

SAP AI – A Use Case Driven Approach

Built for business.

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PUBLIC

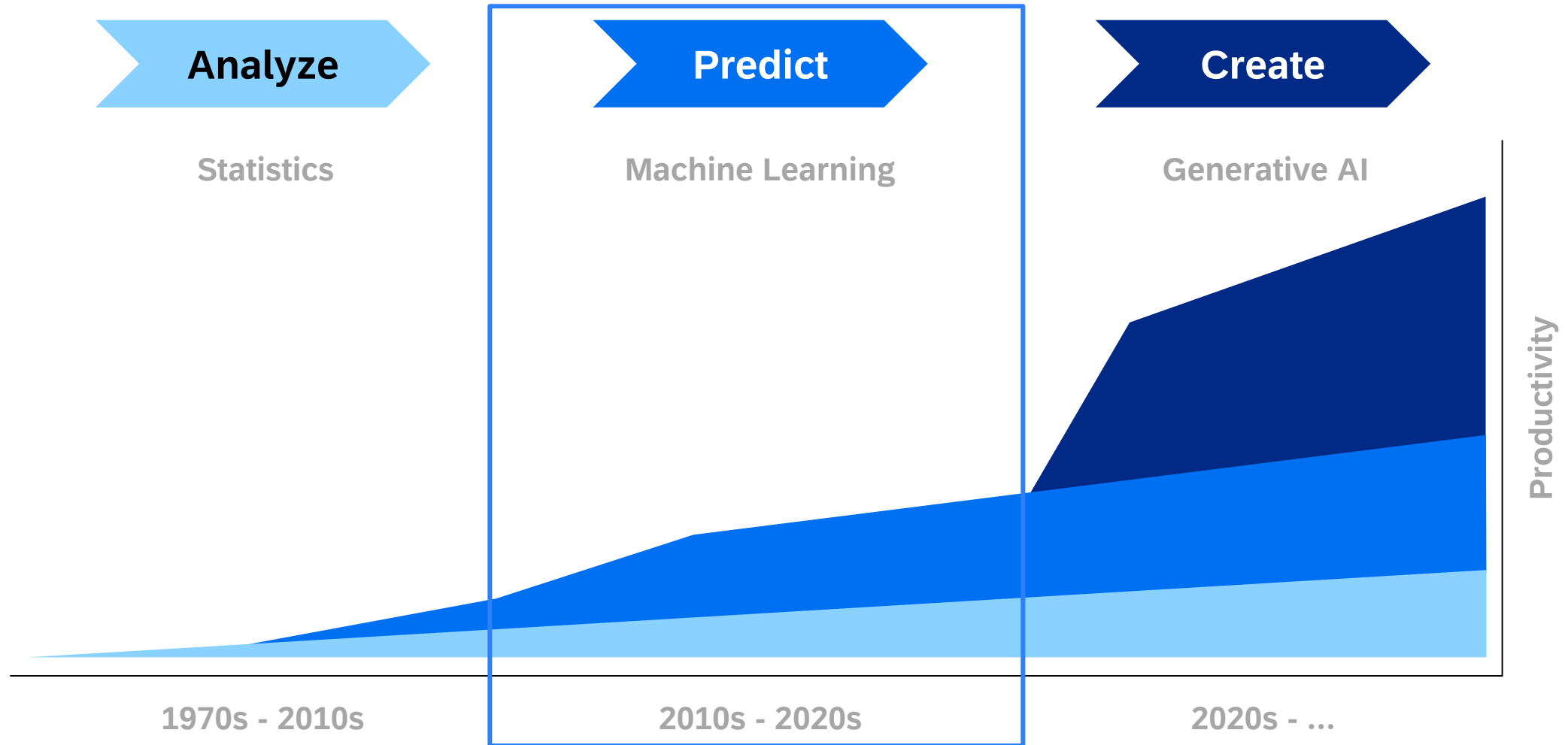
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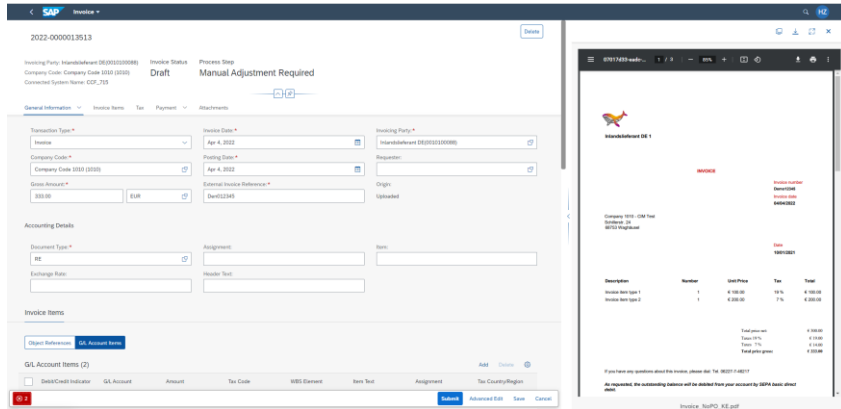
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Evolution of artificial intelligence



Note: Simplified, illustrative view

Integrate AI into the Business Process



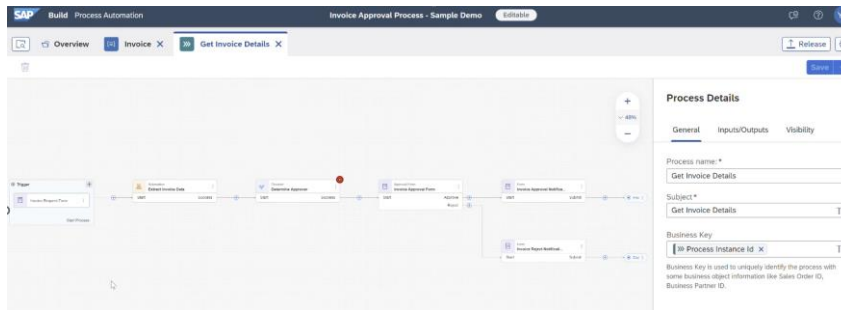
CHALLENGE

- Companies must reduce manual invoice processing, which accounts for up to 62% of the total processing cost
- Accounts payable departments need to modernize and optimize processes for clearing the growing number of PDF invoices
- Additional fields that don't appear in the invoices need to be filled in to complete the document processing

SOLUTION

Document Information Extraction in combination with different SAP solutions

- Extract text from images with optical character recognition (OCR) processing
- Identify key document attributes with intelligent text processing



OUTCOMES

Faster
Processing of paper or
PDF-based invoices

Reduced
Errors and complexity

Increased
Reliability of the
invoice management
process

Welcome to SAP Build

[Hide](#)

Create apps, automate processes and build business sites without writing code.

Quick Start

**Learning**

Access our SAP Build Learning journeys

**Template**

Create a Change and Innovation Approval Process

**Template**

Create an Invoice Approval Process

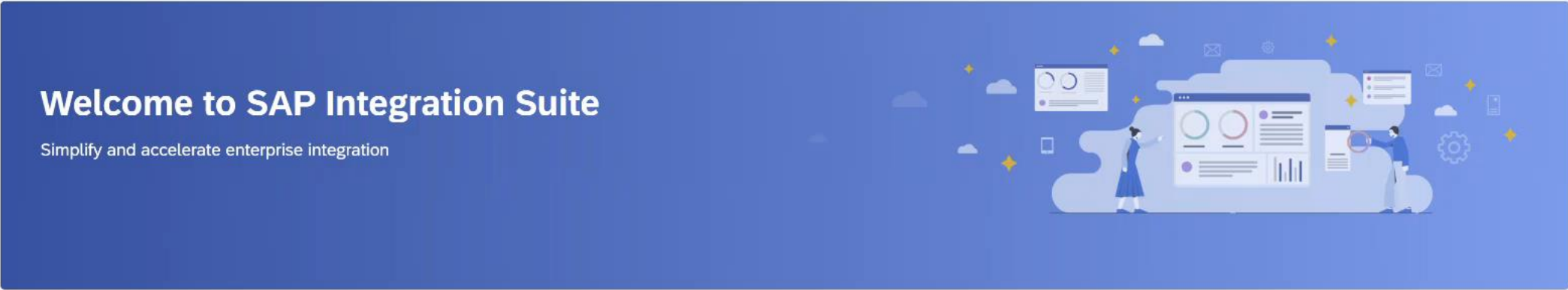
**Template**

Create a Sales Order Approval Process

All Projects (244) ▼[Create](#)

Name	Versions	Type	Last Accessed	Members	More Options
Invoice Approval Process - Demo This sample content is designed to help users to get started in automating invoice approvals. It is based on one of our...		Process Automation	Aug 10, 5:39 pm	Me	⋮
Invoice Approval Process - Sample Copy Demo This sample content is designed to help users to get started in automating invoice approvals. It is based on one of our...		Process Automation	Aug 10, 5:32 pm	Me	⋮
Sales Orders Management AC48321U02	1 Available Latest: 1.0.0 ▼	Process Automation	Aug 10, 4:54 pm	1 member	⋮

- Home
- Discover
- Integrations
- Design
- Monitor
- Integrations
- B2B Scenarios
- Inspect
- Settings



Recent

View recently accessed artifacts.

Integrations		
	Send Finance Tax Data Integration Flow 1.2.2	Not Deployed
	Packaged Integration - SAP Fieldglass to ... Integration Flow 1.3.9	Not Deployed
	ProcessOrder_copy Integration Flow 1.0.6	Not Deployed
	Send HR Tax Data Integration Flow 1.0.4	Not Deployed

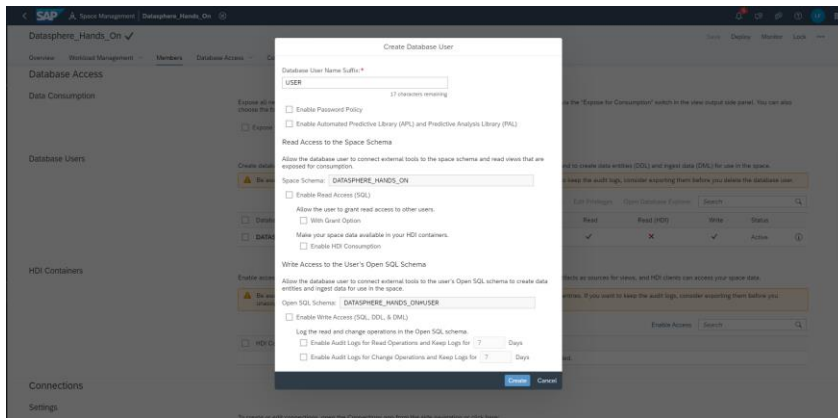
Monitoring

Analyze the usage and performance of your artifacts.

Hour Day Week Month

Bring the Algorithms to the Data

Typical Statistical Learning Scenarios



CHALLENGE

- Time consuming data extraction to create AI forecasts
- Data Leakage, inconsistencies & not-up-to-date data

SOLUTION

HANA ML in SAP Datasphere

- Native Python and R client for the AI expert
- Use HANA dataframe object as virtual data reference
- Automated Predictive Library (APL) & Predictive Analysis Library (PAL)
- Model storage and ML performance reports

```
3. How can we leverage the computing power of our HANA in our machine learning use case?

In [14]: %time
#create training and testing set
from hana_ml_algorithms.pal import partition
df_remote_train, df_remote_test, df_remote_val = partition.train_test_val_split(data = df_remote,
                                                                              training_percentage = 0.8,
                                                                              testing_percentage = 0.2,
                                                                              validation_percentage = 0)

Wall time: 2.74 s

In [15]: #control the size of the training and testing set
print('Size of training subset: ' + str(df_remote_train.count()))
print('Size of test subset: ' + str(df_remote_test.count()))

Size of training subset: 400000
Size of test subset: 100000

Let us now train or random forest on the training set. First, we set the numbers of trees very high, to see where the Out of Bag error converges. After
optimizing the numbers of trees we will take a closer look at the variables considered at each split.

In [16]: #set parameters of random forest
from hana_ml_algorithms.pal.trees import RandomForestClassifier
rf = RandomForestClassifier(n_estimators=500,
                           calculate_oob=True,
                           random_state=0)

In [17]: features = df_remote_test.columns
features.remove('FRAGID')
features.remove('TRANSACTION_ID')
print(features)

['ORIGIN', 'CLASS', 'AMOUNT', 'OLD_BALANCE_ORIGIN', 'NEW_BALANCE_ORIGIN', 'DESTINATION', 'OLD_BALANCE_DEST', 'NEW_BALANCE_DEST']
```

OUTCOMES

Reduce

Data extraction and data redundancy

Improve

The time to value in AI driven use cases

Increase

The quality of your business decision through AI

General Settings

Space ID:	Space Name:	Space Status:	Space Type:
<input type="text" value="HANAML_DEMO"/>	<input type="text" value="HANAML_DEMO"/>	<input style="border: none; border-bottom: 1px solid #ccc; background-color: #f0f0f0; padding: 2px 5px; width: 100%;" type="text" value="Active"/>	

Created By:	Created On:	Deployment Status:	Deployed On:
Yannick Schaper (YSCHAPER)	Aug 10, 2023 17:55:22	Deployed	Aug 10, 2023 17:56:51

Storage Assignment:

Enable Space Quota

Disk (GB):

In-Memory (GB):

In-Memory Acceleration 50 %

Data Lake Access:

Use this space to access the data lake.

Workload Management

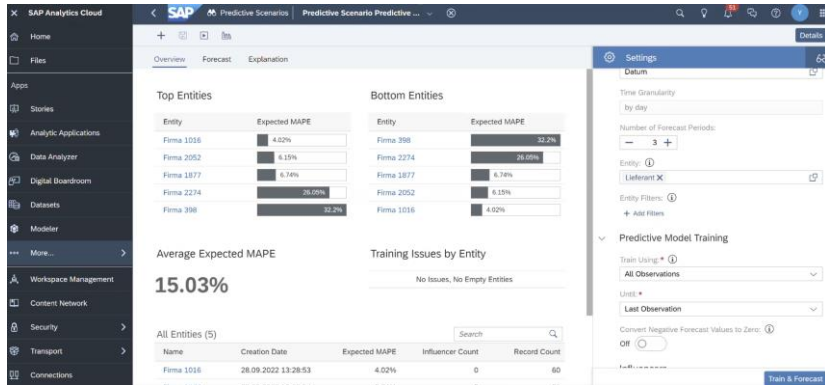
Priority

You can specify the prioritization of this space when querying the database. Enter a value from 1 (lowest priority) to 8 (highest priority). In a situation where spaces are competing for available threads, those with higher priorities are run before spaces with lower priorities.

Space Priority:

Integrate Predictions into Your Planning

From Classification & Regression to Time Series Analysis



CHALLENGE

- We need to use statistical methods to improve our business processes
- Reality: Because of the complexity of data and tools, less than 20% of business analysts consistently use advanced and predictive analytics tools (McKinsey)

SOLUTION

Smart Predict in SAP Analytics Cloud

Simplified tool to:

- To allow the business analyst to solve statistical problems
- To free the data scientist from routine tasks
- Empower the user with business understanding

OUTCOMES

Reduce

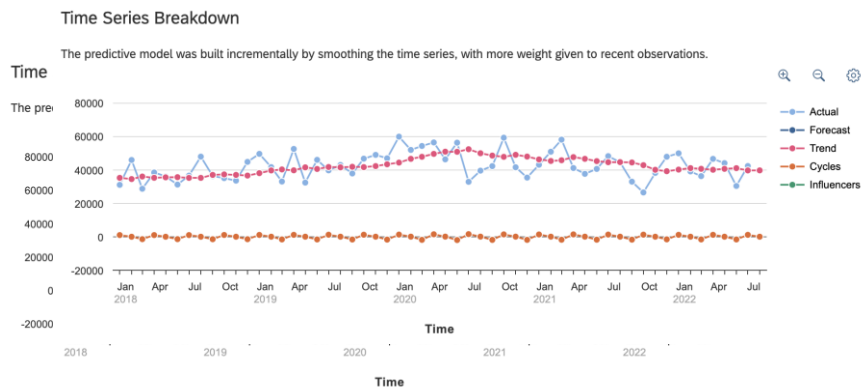
Time to get the Predictions into the Business

Improve

Planning by Integrating Predictions

Increase

The quality of your business decision through AI



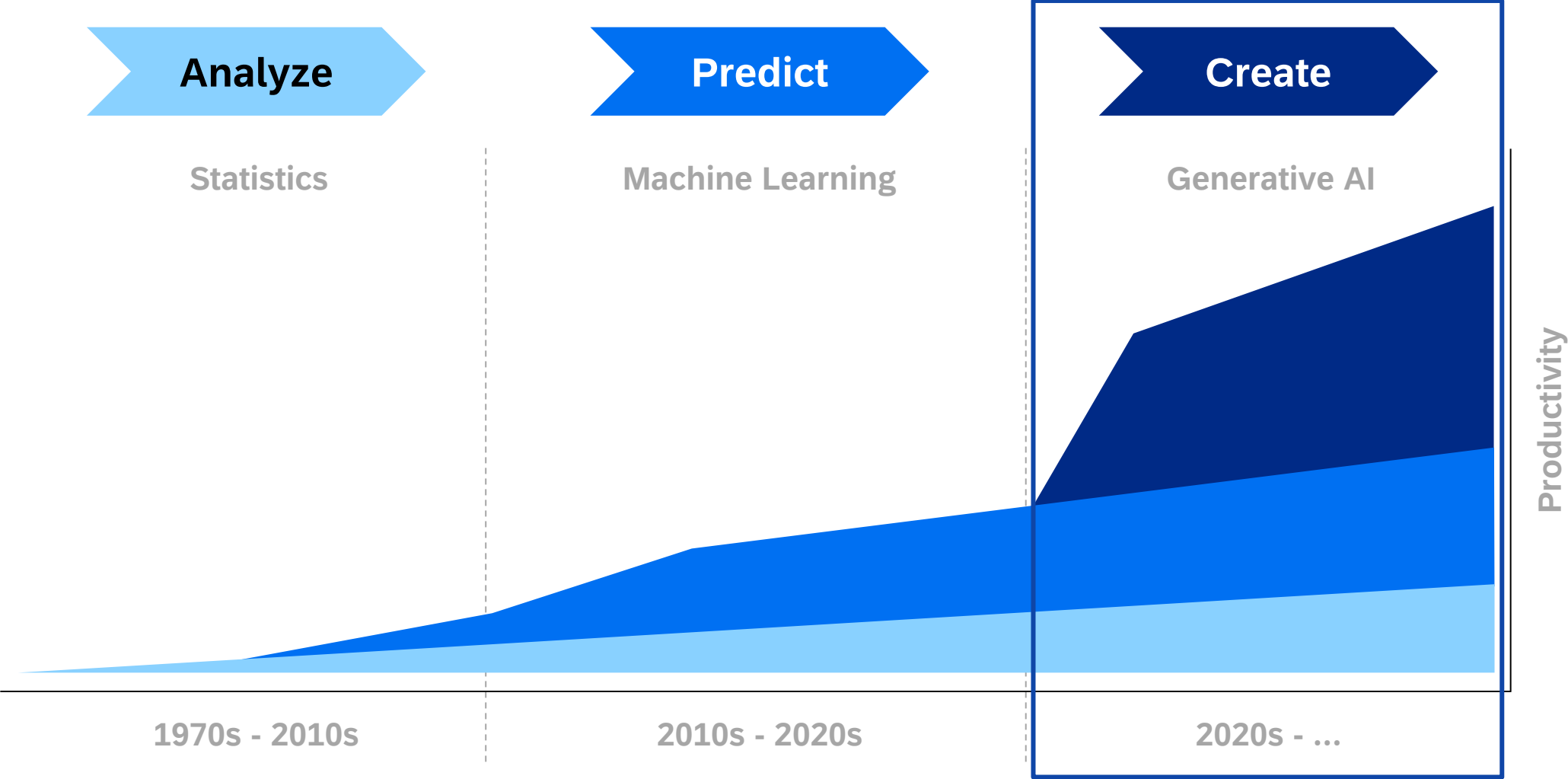
Zeitreihenanalyse

⚙️ 1 Filter | Hidden | 1 ⚠️

Account	Category	Predictive Planning				Sum
		Datum	> Q1 (2022)	> Q2 (2022)	> Q3 (2022)	
	Lieferant					
VolumeninMillionen	Firma 1016	10.90	-	-	-	10.90
	Firma 1877	12.70	-	-	-	12.70
	Firma 2052	9.85	-	-	-	9.85
	Firma 2274	15.65	-	-	-	15.65
	Firma 398	16.01	-	-	-	16.01

ⓘ Please select a chart, table, or map to build your content.

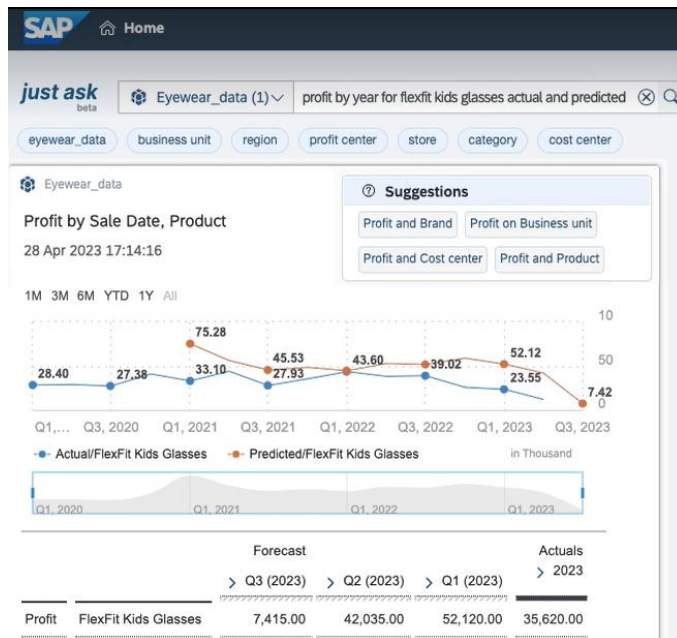
Evolution of artificial intelligence



Note: Simplified, illustrative view

Get answers to business questions in natural language

AI-powered queries for analytics in natural language



Session ID: BTP446



Business user

Data and Analytics

CHALLENGE

- Business users have limited expertise to model and answer typical business questions
- Users' data exploration is limited to existing reports
- Existing "search to insight" feature based on keywords, English only

SOLUTION

Just Ask for SAP Analytics Cloud

- Understand user queries and deliver data in user-friendly way
- Simplify team collaboration and make data-driven decisions
- Retrieve and present data stored in SAP Analytics Cloud data models via natural language queries
- Search and chat with any data live, independent of its source system

OUTCOMES

Accelerate

Access to relevant insights

Increase

Analytics adoption for the
70% occasional users

Empower

Users to answer their
business questions

Just Ask: Search

SAP Home

just ask beta

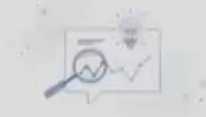
Eyewear_data (1) Search in the model Eyewear_data

X EYEWEAR DATA

costs revenue profit signeddata product sale date brand reading eyewear kid eyewear canada switzerland mexico


costs revenue profit sig... colombia

What do you want to know?



Hi Sales team, you can search only daily and weekly sales figures

[Edit description](#)

 Recommendations to start your search

- ProfitAndLoss
- BestRunJuice
- SalesDemo

[Add section](#)

Boost development productivity

GPT-based CAP model & data generation

```
> capGPT "
Develop a business app for a ticketing system
that enables customers to submit tickets and
agents to handle and resolve them efficiently.

The server should be capable of receiving ticket
submissions from various channels, such as email,
phone, or web portal, and storing the necessary
customer information and ticket details in a database.

It should also include functionalities for
assigning tickets to agents based on availability,
expertise, and workload.

The goal is to provide a robust and reliable
server-side solution for effective ticket
management, enhancing customer satisfaction
and streamlining internal processes for the business.
"
[GPT] generating model
.. Thinking█
```

CHALLENGE

- Writing code is hard and requires upfront learning. Even experienced developers regularly need to consult the documentation which slows down the development process.
- Test data creation is tedious. One must always ensure that data fits the model and is up to date.

SOLUTION

- **Integrated in SAP Business Application Studio & CAP**
- Create all necessary CDS files which define the entities, relations and service projections according to your prompt
- Generation of business logic in services, generate sample data
- Even existing models can be changed, just by providing descriptions
- Supports developers to generate unit tests for business in services

OUTCOMES

Up to 30%
time reduction to generate
data models and services

Improve
Developer experience

Empower
Users to answer their
business questions

 Developer

App Development

Welcome to SAP Build Code

The screenshot displays the SAP Build Code interface for a project named 'CustomerLoyalty'. On the left, the 'Joule' AI assistant is active, providing instructions and a code snippet. The main workspace is divided into several panels: 'External Resources', 'Data Models', 'Services', and 'UI Applications'. The 'Data Models' panel shows two data models: 'CustomerLoyalty' and 'CustomerLoyaltySrv'. Each model contains two entities: 'Customers' and 'Purchases'. The 'Customers' entity has fields: ID (UUID), customerId (String), contactData (String), totalPoints (Integer), totalPurchaseValue (Integer), numberOfPurchases (Integer), and redeemedPoints (Integer). The 'Purchases' entity has fields: ID (UUID), purchaseId (String), purchaseValue (Integer), rewardPoints (Integer), and customer (Association). The 'Services' panel shows two service definitions for 'CustomerLoyaltySrv', each with the same entity structure. The 'UI Applications' panel is currently empty, with a prompt to create a new UI. At the bottom, a code editor shows the following code:

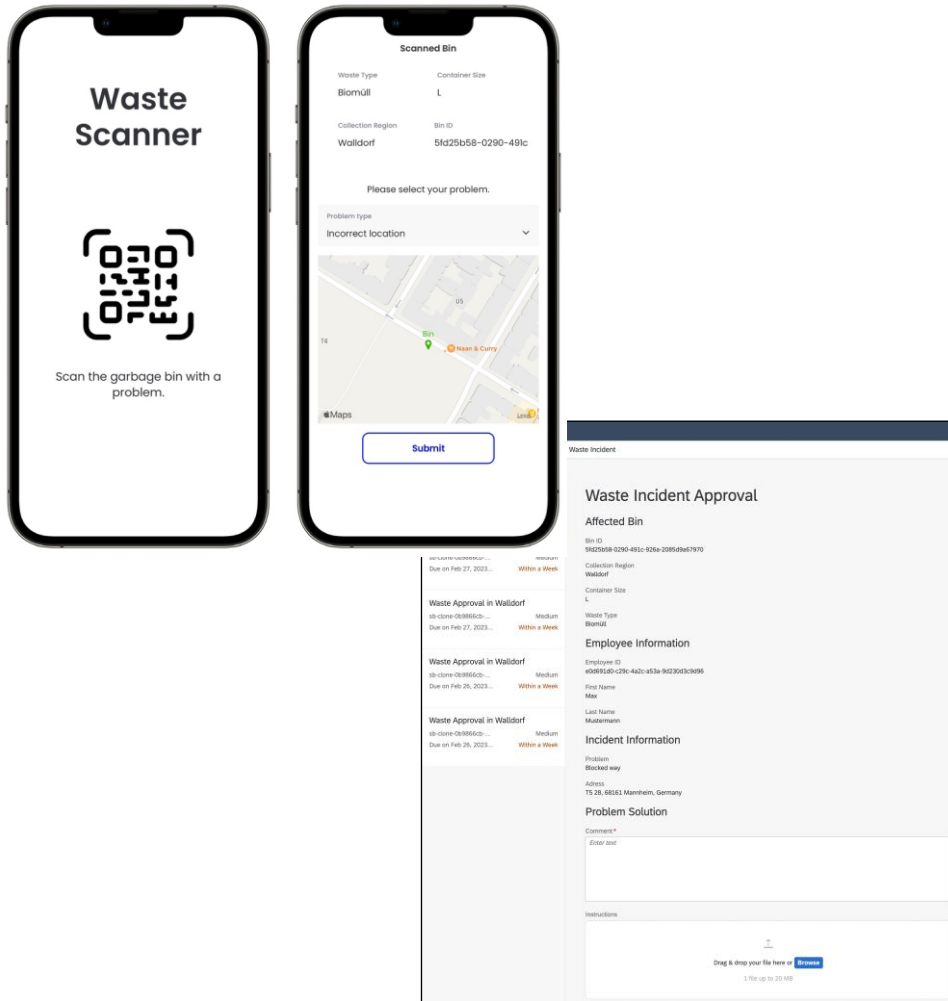
```
namespace CustomerLoyalty;

entity Customers {
  key ID: UUID;
  customerId: String(50) @assert.unique @mandatory;
  contactData: String(500);
  totalPoints: Integer;
  totalPurchaseValue: Integer;
  numberOfPurchases: Integer;
  redeemedPoints: Integer;
}

entity Purchases {
  key ID: UUID;
  purchaseId: String(50) @assert.unique @mandatory;
  purchaseValue: Integer;
  rewardPoints: Integer;
  customer: Association to Customers;
}
```

Combine low-code solutions

Use Case: Smart waste management application for mobile devices



CHALLENGE

- Garbage collectors **lack insights** about their daily route on a mobile device
- Issues related to garbage containers and collection require **paper-based reporting**

SOLUTION

- SAP Build Apps provides the easy-to-use front-end
- Integration to third party services (Google Maps) to visualize location data
- Process, email notifications and ticketing are handled by SAP Build Process Automation
- SAP Integration Suite manages the connectivity to SAP Service Cloud to centrally record incidents

OUTCOMES

Eliminate

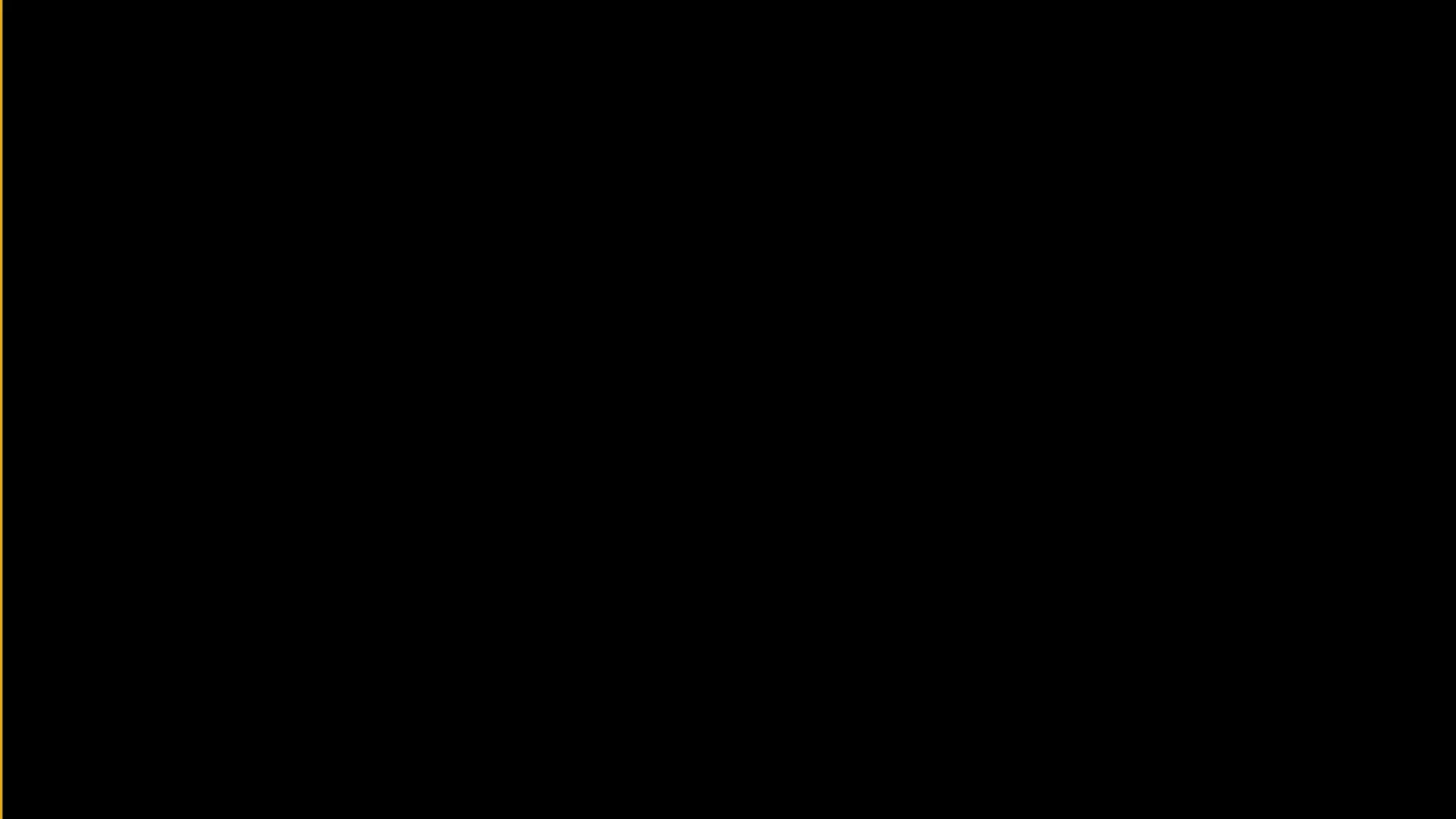
Potential human errors

Improve

Employee satisfaction

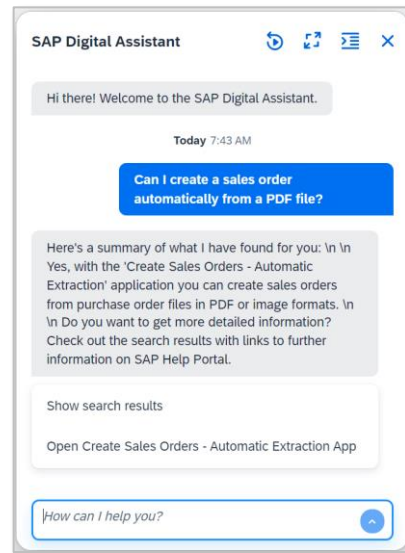
Empower

Users to report problems on the go



Intuitively access how-to information about SAP applications

AI-powered help function using natural language



Session ID: BTP431



Business user

Cross-topic

CHALLENGE

- Information about how to use SAP applications not easily accessible
- Exhaustive SAP enablement content stored in multiple repositories
- User needs to leave SAP application to search and view information

SOLUTION

SAP Digital Assistant

- Make information available via built-in digital assistant
- Return information from SAP's help content quickly within application
- Tailor results based upon user's context, application, and version
- Navigation to the relevant application possible

OUTCOMES

60-70%

Less time to access relevant information

Increase

Confidence of users working with the system

Improve

User experience

Joule - the AI copilot that truly understands your business

Work faster with an AI copilot that truly understands your business

Benefit from smarter insights and quick answers on demand

Achieve better outcomes when creating content, code, and more

Maintain full control over decision-making and your data privacy

The screenshot displays the SAP Joule AI copilot interface. At the top, there is a navigation bar with the SAP logo, a 'Home' dropdown, a search bar labeled 'Search or ask the Digital Assistant', and a user profile icon for 'PH'. Below the navigation bar is a header image with the date 'Fri, Sep 22' and a personalized greeting 'Hello, Philipp!'. The main content area is divided into two sections: 'To Dos' and 'Insights'. The 'To Dos' section contains four task cards, each with a title, user name, and date: 'Procurement Purchase Requisition' (Kevin Hudemann, 1 week ago) with a value of 2,450.00 EUR; 'Expense Report Approval' (Stephan Aßmus, 1 week ago) with a value of 843.37 EUR; and two 'Time Off Requests' (Carmen Rannefeld, 1 week ago) for 3 days and 1 day. Each card has 'Approve' and 'Deny' buttons. The 'Insights' section shows 'Incoming Sales Orders' (289.1 K, Target 266.1K, Deviation 8.6%) and 'Open Purchase Orders' (4 of 35, 2.5K EUR). A 'View More' link and 'SAP Task Center' icon are also visible.

Joule

Note: Planned availability in SAP business applications at different times, starting with SuccessFactors and SAP Start in Q4 2023.

Learn how SAP AI is built for business.



Further Information

- [SAP AI Business Services Behind The Scenes – Document Information Extraction](#)
- [Create an Automation to Extract Invoice Details](#)
- [HANA Cloud - Predictive Analysis Library Hands On](#)
- [SAP Datasphere FedML](#)
- [SAP Analytics Cloud Predictive Planning – Frequently Asked Questions](#)

Thank you.