



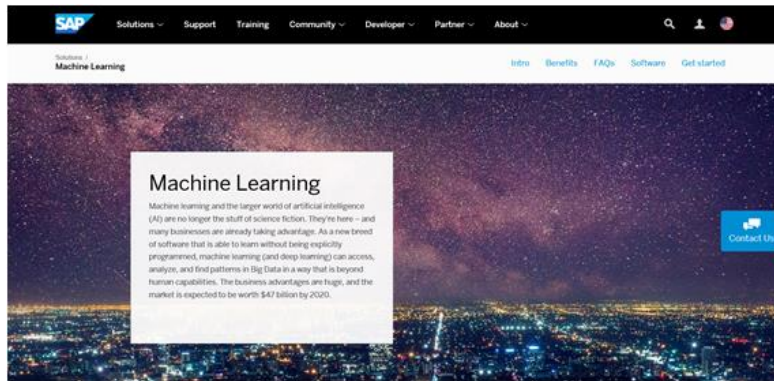
Session 50494 (CPL 141)

SAP Leonardo Machine Learning: A Deep Dive on Intelligent Applications

Margaret Laffan; September 2017

EXTERNAL

Join us @ TechEd Las Vegas



All Day Showfloor

SE04 - SAP Leonardo Machine Learning

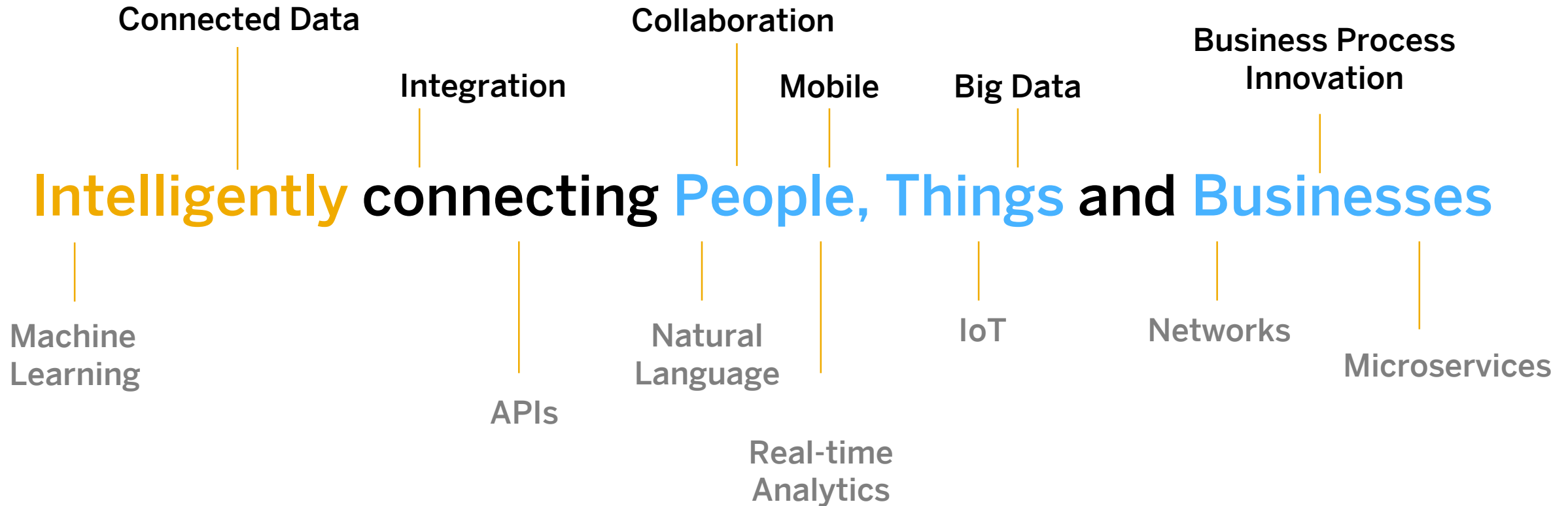
On-site Contacts

- [Margaret Laffan](#)
- [Markus Noga](#)
- [Sebastian Wieczorek](#)
- [Frank Wu](#)
- [Richa Namballa](#)
- [Shuai Zheng](#)
- [Omar Rahman](#)
- [Tu Truong](#)

Session ID	Time	Title	Session Type
ST101	09/26/2017 2:00 pm - 3:00 pm	Machine Learning, Blockchain, and Conversational AI: How to Get Started	Strategy Talk by Jürgen Müller, CIO at SAP
IT200	09/26/2017 5:30 pm - 5:50 pm	Build the Intelligent Enterprise with SAP Leonardo Machine Learning	Innovation Talk by Markus Noga, Head of Machine Learning at SAP
CPL137	09/27/2017 10:30 am - 11:30 am 09/28/2017 3:15 pm - 4:15 pm	Overview of SAP Leonardo Machine Learning Portfolio	Margaret Laffan
CPL139	09/27/2017 9:15 am - 10:15 am 09/28/2017 5:45 pm - 6:45 pm	Learn about SAP Leonardo Machine Learning Business and Functional Services	Sebastian Wieczorek
CPL140	09/27/2017 03:15 pm - 4:15 pm 09/28/2017 05:45 pm - 6:45 pm	Technical Overview of SAP Leonardo Machine Learning Foundation	Frank Wu
CPL865	09/26/2017 04:15 pm - 4:45 pm	SAP Leonardo Machine Learning Foundation Roadmap	Sebastian Wieczorek
CPL225	09/27/2017 05:45 pm - 6:45 pm	How to Deploy Your Own Models on SAP Leonardo Machine Learning Foundation	Frank Wu
CPL141	09/26/2017 05:45 pm - 6:45 pm 09/28/2017 08:00 am - 9:00 am	SAP Leonardo Machine Learning: A Deep Dive on Intelligent Applications	Margaret Laffan
CPL724	09/27/2017 10:45 am - 11:15 am	Build Custom Image Classifier with SAP Leonardo Machine Learning Foundation	Truong Tu
CPL725	09/27/2017 12:15 pm - 12:45 pm	Build Custom Text Classifiers with SAP Leonardo Machine Learning Foundation	Shuai Zheng

Digitization

Every company to become a software-driven company by



SAP Leonardo Digital Innovation System

Solution Ideation
& Vision



Rapid
Prototyping



Business Case
Development



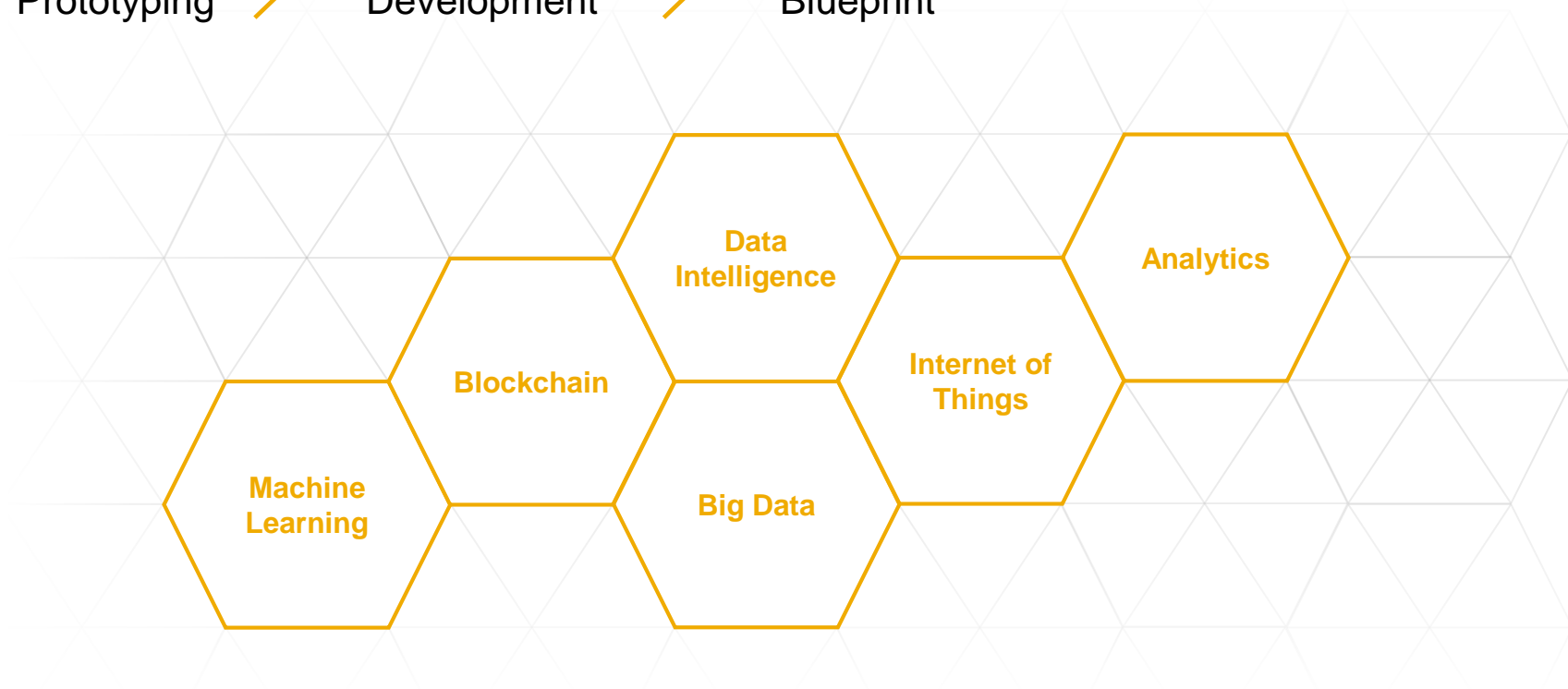
Technology
Blueprint



**Design
Thinking
Services**



**SAP Leonardo
Technologies**



SAP Cloud Platform

Microservices

Open APIs Flexible

Runtimes

Integration

Multi-Cloud Infrastructure



SAP Data Center



Google Cloud Platform



Microsoft Azure



amazon
web services



Market trends – Digital transformation

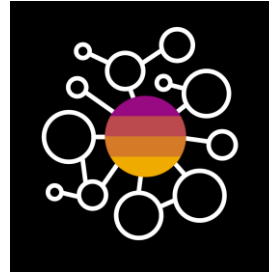
Emerging systems of intelligence



Artificial intelligence and machine learning, IoT, insights

By 2018, 75% of enterprise and ISV development will include AI or ML.

– IDC



Embedded machine learning, analytics providing built-in guidance

By 2019, APIs will be the primary mechanism to connect data, algorithms, and decision services.

– IDC



Conversational applications: the new user experience

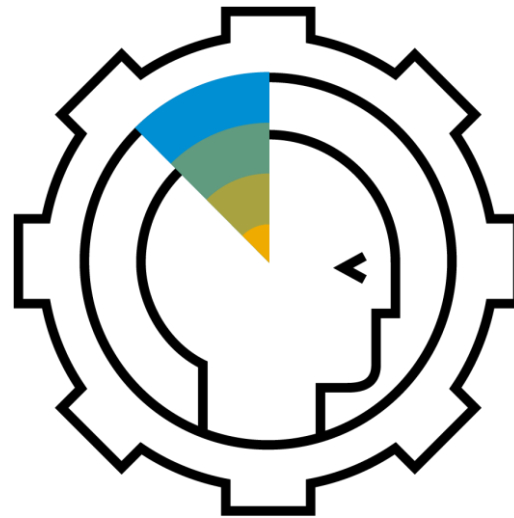
By 2019, natural-language generation will be a standard feature of **90%** of modern BI platforms.

– Gartner

Machine learning is the reality behind artificial intelligence

What is machine learning?

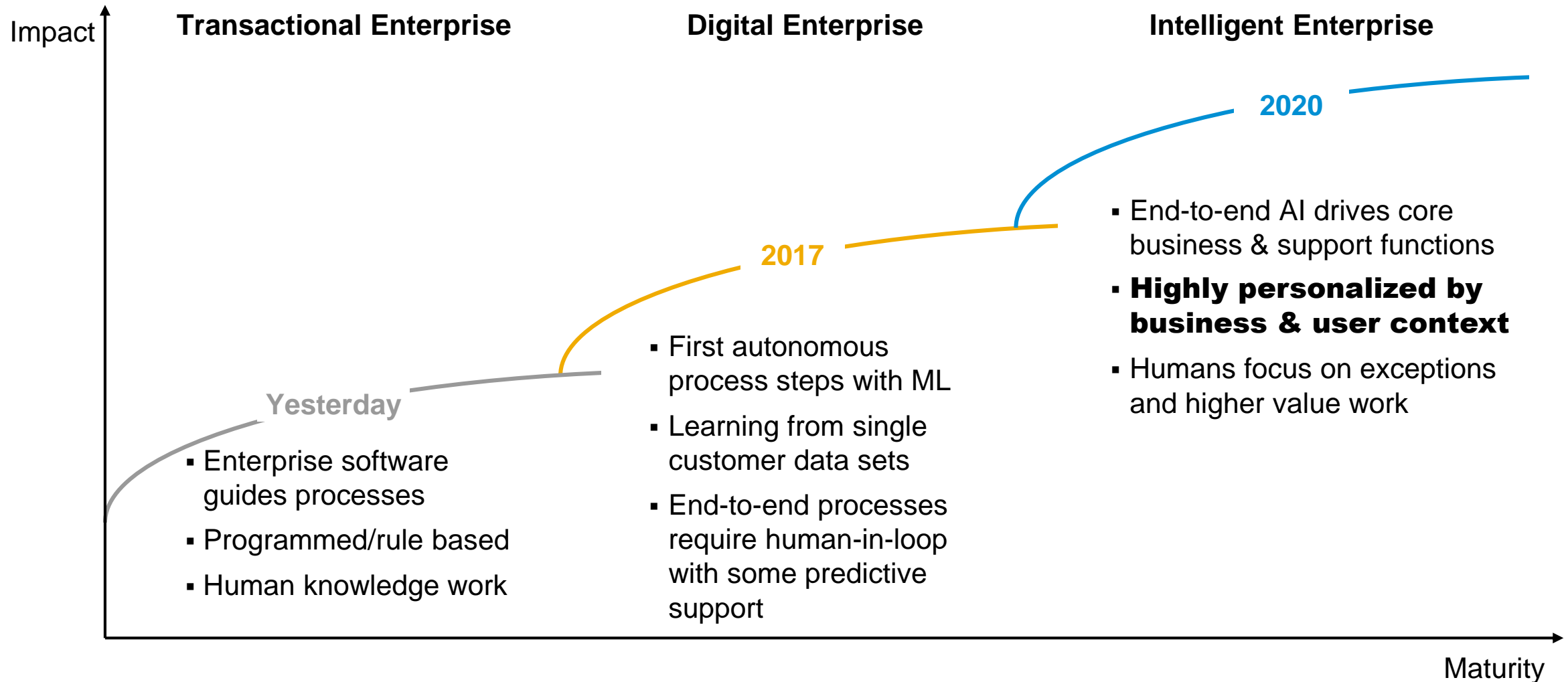
- Computers learn from data without being explicitly programmed.
- Machines can see, read, listen, understand, and interact.



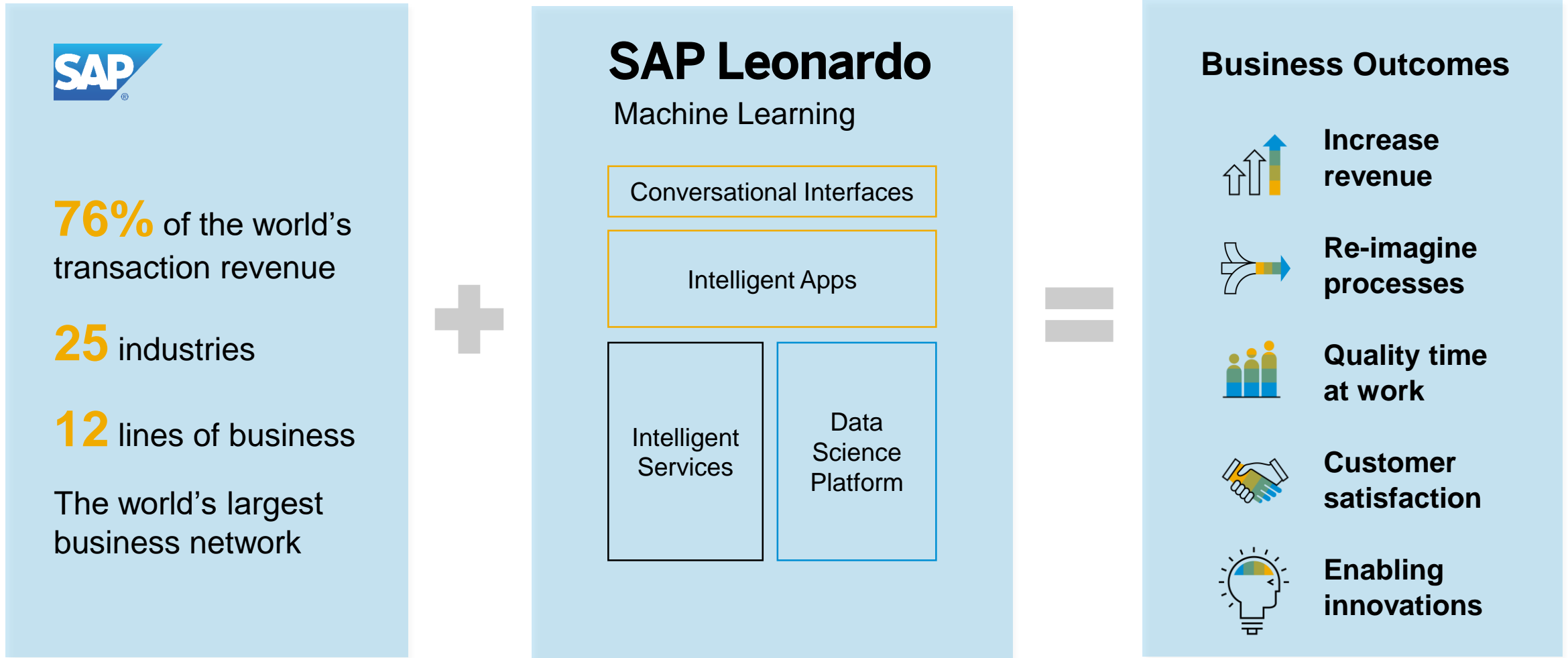
Why now?

- Big Data (for example, business networks, cloud applications, the Internet of Things, and SAP S/4HANA)
- Massive improvements in hardware (graphics processing unit [GPU] and multicore)
- Deep learning algorithms

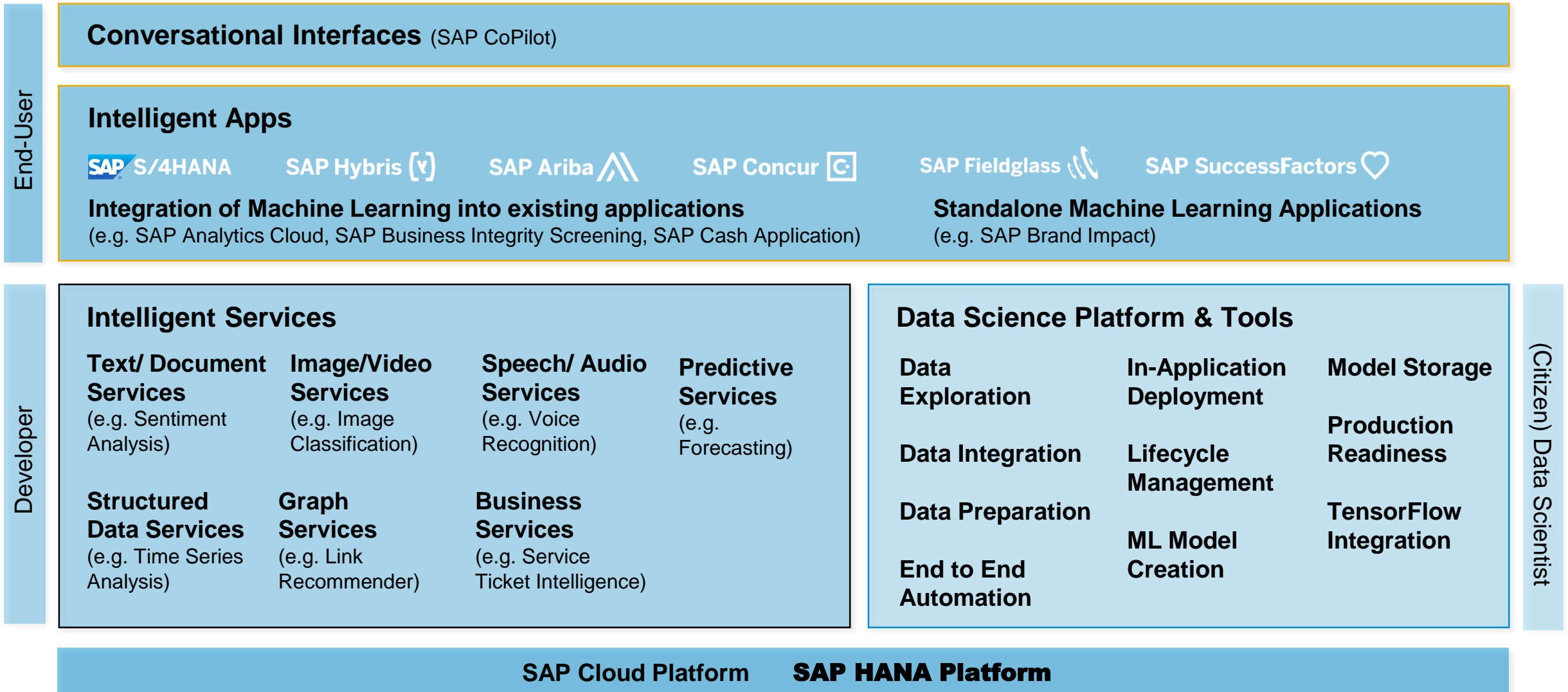
SAP needs to make the leap to become the Intelligent Enterprise



SAP Leonardo enables the intelligent enterprise



SAP Leonardo Machine Learning: Portfolio of Capabilities



(Citizen) Data Scientist

SAP's Intelligence-Embedded Solutions

SAP Leonardo Machine Learning: End-to-End Process for Finance

Key Processes

ML Use Cases



Order to Cash

SAP Cash Application
Remittance Advice



Procure to Pay

SAP Accounts Payable
Expenselt – Receipt Processing
Intelligent Invoice Correction



Record to Report

(Requirements gathering)



Financial Planning & Analysis

(Requirements gathering)

SAP Cash Application

Intelligently Matching Invoices with Payments

Reprocess Bank Statement Items

Standard * ⓘ

Company Code: 1710 (Comp... ⓘ) House Bank: House Bank Account: Bank Statement Date: Bank Statement No.: Posting Status: Auto-Posted on... ⓘ

Hide Filter Bar Filters (3) Go

Bank Statement Items (16) Standard * ⓘ

<input type="checkbox"/>	Po...	Pr...	Company Code	House Bank	House Bank Account	Bank Statement Date	Bank Statement No.	Line Item No.	Amount	Reprocess
<input type="checkbox"/>	✗	△	1710	USBK2	USAC2	03/09/2017	129	1	13,174.35 USD	>
<input type="checkbox"/>	✗	△	1710	USBK2	USAC2	03/27/2017	144	1	9,991.00 USD	>
<input type="checkbox"/>	✗	△	1710	USBK2	USAC2	03/09/2017	130	1	8,111.00 USD	>
<input type="checkbox"/>	✗	△	1710	USBK2	USAC2	03/27/2017	142	1	4,676.10 USD	>

Post in Bank Accounting Change Status ⓘ

Manual process

Automated

Time-consuming

Reduced time to value

YESTERDAY

NOW

Delayed cash processing

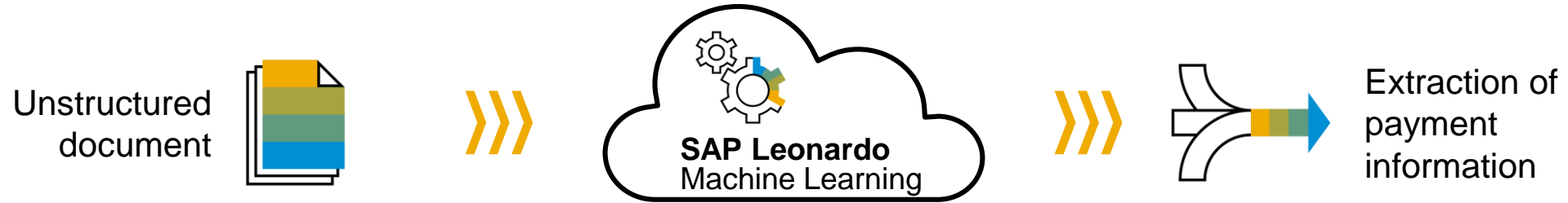
**Improved service quality
and days of sales
outstanding**

Difficult to scale

Indefinitely scalable

Remittance Advice Extractor

Extract payment information from unstructured documents



It drastically lowers manual efforts by automatically extracting additional information about payments from unstructured advice (email, PDF, paper, etc.), and use it to automate the clearing process.



No manual input of remittance advice required



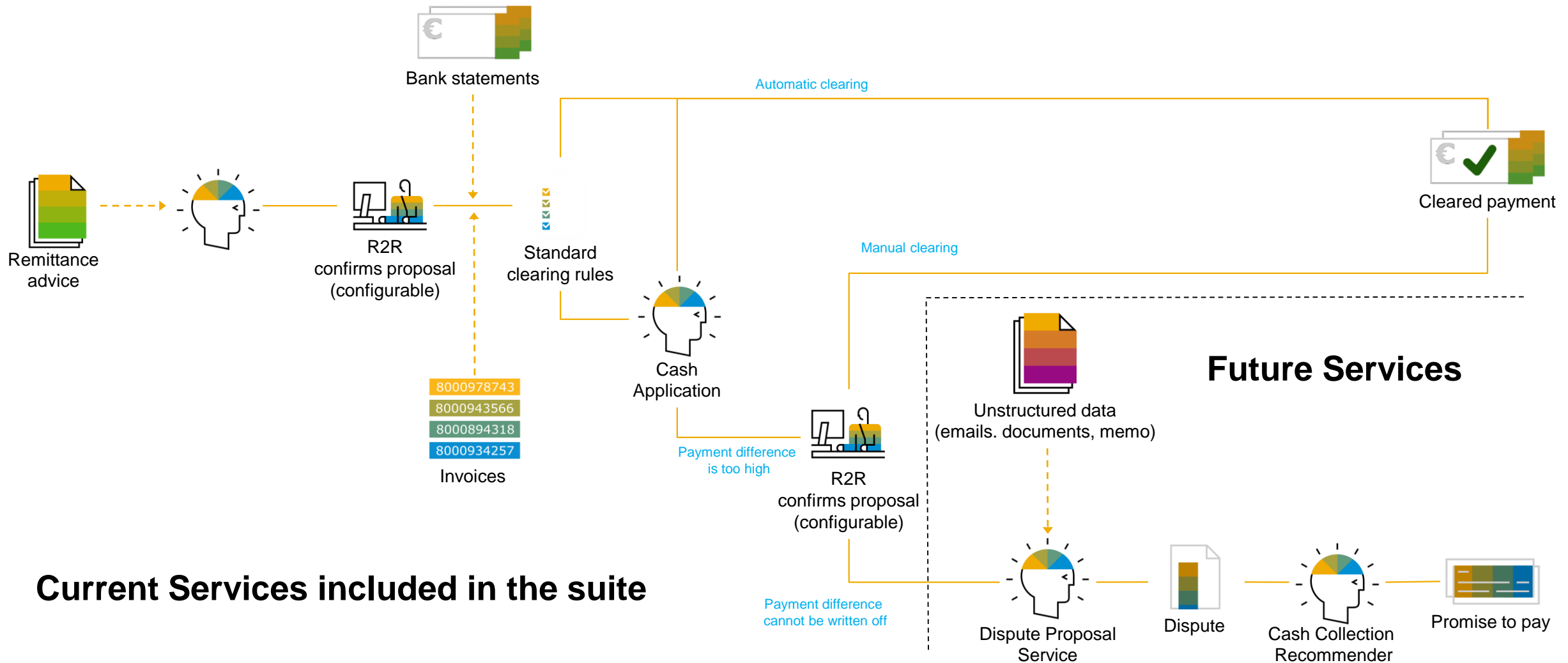
Makes information available for further automatic processing in SAP applications.



Reduces manual efforts and errors and leverage further process automation, e.g. SAP Cash Application

Order to Cash / Accounts Receivables

End-to-end process with machine learning



SAP Accounts Payable

Automate the accounts payable processes



SAP Accounts Payable is an ever-expanding suite of machine learning services that automate accounts payable processes. Based on deep learning it processes incoming invoices and extracts important information. For a high level of compliance it also supports matching invoice vendors to your master database.



Automates and speed up the process from minutes to seconds



Reduces number of errors and effort when posting invoice data to record with higher accuracy



Increases quality and compliance, number of matches in a shorter amount of time and potential throughput of invoices

I2R Demo

Secure https://i2r-staging-demo.cfapps.sap.hana.ondemand.com

Access token

Customer ID

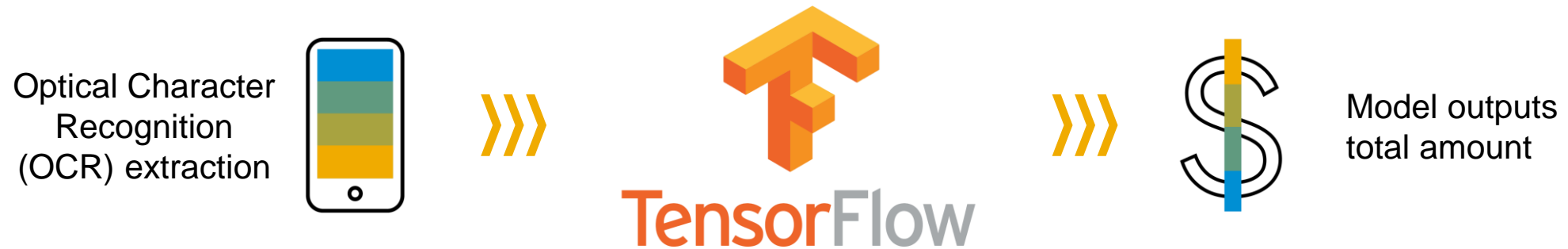
Set



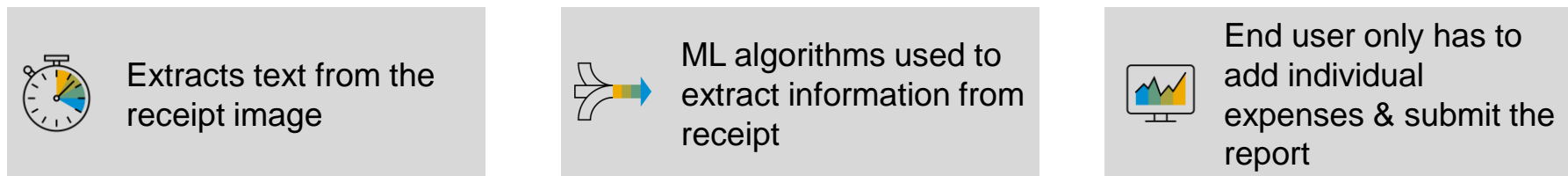
Please drag your invoice file here!

Expenselt – Receipt Processing

Automatically create expense reports

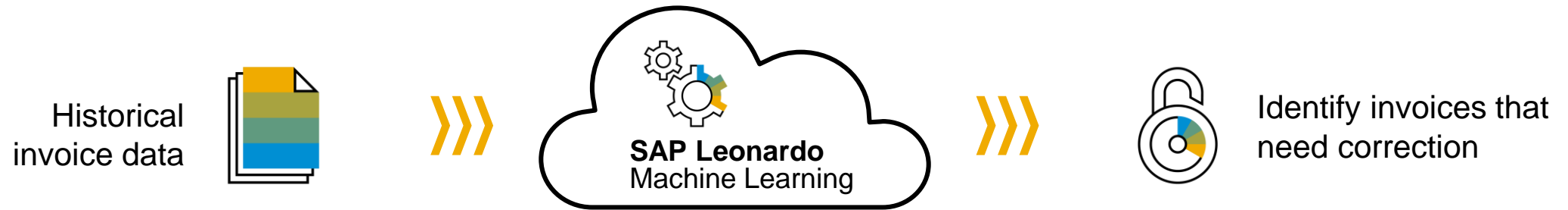


A mobile application that allows end users to take a picture of a receipt and upload it to SAP Concur for automatic processing.



Intelligent Invoice Corrections

Proactively improve invoice accuracy



By using historical data, machine learning can be applied to identify patterns for invoices that need corrections. These patterns can be surfaced to warn the invoice approver, so that additional security measures are enforced proactively.



Improves process efficiency



Reduces rework and impacts the downstream systems



Drives measurable cost savings and keeps invoice processing costs low

Intelligent Invoice Correction

Proactively improve invoice accuracy



Companies with 10,000 employees and more process **300,000+** invoices every year



A subset of these needs to be corrected, because of **formal or content wise errors**



Historical data is used to **identify patterns** for invoices that need corrections



These patterns are used to **warn the approver** proactively

INVOICE

647-444-1234
your@email.com
yourwebsite.com

1 Your Address
City, State, Country
ZIP CODE

Billed To
Client Name
1 Client Address
City, State, Country
ZIP CODE

Invoice Number
000000

Date Of Issue
10/07/14

Invoice Total
\$4520.00

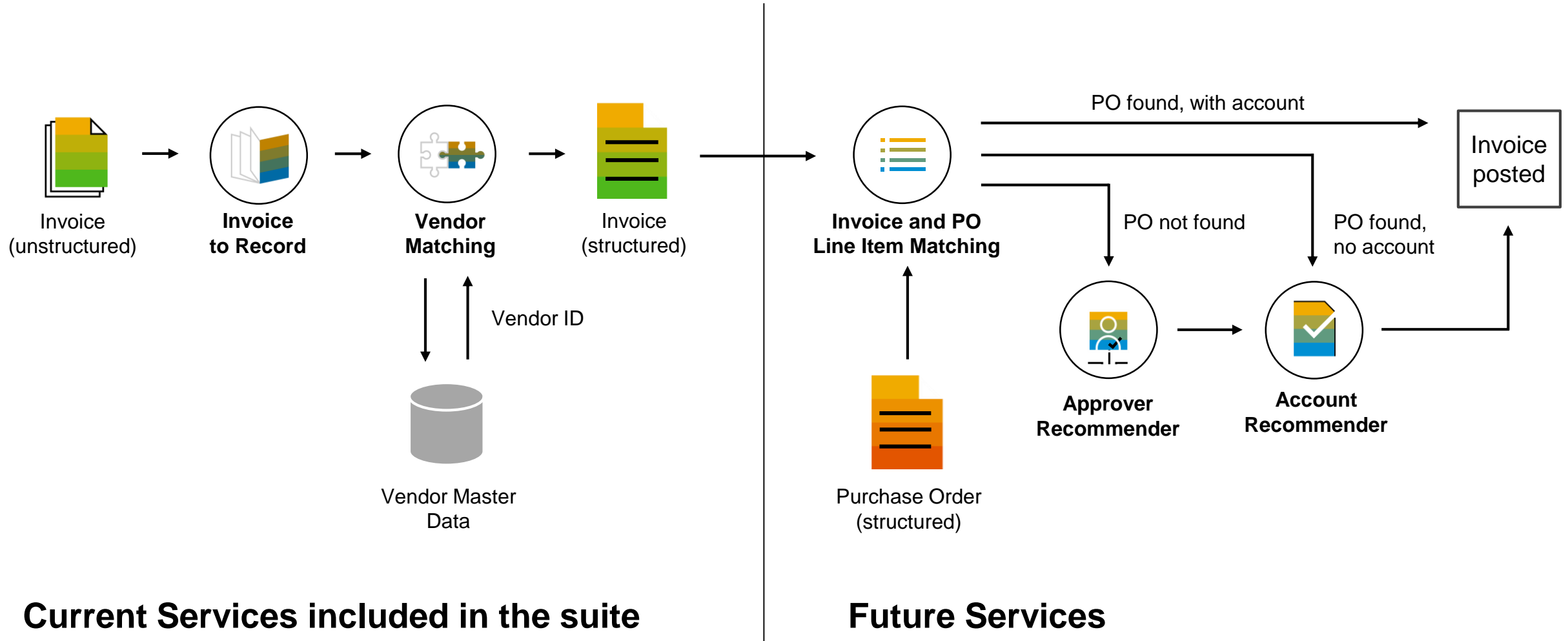
Description	Unit Cost	Qty / Hr Rate	Amount
Your item Name Item description goes here	\$1000	1	1000
Your item Name Item description goes here	\$1000	1	1000
Your item Name Item description goes here	\$1000	1	1000
Your item Name Item description goes here	\$1000	1	1000

Subtotal
Tax

\$4000.00
\$520.00

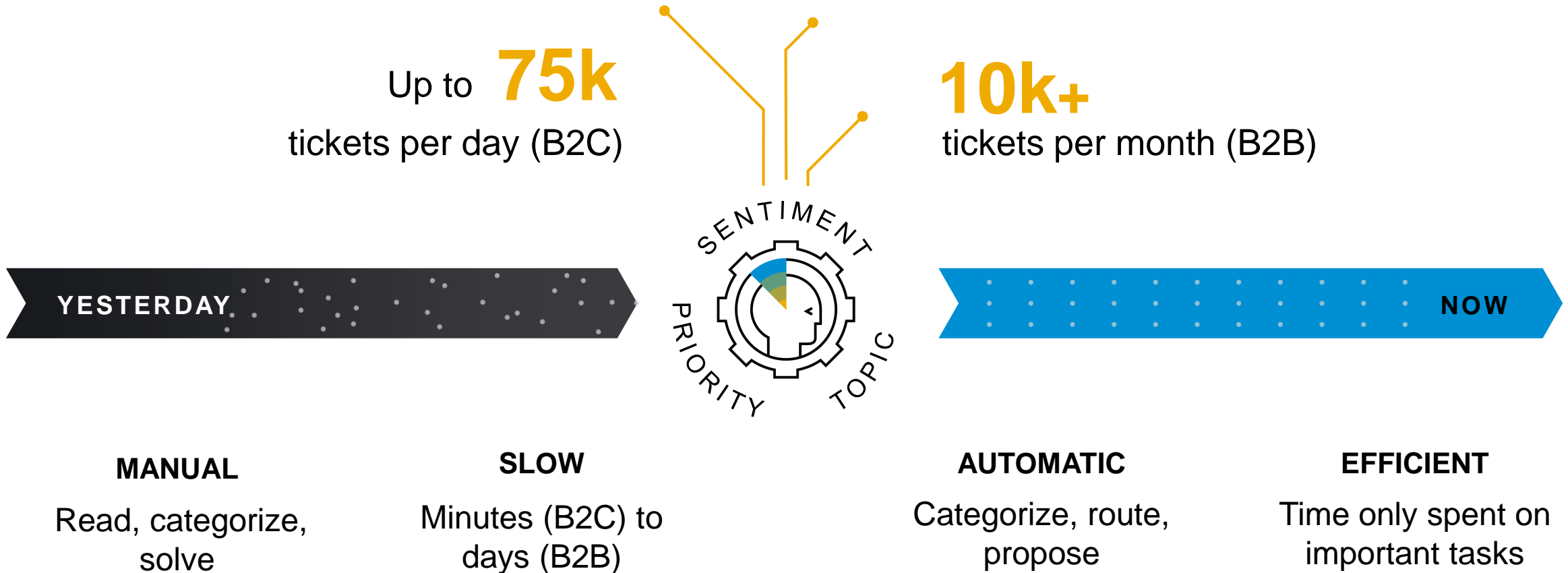
Procure to Pay / Accounts Payables

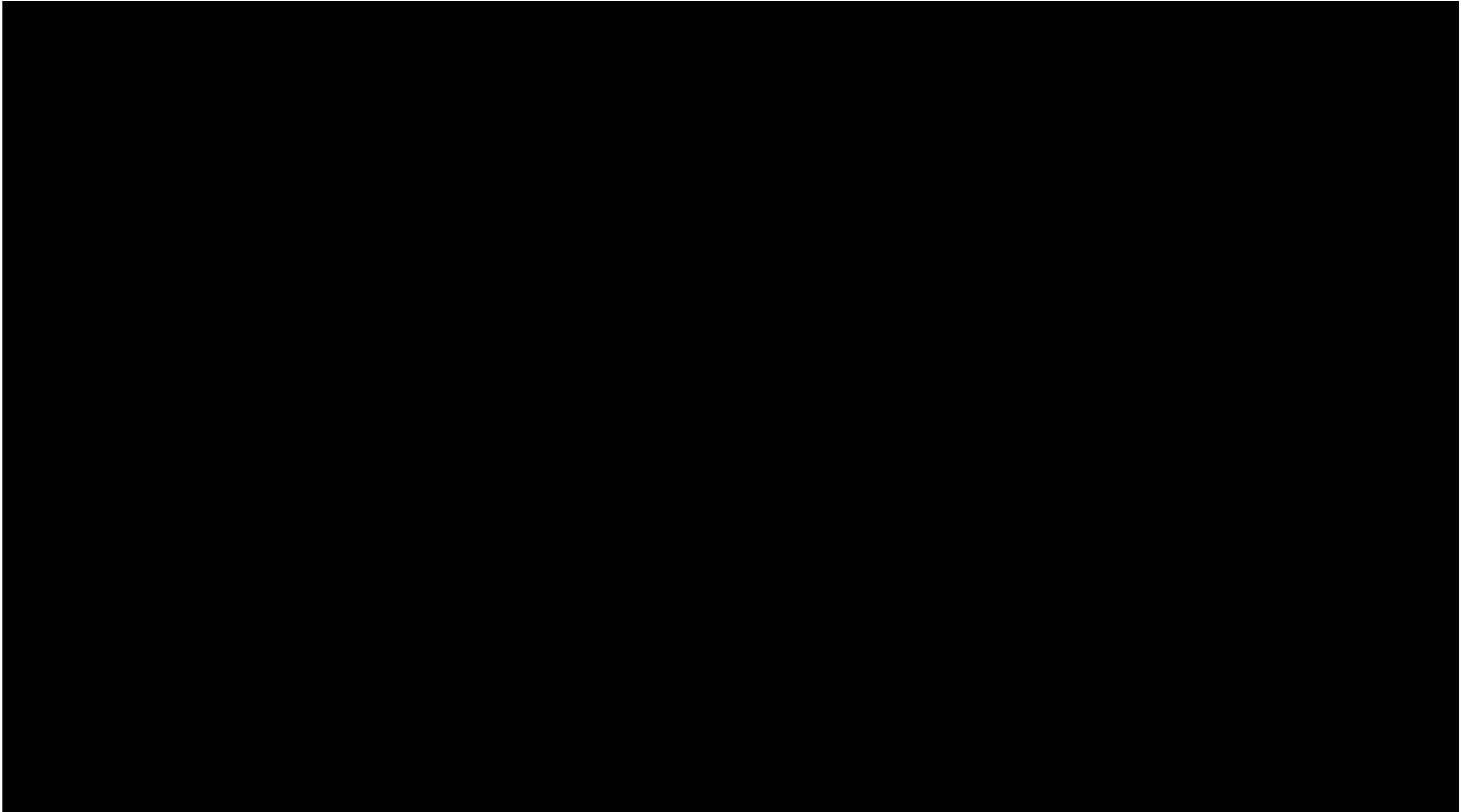
End-to-end process with machine learning



SAP Service Ticket Intelligence

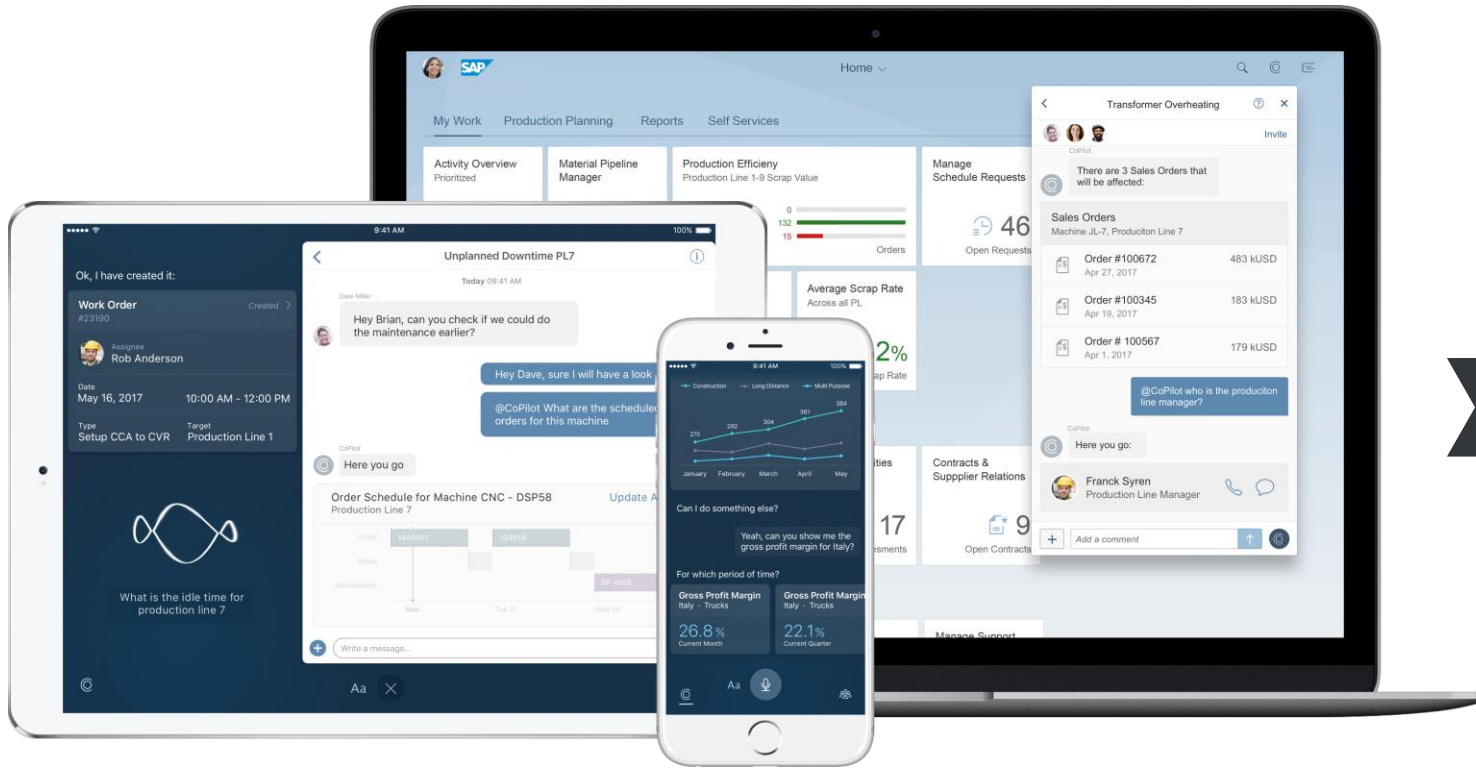
Accelerate Customer Service in an Omnichannel Front Office





SAP CoPilot

The Digital Assistant for the Enterprise



Struggle to find information

Manually filter required facts

Ask for information with natural language

Receive contextual solution recommendation

YESTERDAY

NOW

Hard to focus on relevant actions

Multi-Channel Communication

One personality across products

Self-learning

Open and extensible

ChromeFileEditViewHistoryBookmarksPeopleWindowHelp

Manage Products

Securehttps://s42-1610eds-teched.sapdemocloud.com/sap/bc/ui5_ui5/ui2/ushell/shells/abap/FioriLaunchpad.html#EPMPProduct-zmanage_st&/?sap-iapp-state=ASLMXMP2KU...

Manage Products

Standard

Search

Editing Status:All









Supplier:

Average Rating:★★★★★


Price Range:

Category:

Products (128)

<input type="checkbox"/> Image	Product ID	Category	Sub-Category	Supplier	Availability
<input type="checkbox"/> 	Notebook Basic 15 HT-1000	Computer Systems	Notebooks	SAP	<input type="checkbox"/> In Stock
<input type="checkbox"/> 	Notebook Basic 17 HT-1001	Computer Systems	Notebooks	Becker Berlin	<input type="checkbox"/> In Stock
<input type="checkbox"/> 	Notebook Basic 18 HT-1002	Computer Systems	Notebooks	DelBont Industries	<input type="checkbox"/> In Stock
<input type="checkbox"/> 	Notebook Basic 19 HT-1003	Computer Systems	Notebooks	Talpa	<input type="checkbox"/> In Stock
<input type="checkbox"/> 	ITeIO Vault HT-1007	Computer Components	PDA's & Organizers	Panorama Studios	<input type="checkbox"/> In Stock
<input type="checkbox"/> 	Notebook Professional 15 HT-1010	Computer Systems	Notebooks	TECUM	<input type="checkbox"/> In Stock
<input type="checkbox"/> 	Notebook Professional 17 HT-1011	Computer Systems	Notebooks	Asia High tech	<input type="checkbox"/> In Stock★★★★★2.299,00 USD >
<input type="checkbox"/> 	ITeIO Vault Net HT-1020	Computer Components	PDA's & Organizers	Laurent	<input type="checkbox"/> In Stock★★★★★459,00 USD >

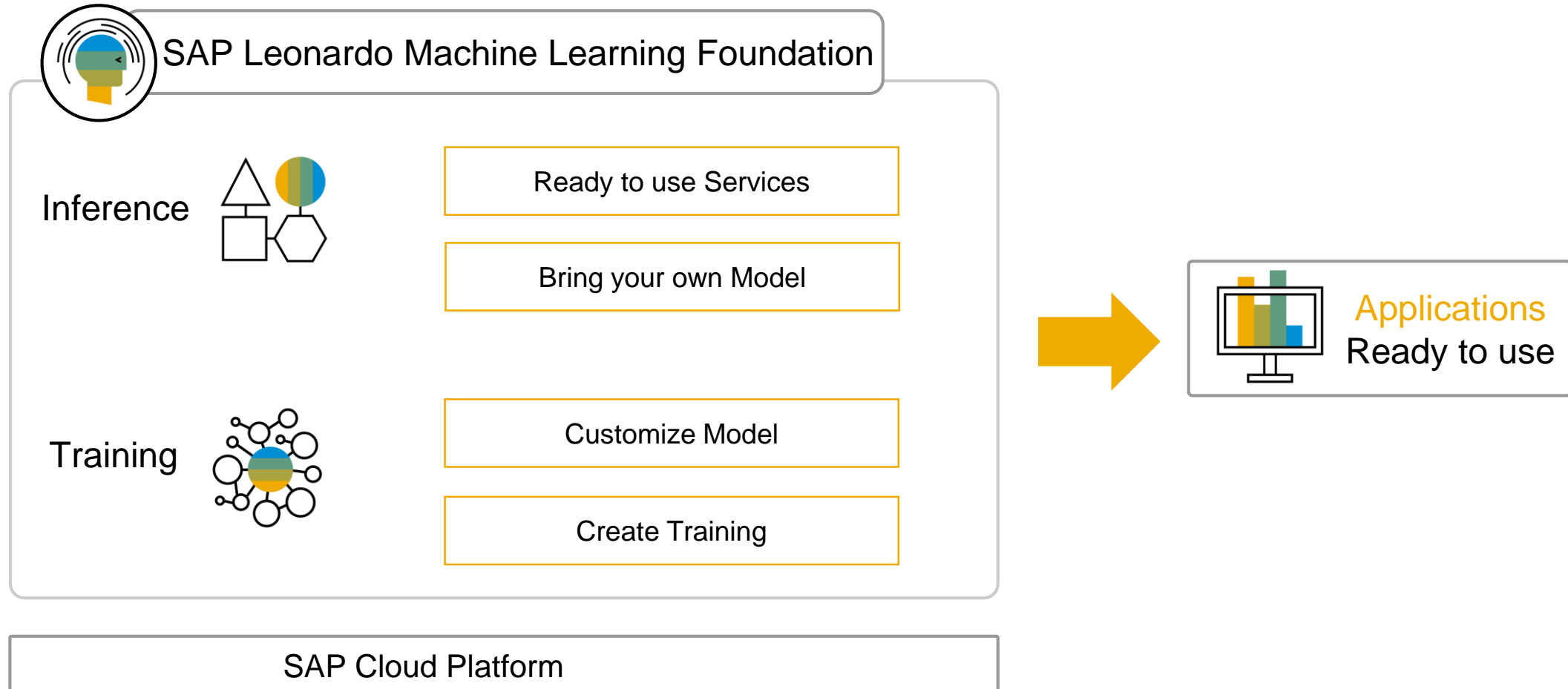
What can I do for you?



Bring Intelligence to Your Applications

SAP Leonardo Machine Learning Foundation





Enabling customers and partners to build the intelligent enterprise

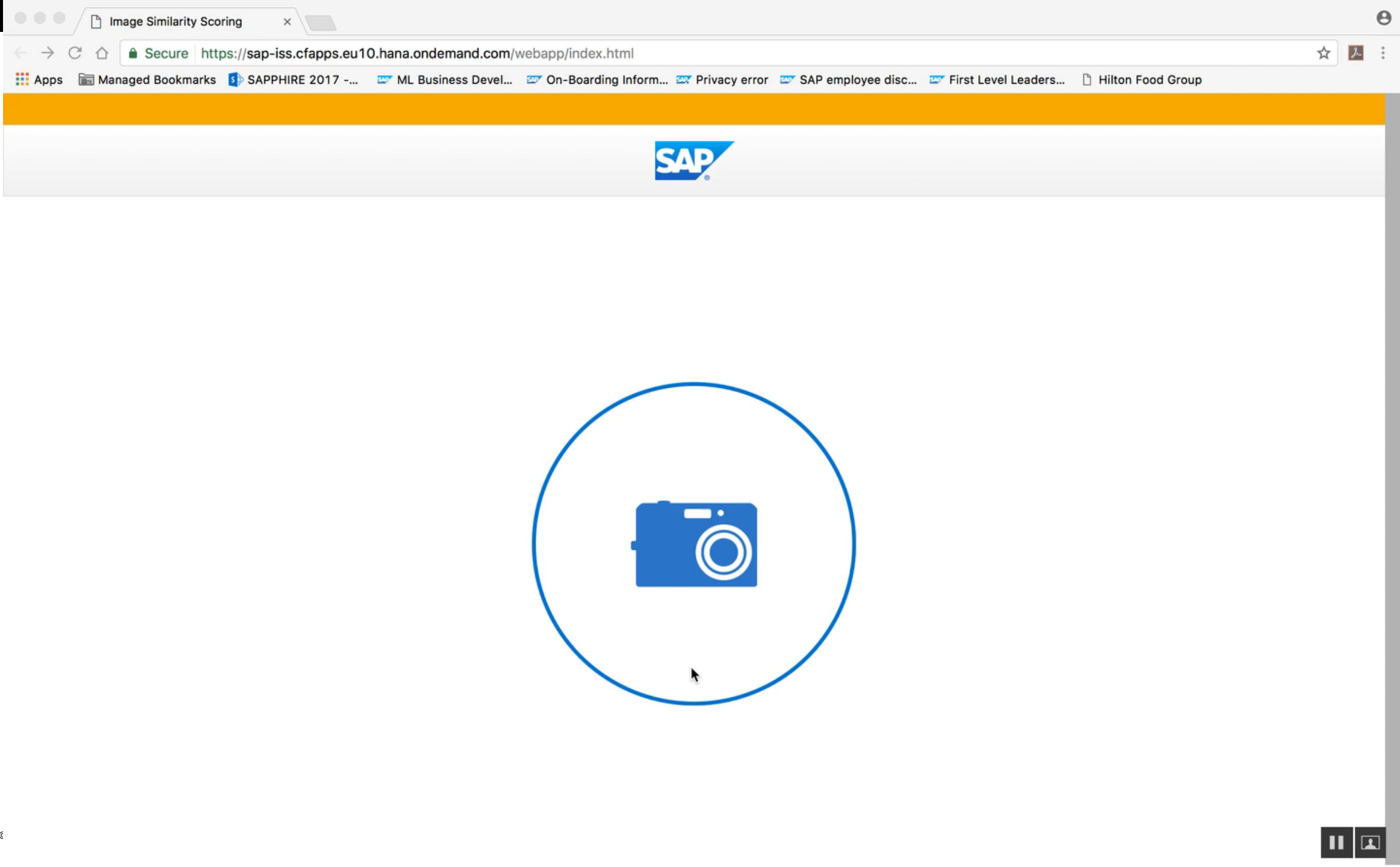


Leonardo Machine Learning Foundation

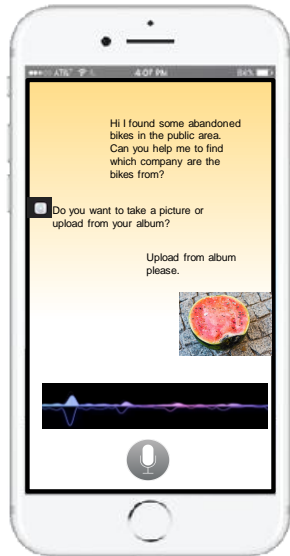
Ready-to-use Services: Roadmap

Status as of October 2017

	 Tabular	 Image & Video	T Text	 Speech & Audio	 Business Services
General availability	<ul style="list-style-type: none"> Time series change point detection Similarity scoring 	<ul style="list-style-type: none"> Image classification Customizable image classification Image feature extraction 	<ul style="list-style-type: none"> Topic detection Text classification Text feature extraction Customizable text classification 		<ul style="list-style-type: none"> Intelligent Financing API Ticket Intelligence - Classification Ticket Intelligence - Recommendation
Alpha	<ul style="list-style-type: none"> Multi-dimensional time series forecasting 	<ul style="list-style-type: none"> Product image classification Human detection service Object detection service 	<ul style="list-style-type: none"> Machine translation Language detection Product text classification Document clustering 	<ul style="list-style-type: none"> Speech-to-text* 	
Road map	<ul style="list-style-type: none"> Time-to-failure forecasting Association rule learning Customizable recommender Multi-dimensional data clustering Generic classification (tabular and text) 	<ul style="list-style-type: none"> Image segmentation Face detection Document optical character recognition Image text extraction Image NER/extraction Apparel detection 	<ul style="list-style-type: none"> Sentiment analysis Named entity recognition Hate speech detection File-to-text conversion 	<ul style="list-style-type: none"> Voice recognition (speaker identification) Text-to-speech* 	<ul style="list-style-type: none"> CV Matching Customer Retention Brand Impact Accounts Payable



Next Generation Customer Service will combine text, image and audio capabilities to provide a total new customer experience

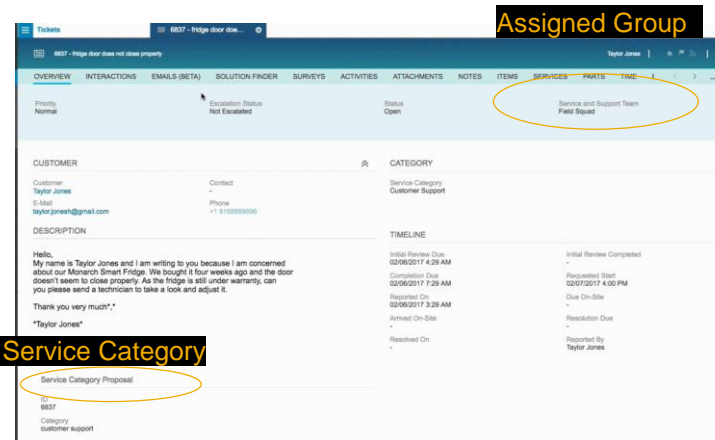


CoPilot

Digital assistant with NLP capabilities



Enhanced user experience



Service Ticket Intelligence
for efficient ticket categorization



Real-time response



Image similarity
for rapid product identification



Operational efficiency

The Intelligent Enterprise Show Case

Apparel and Emotion Recognition



Intelligent Advertising & Shopping Window



Trend Detection

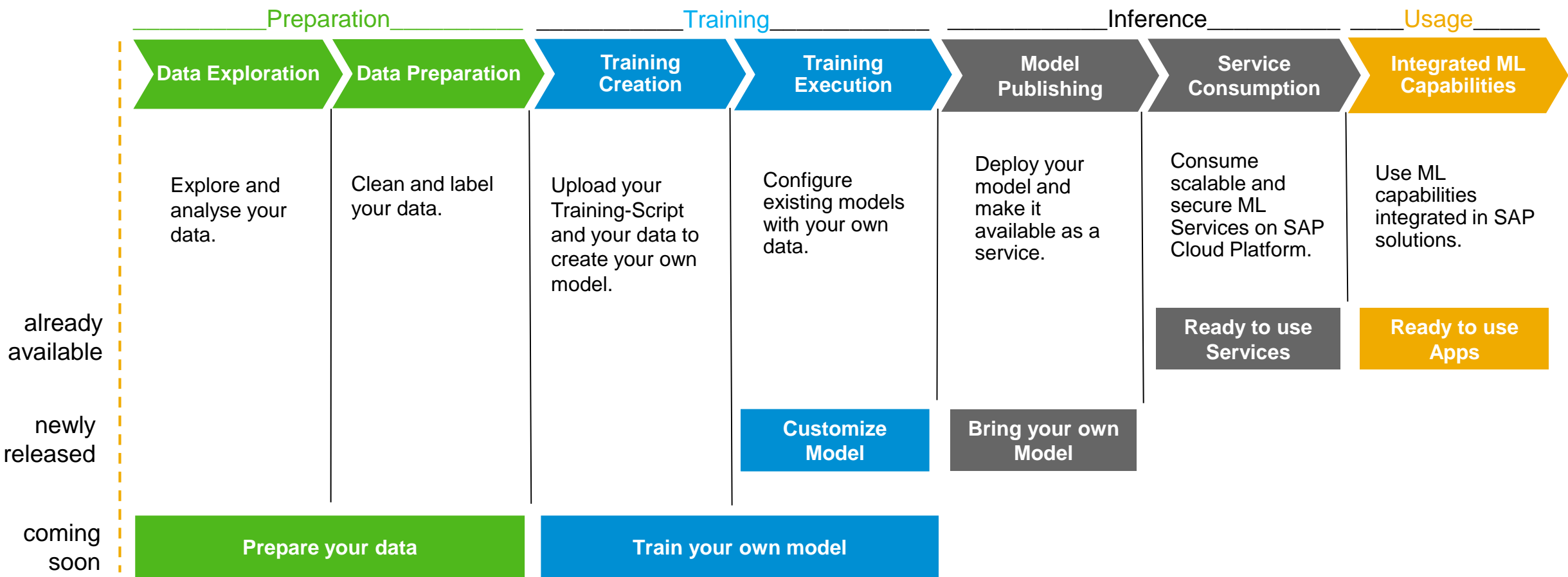


Augmented Business Analysis & Planning

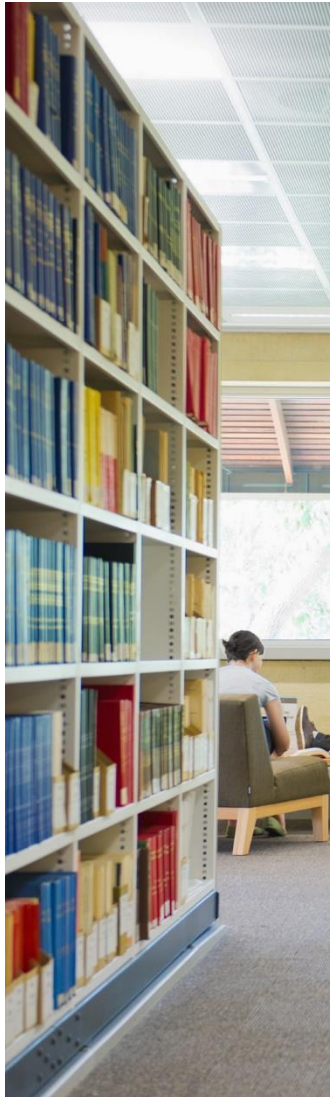


SAP Leonardo Machine Learning Foundation

Portfolio, Process and Roadmap



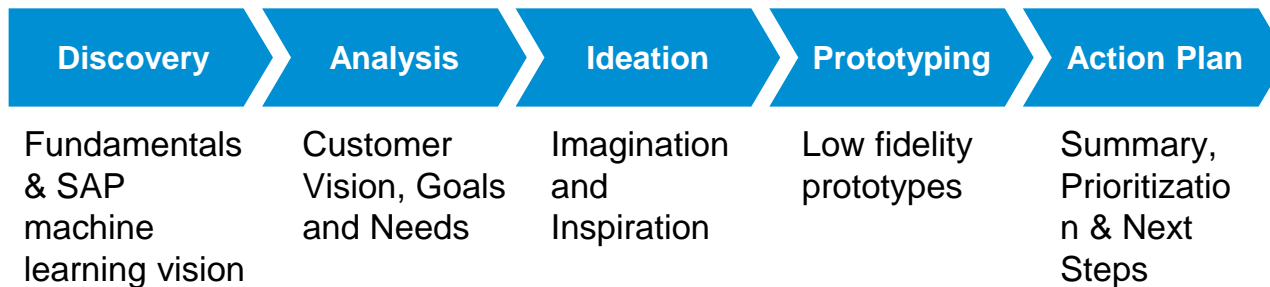
SAP Leonardo Machine Learning Discovery Service



Service Description

Machine learning technology provides new solutions to existing and new business opportunities. **We conduct an onsite workshop with you to define an approach for your business to benefit from the capabilities of machine learning.** SAP machine learning experts provide guidance about the benefits of machine learning and intelligent application – for potential uses cases and line of businesses.

Delivery Approach



Business Benefits

- Understand the business benefits of machine learning and intelligent applications
- Define a vision and value proposition for machine learning based on SAP Leonardo
- Validate a high level action plan to maximize business benefits

Applications

- SAP Leonardo Machine Learning Foundation
- S/4HANA and other backend systems

Key Deliverables

- Initial customer vision to machine learning
- Value proposition based on SAP Leonardo machine learning
- High level action plan

Variants & Duration

- **Standard variant:** 1 day onsite (3 person days effort based on T&M)
- **Variant with extended prototyping:** 2 days onsite (6 person days effort based on T&M)

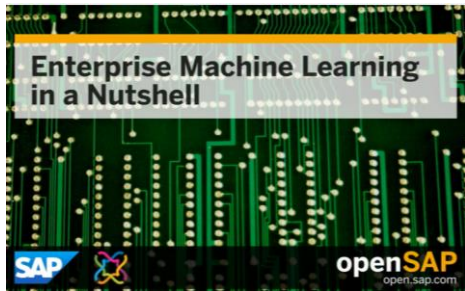
Links and Further Information



Official Website

Explore SAP Leonardo ML under <http://www.sap.com/ml>

- Watch the intro video
- Download the solution brief
- Read about the intelligent enterprise
- Learn about our Machine Learning foundation



Education

Participate in the openSAP course [Enterprise Machine Learning in a Nutshell](https://open.sap.com/courses/ml1) (overview course)



Early Adoption & Co-Innovation

Be an early adopter and co-innovate with us for next-wave cases
Try out our Machine Learning services:

api.sap.com

Thank you.

Margaret Laffan

Machine Learning, Business Development Director
SAP Innovation Center Network

Margaret.Laffan@sap.com