/4HANA. SAP recommends that customers use SAP C/4HANA: SAP Sales Cloud or SAP CRM on-premise (side-by-side with SAP S/4HANA).

Predictive Sales

With the digitalization of enterprise business, sales people need to be more agile than ever to be successful in a highly competitive environment. However, they find it time-consuming to identify potential issues and thus, cannot react quickly.

With the Embedded Analytics and Machine Learning capabilities in Intelligent Enterprise, Embedded Predictive Analytics is possible. Sales people don't have to spend hours every week on numerous spreadsheets to predict the future.

Two examples to illustrate how the embedded predictive analytics works.

1. You can use Quotation Conversion Prediction to track to what extent your quotations are being converted to sales orders before expiring. By leveraging machine learning capabilities, you can gain predictive insights into quotation conversion by comparing actual and predicted results. With precise predictions, customers can focus more on what's value-generating.
2. With big data explosion and the machine learning capabilities, the system helps forecast if sales targets could be met or exceeded, and propose proper follow-up actions. With this app, you can compare your currently achieved sales (for example, sales volume) with predictions which are based on predictive modeling. By selecting an existing sales plan, you can analyze to what extent your sales targets are being achieved. Using this app, you can gain predictive insights into your current sales performance.

Advanced Available-To-Promise (aATP)

Before SAP S/4HANA was introduced, available-to-promise (ATP) functionality was already available in various SAP products. In SAP ERP, a so-called "traditional" ATP check can be executed: a simple product availability check (in one plant) is supported. A relatively simple production allocation check is also available. SAP ERP also contains backorder processing functionality and simple transportation and shipment scheduling.

The SAP Supply Chain Management system (SAP SCM) contains functionality for Advanced Planning and Optimization (APO) which included a functionality known as Global ATP (gATP). It has much more features and functions than the before-mentioned "traditional" ATP check, including a rules-based check which supports alternative plants and/or alternative products to be checked. It also supports sophisticated backorder processing and transportation and shipment scheduling.

Advanced ATP (aATP) in SAP S/4HANA aims to combine these two ATP functionalities by providing a very fast product availability, and product allocation check. Advanced ATP also supports alternative-based confirmations, using alternative plants and substitute materials. Backorder processing (also: interactively) and transportation and shipment scheduling is also included. The solution is based on a unified and simplified data model (which is part of SAP S/4HANA).

The components of Advanced ATP (aATP) are:

- Product Availability Check (PAC)
- Product Allocations (PAL)
- Backorder Processing (BOP)
- Alternative Based Confirmation (ABC)
- Release for Delivery (RefDy)

New Fiori Apps

My Sales Overview app to access a Customer – 360 View is only another example of many helpful Fiori Apps to get, for example, instant insights into sales performance. The sales desk clerk will highly appreciate the Sales Order Fulfilment app, not only to get all sales order issue at a glance but, in addition, issues can be immediately resolved because the system supports the user with provision of the needed apps.

SAP Global Trade Service

Before SAP S/4HANA, two software solutions for supporting international trade transactions were available: SAP ERP SD Foreign Trade (SD-FT) and SAP Global Trade Services (GTS). SAP GTS can be installed on an additional instance as a separate entity. But building on its SAP GTS experience, SAP has selectively developed foreign trade functionality within SAP S/4HANA itself. For example, SAP firstly redeveloped the Intrastat functionality in SAP S/4HANA. The newly developed foreign trade functionality in SAP S/4HANA is grouped together under SAP S/4HANA - International Trade. All companies that use the classic SAP GTS (as a separate entity) can deploy SAP GTS alongside SAP S/4HANA on-premise. The classical Foreign Trade functionality (SD-FT) is not available in SAP S/4HANA.

Relevant SAP Notes:

- Business Partner (SAP Note 2265093)
- Customer Vendor Integration FAQ (SAP Note 2713963)
- S/4HANA Finance Credit Management (SAP Note 2270544)
- S/4HANA International Trade Management (SAP Note 2223144)
- Migration of Financial Documents (SAP Note 2520879)
- SAP Condition Contract Settlement (SAP Note 2267377)
- SAP Revenue Accounting (SAP Note 2267342)
- Optional: SAP S/4HANA new Output Management (SAP Note 2228611)

SAP S/4HANA Analytics approach – (SAP Note 2228056)

Pricing data model changes (SAP Note 2267442)

Custom code check (SAP Note 2228098)

Optimize parallel execution of conversion reports for SD (SAP Note 2353814)

Unit 5

Exercise 10

Create a Sales Order



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Create a sales order using the following information:

Field	Value
Order Type	OR
Sales Organization	1010
Distribution Channel	10
Division	00
Sold-To Party	T-OVW##
Cust. Reference	4455##
Requested delivery date	today + 7 days
Product	T-F1##
Requested Quantity	2
Requested delivery date	today + 7 days

2. Write down the net value.

Write down the net value.

Save the sales order.

Write down the order number.

Track Sales Orders

Business Example

You are a sales representative. In order to get an overview of your sales orders and their status, you have to go to the *Track Sales Order* app.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Start the *Track Sales Order* app in the SAP Fiori launchpad group *Order to Cash*. Select your sales order according to the sold-to-party **T-ovw##**.
2. Configure the result table to also show the Customer reference value in the second column.

Create a Sales Order



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Create a sales order using the following information:

Field	Value
Order Type	OR
Sales Organization	1010
Distribution Channel	10
Division	00
Sold-To Party	T-OVW##
Cust. Reference	4455##
Requested delivery date	today + 7 days
Product	T-F1##
Requested Quantity	2
Requested delivery date	today + 7 days

- a) Start the *Manage Sales Order* app in your *Order to Cash* group on the SAP Fiori launchpad.
 - b) Choose the *Create Button* and select *Create Sales Order*.
 - c) Enter the *Sales Order Type*, *Sales Organization*, *Distribution Channel*, and *Division* from the Table above and select *Create*.
 - d) Complete the sales order by entering the *Sold-to-party*, *Customer Reference*, and *Requested Delivery Data* (today + 7 days).
 - e) Select the *Items* section above, and enter the product, quantity, and requested delivery data.
2. Write down the net value.

Write down the net value.

Save the sales order.

Write down the order number.

- a) To save the sales order, choose Save at the bottom right.

Result

The order number displays in a dialog box.

- b) Choose the SAP logo on the top left to leave the screen.



Note:

You can ignore the message that data will not be saved, as you have already got a sales number.

Track Sales Orders

Business Example

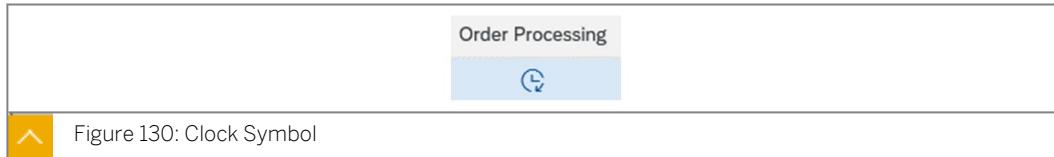
You are a sales representative. In order to get an overview of your sales orders and their status, you have to go to the *Track Sales Order* app.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Start the *Track Sales Order* app in the SAP Fiori launchpad group *Order to Cash*. Select your sales order according to the sold-to-party **T-0VW##**.
 - a) In the *Sold-to-party* field, enter **T-0VW##**.
 - b) Figure out the Order Processing status by moving the mouse over the clock symbol in the *Order Processing* column.

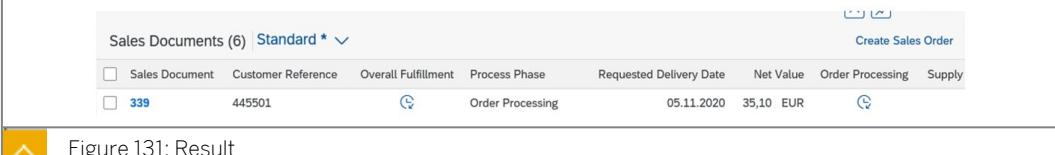


2. Configure the result table to also show the Customer reference value in the second column.
 - a) Choose the  icon on the right.

b) Mark the *Customer reference* field in the pop-up box and move the *Customer reference* column to the second row using the  buttons.

c) Choose *OK*.

Result



Sales Documents (6) Standard * 								
<input type="checkbox"/> Sales Document	Customer Reference	Overall Fulfillment	Process Phase	Requested Delivery Date	Net Value	Order Processing	Supply	
<input type="checkbox"/>								
<input type="checkbox"/> 339	445501		Order Processing	05.11.2020	35,10 EUR			

 Figure 131: Result

d) Close the app.

Monitor and Resolve Supply Chain Issues with the Sales Order Fulfillment Cockpit

Business Scenario

You are responsible for the flow of the sales order processing. To work in an efficient way, you decide to use the Sales Order Fulfillment Issue app to analyze and resolve issues that impede sales orders from being fulfilled.

1. Launch the Sales Order Fulfillment (Analyze and Resolve Issues) app from your Analytics group.
2. Figure out the number of issues according to the Sales Organization Germany and US.
3. Select the Issues within the Sales Organization Germany.
4. Drill down to a particular issue by using the pie chart in the middle section by choosing *Billing Block in Sales Order*.
5. Select the first issue line in the lower section. Now, you will realize that the system enables functions to solve the issue.

There is no need to solve this issue now, it is just to make you aware, that here, analytical and transactional functions are merged. Even we used an SD example, this is an underlying concept across all line of businesses.

Monitor and Resolve Supply Chain Issues with the Sales Order Fulfillment Cockpit

Business Scenario

You are responsible for the flow of the sales order processing. To work in an efficient way, you decide to use the Sales Order Fulfillment Issue app to analyze and resolve issues that impede sales orders from being fulfilled.

1. Launch the Sales Order Fulfillment (Analyze and Resolve Issues) app from your Analytics group.
2. Figure out the number of issues according to the Sales Organization Germany and US.
 - a) Sales Organization Germany: _____
 - b) Sales Organization US: _____
3. Select the Issues within the Sales Organization Germany.
 - a) Select the *Issues within the Sales Organization Germany* by selecting the bar in the graphic *Issues Total by Sales Organization* and choose GO.
4. Drill down to a particular issue by using the pie chart in the middle section by choosing *Billing Block in Sales Order*.
 - a) Click into the pie chart in the middle section of the *Delivery Issue in Sales Orders* sector.
5. Select the first issue line in the lower section. Now, you will realize that the system enables functions to solve the issue.

There is no need to solve this issue now, it is just to make you aware, that here, analytical and transactional functions are merged. Even we used an SD example, this is an underlying concept across all line of businesses.



LESSON SUMMARY

You should now be able to:

- Describe sales in SAP S/4HANA

Unit 5

Lesson 5

Describing the Supply Chain in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the supply chain in SAP S/4HANA

Supply Chain in SAP S/4HANA

Logistics in the Intelligent Enterprise

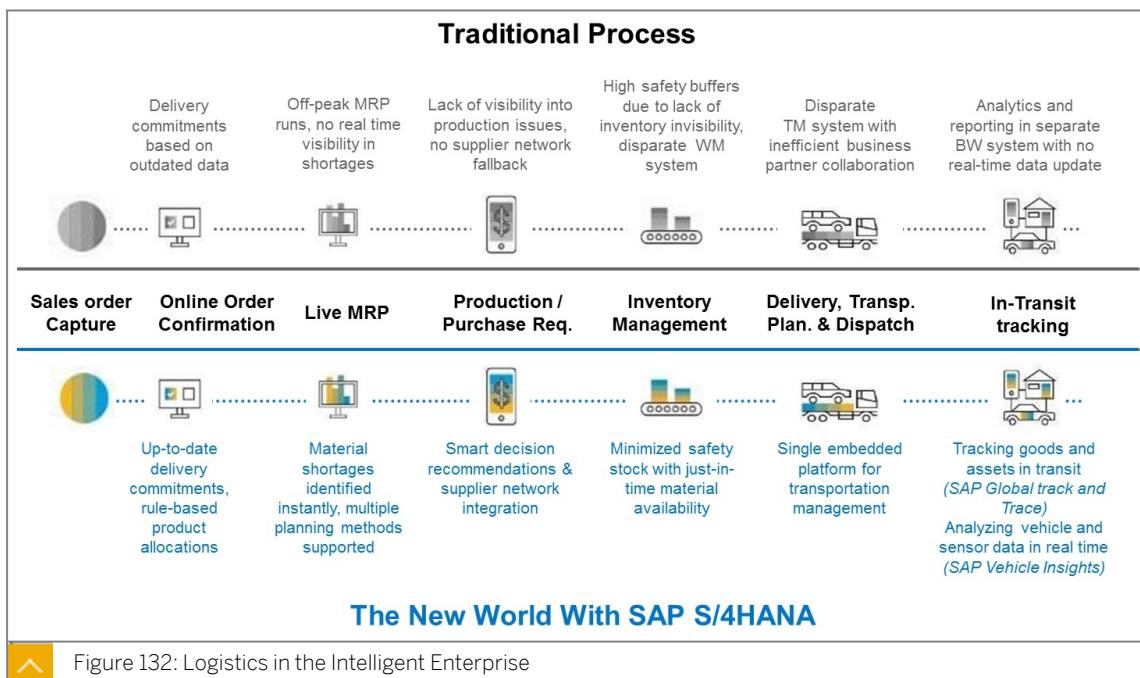


Figure 132: Logistics in the Intelligent Enterprise

The new logistics world with SAP S/4HANA substitutes the traditional functionality with new innovative solutions that are now included rather than optional additions. The simplified data model is the enabler to gain operational efficiency, and provides greater real-time insights – meaning planning and execution by exception, instead of losing time checking everything. SAP S/4HANA logistic functionalities overcome the traditional “Record” approach forward to a system which supports decisions and enables a highly efficient exception-based planning and execution.

High service level guaranteed by lower inventory levels and simplified operations and processes are the outcome.

Supply Chain

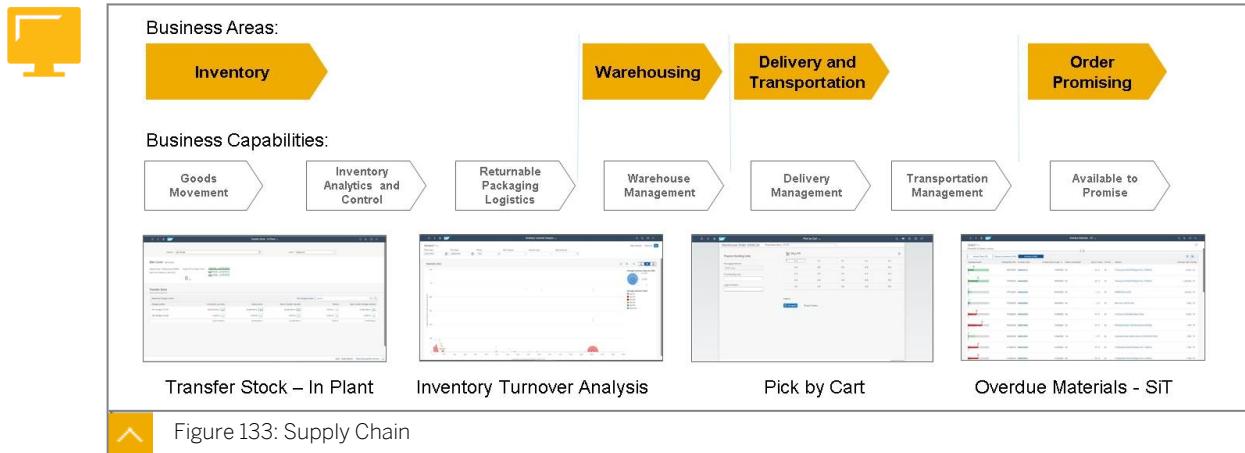


Figure 133: Supply Chain

Goods Movement

Use simplified GI postings for transfer and scrapping.

Experience real-time, high-volume processing using sensor data.

Benefit from locking elimination and material ledger valuation.

Use simplified apps for the following:

- Goods Receipt for PO
- Initial entry
- Goods Receipt without reference

Inventory Analytics and Control

Experience the power of simplification by using state-of-the-art analytical apps, which take full advantage of the simplified data model including 40 digit mat-no. and the power of the SAP HANA database. Optimize inventory and material flows based on real-time information.

Use simplified apps for the following:

- Physical Inventory Analysis

Returnable Packaging Logistics

Track shipping and receiving of returnable packaging materials to and from business partners.

Gain visibility in materials distribution, and reduce overall volume of materials by integrating logistics information into a single version of the truth.

Warehouse Management

Leverage embedded EWM to perform standardized inbound and outbound processing with internal movements, physical inventory, and reporting, in one system (master data, customizing, and UX).

Track alternative quantities with int. Catch Weight Management.

Delivery Management

Execute and confirm on transportation demands from all sources (Sales Order, Purchase Order, Stock Transport Order) in an automated fashion.

Leverage electronic collaboration to accelerate the process and avoid redundancies and human error.

Transportation Management

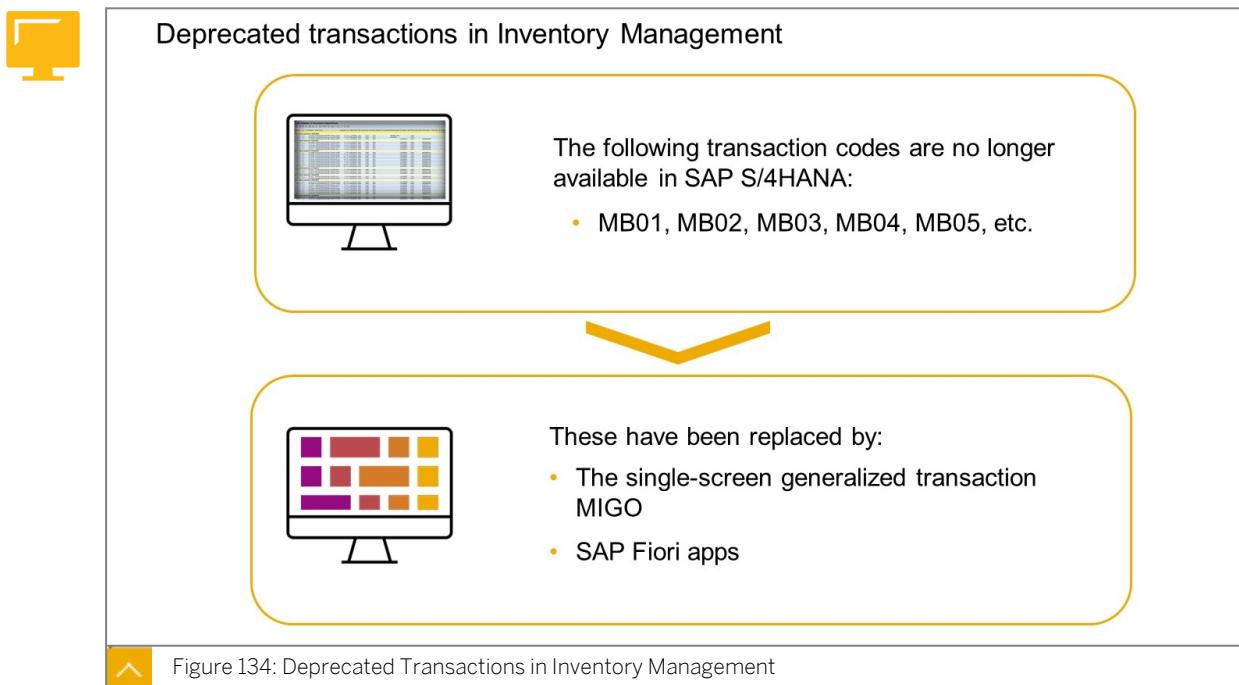
Leverage embedded Transportation Management to handle freight agreements and delivery based charges, as well as basic bookings, plan and execute your transports, use functionality for basic agency billing and subcontracting, as well as dangerous goods management.

Available to Promise

Available to promise: New ATP algorithm based on HANA embedded in mass component check in production.

Improve percentage on-time delivery.

Leverage just-in-time scenarios for inbound and outbound.



See also SAP Note [2210569](#)

The BAPIs available are:

- BAPI_GOODSMVT_CREATE
- BAPI_GOODSMVT_CANCEL

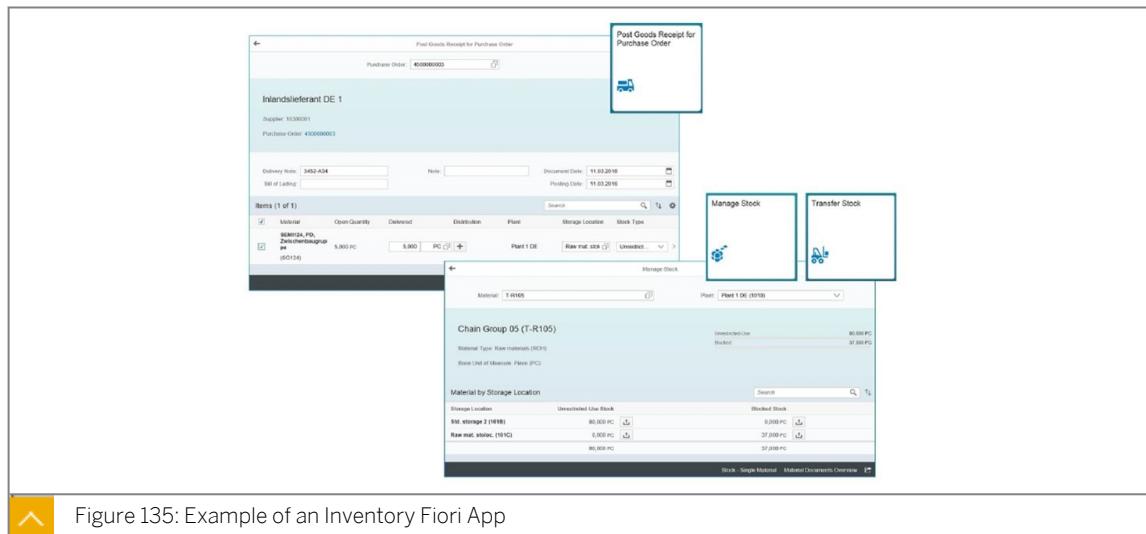


Figure 135: Example of an Inventory Fiori App

Transactional apps in Inventory Management cover the following tasks:

- Goods Receipt for Purchase Order
- Transfer Stock: this SAP Fiori app enables you to perform stock transfers from one storage location to another, and manage postings between stock types unrestricted-use stock and blocked stock.
- Manage Stock: this SAP Fiori app allows you to post an initial goods receipt or to post scrapping from stock.
- You can use the transactional SAP Fiori apps to create postings, and change data. The SAP Fiori apps in this area provide the following benefits:
 - A process flow is available for material documents.
 - On-the-fly calculated aggregated stock information is available.
 - A smart filter bar for flexible filter criteria is provided.
 - A responsive results table for flexible display is provided.

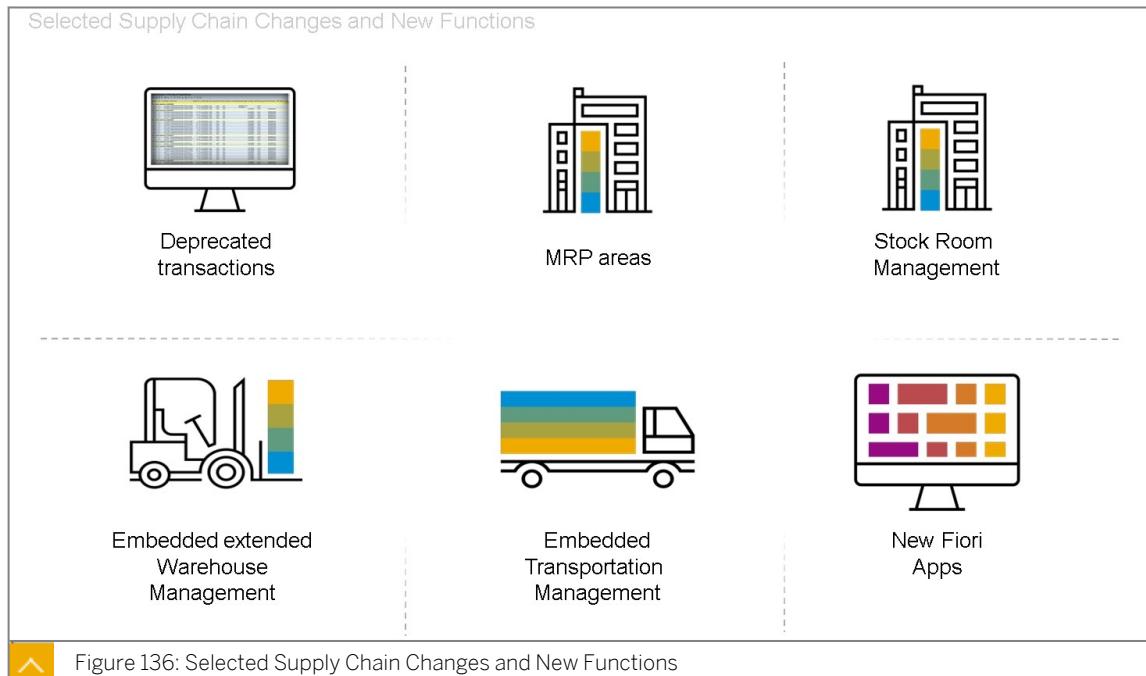


Figure 136: Selected Supply Chain Changes and New Functions

MRP-areas

Storage location MRP is replaced with MRP areas representing storage locations. In former ERP-versions, storage locations are either excluded from planning or planned separately. This used to be controlled by fields in the material master record (MRP 4 tab page). In SAP S/4HANA, MRP areas are now required to be able to (for example) plan certain storage locations separately. The SAP ERP material master (MRP 4 tab) fields related to storage location MRP area are no longer available in SAP S/4HANA.

Subcontracting

Subcontracting scenario: Materials to be provided to a subcontractor need to be planned using the MRP area logic. This is another example of a simplification in SAP S/4HANA is that subcontracting components in a subcontracting scenario now always need to be planned using a subcontracting MRP area. This means planning of subcontracting stocks and requirements in the make-up-stock planning section (no separate MRP area or stock segment for subcontractors).



Note:

Separate planning sections for subcontracting and requirements are not longer available in SAP S/4HANA. At the end, this means also simplified material master maintenance.

Stock Room Management

Stock Room Management (StRM) is basically the ECC warehouse management component (LE-WM), without the capability of supporting more complex warehouses. It is relevant for small warehouses with manual operations (that is, storage bin management).

Functionalities of LE-WM that are not part of stock room management are:

- Task & Resource Management (WM-TRM)
- Warehouse Control Unit interface (WM-LSR)
- Value Added Service (WM-VAS)
- Yard Management (WM-YM)
- Cross-Docking (WM-CD)
- Wave Management (WM-TFM-CP)
- Decentral WM (WM-DWM)

There are no innovations planned here, and Extended Warehouse Management (EWM) remains the strategic product.

SAP EWM in SAP S/4HANA

Before the release of SAP S/4HANA, the SAP Extended Warehouse Management (EWM) solution was only available in a decentralized environment, or as an SAP ERP add-on component. With the release of SAP S/4HANA, SAP EWM has been embedded into the system. This offers a customer a best-in-class warehouse management application that provides support for, and real-time transparency into, the management of product movements in a warehouse in a flexible and optimized way. Basic warehouse management features are available as part of the standard SAP S/4HANA license. More advanced features require an additional product license.

Embedded Transportation Management (TM) in SAP S/4HANA

SAP S/4HANA Supply Chain for Transportation Management (SAP TM) supports a customer in all activities related to the physical transportation of goods from one location to another. Examples of these activities are:

- Creating transportation requirements based on SAP S/4HANA documents like sales orders and/or purchase orders
- Planning transportation
- Selecting carriers
- Tendering transportation services
- Dispatching and monitoring transportation
- Calculating the transportation charges for both the ordering party and the transportation service provider
- Considering foreign trade and dangerous goods regulations



Note:
LE-WM and LE-TRA not the target architecture

Unit 5 Exercise 12

Create an Outbound Delivery



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Create the outbound delivery with reference to the sales order with shipping point **1010** and your *Ship-To Party* **T-ovw##**.

Write down the document number of the delivery.

2. Pick the material for the outbound delivery, and post the goods issue.

Create an Outbound Delivery



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Create the outbound delivery with reference to the sales order with shipping point **1010** and your *Ship-To Party* **T-*OVW##***.

Write down the document number of the delivery.

- a) Start the *Create Outbound Deliveries* app in your *Order to Cash* group on the SAP Fiori launchpad.
- b) Enter *Ship-To Party* **T-*OVW##***, *Shipping Point* **1010**, and *Planned creation date range* from today to the end of the year.

Ensure that you choose today's year.

Figure 137: Planned Creation Date

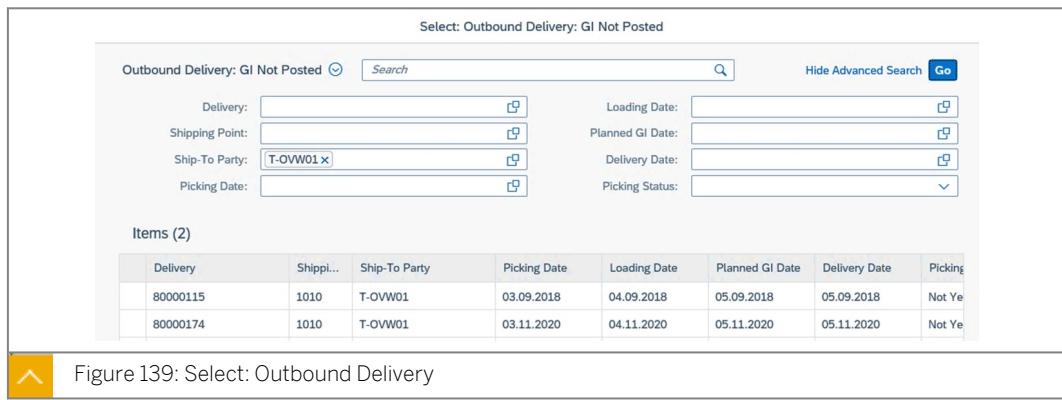
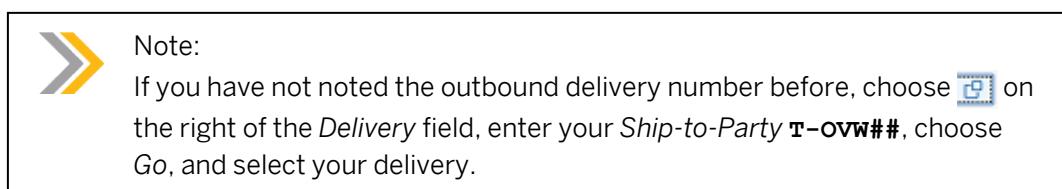
- c) To see a list of sales documents corresponding to your selection, in the top right corner, choose *Go*.
- d) Mark your sales order, and choose *Create Deliveries*.
- e) To navigate to the log, choose *Display Log*.
- f) Choose the *Deliveries* category.

You see the document number of the created outbound delivery in the log.

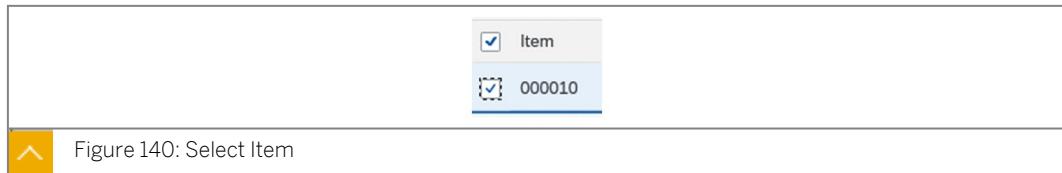


g) Navigate back to the SAP Fiori launchpad by choosing the SAP logo on the top left of the screen.

2. Pick the material for the outbound delivery, and post the goods issue.
 - a) Start the *Pick Outbound Delivery* app in the *Order to Cash* group on the SAP Fiori launchpad.
 - b) Enter the number of your outbound delivery in the corresponding field, and press Enter.



c) On the *Pick Outbound Delivery* screen, ensure that you are in the *Picking* process step and, for *Picking Quantity*, enter **2 pc**. Also ensure that you have selected the checkbox for your item line.



- d) Choose the *Copy Picking Quantity* button. Choose the *Save* button.
- e) In the same app, choose the *GI Ready* button to switch to the *GI Ready* view.
- f) To fulfill this step, on the bottom right of the screen, choose *Post GI*.



LESSON SUMMARY

You should now be able to:

- Describe the supply chain in SAP S/4HANA

Unit 5

Lesson 6

Describing Services in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe services in SAP S/4HANA

Services in SAP S/4HANA



Business Areas:

Service Master Data and Agreement Mgmt.

Business Capabilities:

Technical Assets, Structure, and History

Service Task List and Catalogs

Service Maintenance Plan

Service Contract Mgmt. and Warranty Mgmt.

Business Solution Contract Management

Service Parts Mgmt.

Service Parts Fulfillment

Service Parts Warehousing

Manage Business Solution Portfolio

Service Contract, Billing Plan

Figure 141: Service Support

Technical Assets, Structure, and History

- Provide precise information on customer location and installed equipment to call center, field service, depot repair, and sales staff.
- Plan and execute maintenance services with complete records of a piece of equipment or a system via equipment master data, maintenance plan, measuring point, task list, bill of materials, and so on.

Service Task List and Catalogs

- Streamline administration of recurring work by service task lists that define an authorized sequence of activities with required resources, tools, and materials. It also helps manage large-scale change to maintenance procedures, for example, as a result of change in legal regulations.

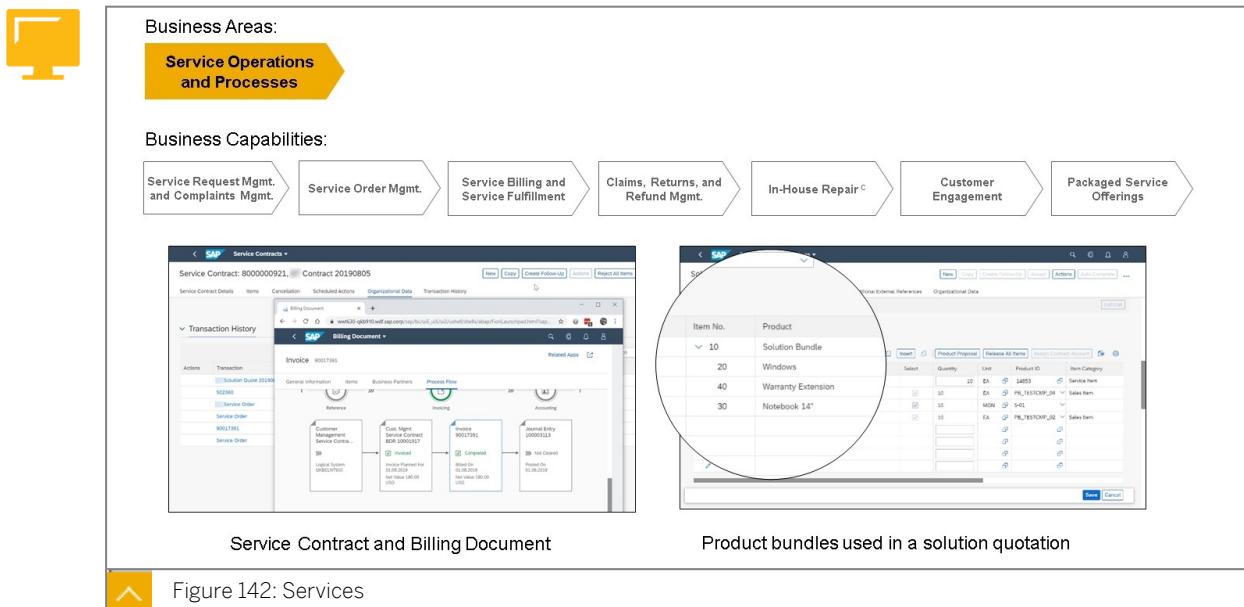
Service Maintenance Plan/Service Contact Management and Warranty Management / Business Solution Contract Management

- Schedule service commitments and major maintenance events (for example, shutdowns and turnarounds) to enable preventive and predictive service activities, based on time, counter, condition, or risk.
- Manage service agreements, price arrangements, and customer entitlements in a single repository, trigger automatic periodic billing.
- Business solution contract management involves providing one single view for all outcome-based services to deliver a comprehensive overview, and to reduce the administrative burden of multiple contracts.

Service Parts Fulfillment and Service parts Warehousing

- Facilitate the optimization of spare part stock processing according to usage and availability. Improve efficiency in parts fulfillment, planning, procurement and warehousing with integration with core materials management and finance functions, as well as support for language and localization requirements.

Services



Service Request Mgmt. and Complaints Mgmt.

- Create, track, and manage service requests with full visibility of current and historical service agreements and activities. Improve customer satisfaction by providing the front-line service agent with the full view of customers, installed equipment, and service history.

Service Order Management/ Service Billing and Service Fulfillment

- Deliver services in the most efficient manner – from simple to most complex services, through planning, scheduling, parts provisioning, execution, and billing. Provide front-line field service teams with access to up-to-date information on service history and equipment configuration to expertly execute maintenance service work.

Claims, Returns, and Refund Management and In-House Repair

- Streamline complaints and returns management and reduce operational costs.

- Plan and execute in-house repairs more effectively by integrating the repair process across various lines of business for greater transparency.
- Reduce cost with full logistical and financial insight.

Customer Engagement and Packages Service Offerings

- Support efficient issues resolution through multichannel customer engagement and smart interactions.
- Differentiate yourself from the competition with packaged service offerings and product bundles. Bundled items automatically lead to corresponding follow-on processes all the way to the billing process.

Unit 5

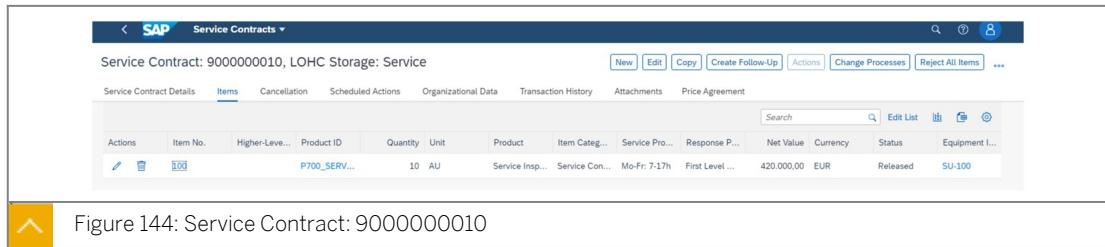
Exercise 13

Search Service Contracts

Business Scenario

You had been asked by the service manager of your business unit to provide them with details about the service profile offered by your company within a specific service contract. In order to find the appropriate data, you have decided to use the *Search Service Contract* app.

1. Start the app using the enterprise functionality.
2. Discover service contract item details.



The screenshot shows the SAP Service Contracts application interface. At the top, it displays 'Service Contract: 9000000010, LOHC Storage: Service'. Below this, there are several tabs: 'Service Contract Details' (selected), 'Items', 'Cancellation', 'Scheduled Actions', 'Organizational Data', 'Transaction History', 'Attachments', and 'Price Agreement'. On the right side of the top bar, there are buttons for 'New', 'Edit', 'Copy', 'Create Follow-Up', 'Actions', 'Change Processes', 'Reject All Items', and a 'More' button. Below the tabs is a search bar with a magnifying glass icon and a 'Edit List' button. The main content area is a table with the following data:

Actions	Item No.	Higher-Leve...	Product ID	Quantity	Unit	Product	Item Categ...	Service Pro...	Response P...	Net Value	Currency	Status	Equipment I...
			P700_SERV...	10	AU	Service Insp...	Service Con...	Mo-Fr: 7-17h	First Level ...	420.000,00	EUR	Released	SU-100

Figure 144: Service Contract: 9000000010

Result

In the column called *Service Profile*, you will find the answer **Mo-Fr: 07: - 17:00**.

Unit 5

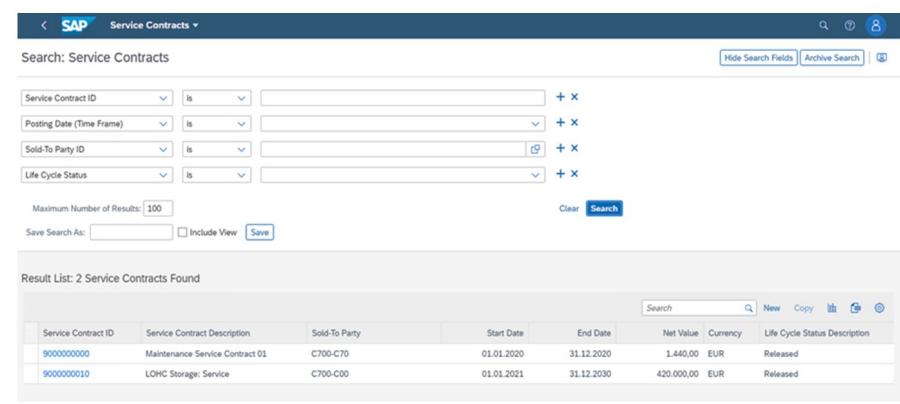
Solution 13

Search Service Contracts

Business Scenario

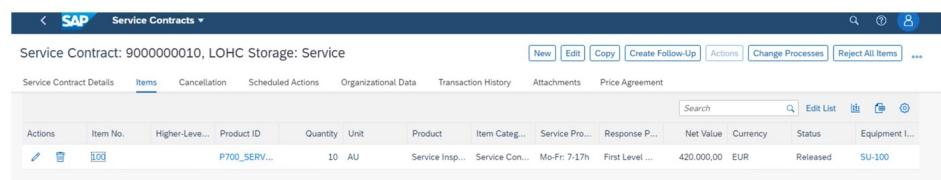
You had been asked by the service manager of your business unit to provide them with details about the service profile offered by your company within a specific service contract. In order to find the appropriate data, you have decided to use the *Search Service Contract* app.

1. Start the app using the enterprise functionality.
 - a) To start the app from the enterprise search, move your cursor to the top right of the screen and choose *APP*. Now, enter the name: *Search Service Contract*.
 - b) Enter the service contract ID: **9000000010** in the filter bar.
 - c) To execute the search, select the *Search* button.
2. Discover service contract item details.
 - a) Choose ID 9000000010 in the *Result List: 1 Service Contract Found* screen (the lower section of this pane).
 - b) Navigate to the *ITEM* section. To do this, use the vertical scroll bar or select the word *Item* in the top bar.



The screenshot shows the SAP Service Contracts search interface. The search bar at the top contains the text "Search: Service Contracts". Below the search bar are four filter fields: "Service Contract ID" (set to "Is" and "9000000010"), "Posting Date (Time Frame)" (set to "Is" and "1.1.2020 - 31.12.2020"), "Sold-To Party ID" (set to "Is" and "C700-C70"), and "Life Cycle Status" (set to "Is" and "Released"). There is also a "Maximum Number of Results" field set to "100" and a "Save Search As" field. The "Search" button is highlighted in blue. Below the search bar is a table titled "Result List: 2 Service Contracts Found". The table has columns: Service Contract ID, Service Contract Description, Sold-To Party, Start Date, End Date, Net Value, Currency, and Life Cycle Status Description. Two rows are listed: one for Service Contract ID 9000000010 with description "LOHC Storage: Service" and another for Service Contract ID 90000000010 with description "Maintenance Service Contract 01".

Figure 143: Search: Service Contracts



The screenshot shows the SAP Service Contracts detail view for Service Contract ID 9000000010. The top navigation bar shows the service contract number and the description "LOHC Storage: Service". Below the navigation bar are tabs: "Service Contract Details", "Items" (which is selected), "Cancellation", "Scheduled Actions", "Organizational Data", "Transaction History", "Attachments", and "Price Agreement". The "Items" tab displays a table with columns: Actions, Item No., Higher-Leve..., Product ID, Quantity, Unit, Product, Item Categ..., Service Pro..., Response P..., Net Value, Currency, Status, and Equipment I... . One row is visible, showing Item No. P700_SERV..., Quantity 10, Unit AU, Product Service Insp..., Item Category Service Con..., Service Profile Mo-Fr: 7-17h, Response Period First Level ..., Net Value 420.000,00, Currency EUR, Status Released, and Equipment ID SU-100.

Figure 144: Service Contract: 9000000010

Result

In the column called *Service Profile*, you will find the answer **Mo-Fr: 07: - 17:00**.



LESSON SUMMARY

You should now be able to:

- Describe services in SAP S/4HANA

Unit 5

Lesson 7

Describing Research and Development/Engineering in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe research and development/engineering in SAP S/4HANA

Research and Development/Engineering in SAP S/4HANA

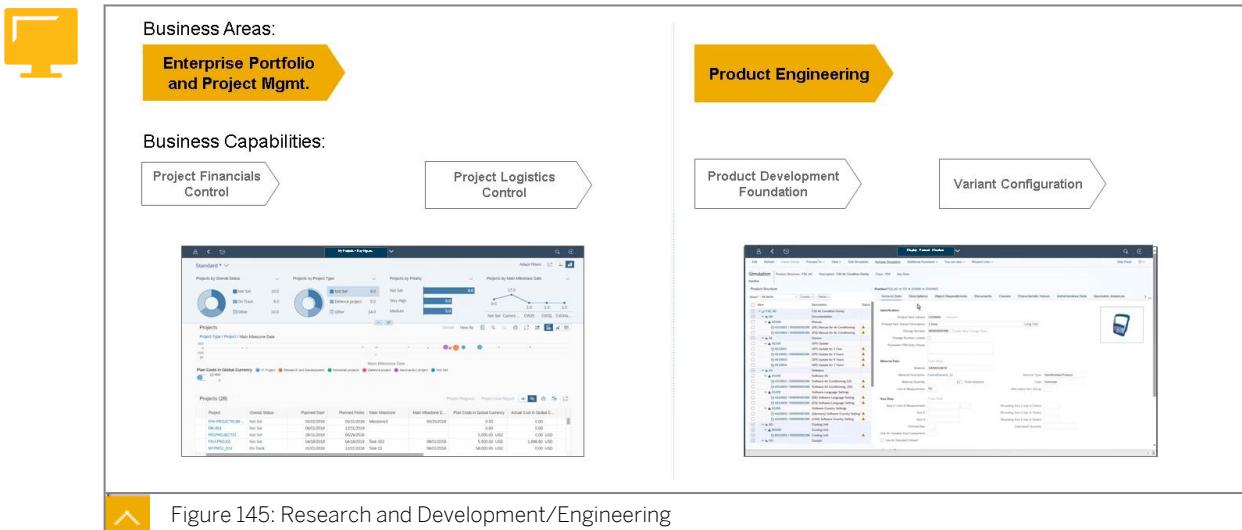


Figure 145: Research and Development/Engineering

Project Financials Control

- Define work breakdown structures as basis for hierarchical project accounting. Plan costs and budgets, and track actual costs tightly integrated with core business processes. Monitor project progress and financial performance, enabling the avoidance cost overruns on time.

Project Logistics Control

- Define project structures comprising suitable work breakdown and network structures as basis for project logistics planning and execution. Use simplified code and optimized data model in line with a simplified authorization concept and initial set of CDS views for external consumption.

Product Development Foundation

- Provide a product innovation platform as base to manage, translate, and integrate innovations to accelerate product design, initiate master data, product structures, with change and configuration management, viewing and document management.

- Leverage embedded software management for holistic product modeling.

Variant Configuration

- Support seamless sales and manufacturing processes with integrated variant configuration.
- Enable your business process to handle highly individualized products in engineering, sales, and manufacturing.



LESSON SUMMARY

You should now be able to:

- Describe research and development/engineering in SAP S/4HANA

Describing Asset Management in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe asset management in SAP S/4HANA

Asset Management in SAP S/4HANA



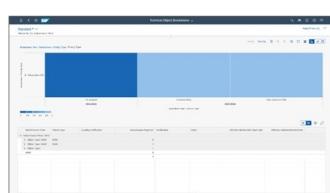
Business Areas:

Maintenance
Mgmt.

Business Capabilities:

Maintenance Planning
and Scheduling

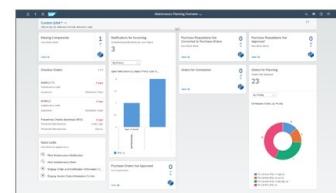
Maintenance
Execution



Technical object damage analysis

Innovation & Highlights:

- “Actual Cost Analysis” app to monitor and evaluate maintenance costs.
- Change schedule for several items in the “Find Maintenance Notification” and “Find Maintenance Order” Apps
- New Fiori Apps for finding maintenance plans and items by using free text search or filters
- Mass time confirmations



Maintenance Planning Overview Page

Figure 146: Asset Management

Maintenance Planning and Scheduling

- Plan maintenance, and find the ideal technician to use appropriate tools and resources and execute maintenance activities.
- Handle unplanned work requests and incomplete information.
- Gain a full view of asset status, maintenance cost, and breakdown causes.
- Reduce maintenance costs by efficiently using labor, material, equipment, and schedules.
- Classify maintenance plans to allow for better searching.

Maintenance Execution

- Execute planned or emergency maintenance.

- Access relevant information on any device. Employees can access, transfer, complete, and manage assigned work orders remotely.
- Enable real-time insights of asset performance for timely, relevant decisions.
- Review ongoing maintenance activities with the ability to reschedule multiple times a day.
- Leverage process integration with Predictive Maintenance and Service and Asset Intelligence Network.

Unit 5 Exercise 14

Perform Actual Cost Analysis

Business Scenario

The head of maintenance in your business division has asked you to give them some insights, the amount and order, in the actual costs for the repair of hydraulic pumps, resulting from current maintenance orders.

You have decided to use the SAP Fiori app, *Actual Cost Analysis*, because you know, that this analytical list page offers you multiple possibilities to evaluate actual maintenance costs stored in the Universal Journal Entry - for example, combining transactional and analytical data using chart and table visualization.

To perform actual cost analysis, complete the following steps.

1. Run the SAP Fiori app by using the appropriate filter criteria:
 - Company code: 1010
 - Cost Element Hierarchy: 1010
 - Ledger: OL



Note:

You can switch between the visual filter and a compact filter layout.

Result

In the section below the filter bar, you will see the amount spent on the *Technical Object: Hydraulic Pump (7000)* in a bar chart.

By hovering over the bar chart, you will see the amount on the blue bar, representing the *Hydraulic Pump (7000)* maintenance costs.

2. Observe the graphical possibilities.
3. Drill down from the bar chart to a particular order.

Perform Actual Cost Analysis

Business Scenario

The head of maintenance in your business division has asked you to give them some insights, the amount and order, in the actual costs for the repair of hydraulic pumps, resulting from current maintenance orders.

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To perform actual cost analysis, complete the following steps.

1. Run the SAP Fiori app by using the appropriate filter criteria:

- Company code: 1010
- Cost Element Hierarchy: 1010
- Ledger: OL



Note:

You can switch between the visual filter and a compact filter layout.

- a) Assess the results.

Result

In the section below the filter bar, you will see the amount spent on the *Technical Object: Hydraulic Pump (7000)* in a bar chart.

By hovering over the bar chart, you will see the amount on the blue bar, representing the *Hydraulic Pump (7000)* maintenance costs.

2. Observe the graphical possibilities.

- a) Choose the blue bar chart. A new section will be opened at the bottom.
- b) Expand the tree structure by selecting the arrow next to the word, *Order Type: PM01*, and then again, the arrow next to the word that appears, *Spend Category*.

3. Drill down from the bar chart to a particular order.

- a) Examine the maintenance order. You will now see the *Maintenance Order 4000100*.
- b) Choose the order number. A pop-up window will appear. Choose the order number of the newly opened pop-up window to navigate to the maintenance order.

- c) To find the navigation possibilities, choose the *Related Apps* button in the top-right part of the screen.
- d) Choose the SAP logo to return to your SAP Fiori homepage landing page.



LESSON SUMMARY

You should now be able to:

- Describe asset management in SAP S/4HANA

Unit 5

Lesson 9

Describing Finance in SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe finance in SAP S/4HANA

Core Finance

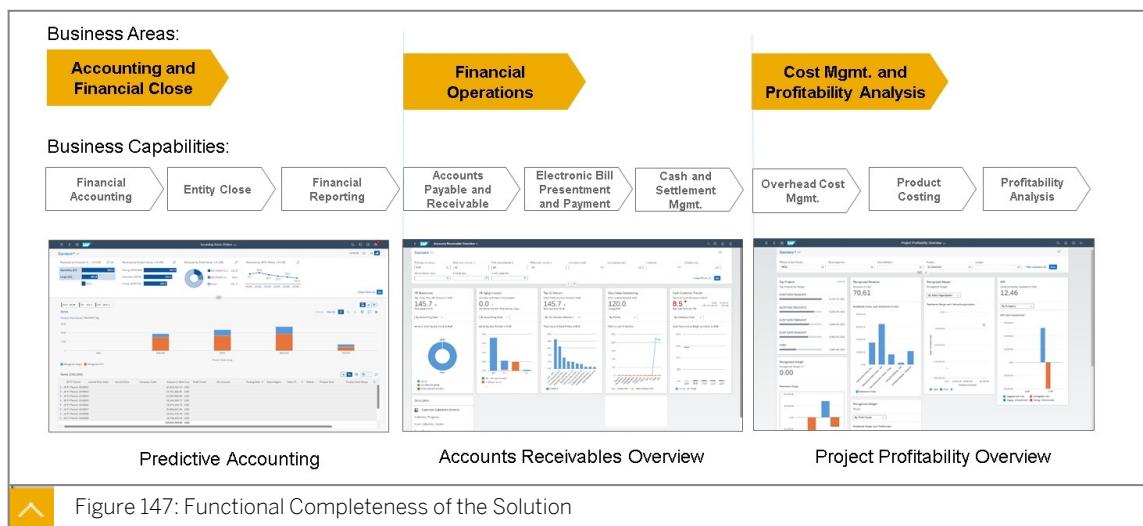


Figure 147: Functional Completeness of the Solution

SAP provides a fully integrated platform, based on the latest technology trends, to allow finance to lead the transformation to digital business. The figure, Functional Completeness of the Solution, shows the functional completeness of SAP S/4HANA Finance. All aspects of financial requirements across all roles are supported in granular solution areas.

Financial Accounting

The unified General Ledger is the heart of Finance as a single source of truth, providing the basis for instant insight into legal reporting and management profitability on a detailed level.

Entity Close

Efficiently close books on time, and create financial statements at the entity and corporate levels for International Financial Reporting Standards.

Financial Reporting

Reduce risk and cost of real-time financial reporting and multidimensional data analysis for accounting standards with SAP solutions. For Business Reporting like New Cash Flow Statements, use new semantic tagging.

Accounts Payable Receivable

Manage customer accounts receivables and payables for all customers with SAP S/4HANA. Increase automation and electronic support to reduce manual effort and cost associated with running this financial process.

Electronic Bill Presentment and Payment

Create and process invoices, credit and debit memos, pro forma invoices, and cancellation notices in real-time. Streamline dispute resolution with real-time customer collaboration.

Cash and Settlement Management

Monitor basic cash flows in real-time, to manage and maintain sufficient liquidity. Manage payments and bank accounts centrally, and improve internal control.

Overhead Cost Management

Gain a deep understanding of cost drivers and responsibilities with structuring your costs along cost centers, activities, or projects. A powerful toolset of cost planning methods and cost allocation tools for transparency and efficiency.

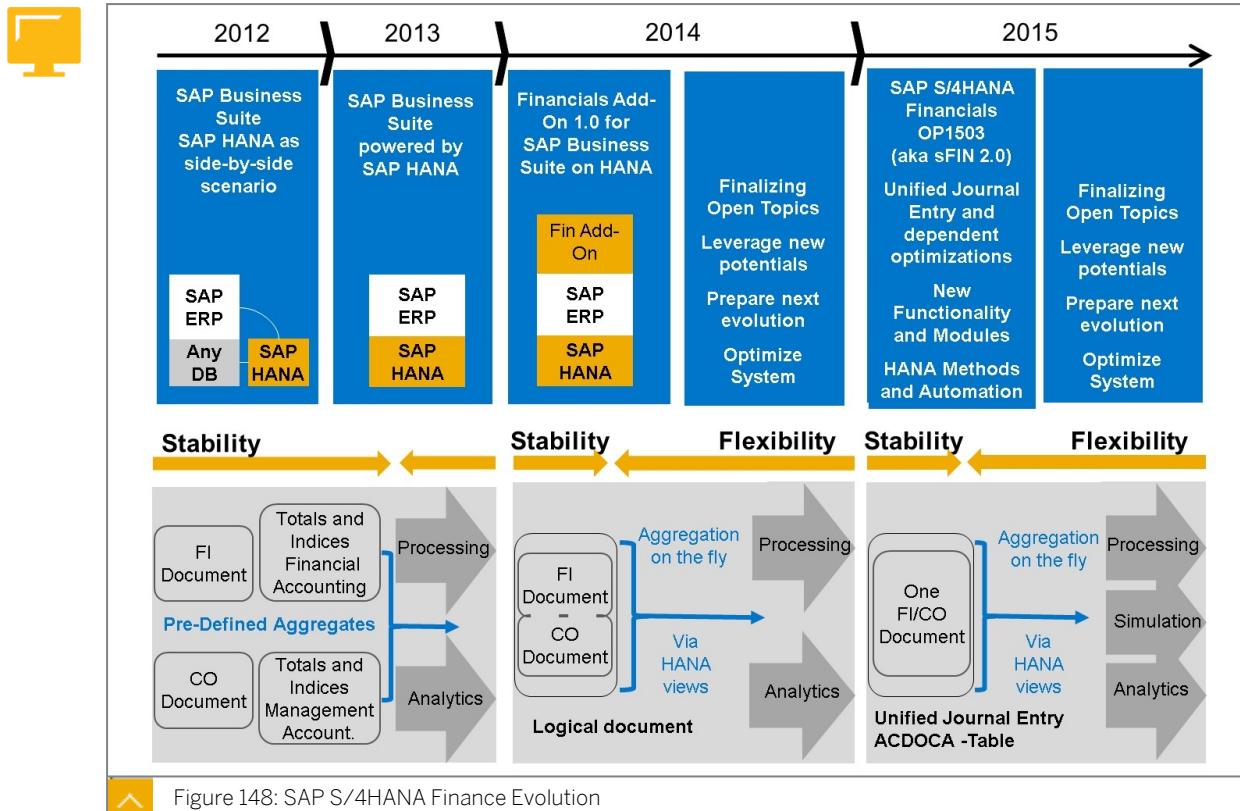
Product Costing

Calculate Cost of Goods Manufactured or Cost of Goods Sold broken down by each step of the production, project or service, leveraging source info deeply integrated into industry specific process.

Profitability Analysis

Understand cost and margin incurred by your products and services in detail to successfully manage the portfolio. With flexible and powerful insights, business users have the support they need to optimize decisions.

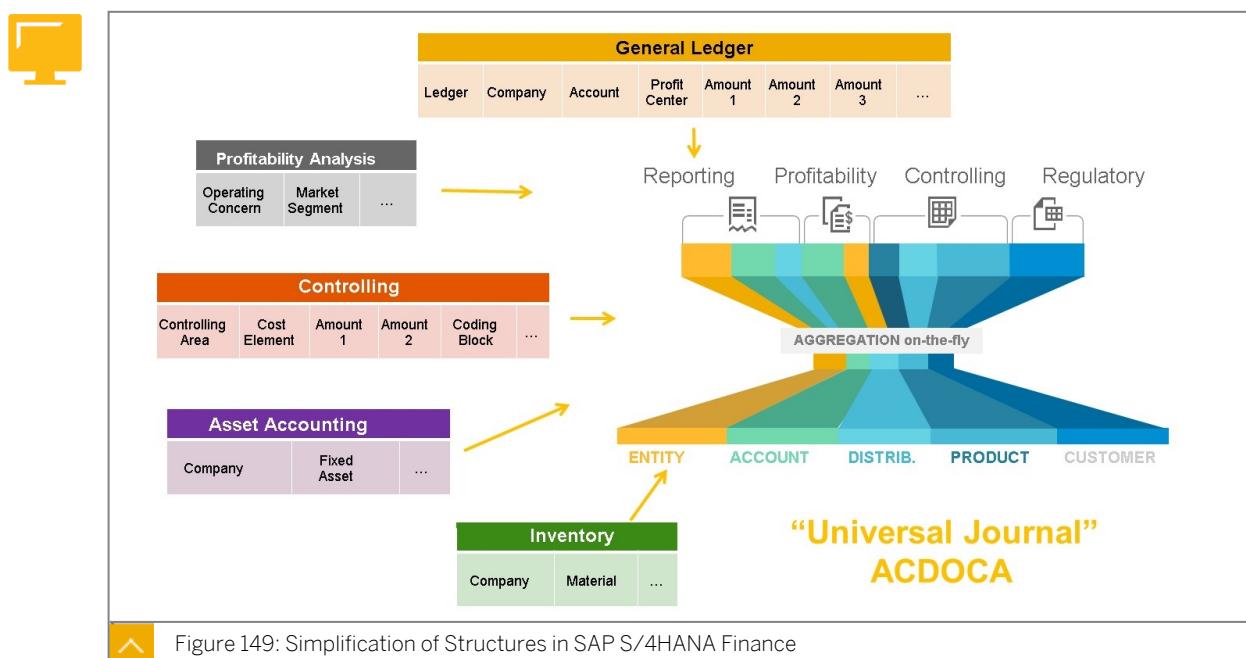
SAP S/4HANA Finance Evolution



Traditionally, SAP financial applications are separated into different components, such as Financial Accounting (FI) and Management Accounting (CO). These components are made up of sub-components, such as Asset Accounting (FI-AA). Each component has its own data model architecture and this brings with it, inefficiencies. The development of SAP S/4HANA provides the opportunity for a complete redesign of these data models, to remove redundancy and inefficiency.

The development cycles for the architecture improvements have been constant, as follows:

- In 2012, it was possible to implement SAP HANA as an accelerator to sit side by side with the traditional stack, to apply significant speed-up to some selected applications. These included financial applications such as CO-PA.
- In 2013, it was possible to migrate a traditional non-SAP disk-based database to SAP HANA, so everything was running in memory. Accelerators were no longer required, so all applications benefited from fast in-memory processing.
- In 2014, SAP began the simplification journey by providing an add-in for finance that was part of Suite on SAP HANA (not SAP S/4HANA). This streamlined the finance application.
- In 2015, SAP completed the simplification journey by fully redesigning the data model and code for SAP S/4HANA Finance, which was the first major application of SAP S/4HANA.



Use

The universal journal is the book of original entry for business transactions in Financial Accounting (FI) and Controlling (CO). It contains the journal entries generated by these transactions and thus, represents the single source of truth in SAP S/4HANA. Integrity of financial data is guaranteed by design, eliminating reconciliation effort between FI and CO, and ensuring that everyone can always access the most current data.

Line items are written only once, keeping the memory footprint at a minimum, and optimizing system throughput rates. Totals are calculated on the fly when needed, further reducing the memory footprint, while ensuring high performance for analytics and period closing processes.

Features

Permanently Reconciled Financials

The universal journal is the basis of an integrated accounting system, in which financial accounting and management accounting data are recorded in a single chart of accounts. Since all financial data is based on the same line items, no reconciliation between financial accounting and management accounting is ever required.

Permanent reconciliation is achieved by bringing together the following components:

General Ledger Accounting (FI-GL)

Asset Accounting (FI-AA)

Controlling (CO)

Profitability Analysis (CO-PA)

The universal journal is integrated only with margin analysis. It is not integrated with costing-based profitability analysis. However, costing-based profitability analysis can be run in parallel.

Material Ledger (CO-PC-ACT)

Enhanced Reporting

The universal journal optimizes the reporting and financial analysis process, since no time-consuming reconciliation activities are necessary. The enhanced reporting features include:

Flexible analysis of financial statements

You can drill down from any balance sheet item, to entities such as fixed assets or materials.

Income statements can be broken down, based on any dimension available in the journal entry. Market segment analysis is possible for any item of the income statement. The income statement is fully reconciled with profitability reports.

If any data is not entered when a transaction is recorded in the journal, the data is derived automatically. This enables you to analyze data using characteristics from different components. For example, you can create a balance sheet at the segment level.

Real-time profitability analysis

Market segments are included in journal entries as additional attributes, allowing you to continually analyze profitability, rather than having to wait for settlement runs at period close.

For example, when salary costs are posted to a cost center, the corresponding market segment can be derived instantaneously, and is immediately available for analysis.

Profitability attributes are provided for each income statement item, ensuring that the profitability data is always reconciled with the income statement. Market segment fields are filled through derivation of profitability attributes (for example, a posting to a cost center derives the product group). Attributes can be enriched by further processes such as settlement or allocations.

Comparability of costs

Costs in the income statement can be compared directly with the costs in a CO report, since both are based on the same underlying data. There is no need to map G/L accounts to cost elements, or ensure that the ledger in G/L is adapted to the CO version.

Easier to meet financial reporting requirements

The integration of financial and management reporting, enhances your ability to meet financial regulations, such as the requirement to include operating segments in statutory reports.

Merge of OLTP and OLAP

Replication of data to an OLAP system is not necessary in most cases, since SAP HANA provides multidimensional access to line items almost instantaneously. Even in cases where data is needed in an OLAP system, the data only has to be extracted from one data source rather than different data sources in each component.

Extensibility

The following extensibility options are available for adding custom fields in Finance:

"Classic" Coding Block extensions using the OXX3 transaction and the CI_COBL structure.

You can easily extend many processes that lead to journal entries in the ACDOCA table. Custom fields created using this method can be used for many SAP Fiori apps that post journal entries.

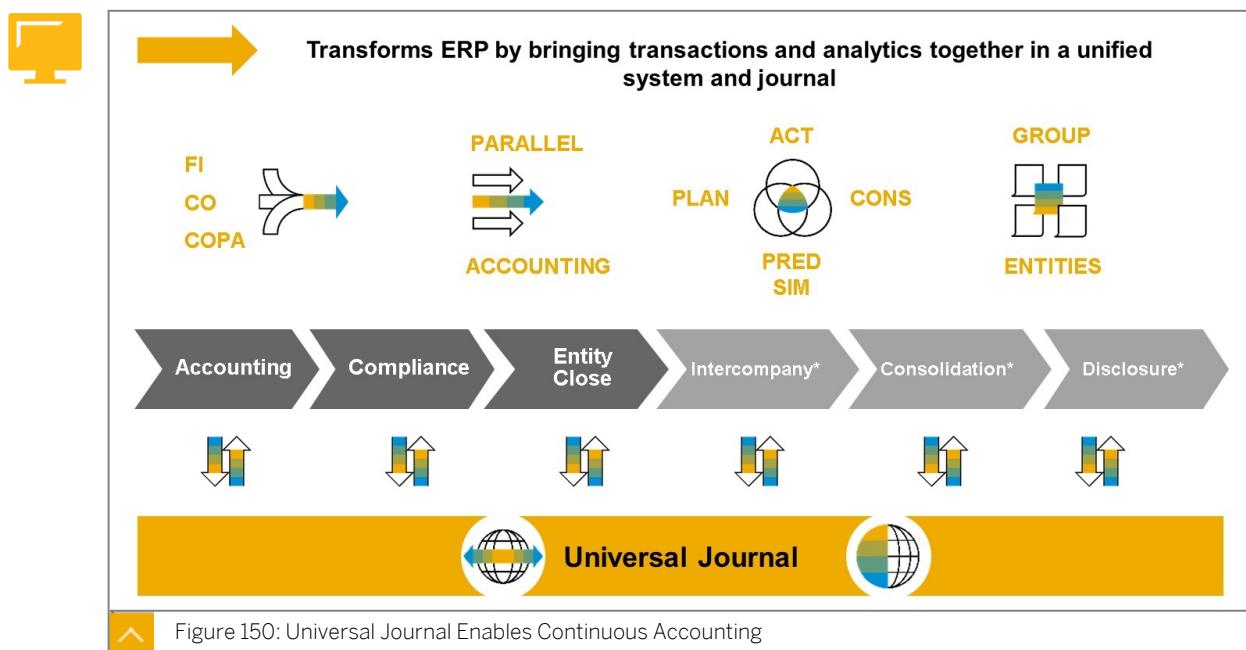
SAP Fiori app **Custom Fields** for key users.

When you as key user use this app, you use the Journal Entry Item business context to add your custom fields. This option allows the local extension of journal entries.

CO-PA custom characteristics ("WW-fields") using the KEA5 transaction.

This involves the extension of the CO-PA operating concern by custom characteristics created in the KEA5 transaction. These fields are also generated in journal entries in the ACDOCA table.

Universal Journal



Permanently Reconciled Financials

The universal journal is the basis of an integrated accounting system in which financial accounting and management accounting data are recorded in a single chart of accounts. Since all financial data is based on the same line items, no reconciliation between financial accounting and management accounting is ever required.

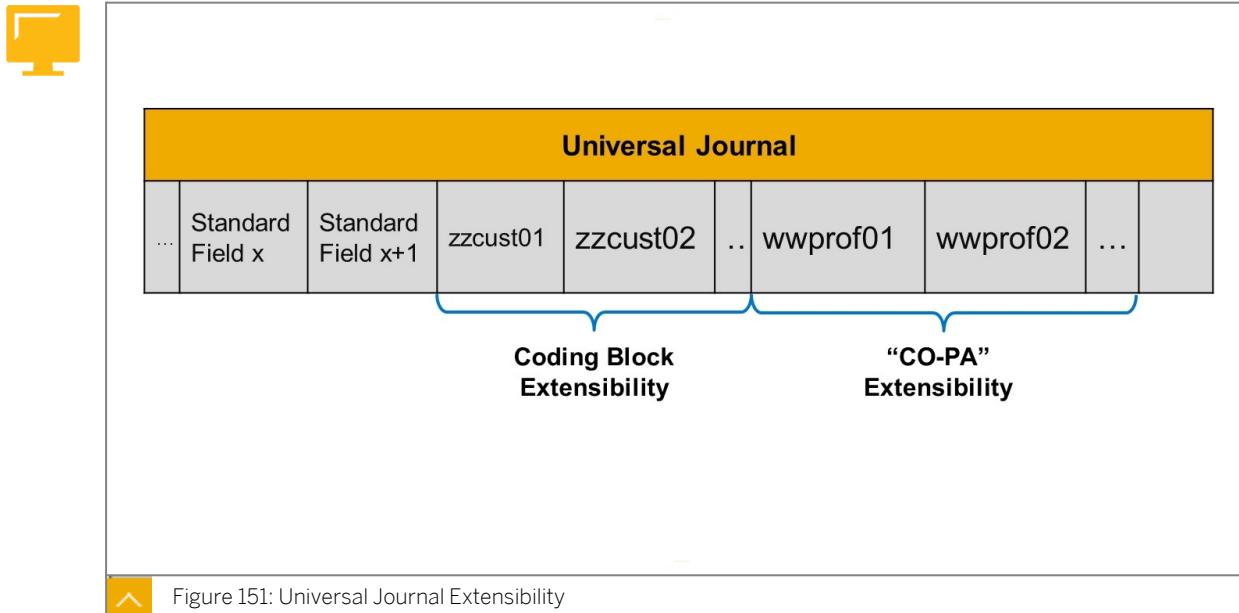
Permanent reconciliation is achieved by bringing together the following components:

- General Ledger Accounting (FI-GL)

- Asset Accounting (FI-AA)
- Controlling (CO)
- Profitability Analysis (CO-PA):

The universal journal is integrated only with account-based profitability analysis. It is not integrated with costing-based profitability analysis. However, costing-based profitability analysis can be run in parallel.

- Material Ledger (CO-PC-ACT)



The universal journal can be extended with customer fields. Extensibility is available for all components that use the universal journal (G/L, CO, AA, ML). The standard General Ledger coding block extensibility can be used, and affects the universal journal. Profit and Loss line extension using CO-PA capabilities is provided, both for field definition (characteristics), and the rich derivation tools from CO-PA. The new SAP HANA-based reporting of all components (G/L, AA, ML, CO) can access the customer fields.



Document No.	Item No.	Document No.	...	Account	Project	Sales Order No.	Customer	Product	Customer Group	Division	Territory	...
15000001	2	15000001		500100	P100-10	210005	250012	580020	03	10	0021	

Schematic **real-time derivation** of attributes at Unified Journal entry creation

Example: Posting of salaries and immediate assignment of the respective market segment

G/L Account	Cost Center	Market Segment	Credit	Debit
Salaries and wages	1000 (Development Financials)	HANA	20000 €	

Figure 152: External Postings with Simple Finance

Data for COEP, FAGLFLEXA, ANEP, MLIT, and so on, is stored directly in ACDOCA.

BSEG is maintained as before, and is not affected by the new architecture. BSEG is still limited to 999 lines per document but you can summarize those lines and have up to 999.999 analytically at the highest granularity directly in ACDOCA.

Profit center accounting, special purpose ledgers, and consolidations remain technically untouched, so they continue to work.

Components that have been built with special purpose ledger functionality, such as joint venture accounting and public sector management, continue to work as before. Additionally, we have costing-based CO-PA that also works exactly as before with the enhancements that come with SAP HANA systems and CO-PA.



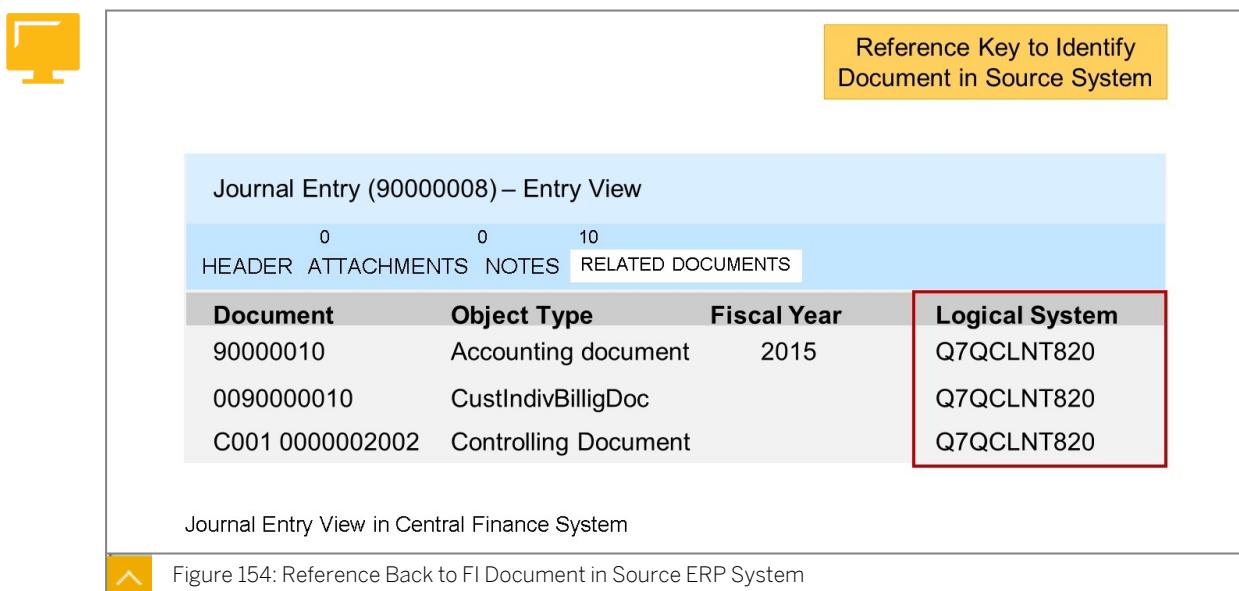
Rows						
Columns						
Available Fields						
GL Account						
Key Figures						
Activity Type						
Business Area						
Company Code						
Cost Center						
Customer Group						
Deb/Cred Ind CO						
Functional Area						
Material Group						
Order						
Partn. Activity Type						
Partn. Profit Center						
Partner Cost Center						
Partner Funct. Area						
Partner Order Number						
Partner Project Def.	... and many more					
Partner WBS Element						
Posting period						
Profit Center						

Figure 153: Multi-Dimensional P&L

Another major advantage comes into effect when it is time for financial reporting. You can now drill down on any dimension in order to explore the breakdown of any balance. Note that, what you see in any report is an on the fly aggregation that always comes from the individual line items.

For example, a sales director asks, "Why is the profit so low on this new product we just launched? The total costs look high compared to the revenue collected." The sales director drills down on the total cost of sales, breaks down the cost elements, and notices that a lot of money has been spent on marketing the new product. Further drill down identifies the biggest marketing expenses, which are celebrity agent fees. A further drill down to break down the fees reveals an expensive British celebrity was used at a US launch, and that this person put in outrageous expense claims.

Without leaving the report, the sales director has managed to get to the root of the issue of low profitability. Additionally, because everything is processed in-memory, performance is not a problem on any data size. It is possible to keep drilling to the bottom, click by click.



The document header of the newly posted FI document in the SAP S/4HANA Finance target system includes new fields that have been added to reference the posting back to the original source document in the source system.

In the Related Documents view of the newly posted FI document in Central Finance, you can see the information that refers back to the original document. It is even possible to navigate back to the original source documents in the source ERP systems.

Finance: What It Looks Like



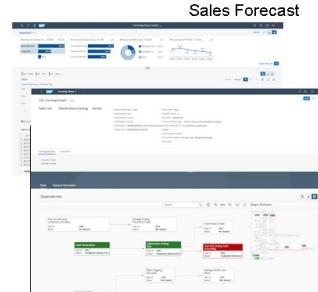
On any device, use role based cockpits with digital assistant

Embedded analytics for simulation, prediction and insight-to-action

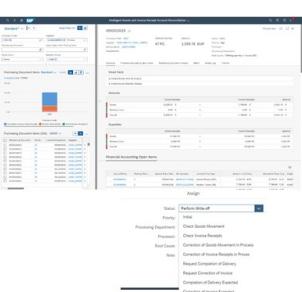
Machine learning for automated processing and decision support



Asset Accounting Overview



Sales Forecast



Financial Close Progress

Project Margin

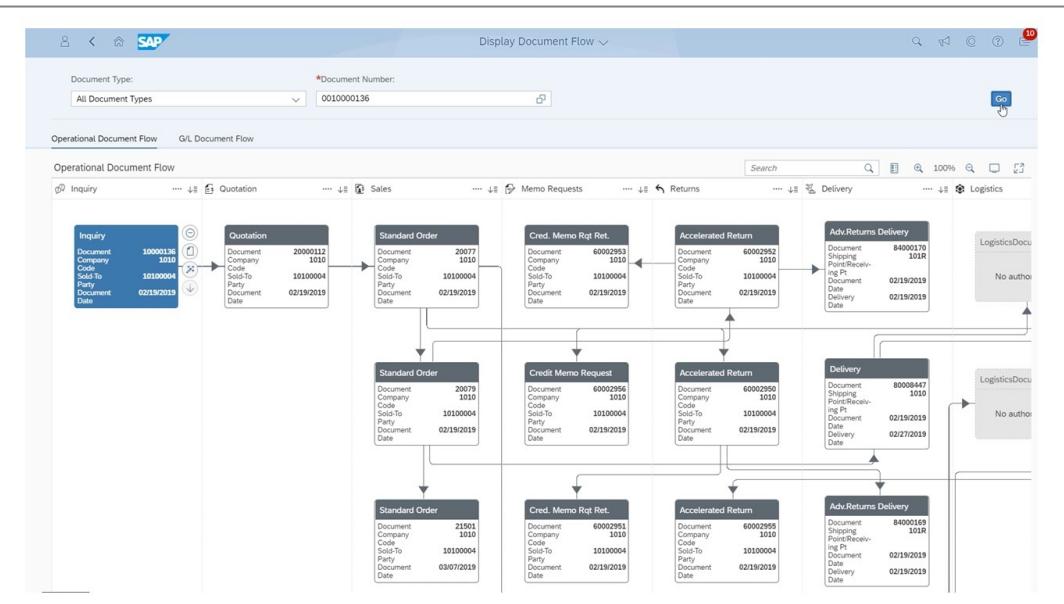
ML for GR/ IR Reconciliation



Figure 155: Finance: What It Looks Like

Display Document Flow App





The screenshot shows a complex document flow diagram. At the top, a search bar and filter options are visible. Below, a grid of documents is arranged in a flow. The documents include:

- Inquiry:** Document Number 100000136, Company 1010, Date 02/19/2019.
- Quotation:** Document Number 20000112, Company 1010, Date 02/19/2019.
- Standard Order:** Document Number 20077, Company 1010, Date 02/19/2019.
- Cred. Memo Rgt. Ret.:** Document Number 60002953, Company 1010, Date 02/19/2019.
- Accelerated Return:** Document Number 60002952, Company 1010, Date 02/19/2019.
- Adv.Returns Delivery:** Document Number 840002170, Company 1010, Date 02/19/2019.
- Delivery:** Document Number 80008447, Company 1010, Date 02/27/2019.

 Arrows indicate the flow from Inquiry to Quotation, Quotation to Standard Order, Standard Order to Cred. Memo Rgt. Ret., Standard Order to Accelerated Return, and Accelerated Return to Delivery. There are also arrows from Inquiry to Cred. Memo Rgt. Ret. and from Quotation to Accelerated Return.



Figure 156: Display Document Flow App

With the *Display Document Flow* app, you can display all documents that are part of a business transaction.

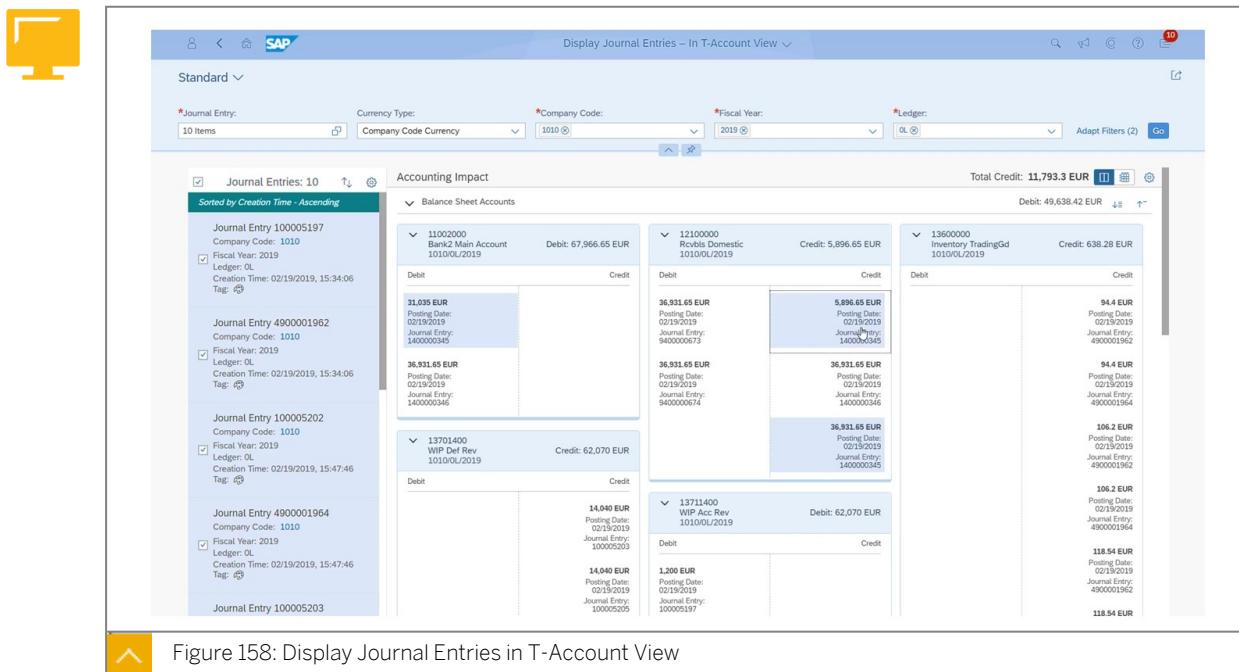
This app provides the following key features:

- View all preceding and succeeding documents by entering a single document number.
- Operational documents and journal entries are displayed in separate document flows on the same screen.
- Select documents within the flow to access additional controls.
- Select journal entries and view their accounting impact in a related app.



In the lower section of the *Display Document Flow* app, you can identify which Journal Entries belong to which ledger and inspect them further by following the *T-account* app.

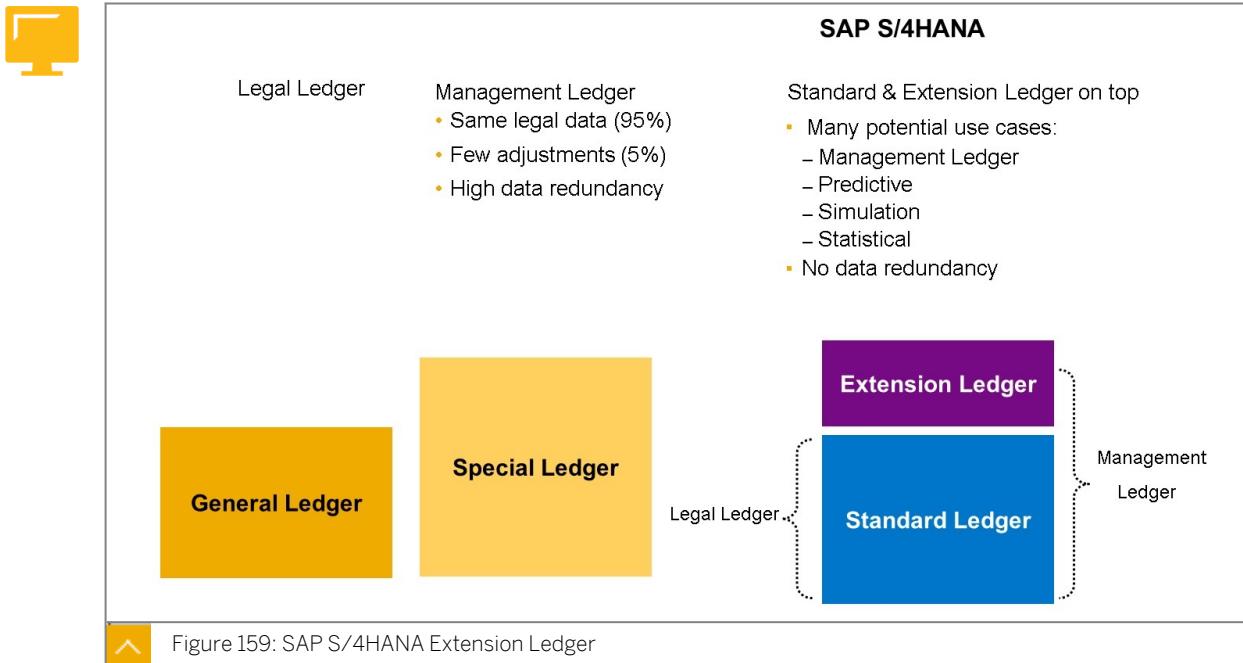
Display Journal Entries in T-Account View



With *Display Journal Entries in T-Account View*, you can inspect how one or multiple journal entries affect ledger accounts where they are posted.

This app enables you to:

- Choose one or multiple journal entries, and display ledger accounts where they were posted.
- Check how journal entry line items affect the debit and credit sides of individual ledger accounts.
- Find matching debit and credit entries in the affected ledger accounts.
- Display journal entries in T-account view or table view.



Due to different regulations and requirements, the majority of companies today, publish financial statements according to multiple accounting standards in parallel. Starting from SAP ERP with newGL, you can use standard ledger functionality whereby a separate ledger is kept in the system for each accounting standard. There are two types of ledgers – leading ledger, which is integrated with all subsidiary ledgers and controlling, and parallel ledgers which are called non-leading ledgers. These parallel ledgers are always managed as complete ledgers. This means that all postings relevant to the specific valuations are always posted fully. At the moment, parallel ledgers are supported fully in General Ledger and Fixed Asset Accounting, but the vision is that all finance application based on the universal journal will be able to work with parallel ledgers.

What is an extension ledger?

In SAP S/4HANA, we have a new type of ledger – an extension ledger. The extension ledger, in contrast to the standard parallel ledger, is a delta ledger. It means that only differences between valuations are posted into the extension ledger. As a delta posting is meaningful only in combination with the original posting, the extension ledger must always have a standard ledger assigned as an underlying ledger. The postings to the underlying ledger also apply to the extension ledger. Anytime you report on the extension ledger, data from the underlying ledger are always accessed and displayed together with delta posting.

Based on what kind of journal entries you want to post to the extension ledger, you can define three extension ledger types:

Standard Journal Entries – stores journal entries with real document numbers. These journal entries cannot be deleted, and have to be reversed when required. Use cases – management adjustments, tax adjustments, realignments

P – Line items with technical numbers/no deletion possible (former Prediction) – stores journal entry with technical numbers only, without document numbers. They cannot be deleted, and have to be reversed when required. Use cases – predictions, commitments, statistical sales conditions.

S – Line items with technical numbers/deletion possible (former Simulation) – stores journal entry with technical numbers only, without document numbers. They can be deleted. Use cases – simulation, posting

You may also come across the so-called valuation extension ledger V -Journal Entries for valuation differences, which is not ready yet but was made visible in the configuration by mistake.

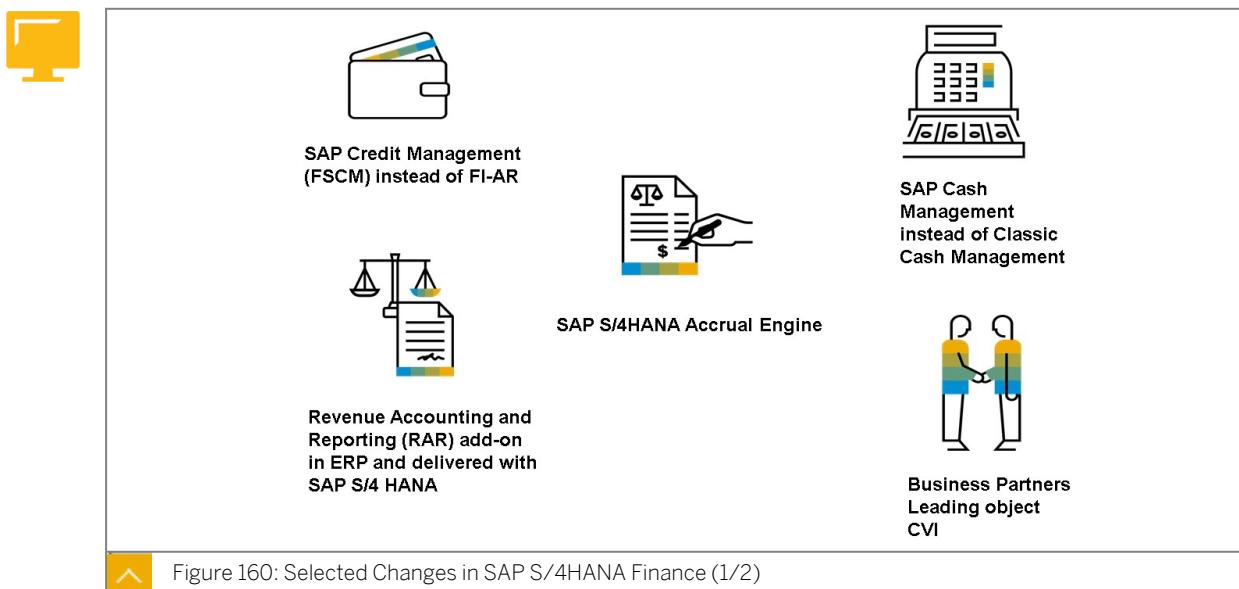
Advantages of an extension ledger

Flexibility – This is probably the biggest advantage of extension ledger when comparing to standard ledgers. Setting up new extension ledgers is easy, it is not necessary to perform any kind of data migration, only the configuration is needed.. This is enabled by the extension ledger concept, as it just inherits the historical data of the underlying ledger. You can activate or deactivate the extension ledger in a productive system anytime during the year without having to migrate data as it is the case with the standard ledger.

Reuse of existing reports – All reports supporting standard ledgers work also with extension ledger. This is true for new Fiori analytical apps and classical SAP GUI reports as well.

Reduced data footprint – as only delta values are kept in the extension ledger

Selected Changes in SAP S/4HANA Finance



SAP Credit Management

FI-AR-CR Credit Management is not available in SAP S/4HANA. The functional equivalent in SAP S/4HANA is SAP Credit Management (FIN-FSCM-CR).

SAP Credit Management takes information in real-time from the SD and FI modules. Allowing a credit analysis on the flight, and gives us the certainty of an accurate analysis of the clients

The basic license includes the manual features for setting credit limits, setting risk classes, and setting an internal score for a Business Partner. If an automated calculation is needed, then an additional license is required for the Advanced Credit Management with SAP S/4HANA option.

Following the "Principle of One" where there was overlapping functionality across applications, the SAP S/4HANA solution is simplified to one. At its core, SAP Credit Management in SAP S/4HANA is for all intents and purposes FSCM, which was re-branded in SAP S/4HANA. The former AR and SD features were then added. SAP Credit Management in SAP S/4HANA resides in the Finance Module. For the minimum configuration of SAP Credit Management in SAP S/4HANA, perform the "required" actions in the Task List PDF attached to the SAP Note 2270544.

What allows you to create SAP Credit Management?

Credit Limit Management

- Implement a company wide credit policy
- Manage a customer credit profile
- Central credit management in a distributed system landscape

Credit Case

- Credit case for structured processing of credit limit applications
- Track status and result of credit limit applications

Credit Rules Engine

- Categorize customers by scoring rules
- Automatically calculate and assign a customer-specific credit limit
- Credit check rules
- Model and implement own customer credit score cards

Credit Information

- Interface to external credit agencies
- Input parameters for scoring rules

Credit Manager Analytics

- Role-based access to credit management information and analysis

What allows Credit Rules Engine?

Create a **scoring formula** and **credit limit formula** by using the **formula editor**. Parameters (for example, business partner data) and functions are used as input parameters.

One scoring formula and several credit limit formulas (for each credit segment) are assigned to the rule for scoring and credit limit calculation, which is assigned to each customer in the credit profile. The **risk class** is determined directly from the score.

In customizing, specific score ranges which do not overlap are assigned to each risk class. For the **check rule**, the system determines the steps which are taken to check the creditworthiness of a customer when a sales order is created. This may include the static check of the credit limit or a check of the highest dunning level.

Customer-specific process chains in SAP Credit Management can be defined through **events** which trigger follow-up actions

SAP Revenue Accounting

SD Revenue Recognition is not available in SAP S/4HANA. SAP Revenue Accounting and Reporting should be used instead. This functionality supports the revenue accounting standards as outlined in the International Financial Reporting Standards (IFRS15) and adapted by local Generally Accepted Accounting Principles (GAAPs). Migration to the SAP Revenue Accounting solution is required to comply with IFRS15, even if an upgrade to SAP S/4HANA is not done, see also SAP Note 2270544.

SAP Revenue Accounting and Reporting Features:

- Revenue Accounting Decoupled from Operational Applications
- Revenue Accounting is an add-on to ERP Financials with an open interface to operational applications
- Multiple Element Arrangements
- Allocate transaction price to distinct items of a contract
- Combine items from different operational contracts into one contract
- Combine items from different operational applications
- Parallel Accounting
- Revenue Accounting can manage all data and valuations separately for parallel accounting principles
- Parallel accounting principles can post to different ledgers in the New GL or to different accounts

SAP Revenue Accounting and Reporting was built from the ground up to handle the new revenue recognition regulations announced on May 28, 2014 (IFRS 15 and US-GAAP ASC 606), and is effective from January 1, 2018, in countries adhering to both US GAAP and IFRS.

The solution automates the revenue recognition and accounting processes, and simplifies the tasks of revenue accountants following the new accounting guidelines published on May 28, 2014.

Frequently asked questions around SD Revenue Recognition and IFRS 15 are addressed in Note 2341717.

Note: SAP has created a dedicated course for Revenue Accounting: S4F55 Revenue Accounting and Reporting.

SAP Cash Management

Cash and Liquidity Management enables an organization's cash or treasury department to manage bank accounts centrally and overview the cash operations and long-term liquidity trends accurately and precisely. Cash managers can easily and intuitively get a high-level overview and detailed insights into bank accounts, cash position, and cash flows, which enables them to make decisions and take actions directly. The major features are listed below.

Classic Cash Management is not available, but with the SAP S/4HANA Cash Management is the finance application, where business users can immediately see the huge advancements when comparing to the old SAP ERP predecessor application. There is a Basic/Advanced version available, see also SAP Note 2270400.

Bank Relationship Management

Bank Relationship Management allows you to manage your bank account master data centrally, using a process to govern the opening, closing, changing, and reviewing of bank accounts. The streamlined workflow and dual control processes also help improve user efficiency in accomplishing compliance-related tasks.

Cash Operations

Cash Operations allows you to review the cash position to understand cash distribution, to establish whether bank accounts have sufficient funding (or a surplus) for the day's payment obligations, and to decide whether to invest available cash in the short term.

Liquidity Management

Liquidity Management allows you to analyze the past actual cash flows, and forecast the medium-term liquidity trends. It also provides rolling plan cycle management and planning status monitoring with variance analysis on plan, actual, and forecast data.

Supported Apps in the Basic Cash Management Capability (SAP S/4HANA license)

If you have an SAP S/4HANA license, and you do not yet plan to purchase the additional license for the SAP S/4HANA Finance for cash management, you can use basic functionality for Cash and Liquidity Management.

Before you use the basic cash management capability that is delivered with SAP S/4HANA, you need to switch off the business function FIN_FSCM_CLM and select “Basic Scope” in the Customizing activity “Define Basic Settings”.

Below you will find the most important Fiori Apps listed:

[Manage Banks – Manage Bank Accounts \(Basic Cash Management\)](#) (Also available via NWBC) Create, display, edit, and delete bank accounts, App Extensibility for adding custom fields – [Bank Account Balance – Cash Flow Analyzer \(Basic Cash Management\)](#) (Except Liquidity Item) – [Manage Memo Records](#) (SAP GUI Transactions FF63 and FF65 still available) – [Manage Payment Media – Monitor Payments](#)

Additional functionality in SAP S/4HANA Finance for cash management (Additional license)

To use SAP S/4HANA Finance for cash management, you need to switch on the business function FIN_FSCM_CLM, and select Full Scope for Cash Management Scope in the Customizing activity “Define Basic Settings”.

Before you switch on this business function, contact your SAP Account Executive about the license for SAP S/4HANA Finance for cash management.

In addition to the basic cash management functions, you have available the following new and improved functions and processes:

- Manage banks and house banks
- Define bank accounts and house bank accounts, display bank accounts in the bank hierarchy view, the list view, and user-defined views based on bank account groups, initiate bank account reviews and monitor the review status, keep track of foreign bank accounts and responsible payment approvers
- Define payment approvers and overdraft limits for bank accounts
- Implement workflow or dual control processes for opening, modifying, closing, reopening, and reviewing bank accounts
- Import and monitor bank fee data
- Create cash pools based on bank account groups
- Perform cash concentration
- Perform cash operation tasks such as monitoring cash positions, making bank transfers, and approving payments
- Forecast the liquidity trend and analyze the actual cash flows using various dimensions
- Develop and analyze liquidity plans to ensure payment obligations and assist funding decisions
- Use predefined local BI Content to extract cash management data for analytical purposes

- Enable the snapshot functionality to filter cash flows by the snapshot time

SAP S/4HANA Accrual Engine

What is the motivation behind the development of an accrual engine in general? The creation of accruals, done in a manual way, is difficult for the business users, and comes with an enormous workload. This is a necessary task, because the amount of the necessary accruals is not usually known until the end of the period.

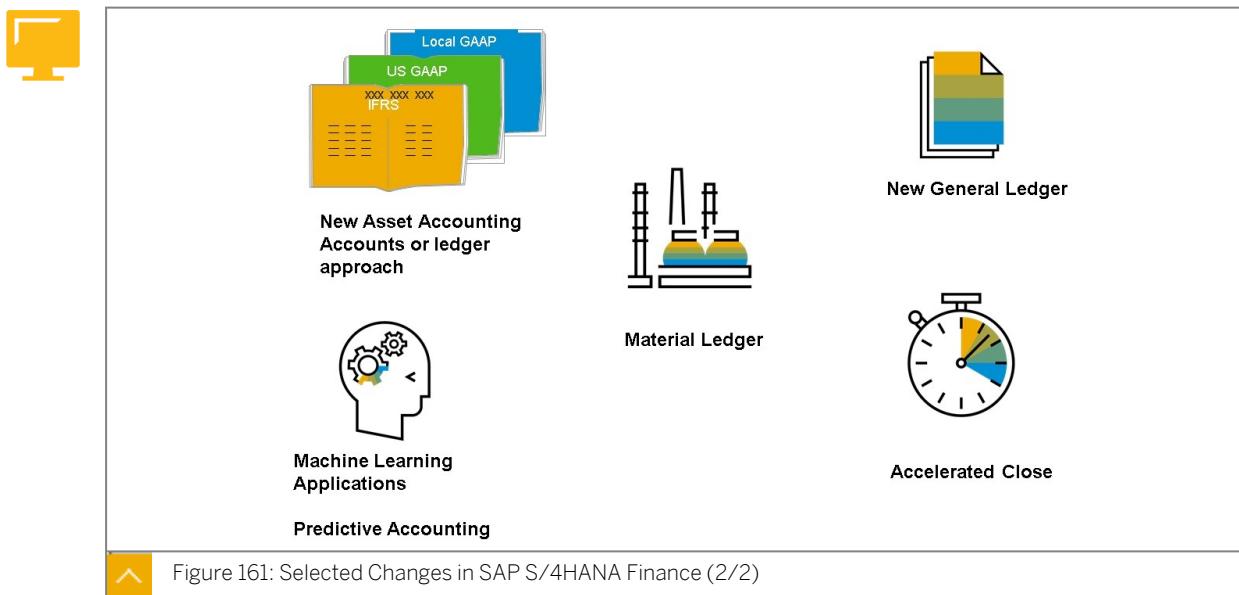
With SAP S/4HANA 1809, the accrual engine will support business users by creation, calculation, and managing of accruals. This will save time and efforts for period end closing activities.

Benefits of the new accrual Engine:

In a nutshell:

1. The new accrual engine supports all currencies of the universal journal with a simplified data model, and optimized for SAP S/4HANA. Line Items in the ACDOCA represent the engine postings. In the end, this means also no redundant storage anymore for summary entries, for example.
2. In addition, customers can now define more complex posting schemes. For example, more than two line items are now possible.
3. Third, the mass upload of accrual objects is possible, meaning the creation and updating of accruals object with total and periodic amount and updating periodic amounts only.

The accruals management functionality in SAP S/4HANA continues to grow. As of the 1809 (on-premise) release, the accruals family will welcome its new member, **purchase order accruals**, which enables us to automatically use purchase orders as accrual objects. This means that our accruals calculation and posting will be nearly effortless.



New Asset Accounting

FI-AA encompasses the entire lifetime of the asset from purchase order or the initial acquisition (possibly managed as an asset under construction), through to its retirement. The system calculates and posts, to a large extent automatically, the values for depreciation and interest between these two points (acquisition and retirement) in time. With the Asset

Explorer and many standard reports, SAP helps you to analyze and report fixed asset values. Reconciliation accounts link the subledgers to G/L Accounting in real-time.

The use of Asset Accounting is not just restricted in SAP S/4HANA. It can be used with ECC system also (from EHP 7 onwards), provided New GL is activated. However, the difference is while it is mandatory to activate new Asset Accounting in SAP S/4HANA, it is an optional feature in ECC. Additionally, AA in SAP S/4HANA provides additional features that are not available in ECC. Accounts or ledger approach is possible, and a simplified chart of depreciation is only one of many new features available in SAP S/4HANA. See also SAP Note 2270387/ 2270388.

What are the major development deltas and benefits within SAP S/4HANA?

- Data model changes based on Universal Journal which brought several benefits such as no reconciliation between GL and AA needed anymore, asset accounting attributes (for example, asset number) available in all reports based on Universal Journal.
- Redesign of parallel accounting in Asset Accounting – the introduction of new posting logic
- Improved planned depreciation calculation and depreciation run
- Bunch of Fiori apps has been shipped, such as: [Fixed Asset](#), [Asset Master Worklist](#), [Manage Depreciation Runs](#), [Fiscal Year Change](#), [Recalculating values](#), Overview pages and so on
- New functionality allows you to close the fiscal year for multiple company codes and/or ledgers in a single run. You can run it as a separate transaction (transaction FAA_CLOSE_FISC_YEARS) in the SAP GUI or schedule it in the Fiori app [Schedule Asset Accounting Jobs](#)

New General Ledger

The New General Ledger already explained in more detail in the previous slides.

SAP Note 2270339

Machine Learning Applications

According to Gartner (2020), 69% of routine work currently done by managers will be fully automated by 2024, and ML-based innovations are the most critical for the enterprises want to transform the business.

Machine learning algorithms use customer-specific history and exceptions to predict future outcomes, and these outcomes can be used to automate business user decisions.

Some examples for machine learning applications in the finance area are:

- Cash application
- Goods and invoice receipt reconciliation
- Tax compliance smart automation
- Intercompany Reconciliation
- Assigned Liquidity Items
- Predictive Scenario for Bank Reconciliation

With machine learning applications, SAP supports their customers to save efforts by automation of numerous finance processes.

Accelerated Close

In SAP S/4HANA, accelerated closing will be supported by continuous intra-month processes. In addition, soft close for better insights at any time. The new SAP Financial Closing Cockpit especially adds more value for the users. This is remarkable because even the Financial Closing Cockpit in ECC already provided great opportunities for the finance specialists in saving time and efforts in the closing process.

The new SAP Financial Closing Cockpit in SAP S/4HANA offers:

- Automated closing tasks, even in remote systems and powerful, user-friendly application for manual tasks
- Collaboration, notifications and workflows
- Definition of a global game plan for the entity close
- Leverage the global plan for multiple organization units and closing cycles
- Audit trails, logging, and documentation
- Real-time insight into the closing status
- Monitoring by subsidiaries and headquarter
- Close Analysis, closing tasks
- SAP Note Closing Cockpit 2332547

Material Ledger

With SAP S/4HANA, it is mandatory to use the Material Ledger. Latest trends in material management aim for improved and more flexible valuation methods in multiple currencies and parallel accounting standards, while simultaneously reducing required system resources, and improving scalability of the business processes. Since the data model of the Material Ledger (ML) module supports these business requirements, it was chosen as the basis for material inventory valuation in SAP S/4HANA.

If customers are not using the material ledger in their current SAP ERP system, it will be activated during the conversion process of the system to SAP S/4HANA. In transactions MM02 and MR21, material prices can then be maintained in multiple currencies.

In Financials, the inventory account balances are calculated separately for each currency. This results in a cleaner and more consistent valuation in other currencies than the local currency.

Unit 5 Exercise 15

Create a Billing Document

1. Create the billing document with reference to the outbound delivery, which you have created in the previous exercise. Use your sold-to party as selection criterion.

Write down the document number of the billing document.

Create a Billing Document

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Write down the document number of the billing document.

- a) Start the *Create Billing Documents* app in the *Finance* group on the SAP Fiori launchpad.
- b) Enter your sold-to party **T-0VW##** in the respective field.
- c) Choose *Go*.
- d) Select your delivery number item by marking the checkbox on the left.
- e) Choose *Create Billing Documents*, which is above the *Billing Due List*.
- f) You will be guided to a new screen. On it, choose *Save*, and in a second step on the top-right, choose *Post Billing Document*.
- g) Note the invoice number: _____
- h) Navigate to the *Process Flow* section.
- i) Choose the card, *Invoice*, and realize the numerous navigation *Opportunities*.

Unit 5 Exercise 16

Analyze the Posted Invoice in FI

You previously posted an invoice for your sales order. In this exercise, you check and analyze the FI posting in order to understand the integration and the data recorded on the FI document. You also want to view the customer's outstanding balance.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Go to the *Manage Journal Entries* app and find the posted customer invoice. Use your username **S4H01-##** where required.
2. Select the billing document transfer and open it with the *Manage Journal Entry* app.
3. Check the *RELATED DOCUMENTS* tab, and confirm the sales order number.
4. Analyze the accounting *Impact* by using the *T-Account View*.
RcvbIs Domestic: 12100000
Output tax (MWS): 22000000
Rev Domestic Prod: 41000000
5. Open the *Overdue Receivables* app.
6. Filter for your customer *T-OVW##*.
7. Save *Overdue - Customer T-OVW##* as a tile.
8. Go to the launchpad Home page, and find and launch your tile.

Unit 5

Solution 16

Analyze the Posted Invoice in FI

You previously posted an invoice for your sales order. In this exercise, you check and analyze the FI posting in order to understand the integration and the data recorded on the FI document. You also want to view the customer's outstanding balance.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Go to the *Manage Journal Entries* app and find the posted customer invoice. Use your username **S4H01-##** where required.
 - a) In the enterprise search field, search for **Manage**, and choose the *Manage Journal Entries* tile.
 - b) Choose *Adapt Filters*.
 - c) Select the *JE Created By* checkbox, and choose *OK*.
 - d) Enter your username, **S4H01-##**, select the checkbox next to the field, and choose *Save*.
 - e) In the *View* text box, enter **S4H01-##**, choose *Set as Default*, and then *OK*.
 - f) Choose *Go*.
2. Select the billing document transfer and open it with the *Manage Journal Entry* app.
 - a) Choose the document number with document type *Billing doc.transfer (RV)*.
 - b) Choose the *Journal Entry* number on the left side, and choose *Manage Journal Entry*.
3. Check the *RELATED DOCUMENTS* tab, and confirm the sales order number.
 - a) Choose *RELATED DOCUMENTS*.
 - b) Expand the document list by selecting the arrow next to *Accounting Document*.
 - c) Check the reference number on the top right.
The number should be the one that you created earlier – you can confirm by choosing it and displaying the document.
4. Analyze the accounting *Impact* by using the *T-Account View*.
Rcvbls Domestic: 12100000
Output tax (MWS): 22000000
Rev Domestic Prod: 41000000

a) Choose the *T-Account View* button at the bottom of the screen. You will find this button, when you scroll further down on the right.

b) The *Balance Sheet Account* numbers are as follows:

G/L Account (Company Code CoA): 41000000 (Rev Domestic Prod)



Note:

In the pop-up, all information, such as *Material Group* and *Sales District*, is updated directly in Accounting and available in reporting.

c) Exit to the SAP Fiori launchpad Home page.

5. Open the *Overdue Receivables* app.

a) In the search field, enter **Overdue Receivables - today**, and then open the app.

6. Filter for your customer *T-OVW##*.

a) On the filter bar, choose *Customer (All)*.

b) In the search, enter **T-OVW##**.

c) Select your customer and choose *OK*.

7. Save *Overdue - Customer T-OVW##* as a tile.

a) Choose

b) Choose *Save as Tile*.

c) In the *Subtitle*, enter **T-OVW##**, and choose *OK*.

d) Select the group *Finance*.

8. Go to the launchpad Home page, and find and launch your tile.

a) On the SAP Fiori launchpad Home page, refresh the browser (press **Ctrl+R**).

Unit 5 Exercise 17

Post an Incoming Payment

You have received payment from your customer and want to clear their account. Post an incoming payment for your customer.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Use the *Post Incoming Payments* app to enter the payment and clear your customer account. Enter the data provided in the following tables:

Table 3: General Information

Field	Value
Company Code	1010
Posting Date	Today's date
Journal Entry Date	Today's date
Value Date	Today's date
Journal Entry Type	DZ (Customer Payment)

Table 4: Bank Data

Field	Value
G/L Account:	11001020 (Bank1 Bank Transfer)
House Bank / Account ID	Bank1 / GIRO
Amount / Currency	Amount from Invoice / EUR
Document Date	Today's date

Table 5: Open Item Selection

Field	Value
Account Type / Account ID	Customer / T-OVW##

2. Select the item to clear from the list of proposed items.
3. Post the payment document.

Post an Incoming Payment

You have received payment from your customer and want to clear their account. Post an incoming payment for your customer.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Use the *Post Incoming Payments* app to enter the payment and clear your customer account. Enter the data provided in the following tables:

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Field	Value
G/L Account:	11001020 (Bank1 Bank Transfer)
House Bank / Account ID	Bank1 / GIRO
Amount / Currency	Amount from Invoice / EUR
Document Date	Today's date

Table 5: Open Item Selection

Field	Value
Account Type / Account ID	Customer / T-OVW##

- a) In the *Finance* group, choose the *Post Incoming Payments* tile.
 - b) Enter the data provided in the table, and choose *Propose Items*.
2. Select the item to clear from the list of proposed items.
 - a) Find the line with the amount to be paid, and choose *Clear*.
3. Post the payment document.
 - a) Choose *Simulate*.
 - b) Choose *Post*.
 - c) Go back to the Home page.



LESSON SUMMARY

You should now be able to:

- Describe finance in SAP S/4HANA

Describing SAP HCM On-Premise Solutions



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe human resources in SAP S/4HANA

Describe SAP HCM On-Premise Solutions



SAP HCM On-Premise Solutions

SAP S/4HANA
Compatibility Pack (HCM)

SAP ERP HCM (Business Suite)

2020 2022 2025 2027 2030 2040

Figure 162: SAP HCM On-Premise Solutions

SAP S/4HANA On Premise Human Capital Management (HCM) support packages are efficient, high-quality updates enabling you to keep your HCM system in sync with the latest legal requirements and corrections. They offer easy access to these changes: Simply download the support package at your convenience from the [SAP Software Download Center](#) or through the [Maintenance Planner](#). Adding a S/4HANA On Premise HCM support package does not require a system restart.

For the SAP S/4HANA installation using HCM functions on-premise can go ahead by using SAP ERP HCM in the Compatibility Mode. In fact, that means no further installation. Note, that customers have to be aware, that according to the figure above, it is limited to 2025. Stating this, customers have to decide before expiring, either to migrate from SAP ERP HCM on-premise to SAP SuccessFactors or to go ahead with SAP Human Capital Management for SAP S/4HANA on-premise edition)



SAP Human Capital Management for SAP S/4HANA



Continuity and investment protection for HCM on-premise customers

Solution will be based on SAP ERP HCM with selected SAP HANA database related enhancements.

This option is intended to serve those customers who are not yet ready to partially or fully transform their HR processes into a cloud-based model.

The future of digital HR in the cloud is powered by SAP SuccessFactors.

Figure 163: SAP Human Capital Management for SAP S/4HANA

As part of SAP Business Suite wide simplification incl. the 'principle of one strategy', some of the known SAP HCM ERP functionality will not be part of SAP HCM for SAP S/4HANA

SAP Human Capital Management for S/4HANA is available as part of the SAP S/4HANA 2022 release. The solution scope matches the SAP S/4HANA compatibility pack and the key functionality of SAP ERP HCM (EhP 8). SAP Travel Management (FI-TV) is also the SAP S/4HANA 2022 release.

All simplifications will be part of the SAP S/4HANA Readiness Check and SAP Simplification Item Catalog.



SAP Human Capital Management for SAP S/4HANA

Personnel Management

- Personnel Management
 - Organization management
 - Benefits
 - Enterprise compensation management
 - Personnel cost planning and simulation
 - Pension scheme
 - MSS / ESS (WDA and Fiori)*
- Payroll
- Payroll
- SAP Travel Management (part of SAP S/4HANA)

Talent Management

- SAP Learning Solution *
 - SAP E-Recruiting
 - Talent Management and development
 - Objective settings and appraisals
- Time Management
- Time
 - Shift planning
 - CATS
- Public Sector
- Position budgeting and control
 - HR funds and position management
 - Shift planning for public sector

Figure 164: SAP Human Capital Management for SAP S/4HANA

There are no changes to our overall investment strategy. SAP SuccessFactors remains the primary focus of our HCM innovation at SAP and we have no plans for major additional functional additions or re-architecture in SAP Human Capital Management for S/4HANA. So, for example, RPTime will stay and the Infotypes will still be around. See a detailed view below. The solution will be successively optimized for operation with SAP S/4HANA and the most recent component of an HCM topic is planned to be supported.



Selected HCM SAP Fiori-Apps e. g. Org Chart App

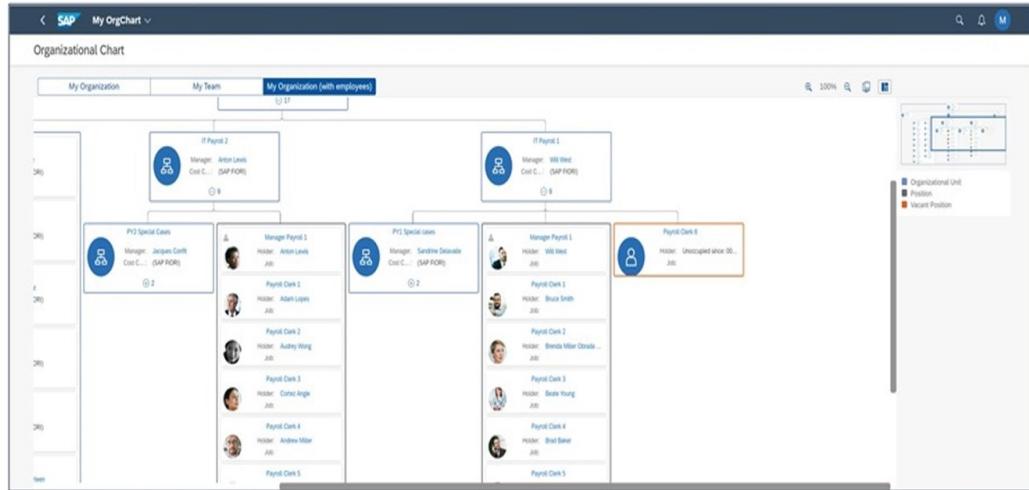


Figure 165: Selected HCM SAP Fiori-Apps e.g. Org Chart App

The existing SAP Fiori 2.0 apps for self-services are running in SAP Human Capital Management for S/4HANA. A new SAP Fiori role for HR professional was created which combines SAP Fiori UI and WDA-services for employee data maintenance. This also includes the support of the SAP Fiori 3 space concept. Also, there is an org-chart app to display the organization.



Selected HCM SAP Fiori-Apps e. g. Employee Administration

Figure 166: Selected HCM SAP Fiori-Apps e.g. Employee Administration

Employee Administration

The new Fiori role for HR professionals supports them to create vacancies when employees are leaving positions. Vacancies can also be delimited directly when assigning an employee to a position.

Time Management

There are optimizations for time-management customizing to improve collision definitions of absence types, and more transparent error handling in RPTIME about the error cause.

Selected HCM SAP Fiori-Apps e. g. Payroll Processing

Figure 167 displays three SAP Fiori applications related to payroll processing. The main window shows 'Wage Type Information'. Overlaid are two other windows: 'T512Z - Permissibility of Wage Types per Infotype (BENEFITS)' and 'T51P9 - Characteristics of WTypes for Arrears Processing (DEDUCTIONS)'. The 'T512Z' window lists various wage types and their characteristics. The 'T51P9' window lists wage types for arrears processing.

Figure 167: Selected HCM SAP Fiori-Apps e.g. Payroll Processing

A new wage type information report with all relevant wage type configuration details in one consolidated place is available. This enables the payroll team to troubleshoot production issues caused by an inaccurate wage type configuration.

The off-cycle workbench to replace an unsuccessful payment with a transfer, the consolidation of posting reports, an automated clearing process for bank transfer after payment replacement and some more are enhanced as well.

Selected HCM SAP Fiori-Apps e. g. Processes & Forms

Figure 168 shows an SAP Fiori application for processes and forms. The top part is a bar chart titled 'Processes' showing the duration of various processes: Car Lease, Personal Loan, Birth of Child, Transfer, Retirement, Resignation, Bill Refund, and Machine Repair. The bottom part is a table titled 'Processes (42)' with columns for Reference Number, Process Initiator, Processor, Process, Status, Progress, Start Date, and Expected End Date. The table lists 42 different processes, each with a unique reference number and details about the initiator, processor, and current status.

Figure 168: Selected HCM SAP Fiori-Apps e.g. Processes & Forms

A new analytical SAP Fiori app supports to analyze the processes initiated by employees, managers, or HR professionals by using HANA views and gain insights of processes and their status such as average processing time, workload, error rate etc.

There are also some more technical oriented enhancements like HCM content for SAP S/4HANA migration cockpit, master-data integration (MDI) content provider, and more.



LESSON SUMMARY

You should now be able to:

- Describe human resources in SAP S/4HANA

Describing the Simplification List



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the SAP S/4HANA simplification list

Simplification List



The Simplification List supports in three main areas:

1. Planning the actual system conversion from a traditional ERP solution to SAP S/4HANA.
2. Reducing efforts during the actual conversion by enabling individual Simplification Items to be dealt with in advance for those customers intending to migrate in a future project.
3. Implementing SAP S/4HANA-compliant strategic capabilities when rolling out new capabilities to avoid rework on SAP S/4HANA.



Figure 169: Simplification List

The simplification list describes in detail, and on a functional level, what happens in SAP S/4HANA to individual transactions and solution capabilities found in SAP Business Suite products.

In some cases, we have merged certain functionalities with other elements, or reflected them within a new solution or architecture, compared to the SAP Business Suite products.

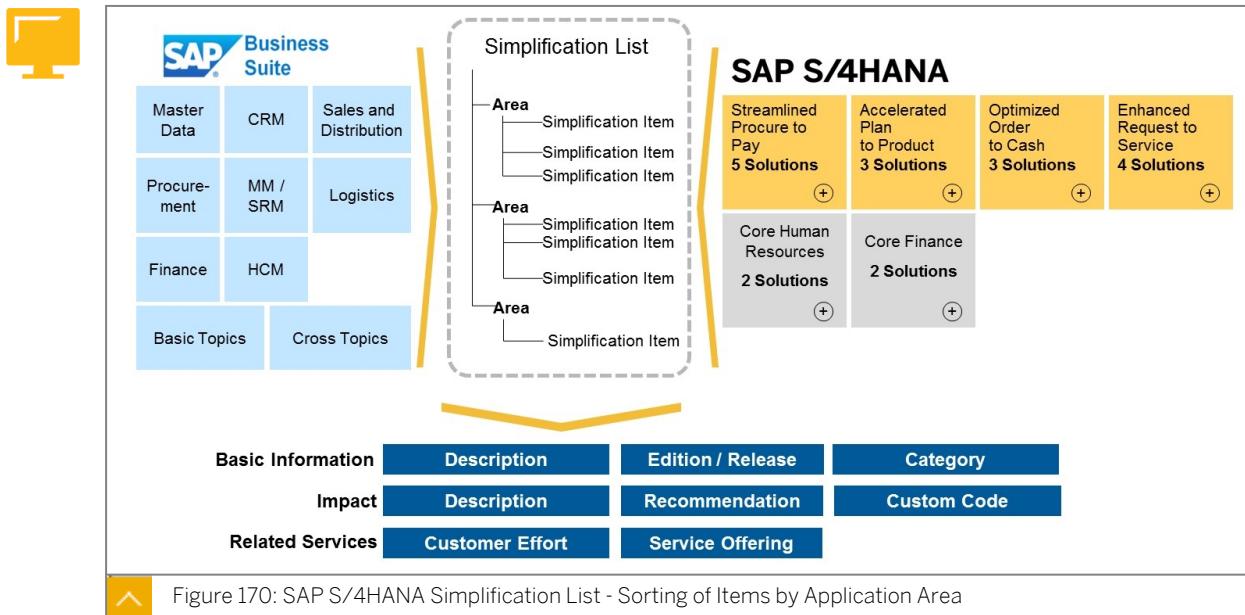
This is a key document that is used in the implementation phase, and is relevant only to customers who are converting from SAP Business Suite to SAP S/4HANA. It helps to determine the impact of converting.

For example, the simplification list highlights where transaction codes are no longer available, and points to the replacement application.

The simplification list is especially helpful when the source systems have had customizations, because you can consider how these might be affected by the new design and make adjustments.

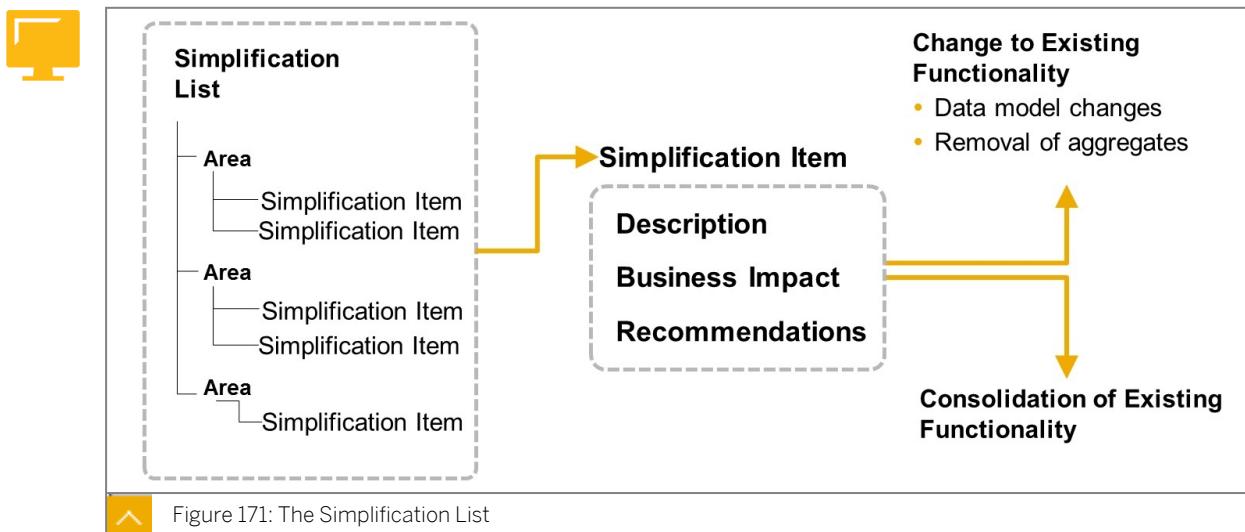
Scenario

As your enterprise plans to implement SAP S/4HANA, you want to understand the role of the simplification list for SAP S/4HANA Enterprise Management in the area of Sales.



This simplification list focuses on the items that must be considered by customers in an implementation or system conversion project from SAP ERP 6.0 to SAP S/4HANA.

This list describes in detail at a functional level, what happens in SAP S/4HANA to individual transactions and solution capabilities. If some transactions or capabilities are dropped, this does not mean that we are decommissioning functionality. It means that we have merged this functionality with other elements, or reflected it in a new solution or architecture.

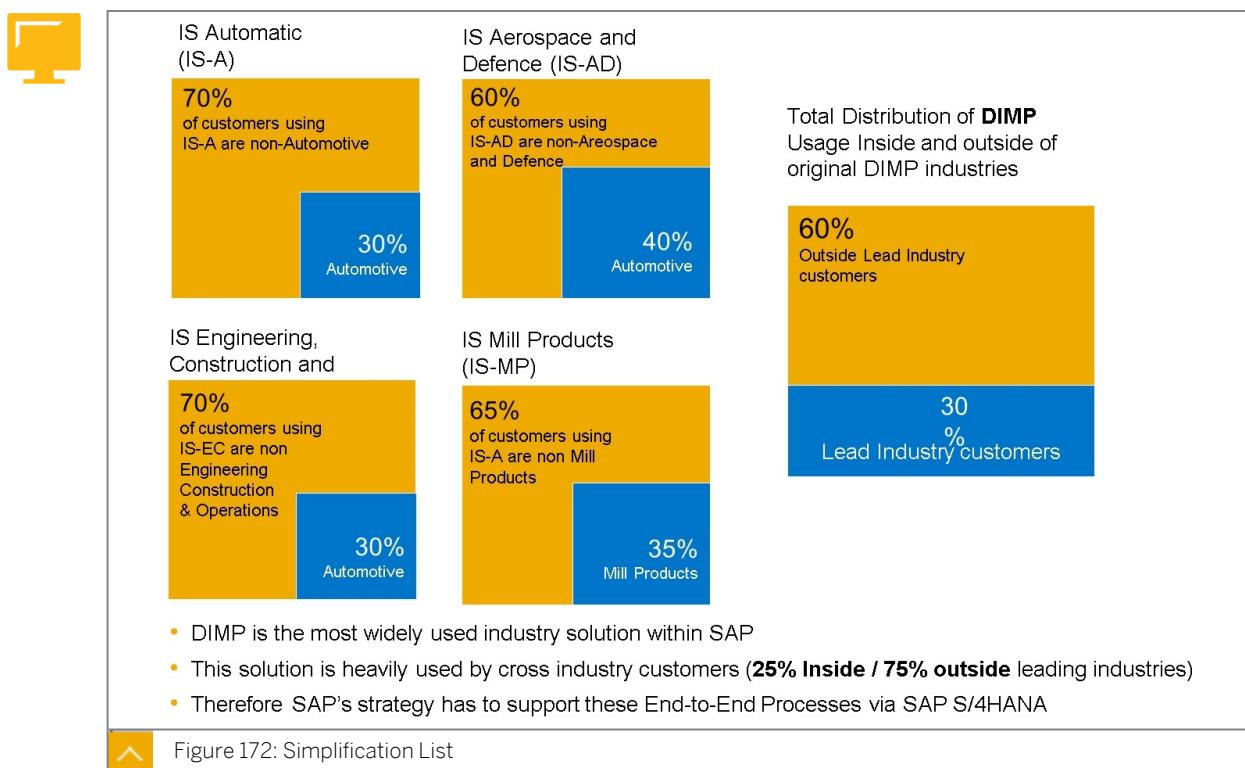


The simplification list is a collection of single simplification items. A simplification item in sales can have a business impact and a technical impact. With every new release of SAP S/4HANA, the simplification list is updated with release-relevant information.

Review the simplification list to identify the areas for which you have to take actions, and to create an overall conversion project plan.

In the simplification list, a simplification item can contain the following different categories of detailed information:

- The description
- The recommendation
- The edition release
- The customer effort
- The service offering
- The corresponding notes
- Further items, such as change of existing functionality, consolidation of existing functionality, not strategic, and plans for next release



When we research about SAP S/4HANA, we find a lot of information about the simplified scenarios, or about the great new features, such as MRP Live, Embedded PP/DS, or Advanced ATP.

However, there is a relevant topic which is very often forgotten, which is the fact that the standard business functions and many industry solution functionalities, are active by default in SAP S/4HANA.

For more than 20 years, SAP has been providing industry-specific functionality to either replace or enhance the standard functions of the business suite.

For example, a customer in the automotive industry may be keen to implement the SAP for Automotive solution to take advantage of the additional functionality that supports complex component supersession management (such as when a car component is no longer available and is replaced by one or more newer, improved components).

You might think that this specialized function would only be of interest to organizations in the automotive industry, but any organization might find they also have need for this type of function to manage any type of product replacement scenario. In fact, it is surprising that the majority of organizations who use some of the most popular SAP industry solutions are not from those industries at all.

SAP decided to combine the functions from various generic industry solutions with SAP S/4HANA Enterprise Management, so that any organization can include these functions in their own solutions.

The industry solutions SAP chose are part of what is known as Discrete Industries and Mill Products (DIMP). DIMP is the umbrella term used to describe a group of generic industry solutions, and it can be broken down into more specific industries, including aerospace and defense, automotive, high tech, engineering construction and operations, and industrial machinery and components industries.

From Automotive

- Integrated Product and Process Engineering
- Packaging Logistics
- Executing Inbound Deliveries
- Just-in-Time, Just-in-Sequence
- Automotive-specific Kanban features
- Production Backflush for Discrete Industries
- Self-Billing and Evaluated Receipt Settlement
- Scheduling Agreement Processing (enhancements)
- Vehicle Management System, Vehicle Search
- Long Material Number

From E&C, Aerospace and Defense, Mill

- Equipment Tools Management
- Bill of Services
- MRO Maintenance, Repair and Overhaul
- Order Combination for Production and Process Orders (Mill)

From Utilities

- Asset Operations and Maintenance
- Meter Logistics and Operations Services
- Intelligent Meter Reading Processing
- Bill-to-Cash for Energy Prosumers
- Credit and Collection Management

From Professional Services

- Commercial Project Management

From Consumer Products

- Catch Weight Management (including conversion)
- SAP Agricultural Contract Management

From Retail and Fashion / Wholesale

- Master Data Management for Merchandising
- Omnichannel Merchandise and Assortment Planning
- Pricing and Promotions
- Merchandise Procurement
- Demand and Supply Planning
- Inventory Management and Order Response
- Store Commerce

From Oil and Gas

- Hydrocarbon Product Management
- Trader's and Scheduler's Workbench (TSW)
- Joint Venture Accounting
- Retail Fuel Network Operations
- Secondary Distribution Management

From Banking

- Average Daily Balances
- Amount Field Length Extension in the General Ledger
- Multi-Currency Processes and Accounting
- Error Correction and Suspense Accounting

From Media

- Product Master Hierarchy

**LESSON SUMMARY**

You should now be able to:

- Describe the SAP S/4HANA simplification list

Learning Assessment

1. In SAP S/4HANA Enterprise Management, a new responsive user experience design has been implemented for the roles of:

Choose the correct answers.

- A Sales representative order management and billing
- B Inventory Manager
- C Procurement clerk
- D Material planner

2. SAP Fiori apps help in managing supplier invoices and payment blocks.

Determine whether this statement is true or false.

- True
- False

3. With MRP Live, the MRP controller can match demand and supply more efficiently than was previously possible.

Determine whether this statement is true or false.

- True
- False

4. Sales KPIs are integrated in SAP Cloud Analytics.

Determine whether this statement is true or false.

- True
- False

5. Identify the features of Advanced Available to Promise.

Choose the correct answers.

- A Advanced transportation scheduling
- B Mass enabled fast availability check
- C Use-case driven product allocation check
- D Semi-manual plant substitution

6. Customer Engagement and Packages Service Offerings support efficient issues resolution through multichannel customer engagement and smart interactions.

Determine whether this statement is true or false.

- True
- False

7. _____ leverages embedded software management for holistic product modeling.

Choose the correct answer.

- A Variant Configuration
- B Project Financials Control
- C Project Logistics Control
- D Product Development Foundation

8. Maintenance Planning and Scheduling reviews ongoing maintenance activities with the ability to reschedule multiple times a day.

Determine whether this statement is true or false.

- True
- False

9. The universal journal represents the single source of truth in SAP Simple Finance.

Determine whether this statement is true or false.

- True
- False

10. Which of the following functional areas are available in SAP Human Capital Management for SAP S/4HANA (one or more can be correct).

Choose the correct answers.

- A Personnel Management
- B Talent Management
- C Time Management
- D Payroll

11. The SAP S/4 HANA Compatibility Pack (HCM) will also be available beyond 2025.

Determine whether this statement is true or false.

- True
- False

12. SAP Human Capital Management for SAP S/4HANA will be based on SAP ERP HCM with selected SAP HANA database related enhancements.

Determine whether this statement is true or false.

- True
- False

13. The simplification list is a key document that is used in the implementation phase and is relevant for all customers.

Determine whether this statement is true or false.

- True
- False

Learning Assessment - Answers

1. In SAP S/4HANA Enterprise Management, a new responsive user experience design has been implemented for the roles of:

Choose the correct answers.

- A Sales representative order management and billing
- B Inventory Manager
- C Procurement clerk
- D Material planner

Correct. In SAP S/4HANA Enterprise Management, a new responsive user experience design has been implemented for the roles of sales representative order management and billing, procurement clerk, and material planner.

2. SAP Fiori apps help in managing supplier invoices and payment blocks.

Determine whether this statement is true or false.

- True
- False

Correct. SAP Fiori apps help in managing supplier invoices and payment blocks.

3. With MRP Live, the MRP controller can match demand and supply more efficiently than was previously possible.

Determine whether this statement is true or false.

- True
- False

Correct. With MRP Live, the MRP controller can match demand and supply more efficiently than was previously possible.

4. Sales KPIs are integrated in SAP Cloud Analytics.

Determine whether this statement is true or false.

True

False

Correct. Sales KPIs are integrated in SAP Cloud Analytics.

5. Identify the features of Advanced Available to Promise.

Choose the correct answers.

A Advanced transportation scheduling

B Mass enabled fast availability check

C Use-case driven product allocation check

D Semi-manual plant substitution

Correct. Advanced Available to Promise provides advanced transportation scheduling, mass enabled fast availability check, and use-case driven product allocation check.

6. Customer Engagement and Packages Service Offerings support efficient issues resolution through multichannel customer engagement and smart interactions.

Determine whether this statement is true or false.

True

False

Correct. Customer Engagement and Packages Service Offerings support efficient issues resolution through multichannel customer engagement and smart interactions.

7. _____ leverages embedded software management for holistic product modeling.

Choose the correct answer.

A Variant Configuration

B Project Financials Control

C Project Logistics Control

D Product Development Foundation

Correct. Product Development Foundation leverages embedded software management for holistic product modeling.

8. Maintenance Planning and Scheduling reviews ongoing maintenance activities with the ability to reschedule multiple times a day.

Determine whether this statement is true or false.

True

False

Correct. Maintenance Execution reviews ongoing maintenance activities, with the ability to reschedule multiple times a day.

9. The universal journal represents the single source of truth in SAP Simple Finance.

Determine whether this statement is true or false.

True

False

Correct. The universal journal contains the journal entries generated by business transactions in Financial Accounting (FI) and Controlling (CO) and thus, represents the single source of truth in SAP Simple Finance.

10. Which of the following functional areas are available in SAP Human Capital Management for SAP S/4HANA (one or more can be correct).

Choose the correct answers.

A Personnel Management

B Talent Management

C Time Management

D Payroll

Correct. Personnel Management, Talent Management, Time Management and Payroll are all available in SAP Human Capital Management for SAP S/4HANA.

11. The SAP S/4 HANA Compatibility Pack (HCM) will also be available beyond 2025.

Determine whether this statement is true or false.

True

False

Correct. The SAP S/4 HANA Compatibility Pack (HCM) will not available beyond 2025.

12. SAP Human Capital Management for SAP S/4HANA will be based on SAP ERP HCM with selected SAP HANA database related enhancements.

Determine whether this statement is true or false.

- True
- False

Correct. SAP Human Capital Management for SAP S/4HANA will be based on SAP ERP HCM with selected SAP HANA database related enhancements

13. The simplification list is a key document that is used in the implementation phase and is relevant for all customers.

Determine whether this statement is true or false.

- True
- False

Correct. The simplification list is a key document that is used in the implementation phase, and is relevant only for customers who are converting from SAP Business Suite to SAP S/4HANA.

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UNIT OBJECTIVES

- Describe the concept of embedded analytics with SAP S/4HANA
- Describe a virtual data model (VDM) and its implementation with SAP S/4HANA
- Describe the tools for the end user
- Describe the tools for the analytics specialist
- Describe the tools for the IT expert

- Describe best practices for analytics with SAP S/4HANA
- Describe SAP Analytics Cloud integration with SAP S/4HANA

Introducing the Concept of Embedded Analytics with SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the concept of embedded analytics with SAP S/4HANA

Embedded Analytics with SAP S/4HANA

In the past, we periodically moved transaction data from the transactional systems (OLTP) to dedicated, analytical (OLAP) systems, through a series of steps known as Extraction, Transformation, and Loading (ETL). This was done because transactional systems are not built to handle sophisticated analysis. Their focus is on optimal transaction processing. The transaction data is physically moved to a system where the focus is on optimized analysis. This movement creates delays in making operational data available for analysis, and there are many points of failure along the journey, so it comes with risk. This data transfer activity encourages the inefficient behavior of **transact then analyze**. For optimal decision making, we need to be able to analyze at the same time that we transact.

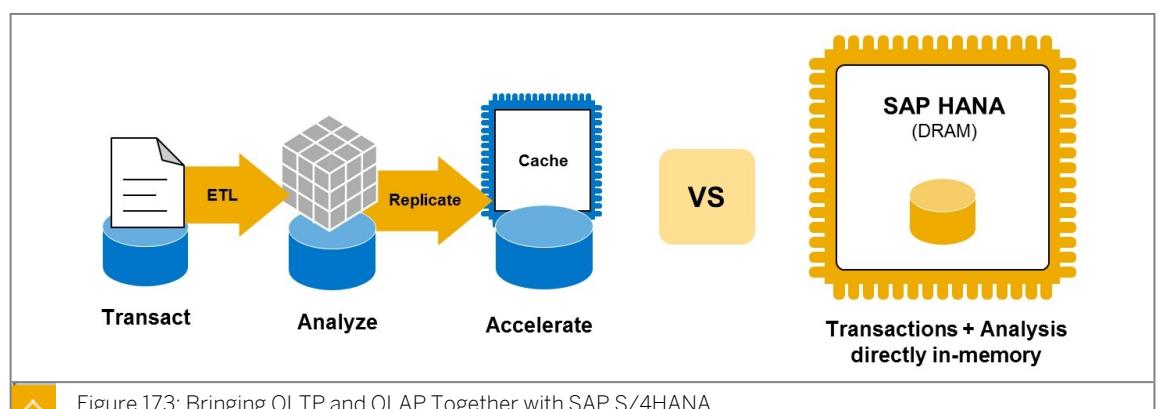


Figure 173: Bringing OLTP and OLAP Together with SAP S/4HANA

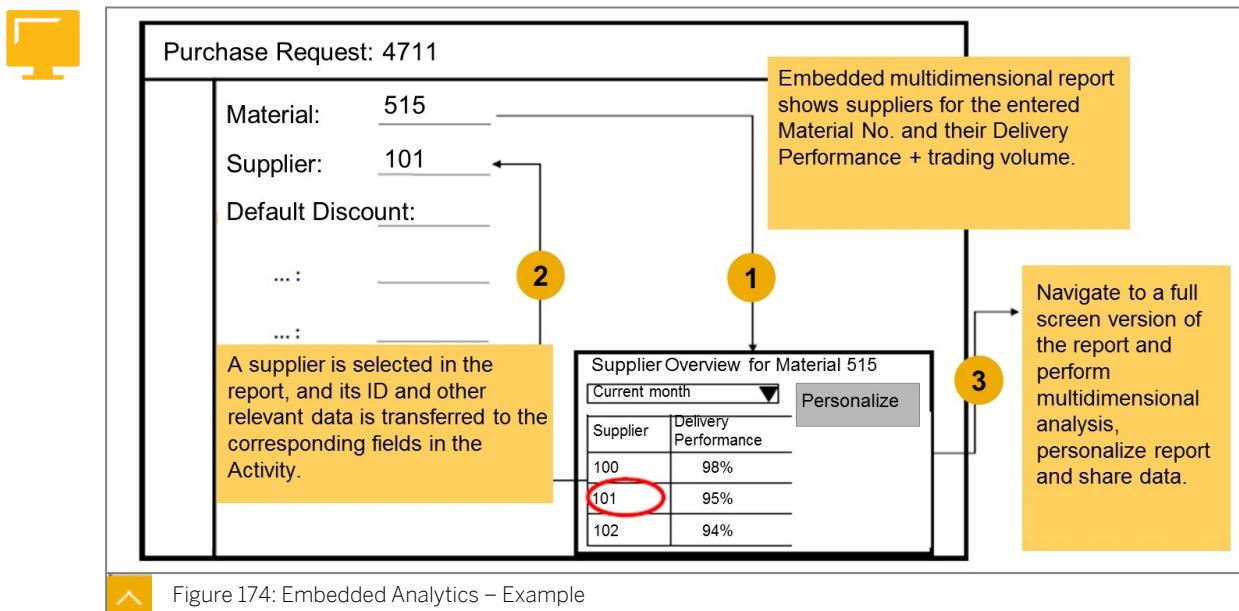
Additionally, the landscape is complex and expensive, and special skills are needed to implement and run the various components in the ETL flow. One of the side-effects of the ETL approach is that a huge amount of duplication is generated, due to the constant copying of data from one system to the next.

With SAP S/4HANA, OLTP and OLAP are combined on a single, in-memory platform. This means that there is no more moving data, generating multiple copies, and causing delays in the viewing of the business performance information. We also have a much simpler IT landscape with only the SAP HANA platform needed.

A key enabler of this simplicity is that the SAP S/4HANA data model is simple. We do not need to prepare and aggregate transactional data into separate analysis tables. All analysis is done directly on the core transactional tables. There is no more moving data, either from one

system to another, or even within one system, from detailed table to summary table. There is no redundancy at all. Additionally, SAP S/4HANA includes built-in analysis tools that are SAP Fiori based and user-friendly and promote self-service operational BI.

Embedded Analytics



The figure, Embedded Analytics – Example, provides an example of SAP S/4HANA embedded analytics in action.

As you can see, the user is creating a new purchase request, and needs to assign a supplier. There are quite a few suppliers who can shop this product, so an embedded analysis right inside the application provides some key decision making information to the user to help them make the decision without leaving the application.

The users choose the supplier with the best delivery performance.

Advanced BI Tools

Consider a scenario when a user needs to find out why a supplier does not achieve 100% delivery performance, for example, because there has been a serious issue that might be repeated.

The user begins a drill down to break down that 95% figure to look for a pattern. Perhaps the concern is far in the past and issues have now been fixed. Or perhaps there were serious issues with the whole order.

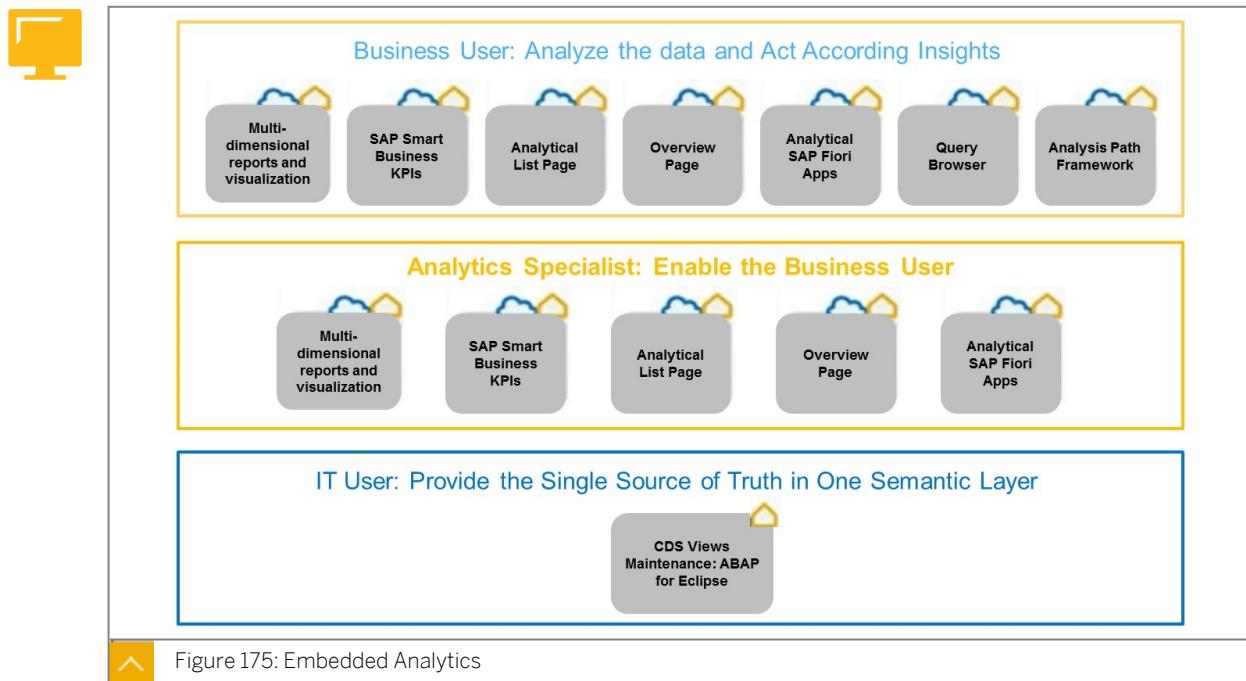
This seamless, extended exploration of data is possible because, with SAP S/4HANA, you can launch advanced BI tools while still in context. You start inside the transaction and then navigate using embedded analytic tools, and if necessary, continue to navigate using sophisticated BI tools without losing the context.

You can explore all dimensions of the performance of a supplier and, if necessary, drill all the way down to individual historical transactions. You can also use tools to look for hidden patterns of behavior to identify warning signs. Additionally, you can compare the current supplier data with years of historical information on the supplier to identify trends. All of this analysis is always based on real-time data.

This is all possible with SAP S/4HANA embedded analytics, and we can address the low levels of satisfaction illustrated earlier.

Therefore, as well as making analytics available inside the business processes, we provide sophisticated tools that allow for advanced analysis.

SAP S/4HANA Embedded Analytics



The tools for SAP S/4HANA embedded analytics are assigned to either the business user who needs to analyze the data and act according to insights, or to the analytics specialist who needs to enable the business user.

There is also another role, the IT user. This person is typically a full-time developer (coder) who is familiar with the deeper technicalities of SAP S/4HANA, such as OData services, CDS view syntax, and SAP Fiori application development. In the context of embedded analytics, the IT user is responsible for maintaining the virtual data model. This includes creating extensions to the virtual data model using CDS syntax. The IT user is likely to be responsible for managing access to the SAP Fiori apps and the data that they expose. The IT user will have the skills to develop additional reports and applications based on the SAP-standard supplied SAP Fiori floorplans such as Analytical List Pages and Overview Pages. The roles of analytics specialist and IT user typically overlap in most organizations. It is possible for an experienced analytics specialist to work with the CDS editor in Eclipse, and so the duties of the IT user might be reduced.



LESSON SUMMARY

You should now be able to:

- Describe the concept of embedded analytics with SAP S/4HANA

Describing the Virtual Data Model (VDM)



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe a virtual data model (VDM) and its implementation with SAP S/4HANA

Virtual Data Model (VDM), and its Implementation with SAP S/4HANA

What is a Virtual Data Model (VDM)?

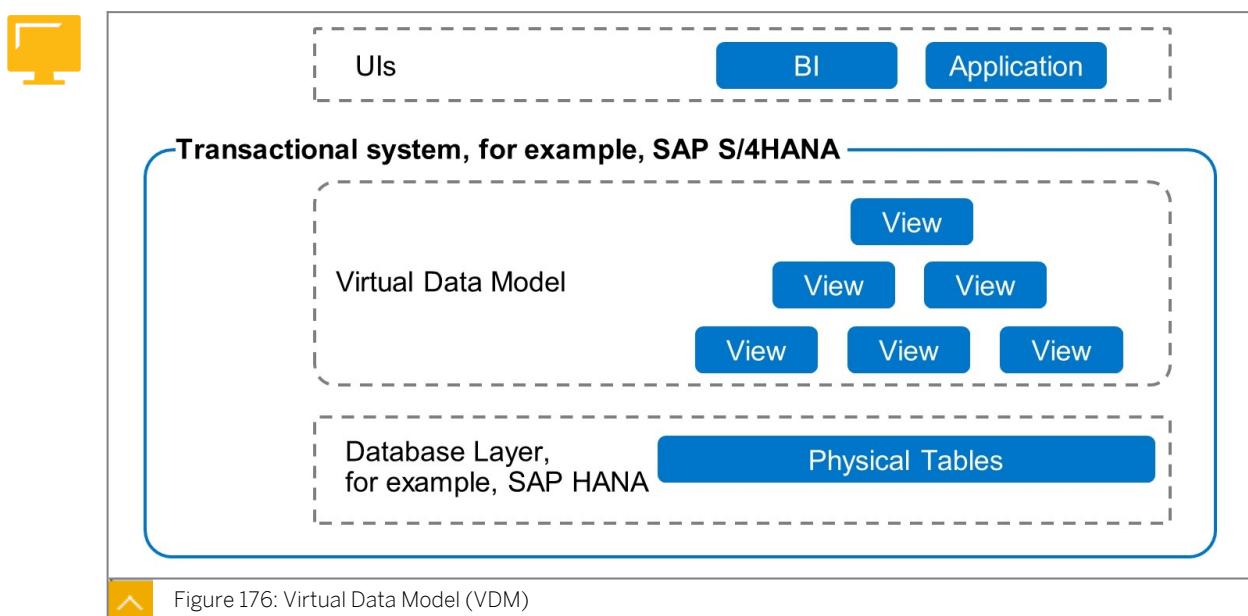


Figure 176: Virtual Data Model (VDM)

Database tables are generally not built for direct consumption by analytical applications. Database tables are generally consumed directly by transactional applications that need to read, insert, update, and delete records. Database tables are often complex, and do not easily represent business views of data without combining them with other database tables. The main goal of a table is to provide a physical and optimal store of data, and this does not take their consumption by analytical applications into account. Optimal storage is their main goal, and this goal cannot always co-exist with the goal of ease of consumption. That is where a virtual data model comes in.

A virtual data model (VDM) is a hierarchy of views, in which each layer adds more business context, until the top layer is consumed by the application.

The lowest VDM layer sits on top of the database tables and consumes the most important data directly from the tables. Here, we often see joins that bring the fragmented tables together.

The next VDM layer consumes from the first virtual layer to refine the data, apply filters, add calculations, convert currencies, change the description of the columns, and so on.

There is no technical, fixed limit to the number of layers in a VDM. However, for consistency and governance, the number of layers and their purpose are usually well defined.

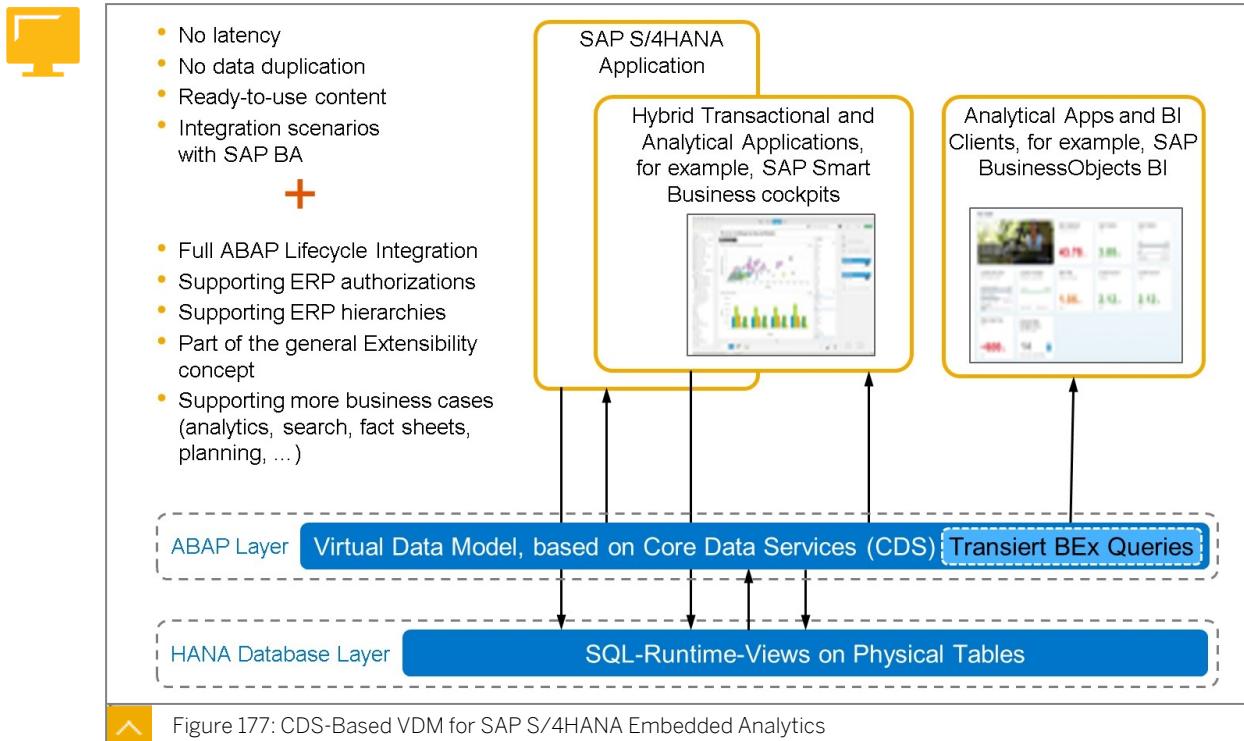
A VDM can be developed using scripting tools or graphical modeling tools. The VDM contains views that are fully reusable in any application, and can also be extended by customers.

With the introduction of SAP Business Suite on HANA, SAP developed their first VDM called SAP HANA Live. SAP HANA Live exposes all key operational tables from the various SAP Business Suite applications such as ERP and CRM, and exposes them as views that can easily be consumed by any BI tool so that operational reports can be built. SAP HANA Live is still available and important for customers who run SAP Business Suite on SAP HANA.

For SAP S/4HANA, **SAP HANA Live is not used**. We have made huge changes to simplify the SAP S/4HANA data model compared to SAP Business Suite, and SAP HANA Live is based on the original, non-simplified data model that is used by SAP Business Suite and not SAP S/4HANA. So you might wonder why we did not just develop a new version of SAP HANA Live for SAP S/4HANA. SAP HANA Live is built using the modeling environment objects of SAP HANA, specifically Calculation Views (SAP HANA). While there is nothing at all wrong with that, SAP HANA Live does come with many limitations. The key limitation is that SAP HANA Live has only one use case, Business Intelligence (BI). While we do need to support BI, the SAP S/4HANA VDM also needs to support many other use cases, including planning, enterprise search, and so on. We did not want to develop separate VDMs for each of these use cases especially when they have so much in common.

So for SAP S/4HANA, we have a brand new implementation of the virtual data model using a completely different technology from SAP HANA Live that offers more flexibility. That technology is **ABAP-managed Core Data Services (CDS)**.

CDS-Based VDM for SAP S/4HANA Embedded Analytics



The SAP S/4HANA VDM is built with ABAP-managed CDS views. ABAP-managed CDS views are developed, maintained, and extended in the ABAP layer of the SAP S/4HANA system. They are ABAP artifacts, and are physically stored in the ABAP repository, where the ABAP programs reside. They do not reside in SAP HANA.

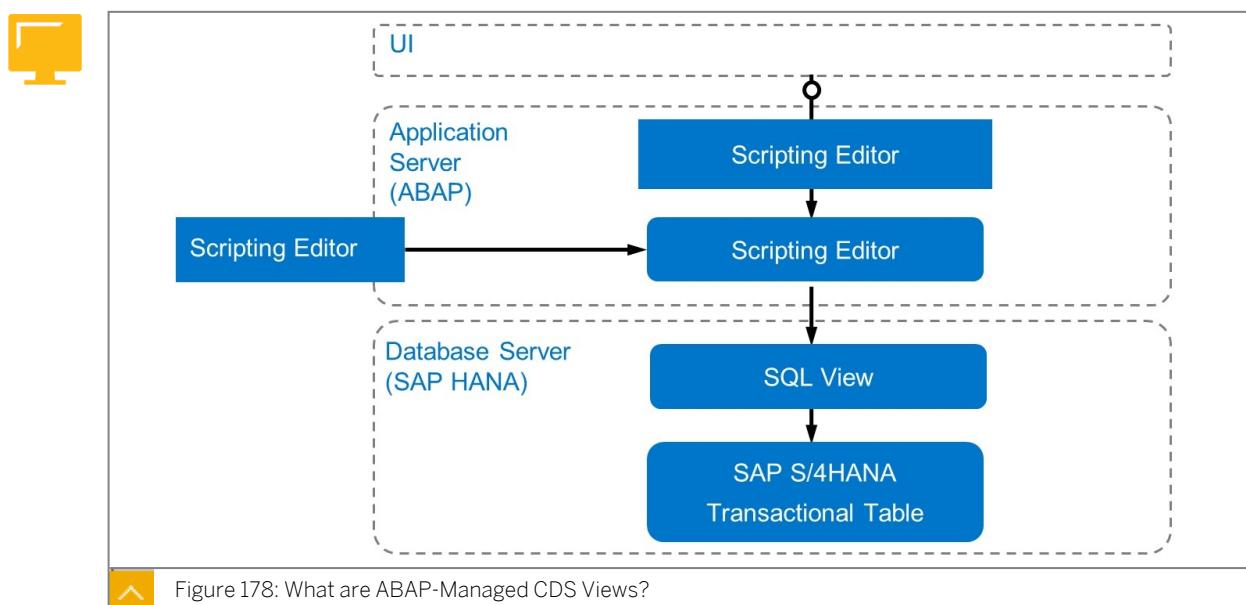
It is advisable to refer to them carefully as ABAP-managed CDS views because there is another type of CDS view that is managed and stored in the SAP HANA platform. These are called SAP HANA native CDS views. These CDS views are not relevant to SAP S/4HANA embedded analytics.

Many SAP S/4HANA embedded analytics tools directly consume the CDS views, but CDS views also generate transient SAP BW InfoProviders. Think of these as dynamic SAP BW InfoCubes that are created at runtime and disappear when the session ends.

This is good news, because it means you can build SAP BW BEx queries using CDS views as the data source. It also means you can build reports with any SAP BI (BusinessObjects) tools, making use of the CDS views, with or without a BEx query.

A key concept behind CDS views, is that they are the foundation for all consumption for SAP S/4HANA analytics and remove the need to develop the consumption layer in the database.

ABAP-Managed CDS Views



A CDS view is built using SQL, but with added annotations. When the CDS view is activated, an SQL view is generated in the SAP HANA database.

Annotations are added to the native SQL to enrich the data when it arrives at the ABAP layer. The annotations describe how the view can be used (for example, for OLAP use only), restrictions (for example, for the country France only), and business context (for example, this account is a supplier, not a customer).

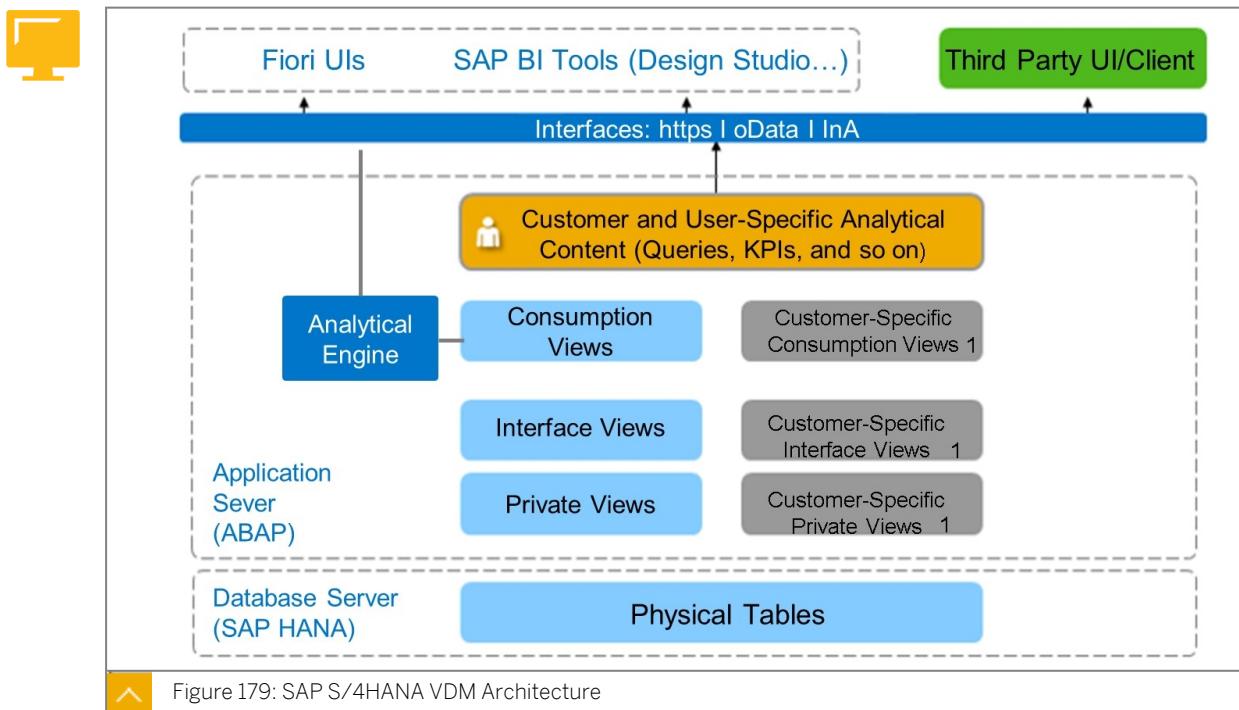
When the CDS view is processed, the result is exposed to a hidden, embedded analytics engine. This is the same engine used by SAP BW. This engine has been developed over many years and is very powerful. It can handle very advanced, multidimensional queries that include complex hierarchies.

This is why a key component of SAP S/4HANA embedded analytics is the embedded SAP BW. The SAP BW analytic engine is necessary for query processing and to generate the transient providers.

CDS views do not contain ABAP code, just standard SQL plus annotations to enrich the data. The runtime for CDS views is ABAP, so an SAP NetWeaver stack is required to execute CDS views. SAP S/4HANA is built on an SAP NetWeaver stack, so it is perfectly suited to this scenario.

CDS views are built using the ABAP editor for Eclipse, and since the 1610 release, we can also build CDS view using a simple SAP Fiori application that key users may also be keen to use.

SAP S/4HANA VDM Architecture



CDS views are built in layers. The idea is to provide a set of base layer views (called private views) to offer a high degree of reusability of common views. Then, you combine these private views to make them more useful at the next layer (interface views).

Finally, you add more business semantics (such as filters and aggregation behavior) to provide a view that is optimal for consumption by the application code or analytic engine (consumption view).

At all layers, extensions can be added. Customers can also add their own views at any layer, and combine them with SAP-delivered views.

This layering model is strictly enforced by SAP to provide governance and promote controlled extensibility.



LESSON SUMMARY

You should now be able to:

- Describe a virtual data model (VDM) and its implementation with SAP S/4HANA

Unit 6

Lesson 3

Describing the Tools for the End User



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the tools for the end user

Describing the Tools for the End User

An overview page is a type of analytical application that provides an entry-level view of all the key information for a domain, such as sales or finance.

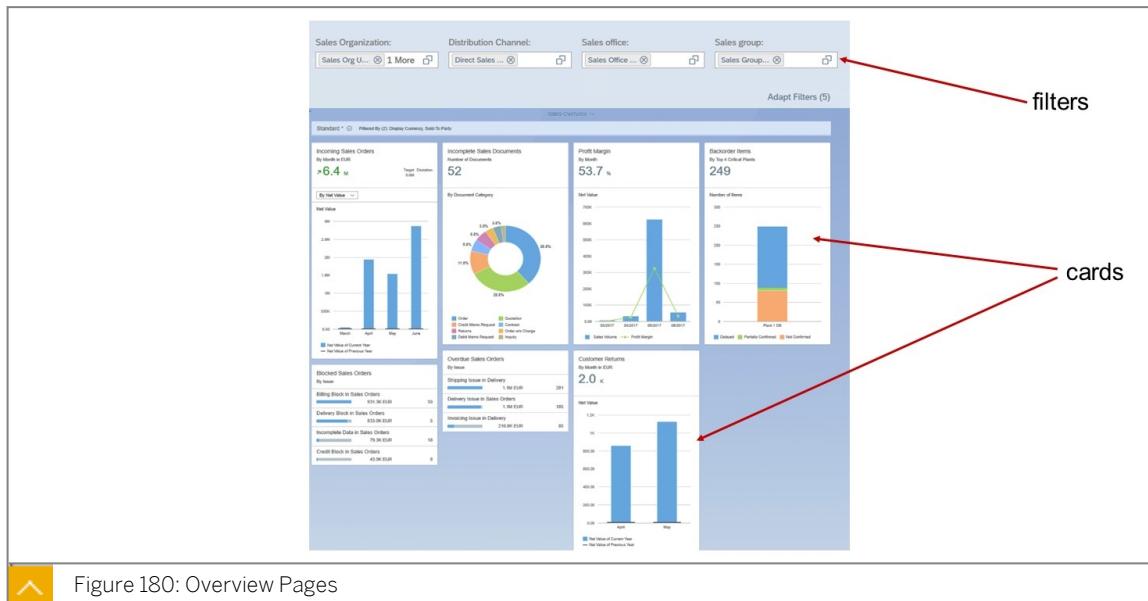


Figure 180: Overview Pages

The overview pages provide a 'street-level' view of all the key information for a specific domain. Overview pages are not very detailed, but provide enough information to quickly get the 'big picture' for a line of business, with the option to drill down for deeper investigation.

In comparison, a user's SAP Fiori Launchpad home page contains a more cross-department view made up of many tiles that present KPIs and other key information on their surface that come from multiple domains. This higher-level view would be regarded as the 'bird's eye view' of the business.

Overview pages use cards to provide key information as charts, lists, tables or texts.

The cards can be positioned on the page by the business user. Cards can be removed, or new cards added.

The cards can be clicked either at the header or in the details to provide a drill down.

Analytical List Pages (ALP)

An Analytical List Page (ALP) is a type of SAP Fiori application that brings together all the information that a business user requires to process a worklist. The ALP provides a combination of analytical and transactional information all on one screen so that it is easy to focus on the most critical issues, and then act on them immediately.

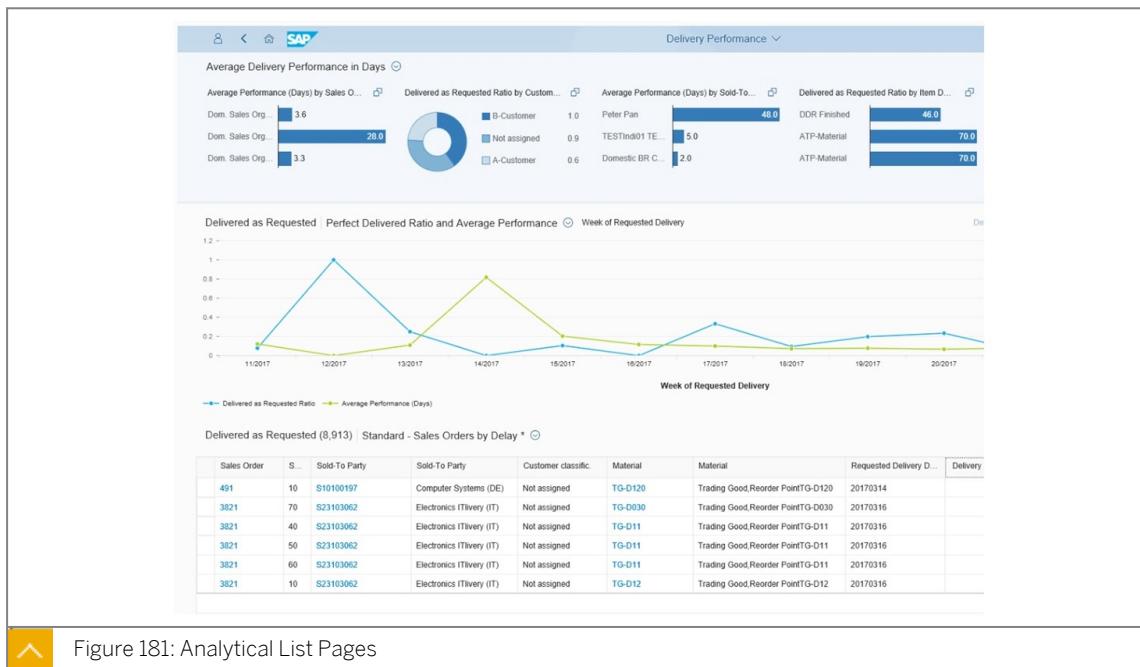


Figure 181: Analytical List Pages

This follows the insight to action approach supported by SAP S/4HANA, which means that a business user can transition easily between an analytical context and a transaction context, and back again. Actions taken on the transaction are immediately reflected in the analytics of the page so the user sees the improving situation in real-time.

The ALP is highly customizable to ensure a focused and localized view of the business issues. Each user can set their own preferences and share common filter choices and layouts with other users.

SAP provides many ready-made ALPs, but they can also be created from scratch. The standard delivered ALPs are well documented in the SAP Fiori Apps Reference Library, with both usage and installation details provided.

The Query Browser

The Query Browser is an SAP Fiori application that you use to quickly, and easily search for and launch analytical queries.



Note:

Analytical queries are simply CDS views of the type consumption (C_) that are marked for use by analytical tools (annotation `@ANALYTICS.QUERY = true`) and contain rich metadata, including default rows and column layouts and default filters.

The Query Browser displays all the SAP standard analytical queries and custom analytical queries to which the user has access.

The Query Browser allows the end user to search for an analytical query and launch it for analysis.



Note:

The analytical query is specified via a URL, so it is possible to create a tile that directly starts a specific analytical query and its saved navigational state, for quicker launching rather than using this tool.

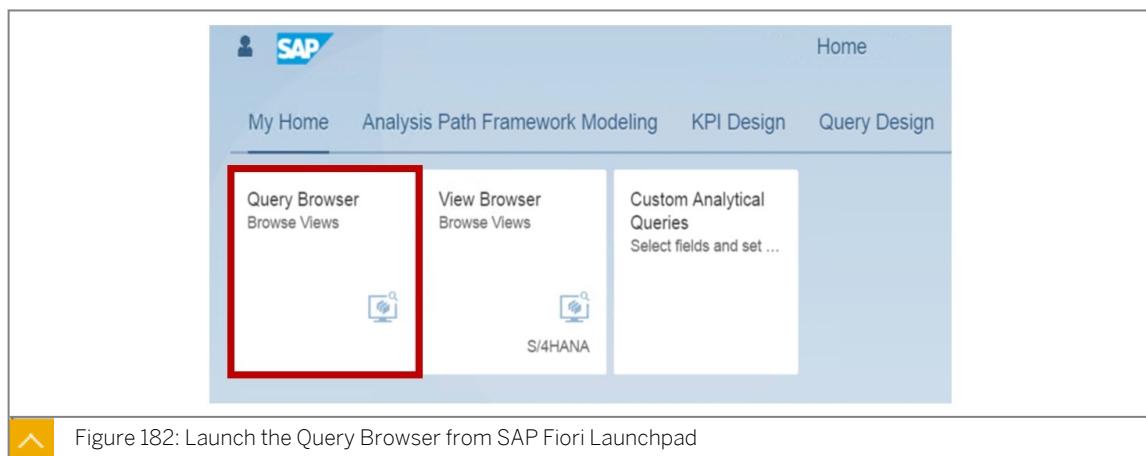


Figure 182: Launch the Query Browser from SAP Fiori Launchpad

To use the Query Browser, the user must be assigned to the employee role **SAP_BR_EMPLOYEE**.

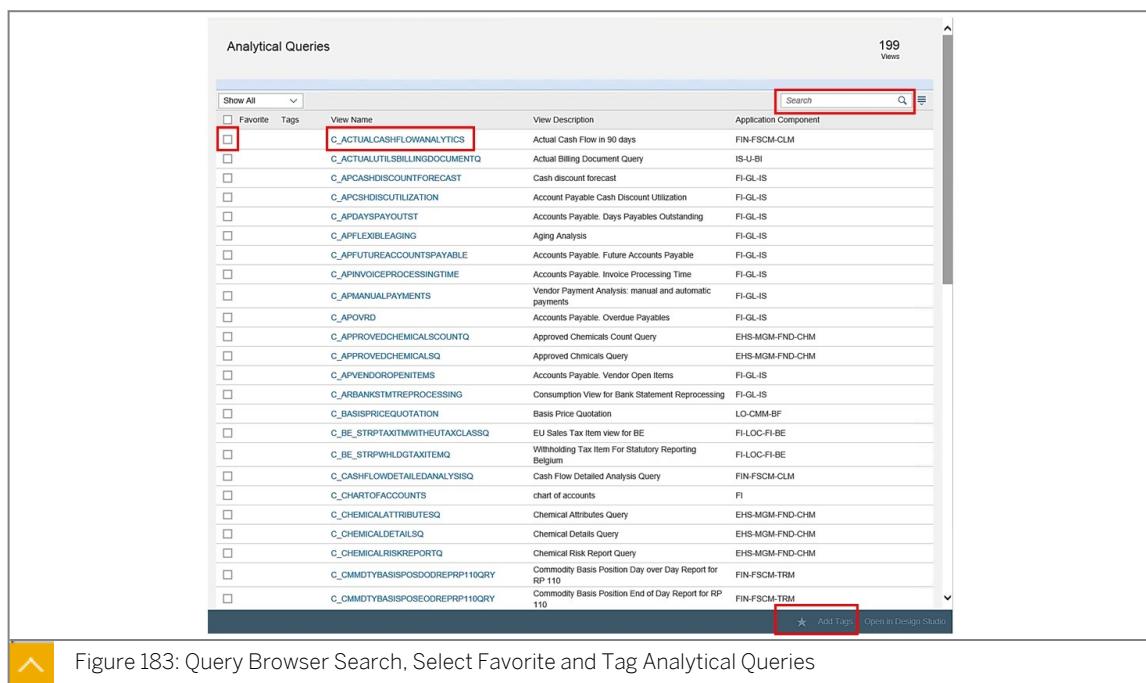


Figure 183: Query Browser Search, Select Favorite and Tag Analytical Queries

In the Query Browser, you see an unfiltered list of analytical queries from all business domains. In reality, you will only work with a few of these.

The key features of the Query Browser are as follows:

- Search for an analytical query using view names, tables, view descriptions, view column names, annotations, or user added tags.
- Sort the list of analytical queries.
- Restrict the display to only analytical queries that belong to an application component (such as SD, FI).
- Tag analytical queries using custom words to make them easier to find later (and search for).
- Mark as *Favorite* so a personal list of frequently used analytical queries can be created.
- Launch the analytical query for navigation.

Once you choose an analytical query, you will see the meta data. Doing this enables the user to display all possible dimensions and measures that are available so that they can decide if the query is suitable.



Note:

The Query Browser was offered in the early days of SAP S/4HANA to display a centralized list of all analytical queries available in SAP S/4HANA. Over time, SAP added more tools such as App Finder and App Search, that might also be useful, and you will notice that there are overlaps with the features of Query Browser.

Multidimensional Reports

Multidimensional reporting includes all explorative analysis tasks that focus on unexpected business questions. Ad hoc filtering, pivoting, sorting, and rearranging of data in tabular or graphical UIs are needed. The key feature of multidimensional reporting is unrestricted navigation across any combination of dimensions with drill downs for discovery of insights.



Scenarios for working with the SAP Fiori multidimensional reporting client:

- Multidimensional analysis (drill down reporting) and list reporting
- Multidimensional planning

Advantages of a data grid in comparison to a table or tree:

- Multiple hierarchies are supported - hierarchies in columns or rows
- Cell merging
- Amounts and currency units in one cell

Full SAP Fiori integration:

- All reports are accessible via the SAP Fiori Launchpad
- Insight to action - each report offers the option to jump to numerous others
- The context is passed in a generic way to the new application



Figure 184: Multi Dimensional Report Overview

Although they are broadly the same, there are two types of web application used in multidimensional reporting:

1. Design Studio Data Grid is available as of SAPUI5 1.48 (S/4HANA on Premise 1709), and used as the default tool for the Multidimensional Reporting Application since S/4HANA 1709.
2. Web Dynpro Data Grid is the main solution for the Multidimensional Reporting Application in S/4HANA <= 1610.

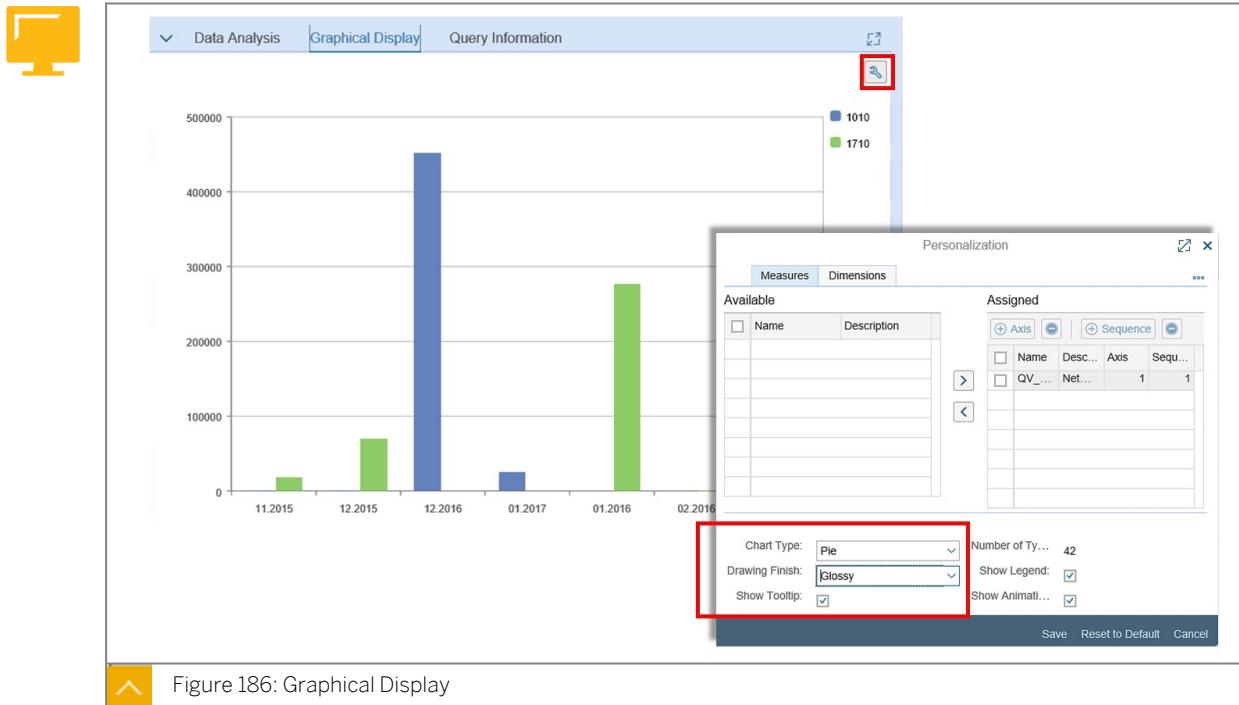
One of the key strengths of multidimensional reporting, is the ability to freely navigate through data using drill downs constructing any level of aggregation over any available measures (key figures). It is also possible to display the results using hierarchies and even have nested hierarchies.

A key use case for multidimensional reporting is when free-format exploration of data is required to gain insights as the navigation progresses. By adding and removing dimensions from the drill down and displaying aggregations, many insights can be quickly gained.

Figure 185: Layout Switch to Graphical Display

		Net Amount				
		11.2015	12.2015	01.2016	02.2016	06.2016
Sales Organization						
1010	Dom. Sales Org DE	\$ 875,00	\$ 65,81			
1710	Dom. Sales Org US	\$ 17.805,55	\$ 69.561,90	\$ 276.822,10	\$ 491,40	
Overall...		Overall Result	\$ 18.680,55	\$ 69.627,71	\$ 276.822,10	\$ 491,40

To switch the report layout from table to graphical display, choose the *Graphical Display* tab.

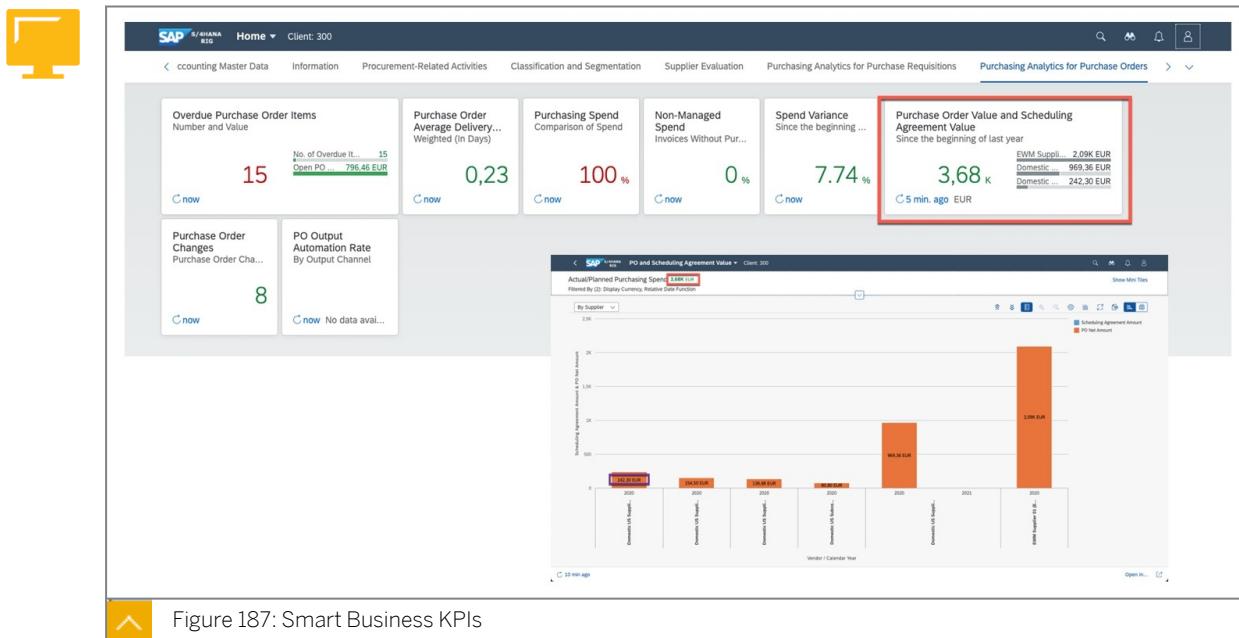


To personalize the graphical display, choose the *Personalization* (wrench) icon in the top right corner.

In the *Personalization* dialog box, you can change the chart type, drawing finish, and add a legend, tool tips, and animations.

Smart Business KPIs

Smart Business KPIs are SAP Fiori tiles with business content on their surface. They display real-time information that is used in the monitoring of business performance.



SAP provide many standard KPI tiles out of the box, but new KPI tiles can easily be created by developers using supplied tools. A business user does not create KPI tiles, because this requires specialist technical knowledge of the underlying database objects.

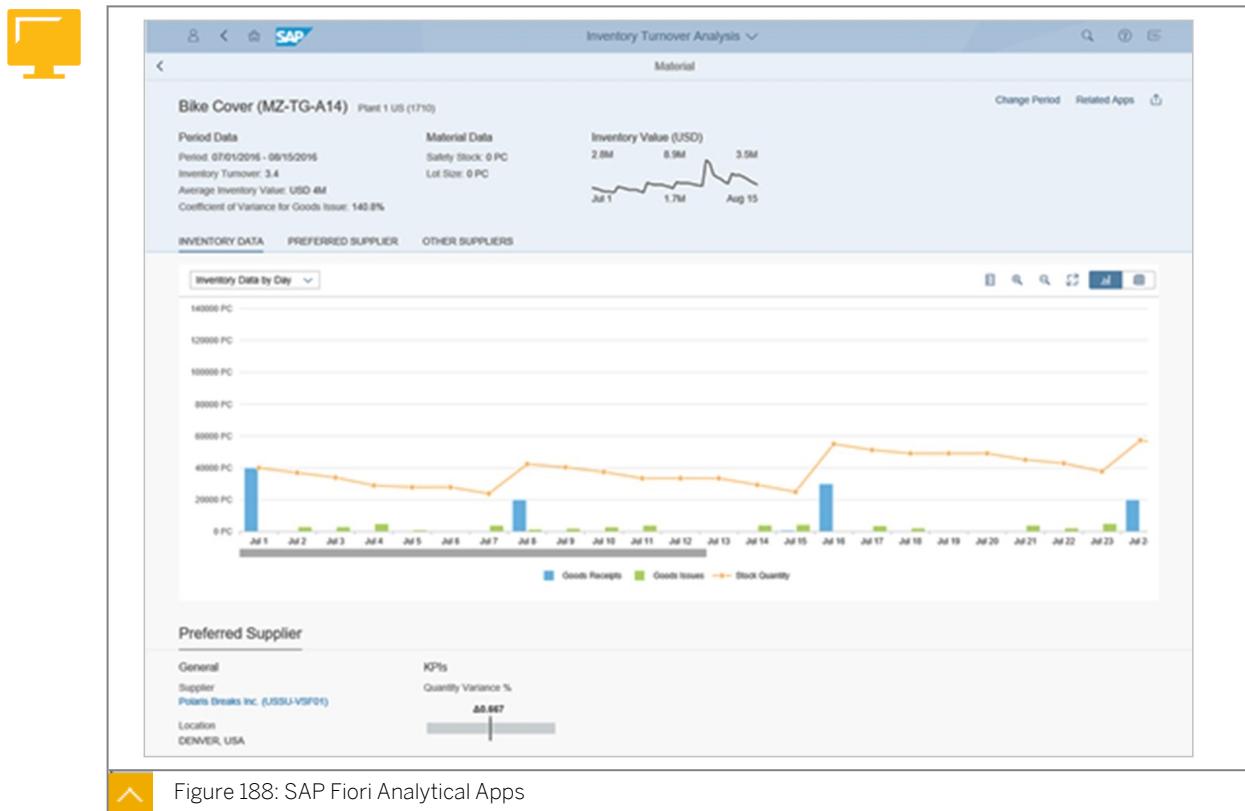
A business user can create their own custom cockpit by selecting interesting KPI tiles in their SAP Fiori Launchpad to provide a complete picture of performance at a glance. KPI tiles can be located using the search feature in the SAP Fiori Launchpad.

The KPI tiles' surface typically presents a single number, where the color of the number could even indicate a status, such as red or green, to represent positive or negative performance. The tile may also present a mini chart focusing on the most important, or most recent data.

A developer who creates a KPI tile can assign it to a Tile Group. A Tile Group brings together multiple related KPI Tiles so that they are already assembled ready for use on the dashboard, so that the business user does not have to do this. You could think of a Tile Group as a cockpit. Tile Groups can be assigned to users' roles so that when they log on, they have ready-to-use cockpits. But, if a business user does like the arrangement of tiles in a group, they can easily create their own custom tile groups in their own SAP Fiori Launchpad from the *Edit Home Page* option. They can also add and remove tiles from the standard tile groups. These changes only affect their own SAP Fiori Launchpad.

SAP Fiori Analytical Applications

SAP Fiori applications belong to various categories including transactional applications and fact sheets. We also have a category of Fiori application called analytical applications. That is the category that we focus on in this lesson.



SAP Fiori Analytical Applications are delivered by SAP, and follow a standard floorplan design (an SAP Fiori design standard) to provide business users with a focused application for a specific business scenario.

There are many analytical applications delivered, and they usually follow these principles:

- They are based on a specific user role and task, for example, material planner, and resource assigner.

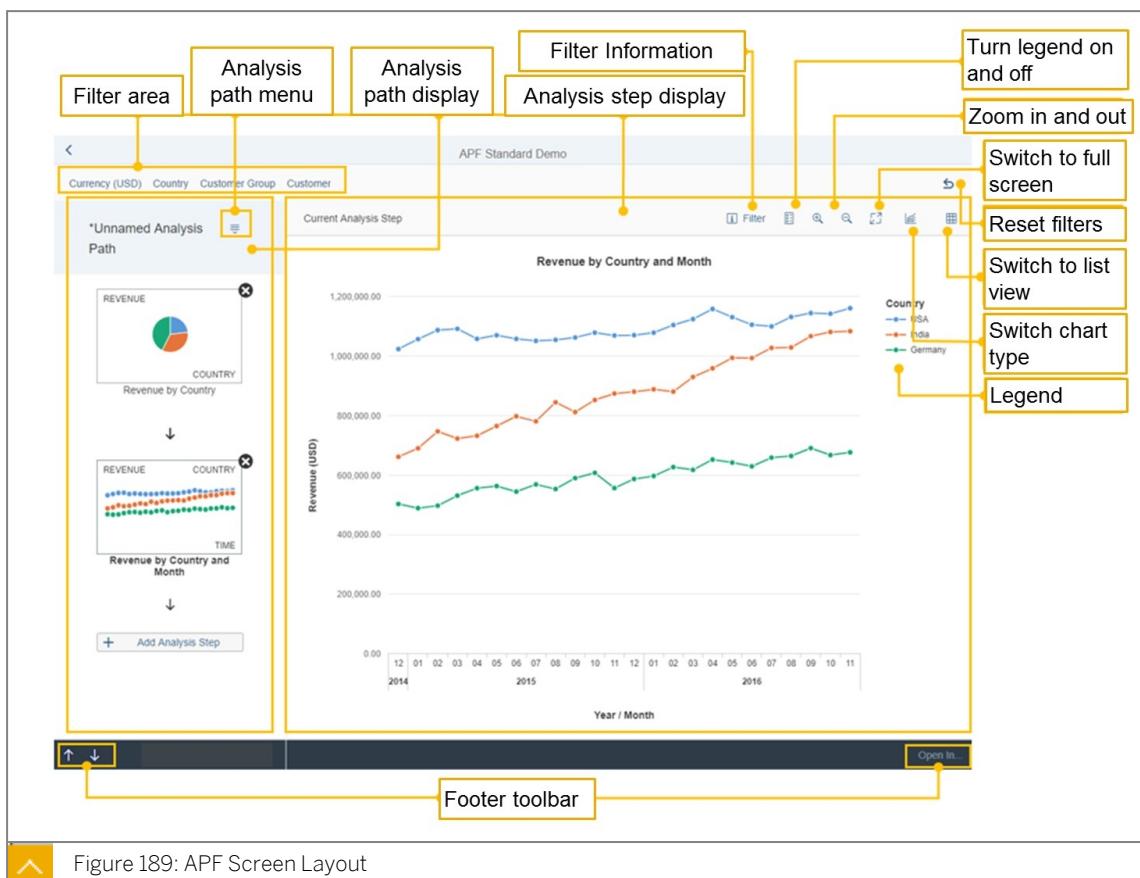
- They provide real-time insight into the operations of your business by collecting and displaying KPIs in useful places.
- They combine transactional and analytical data in one application (insight to action).
- They provide real-time information on large volumes of data in a simplified front end.
- They monitor important key performance indicators (KPIs) in real-time with SAP Smart Business KPIs, and they react immediately to changes in market conditions or operations.



Hint:

You can search for SAP Fiori Analytical Applications using the SAP Fiori Apps Library (<https://fioriappslibrary.hana.ondemand.com/>), and choosing the application type *Fiori – Analytical*.

Analysis Path Framework (APF)



Analysis Path Framework (APF) provides reuse components that allow you to build and enhance interactive analytical Web applications. You can use these applications to explore KPIs and their influencing factors, by drilling down into multidimensional representations of data, such as charts or tables.

APF provides the following features:

- Reusable UI elements:

- Various chart types to visually and interactively depict the data.
- UI elements to display and interact with an analysis path.
- Use of **OData service requests** to expose the data in the underlying server, for example, SAP HANA Extended Application Services (SAP HANA XS).
- The logic for controlling the **behavior of your application**, even for complex analysis scenarios where you filter data, for example.
- The **APF Configuration Modeler** app, to enable you to create your own APF-based applications in a very quick and easy way. You can also use this app to enhance shipped applications.
- A **message handling** concept.
- A **persistence** concept for analysis paths that allows you to save paths under a name, and to retrieve them from the server.
- A **translation process** to change the language of UI texts, or to switch the development language.
- A **generic runtime application** to execute APF configurations that have been created using the APF Configuration Modeler.
- Integration with **SAP Fiori** and **SAP Smart Business**.

Analysis Path Framework (APF) Runtime

The business user executes the APF-based apps in the APF runtime. There are many ways to launch an APF app, such as from a KPI tile, or a link or button in an SAP Fiori Analytical Application, or a card from an overview page. The user can navigate through the predefined steps in the path and add filters and then, optionally, save their own analysis path, which remembers all their settings for later recall.

Unit 6

Exercise 18

Use the View Browser

Open the *View Browser* SAP Fiori application and launch a view to explore sales information.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Open the *View Browser* app from the SAP Fiori launchpad and locate the analytical query **C_SALESORDERITEMQRY**. First, use the filters in the toolbar to show only the Consumption Views and then search for the view by entering **C_SALESORDERITEMQRY**.
2. Launch the analytical query **C_SALESORDERITEMQRY** and at the prompt, enter **USD** for display currency.
3. The query already shows *Net Amount* by *Sales Organization* and *Yr/Month*, but you should expand the result to show who created the orders (use the *Created by* dimension). Use the search feature to find this dimension.
4. Filter the entire query results to show only Sales Organization 1010. Then, remove the *Sales Organization* dimension to display a simpler result.
5. Close the analysis, and return to the SAP Fiori launchpad.

Unit 6

Solution 18

Use the View Browser

Open the *View Browser* SAP Fiori application and launch a view to explore sales information.



Note:

In this exercise, when the values include ##, replace ## with the number provided by your instructor.

1. Open the *View Browser* app from the SAP Fiori launchpad and locate the analytical query **C_SALESORDERITEMQRY**. First, use the filters in the toolbar to show only the Consumption Views and then search for the view by entering **C_SALESORDERITEMQRY**.
 - a) On the launchpad, choose *View Browser* from the *Analytics* group.
 - b) Choose the filter button *Consumption* in the toolbar to display only consumption views.
 - c) In the *Search* field, enter **C_SALESORDERITEMQRY** (case sensitive) and press Enter.
2. Launch the analytical query **C_SALESORDERITEMQRY** and at the prompt, enter **USD** for display currency.
 - a) Select the view by choosing the checkbox alongside **C_SALESORDERITEMQRY**.
 - b) In the toolbar, choose *Show Content*.
 - c) Enter **USD** in the prompt for *Currency*, and choose *OK*.
3. The query already shows *Net Amount* by *Sales Organization* and *Yr/Month*, but you should expand the result to show who created the orders (use the *Created by* dimension). Use the search feature to find this dimension.
 - a) In the *dimension* search field, enter the partial word **crea**.
As you start typing, you see the dimensions that match these characters.
 - b) Drag the *Created by* dimension to the *Rows*.



Note:

You may have to open the *Navigation* panel, by choosing the *Navigation Panel* button.

4. Filter the entire query results to show only Sales Organization 1010. Then, remove the *Sales Organization* dimension to display a simpler result.
 - a) At the top right, open the filter entry pane by choosing *Filters*.
 - b) Scroll to *Sales Organization*, enter **1010**, and choose *Go*.

- c) Drag the *Sales Organization* dimension from the *ROWS* to the *DIMENSIONS* to remove it from the results.



Note:

You may have to enter the *Data Analysis* section by choosing the *Data Analysis* button.

5. Close the analysis, and return to the SAP Fiori launchpad.
 - a) Choose *Home*.



LESSON SUMMARY

You should now be able to:

- Describe the tools for the end user

Unit 6

Lesson 4

Describing the Tools for Analytics Specialists



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the tools for the analytics specialist

Describing the Tools for Analytics Specialists

The View Browser

We supply a large number of ready-made Core Data Services (CDS) views. However, these views do not always contain all of the required fields, especially if the customer has added new fields to the source tables. One of the key tasks of the analytics specialist is to determine if a suitable CDS view already exists, or a new one is needed, and to be able to explore the complete virtual data model of embedded analytics.

To perform this task, a comprehensive exploration tool is needed. The Eclipse tool could be used, but, for analytics specialists, this is usually too complex, and typically only needed if access to the full CDS code is required. To view the essential information a simpler, but comprehensive, tool is needed. That tool is the *View Browser*.



The *View Browser* is used to explore the CDS views supplied by SAP and also those created by customers. With the *View Browser*, you can explore all CDS view types, *Basic*, *Composite*, and

Consumption. This tool exposes only the essential information about a CDS view that could be useful to the analytics specialist. To explore the full details of the CDS view, including the code, you would use the Eclipse tools.



Note:

Be careful not to confuse the *View Browser* with *Query Browser*. The *Query Browser* is limited to Analytical Queries and cannot be used to explore other types of CDS views, such as Cubes and Dimensions. The *Query Browser* is a business user tool. The *View Browser* is used to explore all types of CDS views and is an analytics specialist tool.

The *View Browser* provides many ways to search for any type of view. For example, you can search on any of the following attributes:

- *Field names* - show me all views that refer to the *Campaign* field.
- *Application* – show me all views that belong to Billing.
- *Category* – show me all dimension views or all query views.
- *Tables* – show me all views that are based on table VBAP.
- *View Description* – show me all views with the word 'blocked' in the description.
- *Tags* – show me all views that have been tagged with the words 'Lola's Team Bonus Calculation'.
- *Annotations* – show me all views that check authorizations.

Users can also tag views so they are easy to find in a search. You can also add views to your personal favorites so that you will only see the view that you need for your job or for the development task you are working on.

Explore the View

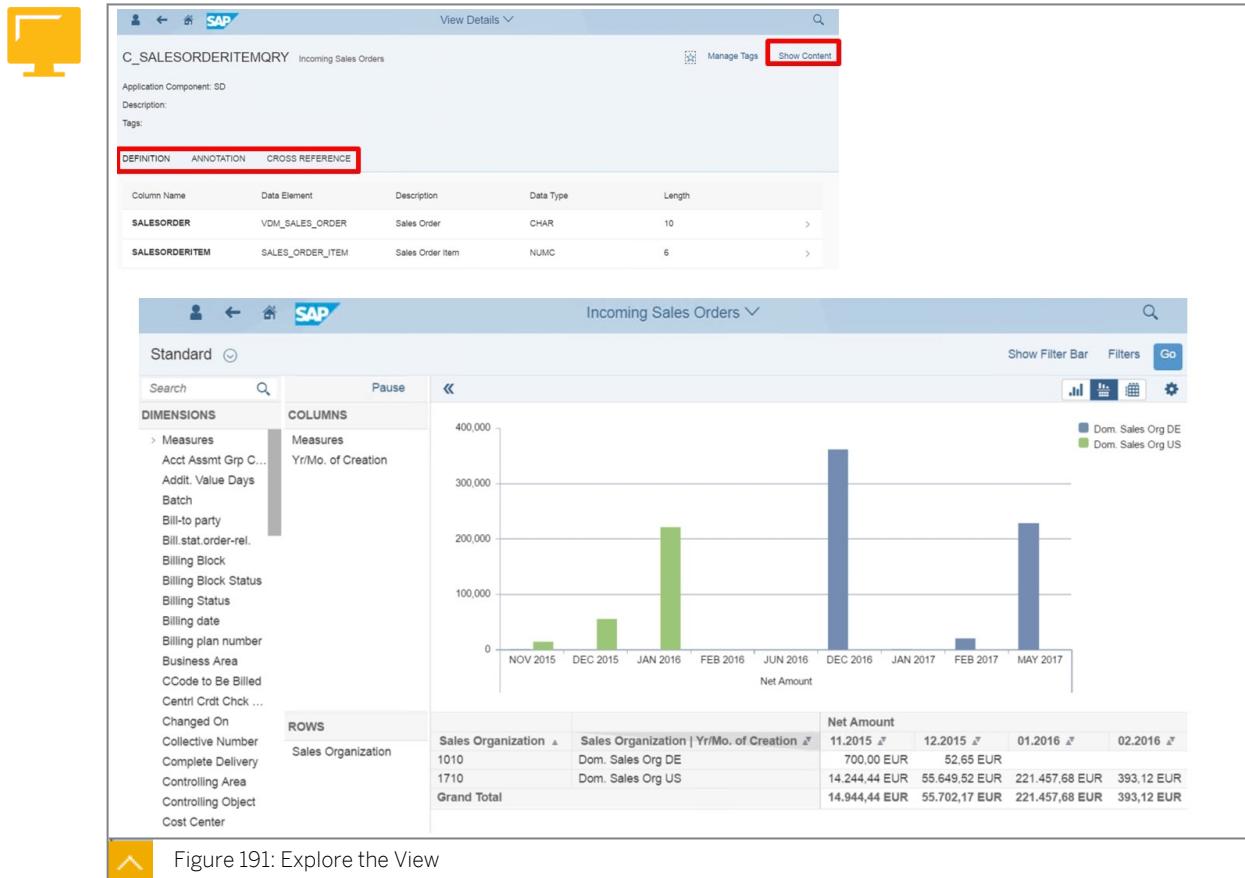


Figure 191: Explore the View

The reports are launched with a standard Design Studio template that offers basic OLAP capabilities to explore the data. This is not meant to be used by business users as a means to launch their queries, but is a useful tool to allow analytics specialists to examine the live data that the view exposes. Only views of the type *Consumption* and also with *Release Status* = Yes can be explored with this tool. Use the option *Show Content*.

You can tag analytical queries so that they can easily be identified by key words or synonyms.

Analytical queries can be marked as favorites, so each user can quickly locate their most popular reports.

To access the *View Browser*, you need to have the Analytics Specialist role (*SAP_BR_ANALYTICS_SPECIALIST*) assigned to your user profile.

Custom CDS Views

There are many SAP-delivered views of the type dimension and cube that can be used as a data source to build analytical queries. We have built these dimension and cube views using the most popular attributes and measures from the underlying tables.

There are times however, when you need to create custom dimension or cube views because you need additional fields that we did not include in the standard views. This happens frequently when custom fields have been added to the source tables.

You might want to simplify standard delivered cubes or dimensions so that they are easier to work with by the people who need to build queries on top of them. For example, you might want to change the standard field labels to more meaningful ones and apply predefined filters to limit the data to local business areas.

Included with SAP S/4HANA embedded analytics, is a tool to create custom CDS views using a simple guided process using forms. No coding is needed. You can create various types of views, including *dimension* and *cube*.

Once you launch the application, you will be presented with all views, both SAP-delivered, and also custom CDS views created by the customer.

Choose *Create* to start building a new CDS view.

Custom Analytical Queries

Analytical queries are CDS views that are built on top of cube and dimension type CDS views to provide the top-most, business-specific layer of the modeling stack. Analytical queries allow you to choose required fields, define filters, add calculations and hierarchies, and choose where the attributes appear in the layout (row or column). Many key users and developers are already familiar with query building (for example, BW Query Designer, Webi Query, and so on) and will find the tool easy to use and many of the features will be familiar to them. SAP provides a large number of analytical queries for all lines of business ready to use.

However, there will always be a need to develop new custom analytical queries. That is why an SAP Fiori tool is provided called *Custom Analytical Queries*.

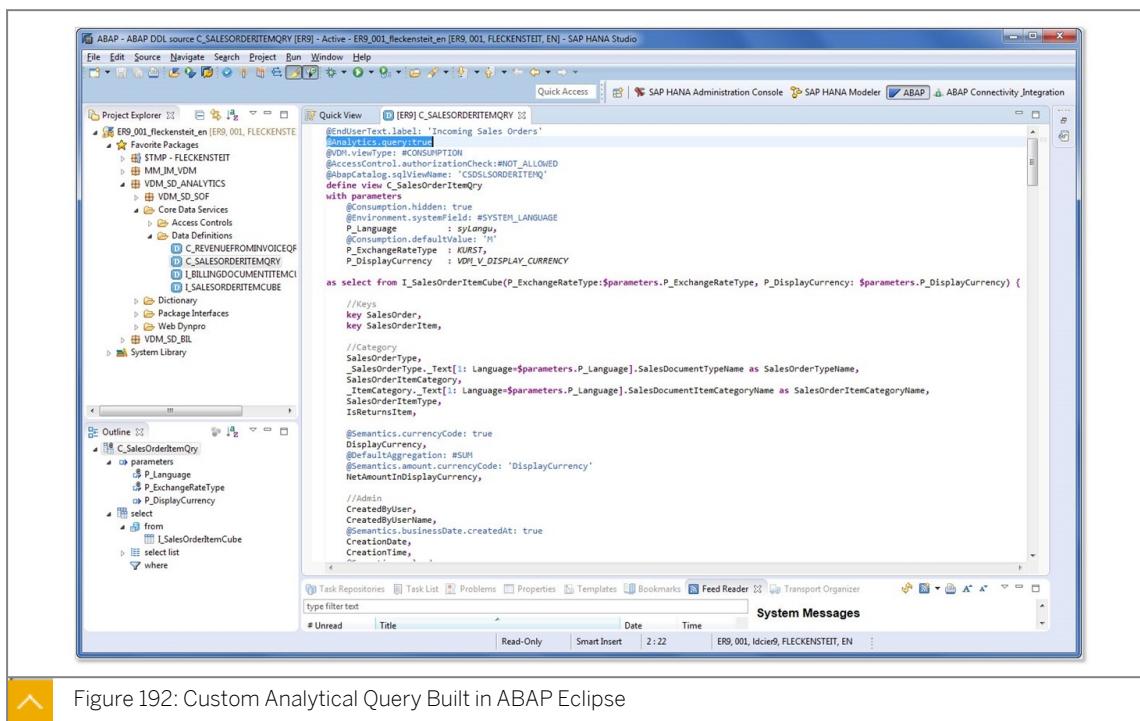


Figure 192: Custom Analytical Query Built in ABAP Eclipse

Although the Analytical Query tool is easy to use, with its form-based editor (no coding required), an understanding of the Core Data Services (CDS)-based data sources is essential. This is why the tool is usually only used by the analytics specialist and not the business user.

Analytical Queries are actually a type of CDS view that specifies the annotation `Analytics.query: true`. You could use the ABAP for Eclipse Editor to create these types of CDS views, but learning the syntax of CDS can be challenging for non-coders. We provide a simpler way to build these CDS views using the SAP Fiori form-based *Custom Analytical Queries* tool. This tool is a simplified way to create the analytical query CDS views without coding, and requires little learning effort.

To launch the application, from the SAP Fiori Launchpad, select the *Custom Analytical Queries* tile.

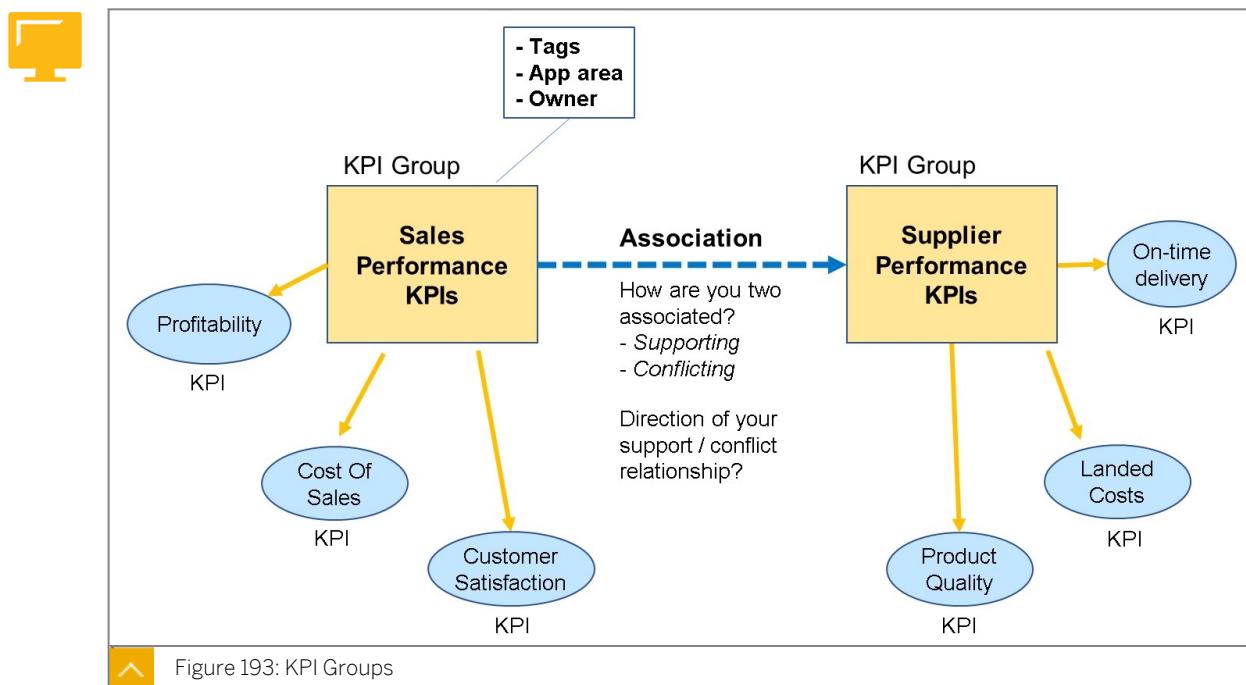
Key Performance Indicators (KPIs)

Key Performance Indicators (KPIs) are measurable values that demonstrate how effectively an organization is achieving its key business objectives.

KPIs are usually created from a calculation that can involve many underlying measures. For example, the KPI Key Customer Renewals Trend might be based on a calculation that compares the number of loyal, high-spend customers who renewed their subscriptions to the number last year and expresses this as a percentage. This gives a very clear, at-a-glance indicator of performance. A KPI value is often evaluated against a target value. For example, you might specify that a KPI Lost Sales should have a target value of zero, or Time Sheet - Days Booked in Week could be set to five (working days). With a target defined, it is then possible to highlight whether the current KPI value is close or far away from the target value, using visual clues such as coloring the KPI value to indicate warning, critical, and so on.

KPI Groups

Before you can create a KPI, you must create a KPI Group, because a KPI must be assigned to a KPI Group.



A KPI Group is a collection of related KPIs. For example, *Sales Revenue*, *Contribution*, *Cost of Sales*, *Refunds*, could be in a KPI Group called *Sales Performance KPIs*. KPI Groups can be tagged so that they are easily searched by the analytics specialist. They can also be assigned to an Application Area to facilitate searching. The KPI Group can also be assigned to a business user who is responsible for the KPIs in the group. KPI Groups provide a convenient way to organize and search many KPIs so that you avoid wasting time trying to locate KPIs. An organization typically has a very large number of KPIs.

One of the key features of KPI Groups are *KPI Group Associations*. KPI Group Associations are optional, but are useful because they provide a way to link KPIs that have an impact on each other, either in a positive (supporting), or a negative way (conflicting).



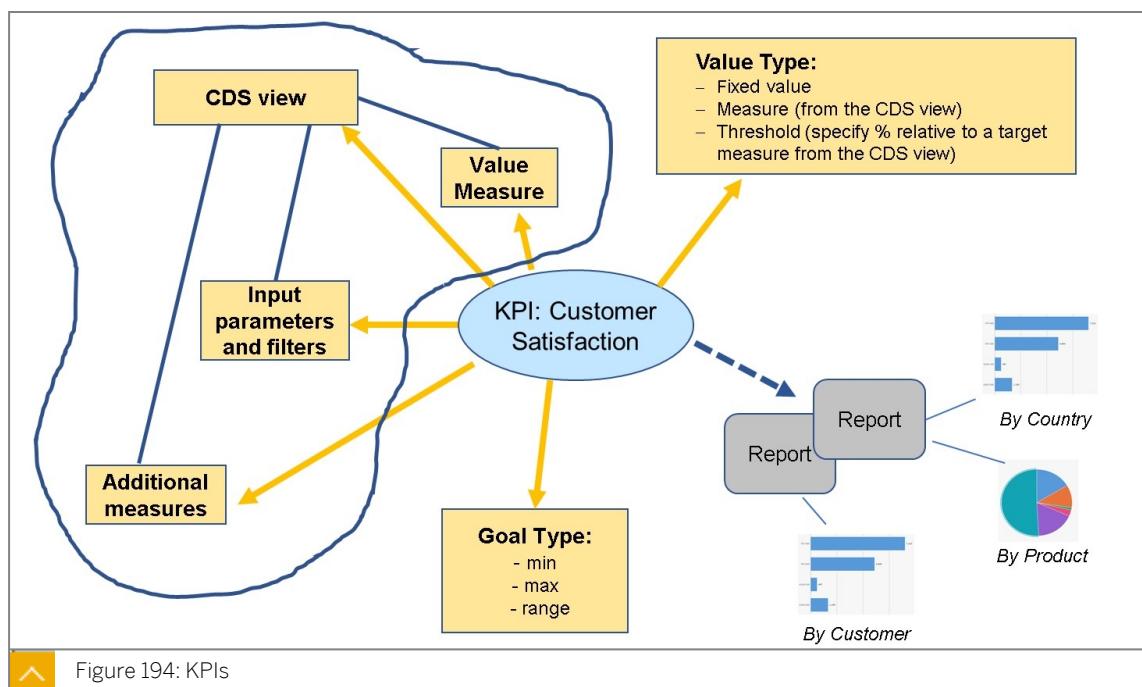
Note:

The KPI group association settings direction and type currently have no functional use and are not displayed in any standard reports or tiles. They are used only for illustration, and are visible only in the KPI Group app where the settings are defined.

When a *Report* is created (see later), a main KPI is always chosen, and that is the KPI that would sit on the tile surface and also be the lead KPI in the drill downs. But it is also possible to include other KPIs from the associated KPI groups in your report. The idea is to provide the business user with more insight into the main KPI, in the form of 'at-a-glance' mini-tiles.

KPIs

A KPI is the central object that is based on single measure from a CDS view and adds context.



When you define a KPI, you must choose one CDS view and, from the chosen CDS view, choose a measure. That measure is known as the *Value Measure*.

If the CDS view contains mandatory input parameters, you must provide values for these in the KPI definition. You can optionally provide additional filters values to provide some context around the value measure based on the dimensions defined in the CDS view. For example, a company code or country filter against sales revenue.

You must also define the *Goal Type*. This describes whether high or low values, or even a range of values, indicate good performance. You can also, optionally provide a target value (the desired value for the KPI), and values that indicate levels of poor performance in the form of warning values and critical values. These are known as *Thresholds*, and are used to display the KPI value in various colors on the tile surface so that a business user can immediately see that a KPI needs attention and might then choose the tile to drill down.

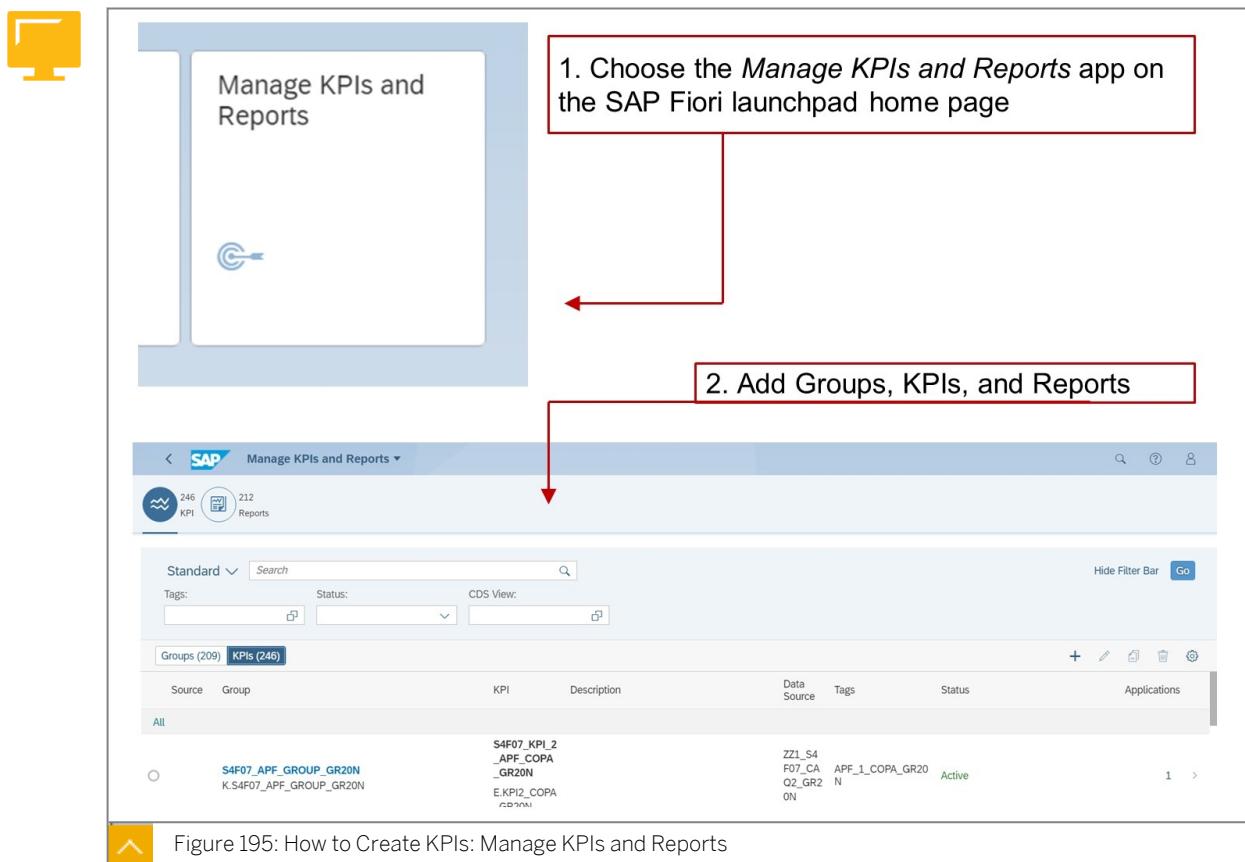
When defining the KPI threshold, you can choose either a constant fixed value, or point to a measure in the same CDS view to provide the value. This setting is known as the *Value Type*. Finally, you can specify whether the threshold value is expressed as a percentage relative to

the value of another measure, again from the same CDS view. For example, in a KPI called delivery accuracy, you could specify that measure delivery quantity should be at least 98% of the ordered quantity measure to be considered on-target.

You can define *Additional Measures* for the KPI. These are then available when you create complex charts that have multiple measures, for example, on a dual line chart or a stacked column chart. Again, the purpose of additional measures is to provide additional insight into the main KPI.

Finally, we should mention that the KPI could be used in a variety of applications with Embedded Analytics. One of the most common uses of a KPI is in a report which adds visualizations to the KPI in the form of drill downs and mini tiles.

SAP Analytics Cloud with SAP S/4HANA on-premise Integration



As well as preconfigured tiles, you can also define custom tiles and KPIs as part of SAP Smart Business.

When creating tiles, custom titles can be entered, and filter criteria can be used to display specific information, for example, display the top three customers within a certain sales organization in a certain period.

The business user/key user requires the following roles to be able to access the *Manage KPIs and Reports* app: *SAP_BR_ANALYTICS_SPECIALIST*.

Optional: Create a KPI Group, KPI, and a Tile



Note:

In this exercise, when the values include ##, replace the characters with the number that your instructor assigned you.

Task 1: Assign the Appropriate Business Role to your User

1. Assign business role **SAP_BR_ANALYTICS_SPECIALIST** to your user in system T41, using the SAP GUI.
2. If you haven't done so yet, log on to the T41 system using the SAP GUI. Input username **S4H01-##** and password **Welcome1**.
3. In the command field, enter transaction code **SU01**, and choose *Enter*.
4. In the User field, enter your user **S4H01-##**, and choose *Change*.
5. Choose the *Roles* tab.
6. On the *Roles* tab, in the first empty row, enter **SAP_BR_ANALYTICS_SPECIALIST**, and choose *Enter*.
7. Choose *Save*, followed by *Exit* to return to the main menu.

Task 2: Create a KPI Group, KPI, and a Tile

1. Create a new KPI Group with the name **Group_##**.
2. Create a new KPI, **KPI_Group_##** using the following details:

Field	Value
<i>Title</i>	KPI_Group_##
<i>Description</i>	Sales Order Fulfillment Issues ##
<i>CDS View</i>	C_ServiceOrderIssueQuery
<i>OData Service</i>	/sap/opu/odata/sap/SD_SOFM_SRV
<i>EntitySet</i>	SalesOrderFulfillmentIssueQuerySe t

3. Define a drill down and a tile.

4. Add your new tile to the tile group *My Home*.
5. Check that your new KPI tile displays the KPI value on its surface and ensure that it launches your report when clicked.

Optional: Create a KPI Group, KPI, and a Tile



Note:

In this exercise, when the values include ##, replace the characters with the number that your instructor assigned you.

Task 1: Assign the Appropriate Business Role to your User

1. Assign business role **SAP_BR_ANALYTICS_SPECIALIST** to your user in system T41, using the SAP GUI.
2. If you haven't done so yet, log on to the T41 system using the SAP GUI. Input username **S4H01-##** and password **Welcome1**.
3. In the command field, enter transaction code **SU01**, and choose *Enter*.
4. In the User field, enter your user **S4H01-##**, and choose *Change*.
5. Choose the *Roles* tab.
6. On the *Roles* tab, in the first empty row, enter **SAP_BR_ANALYTICS_SPECIALIST**, and choose *Enter*.
7. Choose *Save*, followed by *Exit* to return to the main menu.

Task 2: Create a KPI Group, KPI, and a Tile

1. Create a new KPI Group with the name **Group_##**.
 - a) Open the *Manage KPIs and Reports* tile in the *KPI Design* group of the SAP Fiori launchpad.
 - b) In the SAP Fiori launchpad Home page choose the group *KPI Design*.
 - c) Choose the *Manage KPIs and Reports* tile.
 - d) Select *Groups* (on the left of the screen next to the KPIs button).
 - e) Select *Create*.
 - f) In the *Title* field, enter **Group_##**.
 - g) Choose *Save* and *Activate*, and select the setting *Save as a Local Object*, and choose *OK*.
 - h) Choose *Close*, but stay in the *Manage KPIs and Reports* app.
2. Create a new KPI, **KPI_Group_##** using the following details:

Field	Value
Title	KPI_Group_##
Description	Sales Order Fulfillment Issues ##
CDS View	C_ServiceOrderIssueQuery
OData Service	/sap/opu/odata/sap/SD_SOFM_SRV
EntitySet	SalesOrderFulfillmentIssueQuerySet

- Choose the KPI icon in the upper left, and choose the *KPIs* button under the filter bar.
- Choose *Create* on the right hand side, and search for your group **Group_##**.
- Enter the title **KPI_Group_##** and the description **Sales Order Fulfillment Issues ##**, and stay on this screen.
- Scroll down to the section *Data Source Details*.
- Define the data source details as follows:

Field	Value
CDS View	C_ServiceOrderIssueQuery

- In the *Data Source Details* area, choose the link for *Define*.
- Enter the provided CDS View, **C_ServiceOrderIssueQuery**, in the *Search* field of the *Select Data Source* dialog box.
- Choose the *Search* icon.
- Select your CDS View and select from the result list:

Field	Value
OData Service	/sap/opu/odata/sap/SD_SOFM_SRV
EntitySet	SalesOrderFulfillmentIssueQuerySet

- Select *Select OData Service* (at the top right of the interface).
- Enter **SOFM** in the *Search* field and select the OData service **/sap/opu/odata/sap/SD_SOFM_SRV**.

- vii. Enter the EntitySet **SalesOrderFulfillmentIssueQuerySet**, choose **OK**, and scroll down to the section, *Semantics*.
- viii. Define the Value Measure and thresholds according to the following table:

Field	Value
<i>Value Measure</i>	Issues in Order
<i>Goal Type</i>	Minimizing
<i>Target</i>	0
<i>Warning is greater than</i>	50
<i>Critical is greater than</i>	100

- ix. Choose *Activate and Save* button first, then choose the *close* button you are now back on the initial page of the SAP Fiori app.

3. Define a drill down and a tile.
- Choose the *Reports* button in the top right of the screen.
 - Choose the *Create* button on the right, and select the value *Generic Drilldown*.
 - In the *Search* field, enter your KPI, and choose your *KPI_Group_##*.
 - Choose the *Configuration* button next to the *Definition* button, and scroll down to the section *Charts and Tables*, and choose *Add*.
 - Enter a View Tile: **Sales Order Issues ##**, and choose *View Type: Chart*.
 - Choose the *Settings* icon, and ensure that only the *Issues in Order* row has been selected. If not, select this row and deselect all other rows
 - Choose *Activate*.
 - Choose *Applications* on the top, and choose the *+ Add Tile* in the middle of the tile.
 - Select the *Tile Format: Actual vs. Target Tile* and choose *ok*.
 - Enter the Catalog: X-SAP-UI2-Catalogpage: Z_TC_S4H400
 - Scroll down to the *Semantic Object* field and enter **Sales**.
 - Ensure, that the Action is named: **analyze**, if not, change accordingly and choose *Save*.
 - If you go again to the *Application* section, you should now see a preview of your tile, choose *Close*, and return to your landing page by choosing the SAP logo
4. Add your new tile to the tile group *My Home*.
- Choose the profile icon in the toolbar.
 - Choose *Edit Home Page*.
 - In the *My Home* area, choose the *+* sign in the empty tile.

- d) Refresh the browser. You should see the tiles that were added by you and other students. If you do not see any tile, please log out and log in again.
 - e) Choose the pin icon below your tile, and navigate back to your landing page by choosing your SAP logo.
 - f) Select the profile icon, and choose *Exit Edit Mode*.
5. Check that your new KPI tile displays the KPI value on its surface and ensure that it launches your report when clicked.

Optional: Explore CDS Views using Eclipse

Task 1: Open the ABAP Development Tools (ADT) in Eclipse



Note:

In this exercise, where you see ##, replace it with the number that your instructor assigned you.

1. Start the SAP HANA Studio, and log on using the details in the following table:

Input field	Value
Client	400
User name	S4H400-## (don't forget the hyphen before ##)
Password	Welcome1
Language	EN

2. Create a new ABAP project system connection to the T41 system.
3. Open the *T41_400_s4H400-##_en* [T41, 400, S4H400-##, EN] ABAP project.

Optional: Explore CDS Views using Eclipse

Task 1: Open the ABAP Development Tools (ADT) in Eclipse



Note:

In this exercise, where you see ##, replace it with the number that your instructor assigned you.

1. Start the SAP HANA Studio, and log on using the details in the following table:

Input field	Value
Client	400
User name	S4H400-## (don't forget the hyphen before ##)
Password	Welcome1
Language	EN

- a) Start SAP HANA Studio by selecting the SAP HANA Studio icon from the task bar.
- b) In the *StartUpTool – Hana Studio* window, choose *Submit*.
- c) In the *Eclipse Launcher* window, choose *Launch*.
- d) In the *Secure Storage – Password Hint Needed* window, choose *No*.
- e) Close the *Welcome* view tab - you do not need this.
2. Create a new ABAP project system connection to the T41 system.
 - a) In SAP HANA Studio choose *Window* → *Perspective* → *Open Perspective* → *Other...* → *ABAP*, and choose *Open*.
 - b) Choose *File* → *New* → *ABAP Project*.
 - c) In the *System Connection* window, choose the *T41[SPACE]* system, and choose *Next*.
 - d) In the *Connection Settings* window, verify the connection settings, and choose *Next*.
 - e) In the *Logon to System* dialog, enter the logon credentials given in the table above, and choose *Finish*.
3. Open the *T41_400_s4H400-##_en* [T41, 400, S4H400-##, EN] ABAP project.
 - a) In the Project Explorer view, double-click the *T41_400_s4h400-##_en* [T41, 400, S4H400-##, EN] project to expand it.
 - b) If requested, enter your password and choose *OK*.

- c) Select *Favourites*, for example.
- d) Right click, and select *New*.
- e) Select other ABAP Repository Object
- f) Scroll down. Here, you will find a folder called *Core Data Services*.



LESSON SUMMARY

You should now be able to:

- Describe the tools for the analytics specialist

Unit 6

Lesson 5

Describing the Tools for the IT Expert (Optional)



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the tools for the IT expert

CDS View Maintenance with Eclipse

Although we provide tools for the analytics specialist to explore the virtual data models of S/4HANA, these tools are built specifically to be easy to use by non-IT experts. For example, to use the *Custom CDS View* application or the *Analytical Query* creation tools, a basic understanding of the Core Data Services (CDS) data model is required, but no detailed CDS syntax or coding knowledge is needed.

There are no SAP Fiori-based tools that can be used to create a CDS view from the beginning. You can create a new, custom CDS view using SAP Fiori tools, but they are always based on existing CDS views. To start from the beginning when creating CDS views, you need to use the ABAP Development Tools for Eclipse.



```
ABAP - ABAP DDL source C_SALESORDERITEMQRY [ER0] - Active - ER0_001_fleckenstein_en [ER0_001, FLECKENSTEIN, EN] - SAP HANA Studio
File Edit Source Navigate Search Project Run Window Help
Project Explorer Quick View [ER0] C_SALESORDERITEMQRY
C_SALESORDERITEMQRY
@EndUserText.label: 'Incoming Sales Orders'
@IndirectText
@EnvType: CCONSUMPITION
@AccessControl.authorizationCheck: #NOT_ALLOWED
@objAccessControl: #NOT_ALLOWED
define view C_SalesOrderItemQry
with parameters
  @Consumption.hidden: true
  @Environment.systemfield: #SYSTEM_LANGUAGE
  P_Language : VCHAR(10) sysLangpv
  @Consumption.defaultValue: ''
  P_ExchangeRateType : KURST
  P_DisplayCurrency : VDF_V_DISPLAY_CURRENCY
as select from T_SalesOrderItemCube( P_ExchangeRateType:$parameters.P_ExchangeRateType, P_DisplayCurrency: $parameters.P_DisplayCurrency ) {
  //Keys
  key SalesOrder,
  key SalesOrderItem,
  key SalesOrderItem,
  /Category
  SalesOrderType,
  SalesOrderType_Text[1: Language=$parameters.P_Language].SalesDocumentType Name as SalesOrderType Name,
  SalesOrderItemCategory,
  SalesOrderItemCategory_Text[1: Language=$parameters.P_Language].SalesDocumentItemCategory Name as SalesOrderItemCategory Name,
  SalesOrderItemType,
  IsReturnsItem,
  /Semantics
  currencyCode: true
  DisplayCurrency,
  @DefaultAggregation: #SUM
  @Semantics.amount.currencyCode: 'DisplayCurrency'
  NetAmountInDisplayCurrency,
  //Admin
  CreatedByUser,
  CreatedUserName,
  CreatedBusinessDate.createdAt: true
  CreationDate,
  CreationTime,
  ...
}
Parameters
  P_Language
  P_ExchangeRateType
  P_DisplayCurrency
  select
    from
    T_SalesOrderItemCube
  select list
  where
```

Figure 196: ABAP Development Tools for Eclipse

For the IT expert, the ABAP Development Tools for Eclipse provides full access to the range of features required to view, maintain, and create CDS views using advanced source code editors.

A detailed knowledge of CDS language, such as annotations, associations, and so on, is required.

The ABAP Development Tools (ADT) are a set of add-ons for the industry standard development environment tool known as *Eclipse*, and provide the layouts and features needed for SAP S/4HANA CDS source code maintenance.

The ADT tools are provided by SAP, and can be downloaded from the website <https://tools.hana.ondemand.com/#abap>, and installed into Eclipse.

To get started, create an *ABAP Project* in Eclipse and connect the project to an SAP S/4HANA back-end server where the ABAP objects are physically located.

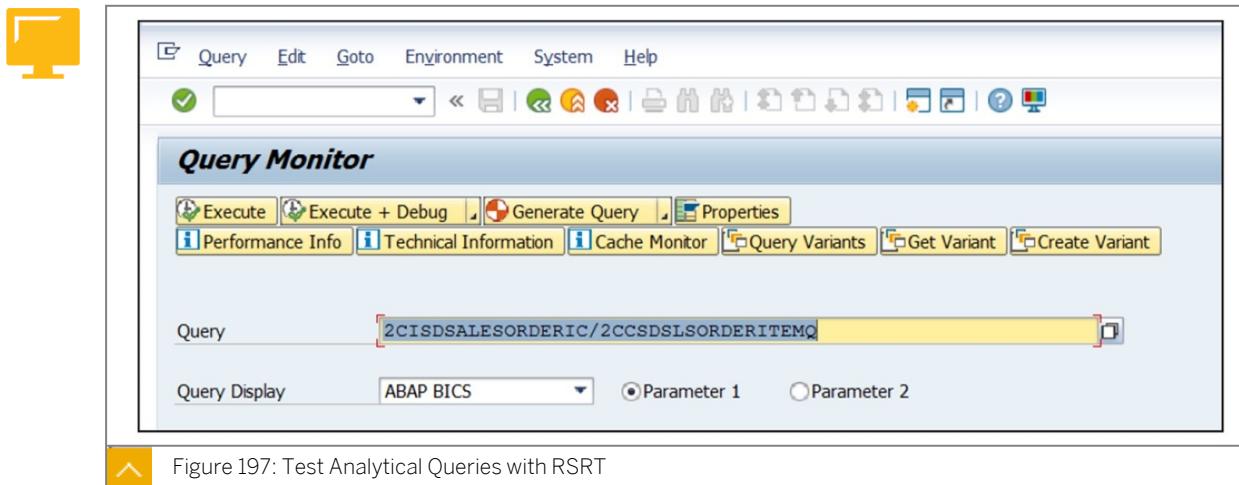
You can then expand the *Project Explorer* to access the packages where the CDS views are organized by application area.

Analytical Query Testing with RSRT

A CDS view that includes the annotation `@Analytics.query=true` is always executed in the analytics engine (embedded BW) of SAP S/4HANA.

Technically, a temporary info provider is automatically generated at runtime on top of the analytical query. This temporary info provider is known as a *transient provider*, and translates the CDS analytical query into a format that can be read by the analytical engine.

The analytical queries, processed by the analytical engine, are then available for consumption by SAP BI tools and SAP Analytics Cloud.



The transaction used to test the analytical queries directly in the back end of SAP S/4HANA is the well-known transaction that was developed many years ago for SAP BW, called *RSRT*.



LESSON SUMMARY

You should now be able to:

- Describe the tools for the IT expert

Describing Best Practices for Analytics with SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe best practices for analytics with SAP S/4HANA

SAP Best Practices for SAP S/4HANA

To start using embedded analytics apps, there is some setup to work through, such as activating OData services, and assigning roles to users. To ensure that this is carried out in the correct way and also to speed things up, we provide Best Practices for the accelerated implementation of many analytics apps, content, and scenarios.

Following SAP-provided Best Practices, customers will know that they are following the advice of SAP when setting up SAP S/4HANA embedded analytics applications and the optional integration scenarios.



SAP Best Practices are assembled in a library, and presented through a web-based exploration tool called **SAP Best Practices Explorer**.



Note:

SAP Best Practices Explorer can be found at <https://rapid.sap.com/bp/>

SAP Best Practices are essentially guidebooks, tools, and content, such as predefined forms, configuration guides, and other tools that support a rapid implementation of embedded analytics and integration to key areas such as BW, SAP Analytics, and SAP Analytics Cloud.

SAP provide best practices related to analytics for the following purposes:

- Enablement of real-time operational reporting and KPIs across all business areas
- Integration between SAP Analytics Cloud and SAP S/4HANA
- Integration between SAP Analytics on-premise tools (for example, Lumira) and SAP S/4HANA
- Integration of BW and BW/4HANA with SAP S/4HANA

The screenshot shows the SAP Best Practices Explorer interface. The left sidebar lists 'Solution Packages (72)' with a breakdown of categories: A-Z Index (72), SAP S/4HANA (11), On-Premise (6), Cloud (2), Integration (4), Migration (1), Industries (1), Lines of Business (39), Industries (5), and Technology (16). The right pane displays a list of packages under the 'SAP Best Practices' category. One package, 'SAP Best Practices for analytics with SAP S/4HANA', is highlighted with a red box.

Solution Packages(72)	
A-Z Index	72
SAP S/4HANA	11
On-Premise	6
Cloud	2
Integration	4
Migration	1
Industries	1
Lines of Business	39
Industries	5
Technology	16

SAP Best Practices Explorer

Solution Packages

SAP Best Practices for SAP S/4HANA (on premise)

SAP Best Practices for analytics with SAP S/4HANA

SAP Extended Warehouse Management integration with SAP S/4HANA rapid-deployment solution

SAP Extended Financial Planning rapid-deployment solution

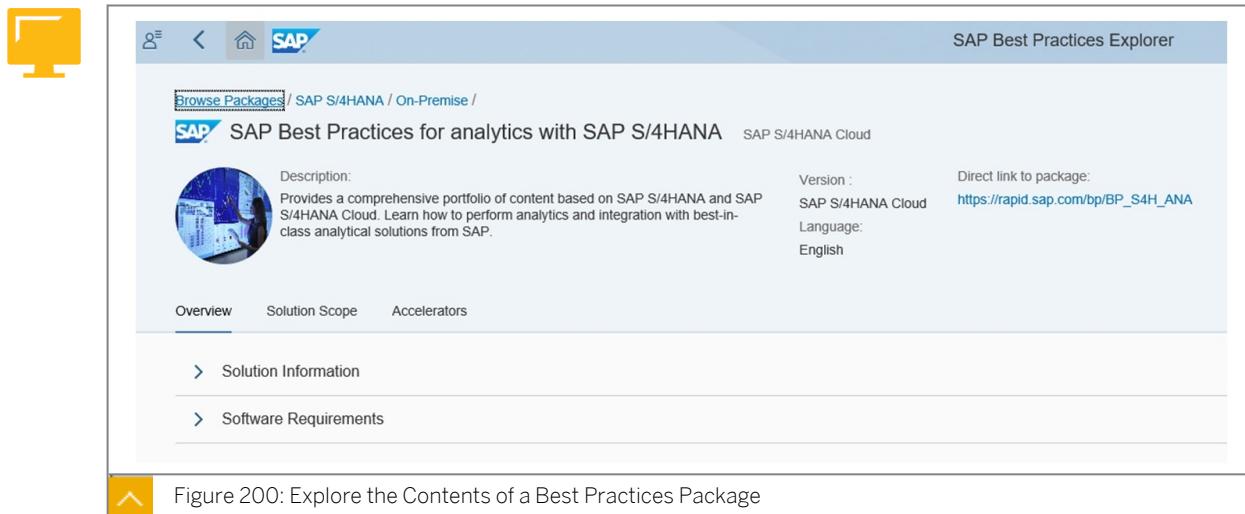
SAP Best Practices for SAP Hybris Billing

SAP S/4HANA Chemicals trial with industry best practices

Figure 199: Use Filters to Discover SAP Best Practices Packages

Best practices are shipped in *Packages*, and these can be explored using the SAP Best Practices Explorer tool.

You can filter the packages according to many criteria, including by type of SAP S/4HANA deployment (cloud or on-premise, release, and so on).



The screenshot shows the SAP Best Practices Explorer interface. At the top, there are navigation icons for user, back, home, and SAP. The title bar says 'SAP Best Practices Explorer'. Below the title, the path 'Browse Packages / SAP S/4HANA / On-Premise /' is shown. The main content area displays the 'SAP Best Practices for analytics with SAP S/4HANA' package. It includes a circular thumbnail image of a person working on a computer, a description text, and details about the package version (SAP S/4HANA Cloud), language (English), and a direct link (https://rapid.sap.com/bp/BP_S4H_ANA). Below the description, there are tabs for 'Overview', 'Solution Scope', and 'Accelerators', with 'Overview' being the active tab. Under 'Solution Scope', there are two expandable sections: 'Solution Information' and 'Software Requirements'.

Figure 200: Explore the Contents of a Best Practices Package

Once you select a package, you can explore the details, and decide if you want to go forward and download the package.

The packages contain guidelines to set up each of the analytical apps with step-by-step instructions.



Note:

To download the actual packages, you require an S user. An administrator of an SAP S/4HANA landscape can generate S users to authorized users.

A package contains scope items which break down the package into specific scenarios.

You select only the scope items that you are interested in, and then the building blocks are presented for each step.



LESSON SUMMARY

You should now be able to:

- Describe best practices for analytics with SAP S/4HANA

Unit 6

Lesson 7

Describing SAP Analytics Cloud Integration with SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe SAP Analytics Cloud integration with SAP S/4HANA

SAP Analytics Cloud Integration with SAP S/4HANA

What is SAP Analytics Cloud?

SAP Analytics Cloud is a software as a service (SaaS) solution that provides tools to the business user for self-service analytics, using data from any source, including on-premise applications such as SAP S/4HANA, and also cloud-based applications, such as SuccessFactors.



Figure 201: SAP Analytics Cloud

SAP Analytics Cloud combines the three pillars of analytics by providing tools to build the following:

- Business Intelligence

- Planning
- Predictive Analytics

SAP Analytics Cloud gives everyone, from frontline workers to executives, the power to find new insights and take action, any time, anywhere, on any device.

The workflow of SAP Analytics Cloud is to first define a data **connection** to a source system that provides the data. There are two types of connection:

- Live Connection (online)
- Acquired data (scheduled or manual load)

Once the connection has been defined, you then create **models**.

You create a model by selecting a data source from your connection, such as a table, file, or a view, and then you choose dimensions and measures. You can enhance your data by defining additional calculations. You can define hierarchies by choosing the dimension in parent-child relationships to support hierarchical drill downs.

Once the model is created, you can then add the visualizations which are known as **stories**. With stories, you add charts, tables, and other visual elements to bring your models to life.

You can use the provided tools to create your own stories, or let SAP Analytics Cloud automatically create your stories. SAP provides story templates so you never have to start with a blank canvas.

Integrating SAP Analytics Cloud with SAP S/4HANA on-premise

Launching a story from an SAP S/4HANA Fiori Launchpad tile has always been possible. All that is needed is the URL to the story, and then you create an SAP Fiori Launchpad tile that launches the URL in a separate window, but this is not really 'technically integrated'.

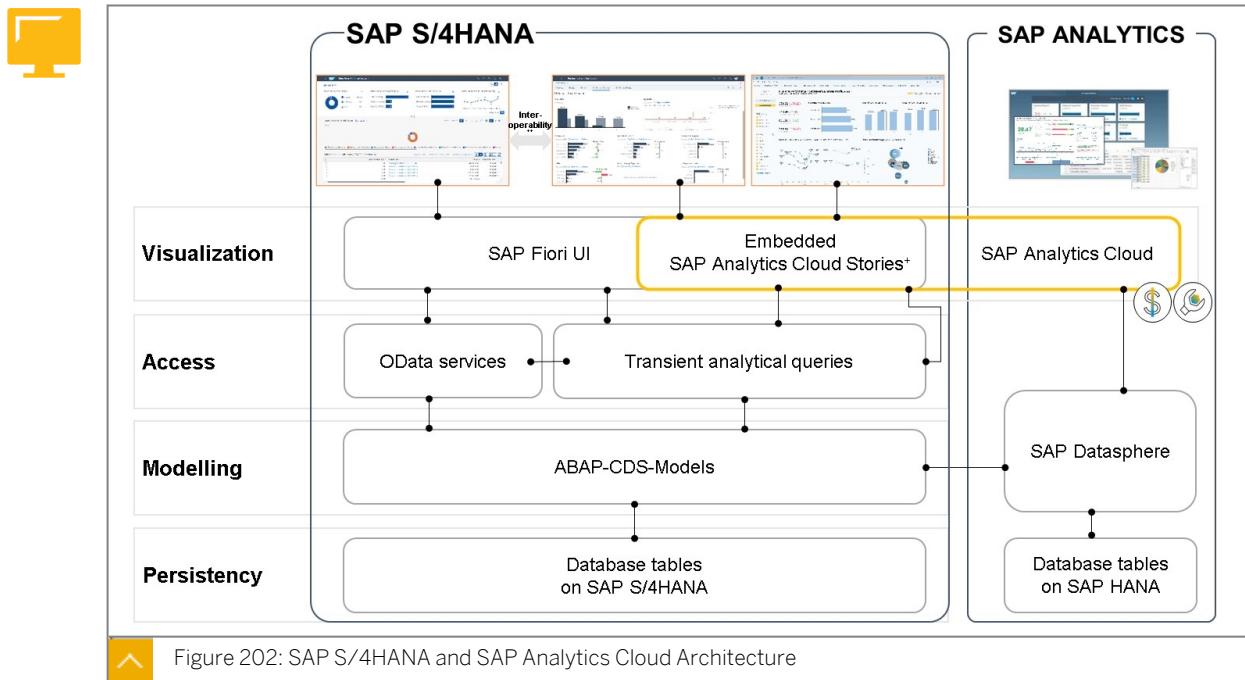
Starting with SAP S/4HANA 2020, SAP Cloud Analytics became technically integrated with SAP S/4HANA. Stories can be completely embedded **inside** the SAP Fiori interface.

When the stories are embedded, there are two additional Fiori features that are enabled:

- Variants - save personal filters and navigation states for easy re-launch
- Intent based navigation - jump directly to related SAP Fiori apps from clicks on the content within the story, carrying the filters that have already been set by the user

The integration is based on two important product capabilities:

1. The live data connection between SAP Analytics Cloud and SAP S/4HANA ensures the real-time access to the operational data of SAP S/4HANA on-premise, exposed through analytical ABAP CDS views. An important aspect of this is that the SAP S/4HANA on-premise authorizations are applied to ensure data access security. Single sign-on is recommended to provide a seamless workflow without the need to log on separately.
2. SAP S/4HANA on-premise uses a "wrapper" to open the SAP Analytics Cloud story in an iFrame in the user's SAP Fiori shell. The iFrame ensures that the capabilities offered by the embedded SAP Analytics Cloud story run as they would in a comparable stand-alone scenario with live data access, such as slice-and-dice, page-switching, or filtering.



Stories can also be embedded within custom SAP Fiori apps. For example, an SAP Fiori developer could create a custom SAP Fiori app to list stock shortages, and then embed a related story that provides a dashboard inside the application. All navigation within the app would also affect the story so everything would be in sync. SAP do not currently deliver SAP Fiori apps that also contains embedded stories.



LESSON SUMMARY

You should now be able to:

- Describe SAP Analytics Cloud integration with SAP S/4HANA

Learning Assessment

1. Identify the features of SAP S/4HANA embedded analytics.

Choose the correct answers.

- A SAP S/4HANA embedded analytics focuses on deeper, more advanced BI scenarios
- B SAP S/4HANA embedded analytics are part of the core SAP S/4HANA license
- C SAP S/4HANA embedded analytics focuses on operational analytics
- D SAP S/4HANA embedded analytics uses an SAP BW system wherever deep multidimensional analysis is required

2. What does a virtual data model provide?

Choose the correct answer.

- A A copy of the database that is optimized for analytical use
- B Reporting tools for users
- C Consumption ready views of data
- D Ready to use business reports

3. Which of the following is used to build the SAP S/4HANA virtual data model?

Choose the correct answers.

- A SAP HANA Live
- B Universes
- C ABAP logical databases
- D ABAP CDS views

4. With SAP S/4HANA Embedded Analytics, which tools are aimed at end users?

Choose the correct answers.

- A View Browser
- B SAP Lumira, designer edition
- C Analytical SAP Fiori applications
- D Query Designer
- E Smart Business Cockpits

5. The _____ is a powerful reporting tool that can be used to create simple, Excel-based reports all the way up to the most advanced, highly formatted reports.

Choose the correct answer.

- A Multidimensional Reporting Client
- B Query Designer
- C Smart Business Cockpits
- D SAP BusinessObjects Analysis, edition for Microsoft Office

6. Which tools are used by the IT users in SAP S/4HANA Embedded Analytics?

Choose the correct answers.

- A CDS View Maintenance using Eclipse
- B Query Designer
- C Analytical SAP Fiori applications
- D Custom CDS View

7. Which of the following are typical tools used by key users to develop various analyses in SAP S/4HANA Embedded Analytics?

Choose the correct answers.

- A SAP HANA Live Browser
- B KPI builder
- C SAP Lumira, designer edition
- D Query Designer

8. Why do we still need SAP BW when we have SAP S/4HANA Embedded Analytics?

Choose the correct answers.

- A** To provide a full data lifecycle management framework
- B** To consolidate multiple data sources
- C** To support SAP BW powered business applications
- D** To provide SAP S/4HANA Embedded Analytics with real-time data

Learning Assessment - Answers

1. Identify the features of SAP S/4HANA embedded analytics.

Choose the correct answers.

- A SAP S/4HANA embedded analytics focuses on deeper, more advanced BI scenarios
- B SAP S/4HANA embedded analytics are part of the core SAP S/4HANA license
- C SAP S/4HANA embedded analytics focuses on operational analytics
- D SAP S/4HANA embedded analytics uses an SAP BW system wherever deep multidimensional analysis is required

Correct. SAP S/4HANA embedded analytics is part of the core SAP S/4HANA license, and focuses on operational analytics. SAP S/4HANA embedded analytics makes heavy use of an SAP BW system wherever deep multidimensional analysis is required.

2. What does a virtual data model provide?

Choose the correct answer.

- A A copy of the database that is optimized for analytical use
- B Reporting tools for users
- C Consumption ready views of data
- D Ready to use business reports

Correct. A virtual data model provides consumption ready views of data.

3. Which of the following is used to build the SAP S/4HANA virtual data model?

Choose the correct answers.

- A SAP HANA Live
- B Universes
- C ABAP logical databases
- D ABAP CDS views

Correct. ABAP CDS views are used to build the SAP S/4HANA virtual data model.

4. With SAP S/4HANA Embedded Analytics, which tools are aimed at end users?

Choose the correct answers.

- A** View Browser
- B** SAP Lumira, designer edition
- C** Analytical SAP Fiori applications
- D** Query Designer
- E** Smart Business Cockpits

Correct. With SAP S/4HANA Embedded Analytics, the tools aimed at end users are: View Browser, Analytical SAP Fiori applications, and Smart Business Cockpits.

5. The _____ is a powerful reporting tool that can be used to create simple, Excel-based reports all the way up to the most advanced, highly formatted reports.

Choose the correct answer.

- A** Multidimensional Reporting Client
- B** Query Designer
- C** Smart Business Cockpits
- D** SAP BusinessObjects Analysis, edition for Microsoft Office

Correct. The SAP BusinessObjects Analysis, edition for Microsoft Office, is a powerful reporting tool that can be used to create simple, Excel-based reports all the way up to the most advanced, highly formatted reports, with full integration with Excel functions and features.

6. Which tools are used by the IT users in SAP S/4HANA Embedded Analytics?

Choose the correct answers.

- A** CDS View Maintenance using Eclipse
- B** Query Designer
- C** Analytical SAP Fiori applications
- D** Custom CDS View

Correct. The tools used by the IT user are CDS View Maintenance using Eclipse and Custom CDS View.

7. Which of the following are typical tools used by key users to develop various analyses in SAP S/4HANA Embedded Analytics?

Choose the correct answers.

- A SAP HANA Live Browser
- B KPI builder
- C SAP Lumira, designer edition
- D Query Designer

Correct. The typical tools used by key users to develop various analyses in SAP S/4HANA Embedded Analytics are: KPI builder, SAP Lumira, designer edition, and Query Designer.

8. Why do we still need SAP BW when we have SAP S/4HANA Embedded Analytics?

Choose the correct answers.

- A To provide a full data lifecycle management framework
- B To consolidate multiple data sources
- C To support SAP BW powered business applications
- D To provide SAP S/4HANA Embedded Analytics with real-time data

Correct. We still need SAP BW when we have SAP S/4HANA Embedded Analytics, to provide a full data lifecycle management framework, consolidate multiple data sources, and support SAP BW powered business applications.

Lesson 1

Transitioning to SAP S/4HANA

351

Lesson 2

Selected Resources, Tools, and Methods

355

Lesson 3

Clean Core

363

Lesson 4

Signavio Process Navigator

369

UNIT OBJECTIVES

- Transition to SAP S/4HANA
- Gain a further insight into the resources, tools, and methods available
- Clean Core Dimensions
- Signavio Process Navigator

Transitioning to SAP S/4HANA



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Transition to SAP S/4HANA

Transition to SAP S/4HANA

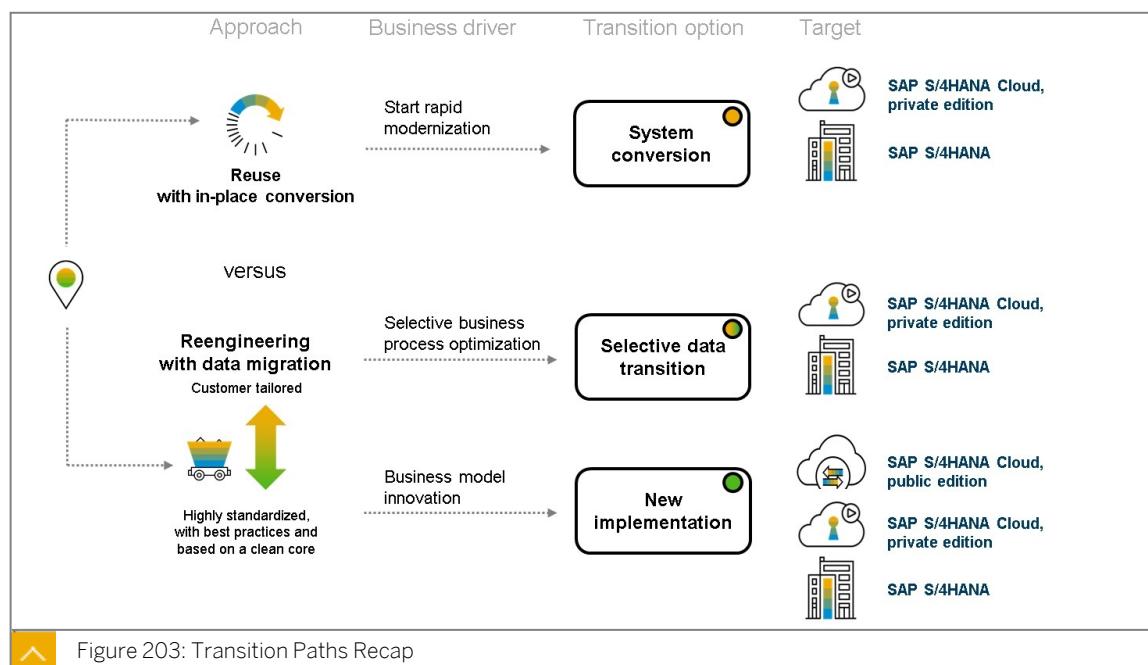


Figure 203: Transition Paths Recap

When designing the implementation experience for customers who are moving to SAP S/4HANA, we must consider the different scenarios that the customers will follow along with the flexibility of choice of deployment.

[Mapping Your Journey to SAP S/4HANA – A Practical Guide for Senior IT Leadership](#)



Criteria influencing the choice of the transition scenario



System Conversion

Re-implementation



Future Readiness



Current System Perception



(Perceived) Data Quality



Custom Code



Release Level



Historical Data

Current system supports today's and future master data & org structure requirements

Key asset

Good

Well maintained

SAP ERP 6.0 and above

Need to keep historical data

You seek to fundamentally redesign master data & org structures

Innovation blocker

Bad

Outdated

Below SAP ERP 6.0

No need to keep historical data

Figure 204: Criteria Influencing the Choice of the Transition Scenario



Deciding when business process transformation should occur

Project preparation

Transition Project

Mandatory Simplifications (that is, in FI, SD, MM, .. area) plus some focused, selected innovations

Separate, single implementation projects (that is, Business Process redesign, new Applications, Fiori UX, Analytics, and so on.)

Golive!

System Conversion

System Conversion + selective Innovation)

System Conversion with additional/full scope of Business Process Transformation (aka 'Big Bang')

Technical Migration

New implementation ("greenfield")

Selective data transition with individual scope

Initial Business Process Transformation

Further Business Process Transformation

Figure 205: Deciding When Business Process Transformation Should Occur

For many reasons, it is not possible to do an "as-is/purely technical" conversion to SAP S/4HANA, for example, considering functions replaced by better ones. Therefore, in every case, on top of the technical migration, a minimum business transformation must happen in the project. Further Business Process Transformations should be conducted gradually after go live to enjoy new innovations.

But, you will have to choose between several options:

- Minimum mandatory innovation (simplification ..)
- Minimum mandatory innovation + a few selected innovations (recommended), such as SAP Fiori at go live, with deployment of other innovation through post go live projects
- Go live with large innovation scope



LESSON SUMMARY

You should now be able to:

- Transition to SAP S/4HANA

Selected Resources, Tools, and Methods



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Gain a further insight into the resources, tools, and methods available

Resources, Tools, and Methods



Approach and tools for a “conversion” – majority applies for “selective data transition” too

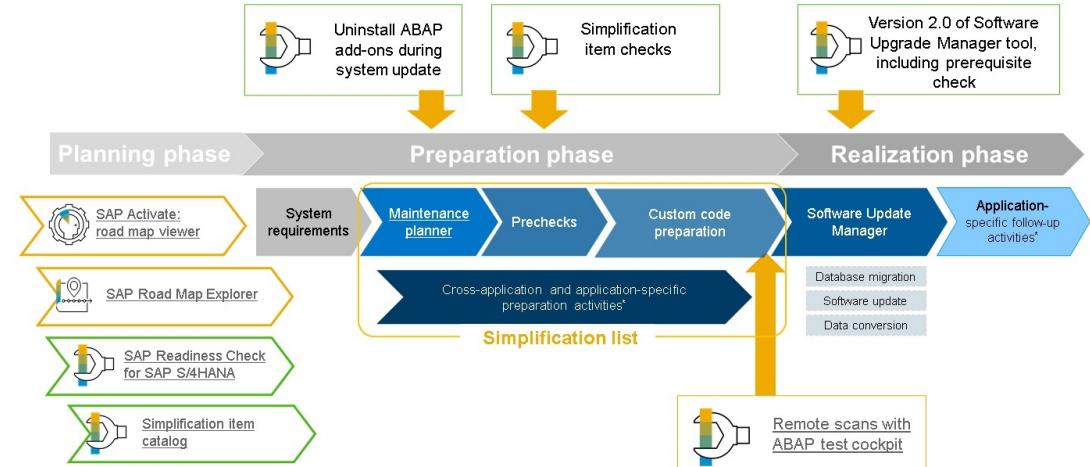


Figure 206: Approach and Tools for a "Conversion" – Majority Applies for "Selective Data Transition" too

SAP Transformation Navigator

This free, self-service tool provides clear guidance on how to chart your digital path to an intelligent enterprise. It assesses your current IT landscape, business strategy, and industry trends, and delivers one comprehensive report, which you can download immediately. It contains custom recommendations of the SAP products and solutions required to realize your digital strategy.

<https://go.support.sap.com/transformationnavigator/#/welcome>

SAP Transformation Navigator provides you with clear guidance to chart the Intelligent Enterprise:

The SAP Transformation Navigator is a web-based and free of charge self-service road-mapping tool. It provides guidance on products and solutions by taking into account the customer-specific IT landscape and usage information, deployment strategy, industry trends, and future solution needs. Users can also initiate a business case calculation based on the

recommended products, share and collaborate on their project, or download a comprehensive report for offline review.

The SAP Transformation Navigator, the customer input involves the following data:

- Current products and usage data
Pre-filled from support profile and SAP EarlyWatch Alert
- Future business/solution needs
Selected from SAP comprehensive solution catalog
- IT strategy
Prompted decision points, such as cloud or on-premise deployment

There are three types of output guides: Transformation guide, business guide, and technical guide.

Transformation Guide

The transformation guide has the following features:

- Explains the prioritization of the necessary transitions
- Summarizes the transition heatmap and prioritization thereof
- Leads the customer to available advanced system and landscape analysis services and methods of SAP, such as the following:
 - Dependencies management with Maintenance Planner
- Leads the customer to available advanced system and landscape analysis services and methods of SAP, such as the following:
 - Dependencies management with Maintenance Planner
- Effort estimation via Activate Methodology

Business Guide

The business guide has the following features:

- Depicts breakthrough trends and strategic objectives of the customer's industry
- Summarizes the selected value driver and aspiration ranges
- Leads the customer to available follow-up offerings of SAP, such as the following:
 - The creation of a full-blown business case
 - Value realization tracking services
 - Organizational change management support

Technical Guide

The technical guide has the following features:

- Explains the digital framework and outlines reference product maps
- Summarizes technical recommendations for all current products
- Leads the customer to available advanced system and landscape analysis services and methods of SAP, such as the following:

SAP S/4HANA simplification analysis

Sizing aspects

SAP Fiori recommendations

See also

<https://support.sap.com/stn>

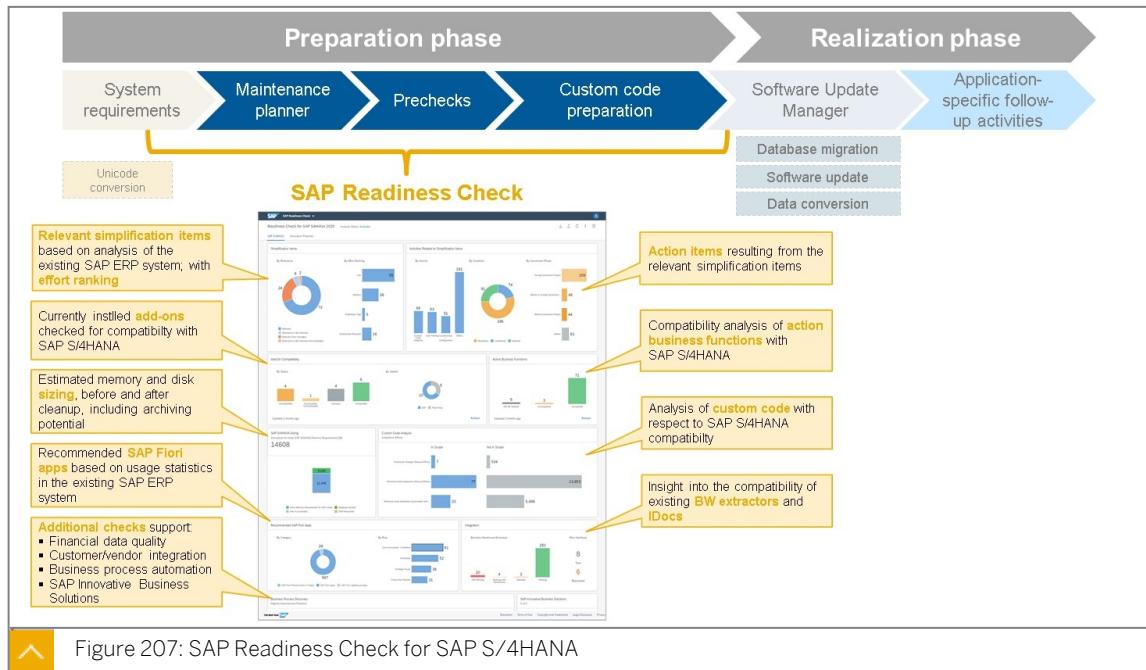


Figure 207: SAP Readiness Check for SAP S/4HANA

The SAP Readiness Check for SAP S/4HANA helps you in planning your transition to SAP S/4HANA, and gives you an overview of the to-dos, and the actual readiness of your productive ERP system for the journey to SAP S/4HANA. In the beginning of SAP S/4HANA in 2015, there were several separate tools to check the readiness of your productive ERP system – each one with its own notes and prerequisites to use, and it was cumbersome to get all of the necessary information together.

With SAP Readiness Check for SAP S/4HANA, you get all of the required information in just one report, merged together in an overview dashboard. The SAP Readiness Check for SAP S/4HANA is available since June 2017 (version 1.0), and is free of charge for every customer with a valid SAP Support agreement.

It is the tool to use when you want to get an overview of the tasks to get your ERP system ready for the conversion to SAP S/4HANA. It provides an overview of several aspects of the preparation phase, and also allows for detailed information on each aspect so that you can get an estimation of the effort it will take to get SAP S/4HANA ready. The results of the SAP Readiness Check are provided via an overview dashboard on the SAP Support Portal, which summarizes the most important aspects of the conversion in an easily-consumable way.

The development of the SAP Readiness Check has undergone some improvements and is now available in version 2.0, which offers some great enhancements.

[SAP Help Portal: SAP Readiness Check](#)

https://help.sap.com/viewer/p/SAP_READINESS_CHECK

SAP Note [2758146](#) (Conversions)

SAP Note [3059197](#) (Upgrades)



A simplification item documents differences in application functionality (changed, replaced, removed) between version 6.0 of SAP ERP and SAP S/4HANA.

- A simplification item provides information about the potential impact of this change for the customer.
- The simplification list is a collection of simplification items.
- The simplification list provides this information per the SAP S/4HANA release as part of the SAP S/4HANA documentation.
- The **SAP Readiness Check tool for SAP S/4HANA**, the **ABAP custom code analysis**, and the **simplification item checks** are based on the information in the simplification items.
- In case **dedicated simplification items require mandatory preparation steps**, the conversion procedure can stop to help ensure a consistent system conversion.

help.sap.com/s4hana

Implement **Simplification Item Catalog**

Preparation phase

Realization phase

System requirements, Maintenance plan, Precheck, Custom code preparation, Software Update Manager (SUM), Cross-Application & follow-up activities

Precheck

Custom code preparation

Customer View, Simplification List

Simplification Item Catalog

Simplification Items Grouped by Product Version

SAP S/4HANA 2023, SAP S/4HANA 2022, SAP S/4HANA 2021, SAP BW/HANA 2023

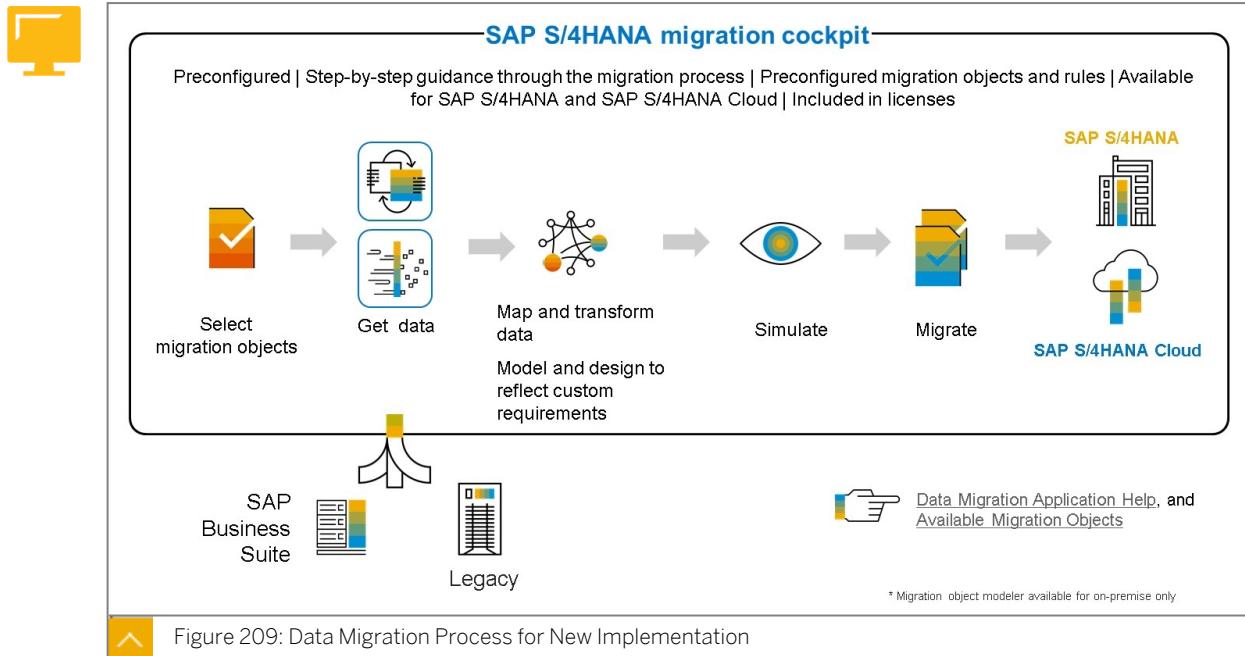
As of SAP S/4HANA 2023, there are ~750 simplification items, but for a given customer system only approximately 50-90 simplification items are typically relevant and require attention.

Figure 208: Managing Simplifications

- A simplification item provides information about the potential impact of this change for the customer.
- The simplification list is a collection of simplification items.
- The simplification list provides this information per the SAP S/4HANA release as part of the SAP S/4HANA documentation.
- The **SAP Readiness Check tool for SAP S/4HANA**, the **ABAP custom code analysis**, and the **simplification item checks** are based on the information in the simplification items.
- In case **dedicated simplification items require mandatory preparation steps**, the technical conversion procedure can stop to help ensure a consistent system conversion.

Access simplification items through the simplification item catalog:

- <https://launchpad.support.sap.com/#/sic/>
- [SAP S/4HANA on SAP Help Portal](#)
- SAP Community blog: [The TOP Simplification List Items](#)



Data Migration is necessary

It is one key task during the transition to SAP S/4HANA. Unfortunately, it is often underestimated. It is not done by just pressing a button. Make sure to understand your data migration requirement early and plan for it accordingly.

1. Implement innovative business processes with preconfigured best-practice content on an innovative platform
2. Migrate your master data and retire old landscape

What is a migration object?

- Represents a business entity in SAP S/4HANA, such as a customer, sales order, or invoice
- Encapsulates the logic to create the specific business entities through the corresponding APIs offered by SAP S/4HANA
- Delivered by SAP based on SAP Best Practices configuration and are ready for immediate use
- Categorized in **master data and transactional data (no historical data)**
- Contains rules how values from source to target are handled –called “mapping”
- Can be extended or newly created with the **SAP S/4HANA migration object modeler**

What is migration content?

- Migration content is the sum of all migration objects

See also, for example, Data Migration Application Help

<https://www.sap.com/documents/2017/07/26113ac0-c47c-0010-82c7-eda71af511fa.html>

<https://help.sap.com/viewer/29193bf0ebdd4583930b2176cb993268/2020.002/en-US>

Migration Objects for SAP S/4HANA

Available Migration Objects

Migration Object Name Business Object Type Migration Approach Custom Field Support Component

Migration Object Name	Business Object Type	Migration Approach	Custom Field Support	Component
Bank	Master data	<input checked="" type="checkbox"/> Select All	Not applicable	FI
Batch unique at material and client level	Master data	<input type="checkbox"/> Direct Transfer - AFS	Not applicable	LO-BM
Batch unique at plant level	Master data	<input type="checkbox"/> Direct Transfer - CRM	Not applicable	LO-BM
Business partner	Master data	<input checked="" type="checkbox"/> Direct Transfer - ERP	Not applicable	AP-ND-BP
CO - Activity type	Master data	<input type="checkbox"/> Direct Transfer - eSPP	Not applicable	CO
CO - Activity type group	Master data	<input type="checkbox"/> Direct Transfer - EWM	Not applicable	CO
Business partner	Master data	<input type="checkbox"/> File/Staging Table	Not applicable	CO-QM-ABC
CO - Activity type	Master data			

Migration object documentation

Download migration object list

Filter for migration approach

Figure 210: SAP S/4HANA Migration Cockpit

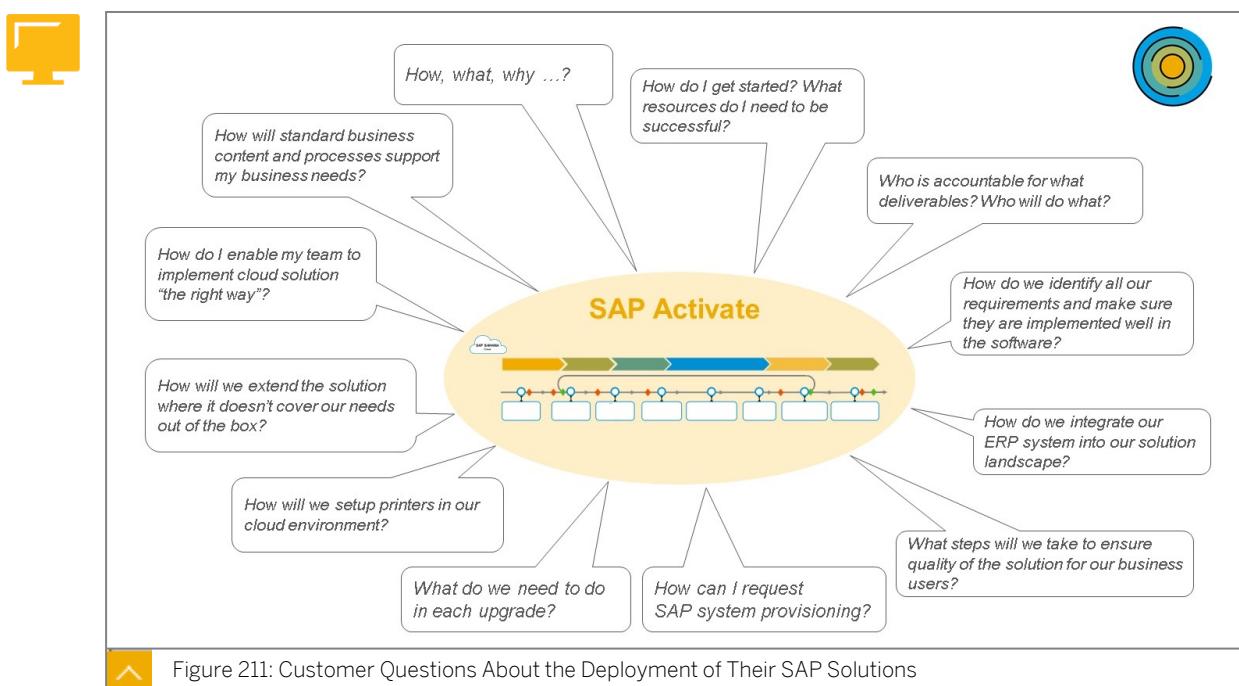
You can use the link below to gain an overview of all migration objects available for SAP S/4HANA. It's sorted in alphabetical order by **Migration Object Name**. Choose a migration object name to navigate to the corresponding documentation for the migration object.

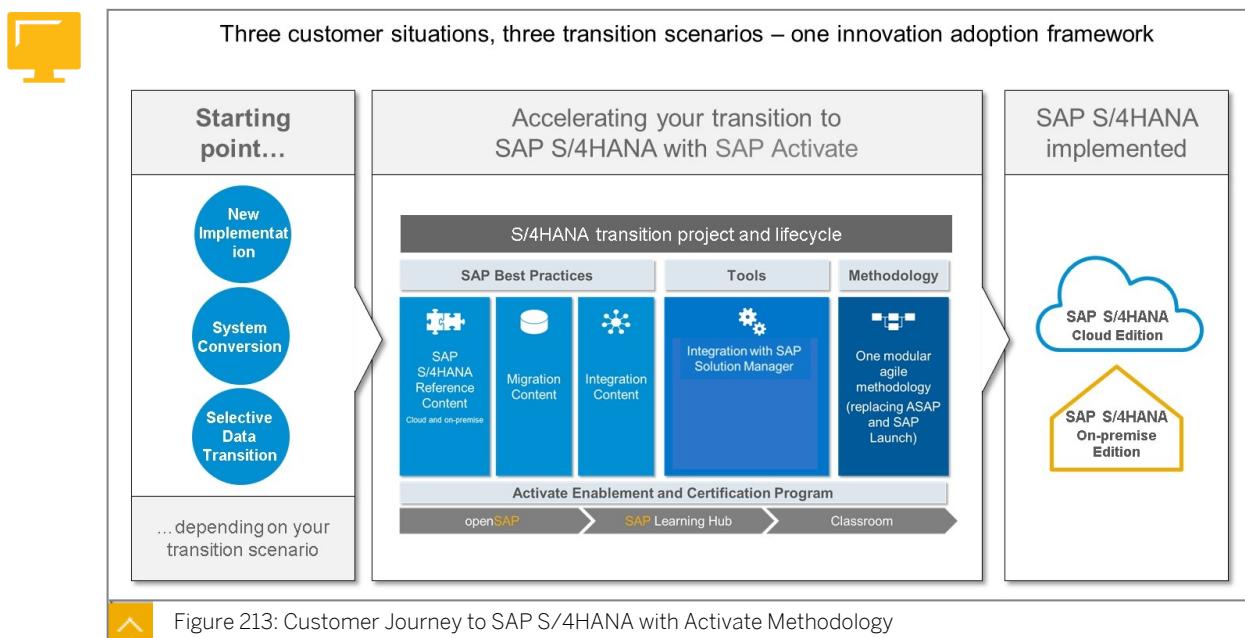
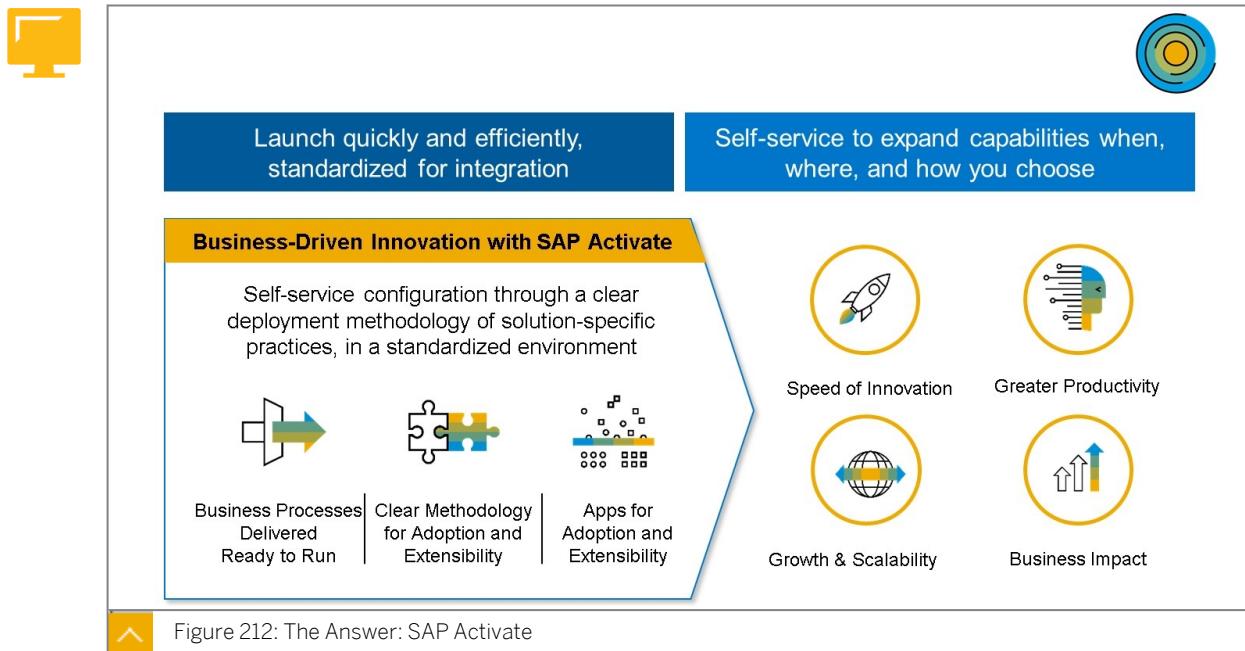
Use the search field in the **Migration Object Name** column to search for a specific migration object.

Choose **Filter** to apply further filters for **Master data** and/or **Transactional data** in the **Business Object Type** column, for **Custom Field Support**, and for the application component in the **Component** column to narrow down the results list. If you want to see more or less information, choose **Show/hide** columns, and select the respective checkboxes for the columns you would like to show or hide.

Available Migration Objects

http://help.sap.com/S4_OP_MO





LESSON SUMMARY

You should now be able to:

- Gain a further insight into the resources, tools, and methods available

Unit 7

Lesson 3

Clean Core



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Clean Core Dimensions

Clean Core Dimensions

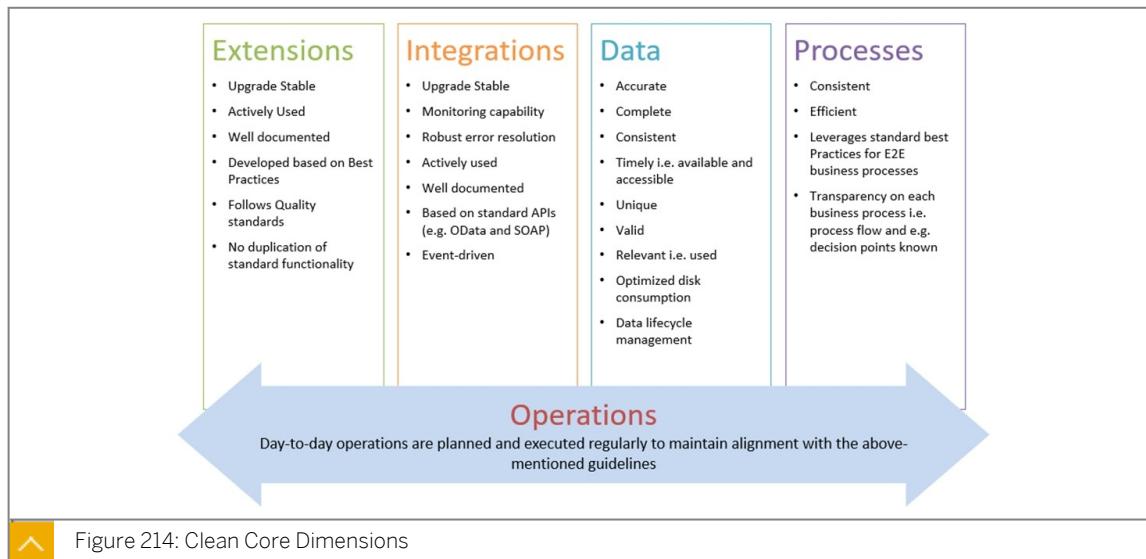


Figure 214: Clean Core Dimensions

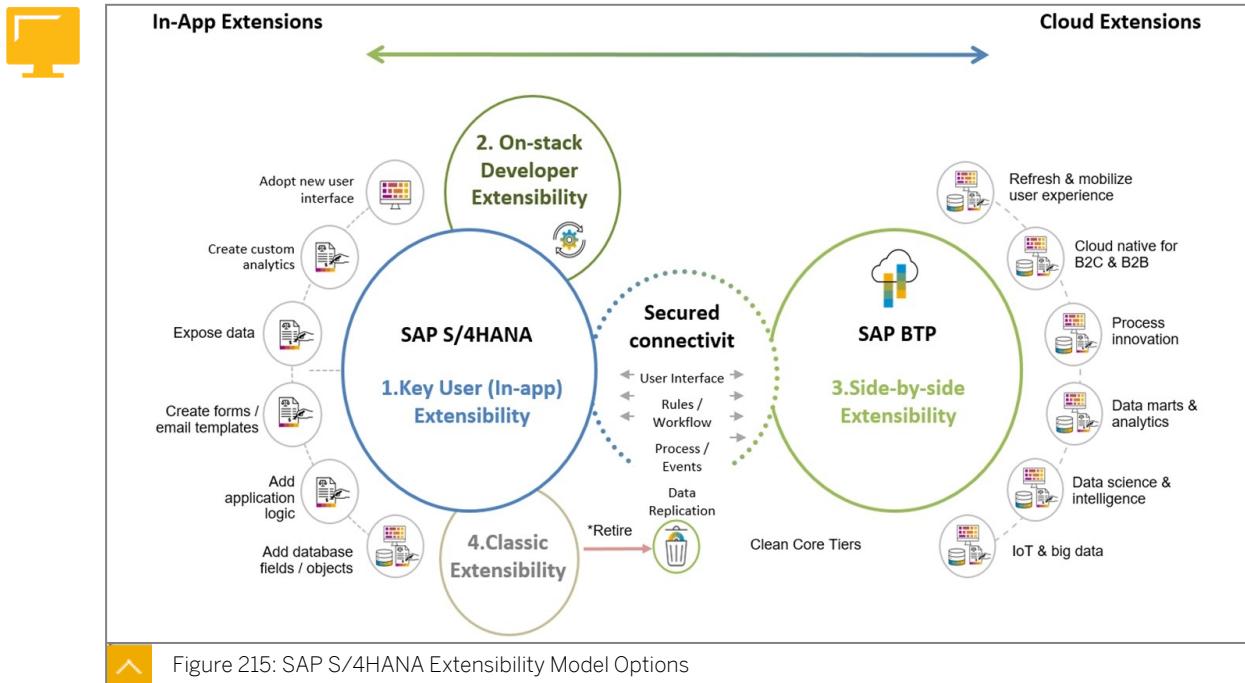
“Clean core” is not a system running without any core customization, but rather a system which follows standardized guidelines for all elements of the core. With that, upgrading this system does not imply significant and costly efforts to test and adapt existing structures.

There are 6 components when discussing the core of an organization. These technical and procedural considerations interact to provide the capability to the business:

- **Extensibility:** Functionality added to standard software, which extends it to address organizational needs that are not met by standard
- **Integration:** Communication between extensions and standard solution as well as communication between solutions
- **Data:** Information in the system (configuration data, master data and transactional data)
- **Processes:** The series of actions or steps taken within your system that cover the end-to-end (E2E) experience of delivering an outcome
- **Software Version:** The version of the shipped standard release of enterprise resource planning (ERP) software

- **Operations:** Governance responsible for managing infrastructure, upgrade decisions, extension decisions, and system monitoring and maintenance activities

SAP S/4HANA Extensibility Model Options



As “clean core” it is deeply connected to the concept of Extensibility, let's first define that word:

Extensibility: Functionality added to standard software, which extends it to address organizational needs that are not met by standard

Extensibility is a key capability, because it allows our customers and partners to differentiate their business processes and develop extension applications on top of existing standard functionality. With the rise of new technologies, especially in a cloud and hybrid environment it can quickly become a complex challenge to navigate. And **SAP's mission is enabling the customer to build cloud ready and future proof architectures of your extensions in a clean core fashion.**

This means, that software engineering principle for enhancements without impairing existing system functions and it can be the addition of new functionality or modification of existing functionality. In addition, measure the ability to extend and the effort required to implement an extension.

Why does SAP S/4HANA ERP need extensibility

- Extend business process for optimization, innovation, or automation
- Extend the UX of existing processes and provide controlled access for external user groups
- Extend data insights & analytics by combining data in one central place
- Extend the ecosystem with side-by-side Software as a Service (SaaS) apps

Challenges with the classic extensibility model

1. High TCO for system maintenance and software upgrades.

- Extensive planning and testing. Making sure the upgrade does not break the system.
- Software changes lead to high adoption efforts.
- SAP Standard code and Customization are not clearly separated, there is no interface.
- Classic extensibility adds complexity to the SAP Core and averts from adoption of agile practices and standardized business processes.
- Redundant data and unused custom code living within the core ERP system.

2. **The slow rate of innovation** as the system was modified via standard and custom codes.
3. Limitations and struggle to reach the fast-changing business needs to compete and lead.

This new SAP S/4HANA Cloud extensibility model, first introduced in SAP S/4HANA Cloud public edition, is now available and **recommended in all SAP S/4HANA editions**, to achieve the following:

- Smoother upgrades
- Little to no testing efforts
- Simplified adoption and LOBs drive innovation timelines
- Standardized and optimized business processes
- Pave the way to the cloud

There are various new options/tools available to create stable extensions in the SAP S/4HANA ERP system by following the clean core principle, even when the classic extensibility model is still available for the on-premise, private editions and recommendations are NOT to adopt it.

1. Key User (In-app) Extensibility

SAP Fiori extensibility apps(tools) help you to customize user interfaces, processes, email templates, or forms using a low-code/no-code(LCNC) paradigm. It empowers business experts or citizen developers (typically a user from the business department) to add extensions to SAP solutions without the need to dive deeply into the implementation details. They typically have deep knowledge of business processes and configuration with no or only limited coding or debugging skills. Some development skills are recommended for developing custom business objects and adding business logic using the cloud ABAP web editor.

Scenario

Simple low-code/no-code tool features for the S/4HANA extension

Use-cases

- UI adoption for screen layouts such as moving/hiding fields and field groups, changing labels, etc, custom forms, and templates
- Custom CDS views and analytical apps.
- Custom business objects with minimal coding effort.

- Custom fields to standard business objects. The custom field is then available in the entire application stack (from the UI to the database tables or for developer extensibility).
- Custom business logic using Cloud BAdIs
- Add custom fields to a process group (e.g., from sales quotation and sales order to delivery and invoice) to provide consistent end-to-end extensibility.
- Copy and adapt print and email form templates.
- The adaptations made by a key user are registered in transport requests for propagation into QA and PRD systems.

2. On-stack Developer Extensibility

This option bridges the gap between the key user and side-by-side extensibility options. On-stack developer extensibility enables you to develop custom ABAP code, and partner extension developments requiring coupling with SAP S/4HANA data, transactions, or apps using a restricted ABAP version. The requirements of the extension project go beyond the scope of key user extensions.

Scenario

Custom ABAP development projects that need tight coupling to SAP S/4HANA data, transactions, or apps that require full access to development capabilities like debugging, refactoring support, version control, etc.

Use-cases

- ABAP-based custom apps and extensions that are developed with a new cloud-ready ABAP RAP model on released APIs.
- Custom applications with SQL access to SAP S/4HANA data cannot be realized by side-by-side or data replication.
- Custom extensions running in the same logical unit of work (LUW) as SAP applications
- Custom remote APIs or services for side-by-side SAP BTP apps
- SAPUI5 Adaptation Project to extend the SAP Fiori application

3. Side-by-side Extensibility

Extensions running on the separated (side-by-side) SAP Business Technology Platform (SAP BTP) for all other loosely-coupled extension scenarios integrating with the extended SAP S/4HANA system. This model is the preferred option for developing loosely coupled but seamlessly integrated extensions to SAP S/4HANA data, transactions, or apps.

Scenario

Loosely-coupled extensions, process automation, and applications, such as partner SaaS solutions or custom applications targeting a different end-user group.

Use-cases

- Proxy applications for a separate target group (no ERP users)
- Convenience application workload that shall run separated from ERP

- A custom application that will run in parallel with ERP reducing the load on the operational system
- Custom applications needing proximity to intelligent SAP BTP services like machine learning, AI, etc.
- Substitute apps integrating with several ERP and cloud services
- Partners want to provide a SaaS solution and therefore need to operate their service independently of the SAP S/4HANA system
- ABAP and non-ABAP (Java, Node.js, etc.) developments
- Extend UI application using a no-code application like SAP Build Apps
- ERP Workflow and business process automation
- Pre/Post processing applications for S/4HANA system
- Analytical applications

4. Classic Extensibility (Not available in SAP S/4HANA public edition)

This is the traditional way of the SAP ECC or S/4HANA on-prem enhancement for RICEFW ABAP custom object development like user-exits, customer-exits, classic BAdis, implicit/explicit enhancements, BTE, module-pool, etc using transaction code SE38, SE80, SE11 (SAP GUI, Eclipse ADT).

Scenario

Requirements that are critical for lifecycle management or business operations and NOT possible using 3 modern extensibility options(Key user, developer, or side-by-side)

Use-cases

- Non-released BAdis, classic user exits business-critical logic.
- Lastly, anything that is not possible to accomplish using modern extensibility options for must-have type business application requirements..

Example for Key-User (In app) Extensibility

Figure 216: Example for Key-User (In app) Extensibility

When it comes to configuring, adapting, and extending your SAP S/4HANA solution, key user extensibility provides powerful low-code/no-code features to manage customer-specific changes for your solution. These changes can be made during the implementation project, during an upgrade project, and at any time you need.

Even better, key user extensibility changes can be made by your business experts, a central process governance group, your functional consultants, or used by your technical team.

In many cases, key user extensibility is the first option you should consider when you need to make a change to a user interface or to a business process, because compared to other extensions key user extensions are:

Simple – no-code/low-code

Cost-effective - require minimum cost/effort/skill

Upgrade-stable – are automatically retained as you upgrade releases

Safe - many of these changes be undone or reset, if needed

Adapt UI can be used to add, remove, relabel, and reorganize fields and features. Example of UI Adaptation mode as it appears in the SAP Fiori app F1511A Create Maintenance Request



LESSON SUMMARY

You should now be able to:

- Clean Core Dimensions

Signavio Process Navigator



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Signavio Process Navigator

Signavio Process Navigator

SAP Signavio Process Navigator in a nutshell

SAP Signavio Process Navigator is a cloud native service providing insights and best practices into SAP's process portfolio. Built on the Enterprise Architecture methodology data model, this new service can be accessed via SAP for Me and provides innumerable resources such as process models, process documentation, process related implementation accelerators, as well as process related context data including solution components, roles, integration automation information, and much more.

SAP Signavio Process Navigator complements by focusing on value accelerators for SAP products and how SAP can help customers implement the SAP portfolio. It provides details on solution process design, localizations and implementation assets that enrich and are the perfect match to all content already available within SAP Signavio Process Explorer.

- A cloud native service providing insights into SAP's process portfolio following a business and solution process-centric data model and design.
- Delivering process models, process documentation, process related implementation accelerators, country and industry specific implementation scope.
- Providing process related context data such as solution components, roles, integration automation information, applications along process flows and supported solution capabilities.
- A tailor-made service to help businesses "implement simple" in all deployment types, public and private cloud, on-premise or hybrid scenarios.
- Providing a lightweight consumer grade usability with SAP Fiori, on any device, with in-app search and filtering options enabling access to SAP's process portfolio at any point in time.

SAP Signavio Process Navigator's Homepage

On the home page, we have two tiles: One tile accessing the solution scenarios, the second tile for assessing the solution processes.

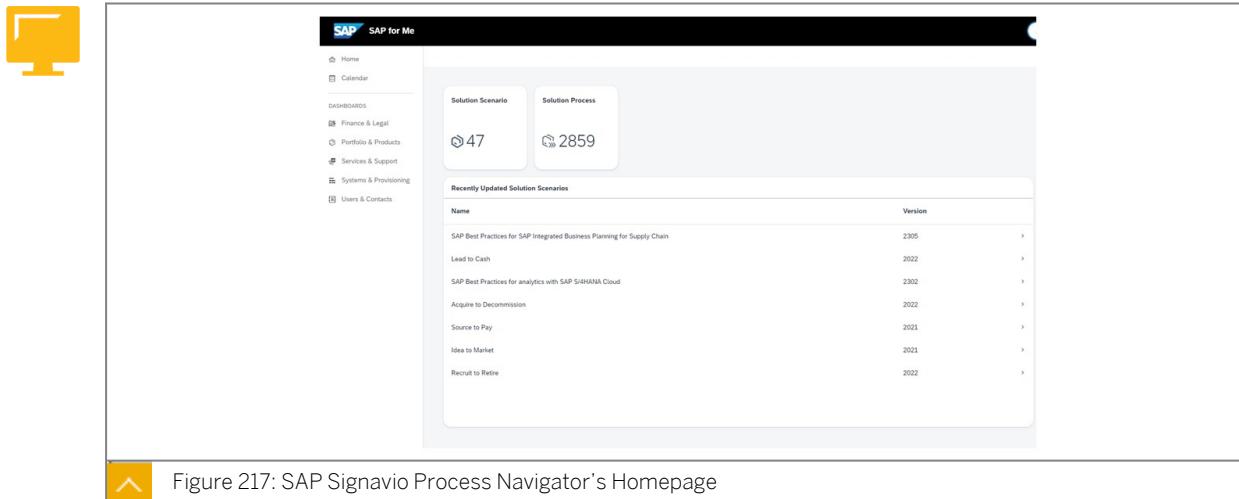


Figure 217: SAP Signavio Process Navigator's Homepage

In general, there are two options to find the SAP Signavio Process Navigator:

Option 1:

To find the tile for Process Navigator, please go to 'Services & Support' in 'SAP for Me', and then select 'Application Lifecycle Management.' Please note that accessing Process Navigator requires you to authenticate yourself using a registered SAP User account through 'SAP for Me'.

Option 2:

The direct link to Process Navigator is <https://me.sap.com/processnavigator>

SAP Signavio Process Navigator's Solution Process

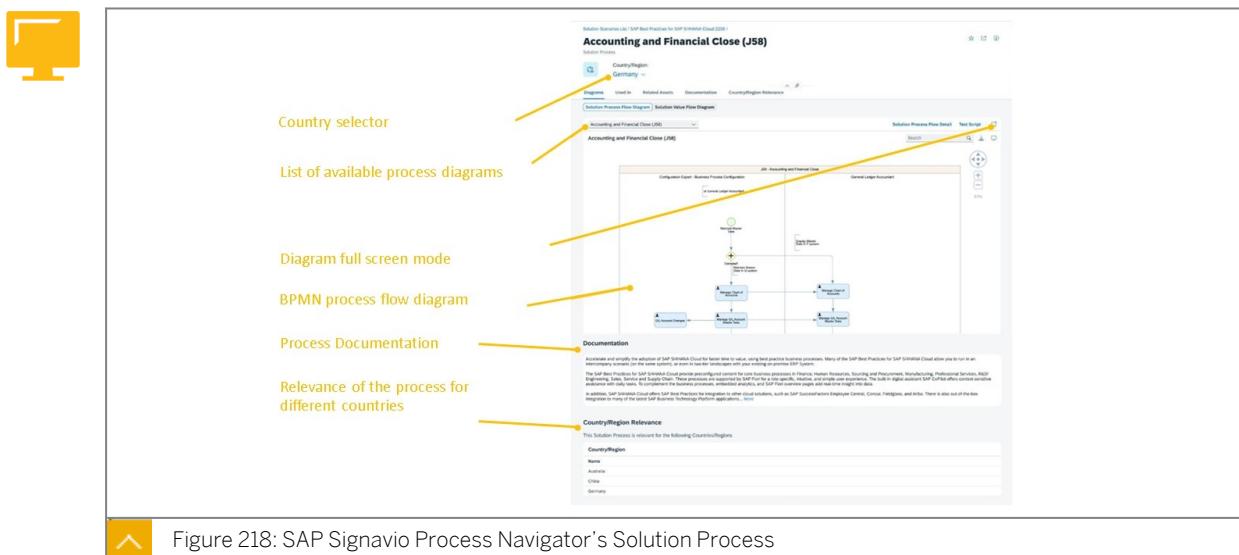


Figure 218: SAP Signavio Process Navigator's Solution Process

Solution Process: This provides the list of various solution processes provided by SAP Solutions. The user can filter based on Version, Country/Region & Name of the Solution Process. Users can also filter based on the Scope Item Number.

From the **Solution Scenario Tile**, it is possible to navigate to the **SAP Best Practices for SAP S/4HANA Cloud**. Once selected, the page shown below is displayed.

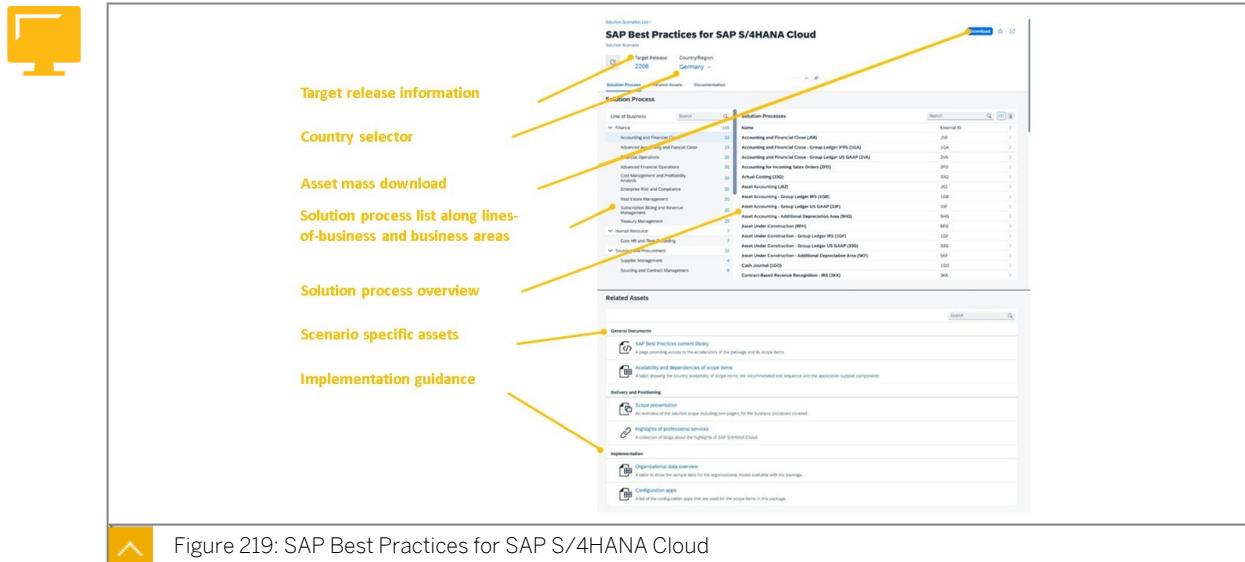


Figure 219: SAP Best Practices for SAP S/4HANA Cloud

On the left-hand side, **Version & the Country/Region** are available. User can change the Country/Region from the dropdown as per his/her wish.

On the top right corner, there is a **Download** button to download the SAP Best Practices.

Below **Version & the Country/Region**, we have three tabs namely **Solution Process**, **Related Assets & Description**.

User can also search directly for a Solution Process by providing the name of the solution process or the scope item number in the search box provided in the Solution Process area.

This means, that SAP Best Practices will remain available, even the SAP Best Practices explorer has been deprecated since 2023.

SAP Signavio Process Navigator and Explorer Cloud ALM and Digital Discovery Assessment

Since the SAP Activate lifecycle involves varying levels of detail across different phases, there cannot be a universal solution that fits all scenarios. Nevertheless, the solution processes offered by these services exhibit a significant degree of overlap and are shared from the same source.



Note:

SAP Signavio Process Explorer has a system-independent approach (provides both SAP and non-SAP best practices) and aims to guide customers all along the transformation journey. If you want to understand the big picture, if you want to get guidance throughout your transformation from design to implementation and comprehend how content, methodology and tools fit together, then SAP Signavio Process Explorer will provide you the right answers.

- **Process Navigator** is SAP's new lightweight service with quick and easy access to solution scenarios and solution processes to support the discovery phase and project planning
- **Digital Discovery Assessment** is customer's pre-qualification experience on the journey to qualify their solution scope and get their offer prepared. Digital Discovery Assessment is linking into the process details in Process Navigator.

- **Cloud ALM** is SAP's application lifecycle management solution to support all aspects of the implementation and run lifecycle, project definition and setup, fit-to-standard workshops and capturing customers requirements to safely guide through the implementation and later on supporting the solution
- **Signavio Process Explorer** as one entry point into the rich world of Signavio, including process metrics to measure and benchmark work, process mining and analytics, and more.



LESSON SUMMARY

You should now be able to:

- Signavio Process Navigator