

SAP Leonardo Machine Learning

Machine Learning and Data Science Platform

Susanne Nosky, Product Expert SAP Leonardo Machine Learning – SAP SE
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PUBLIC

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How SAP Leonardo Machine Learning helps deliver the Intelligent Enterprise



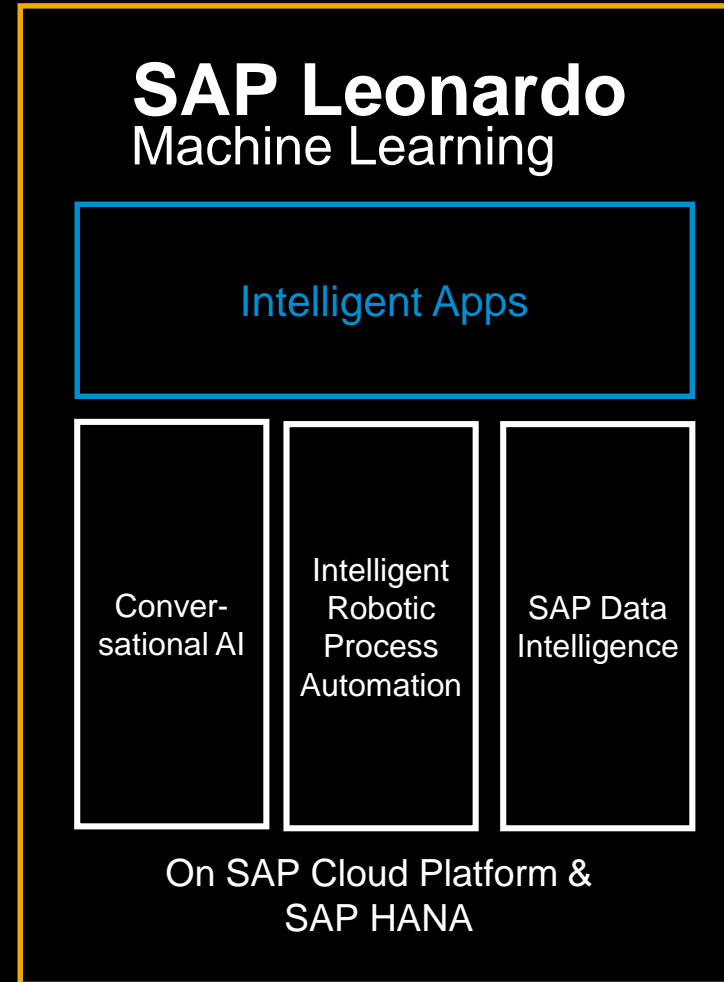
Data &
Integration

77% of the world's
transaction revenue

25 industries

7 lines of business

The world's largest
business network



Business Outcomes



Increase
revenue



Re-imagine
processes



Quality time
at work

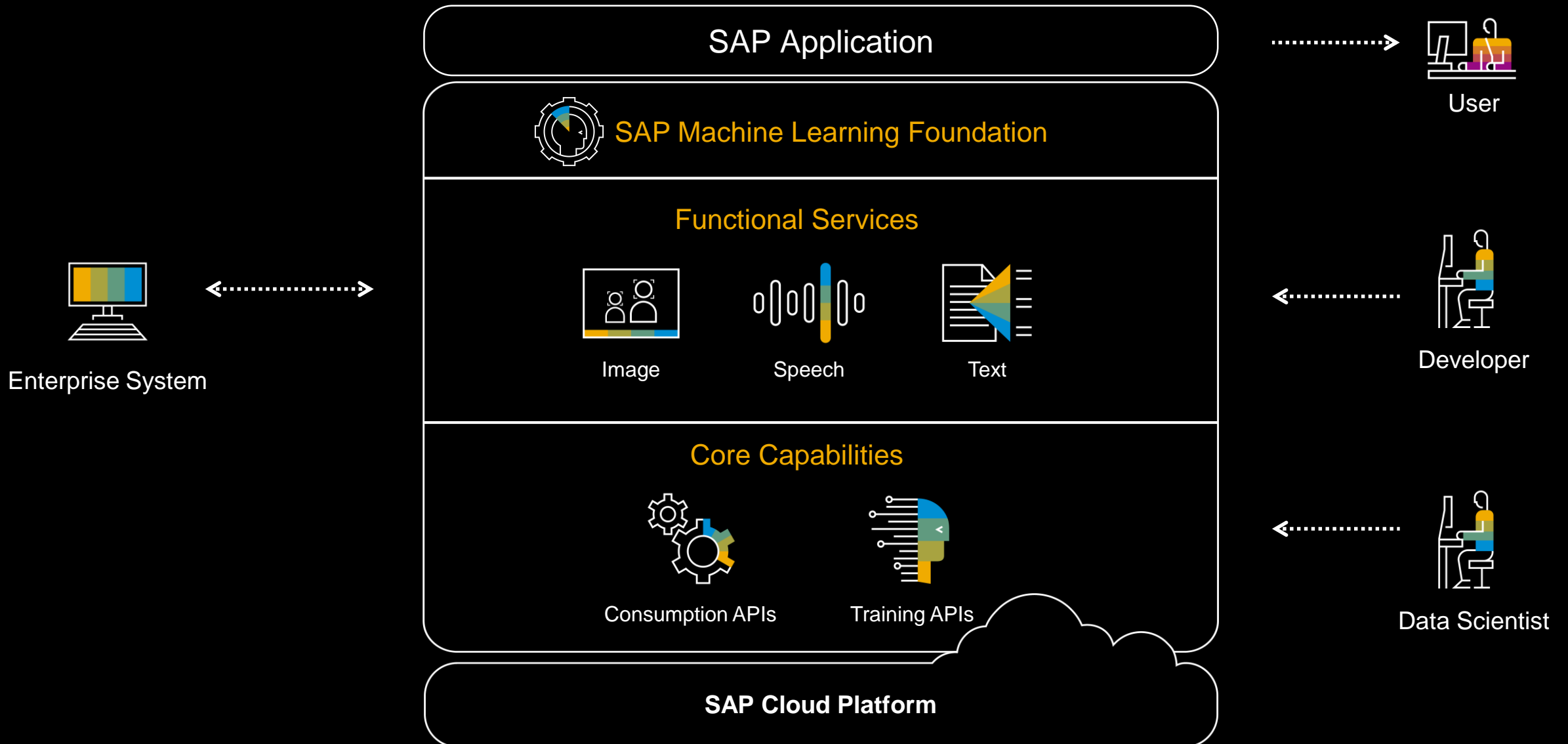


Customer
satisfaction

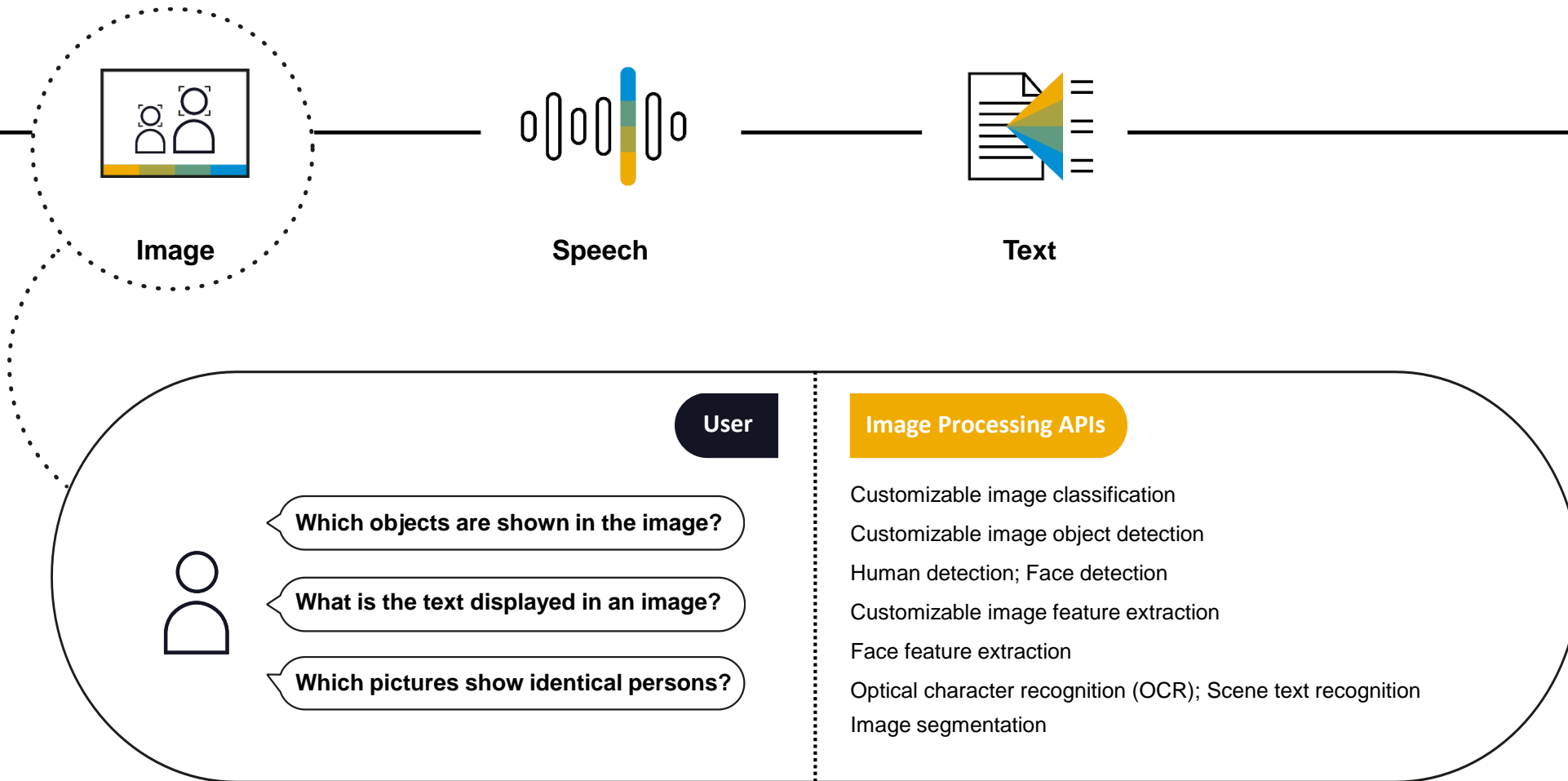


Enabling
innovations

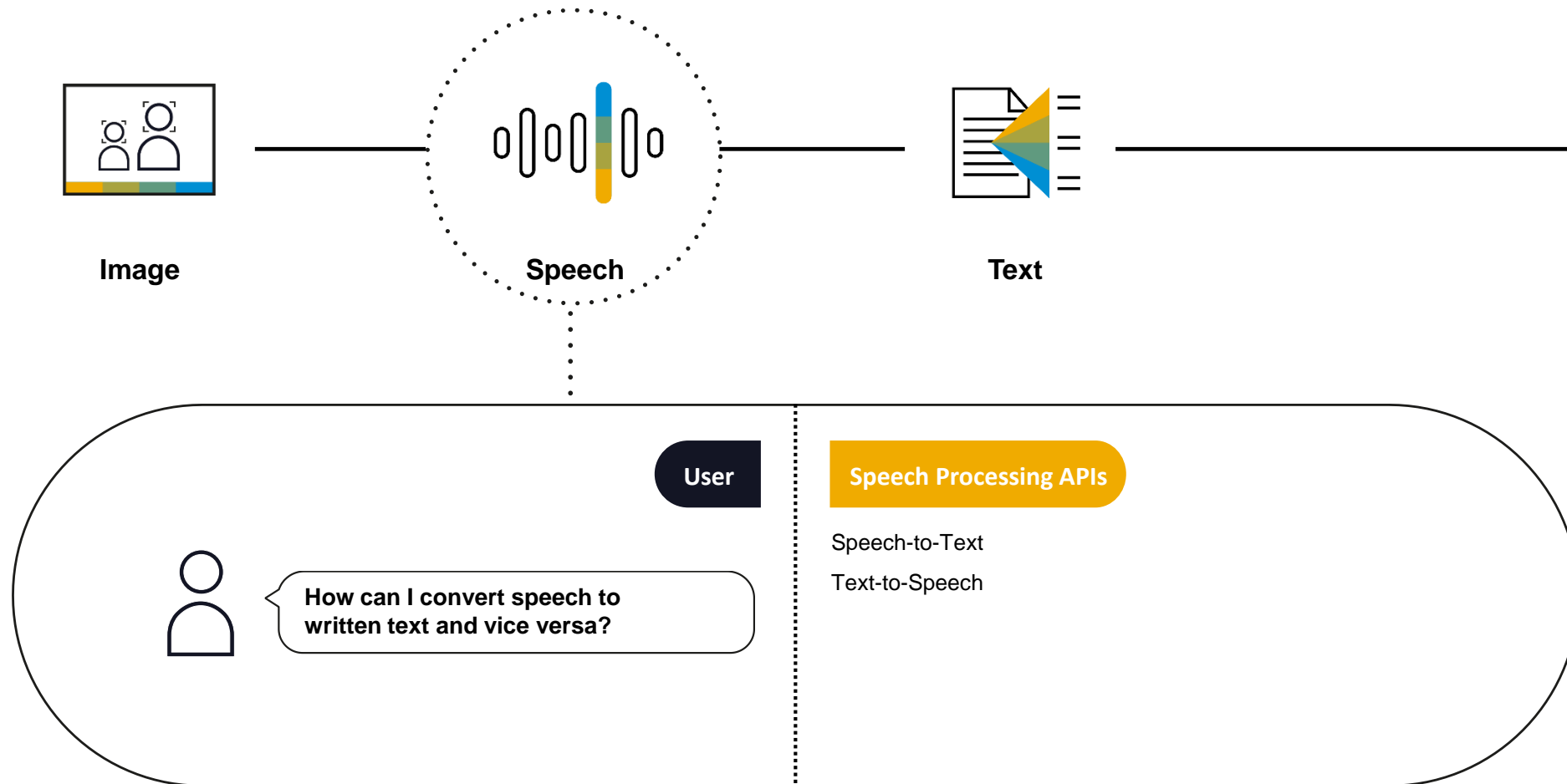
SAP Leonardo Machine Learning Foundation Architecture



ML Services Portfolio



ML Services Portfolio



ML Services Portfolio



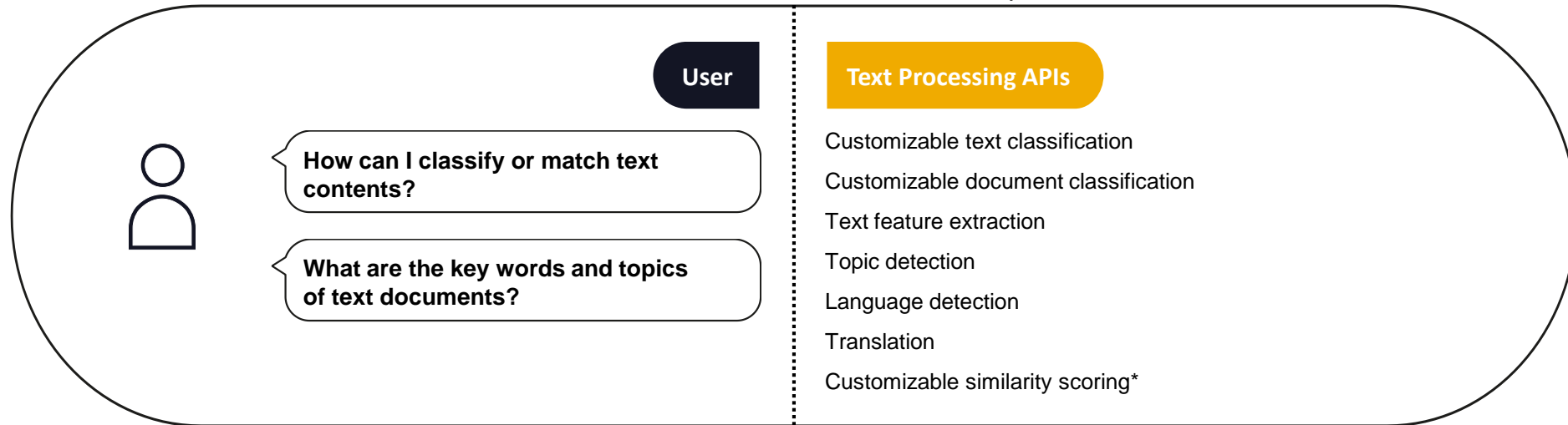
Image



Speech



Text



Use cases for **Enterprise** Machine Learning



Product and Spare Part
Identification



Product Classification



Detection and reading of labels



Analysis of legal documents



Visual identity checks



Master Data Matching



Optimize transport document
processing



Identification of changes in
documents

Accelerating customer service with computer vision



Challenge: Identification of broken items

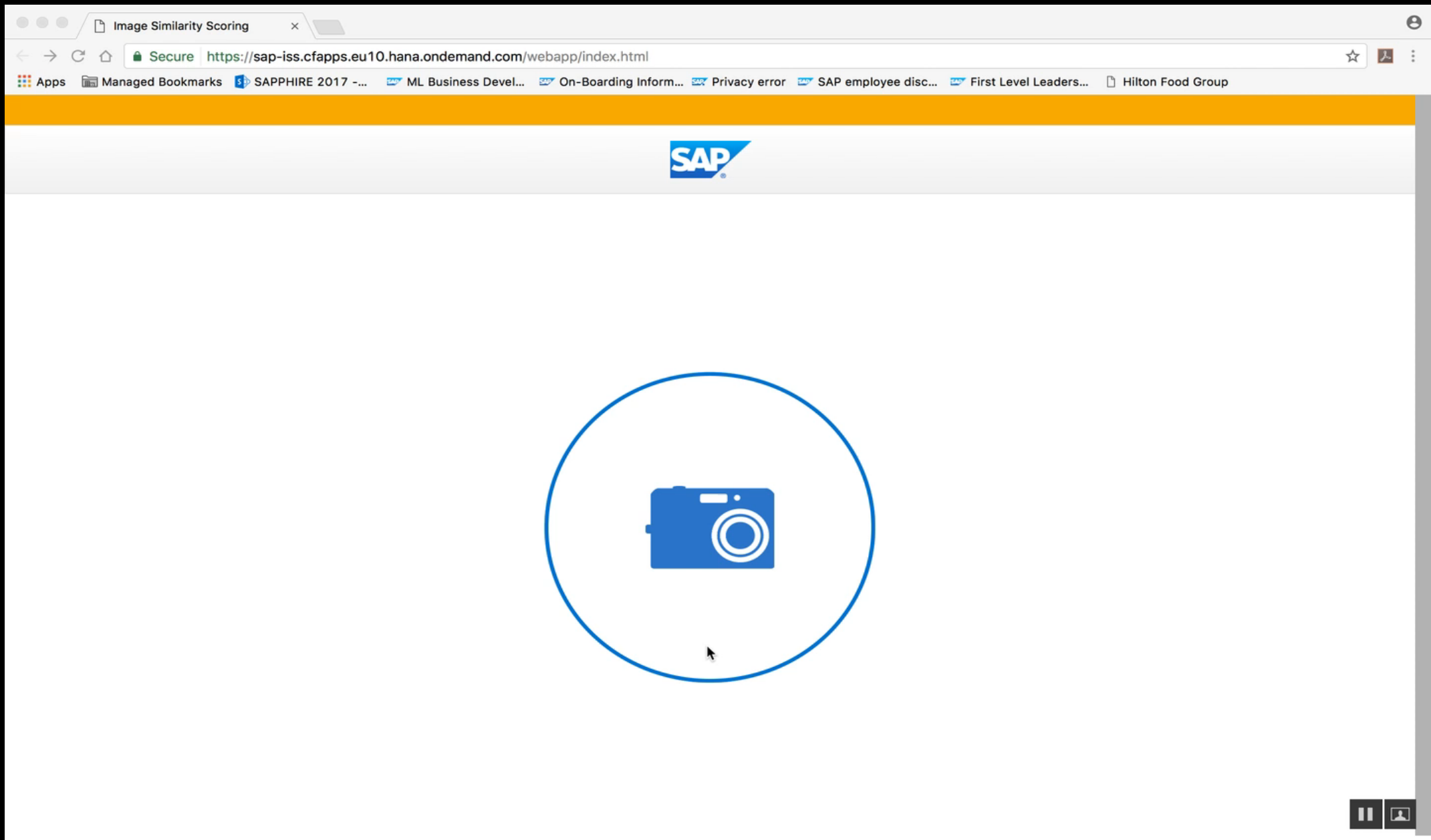


Solution: Intelligent app to match and recommend corresponding product

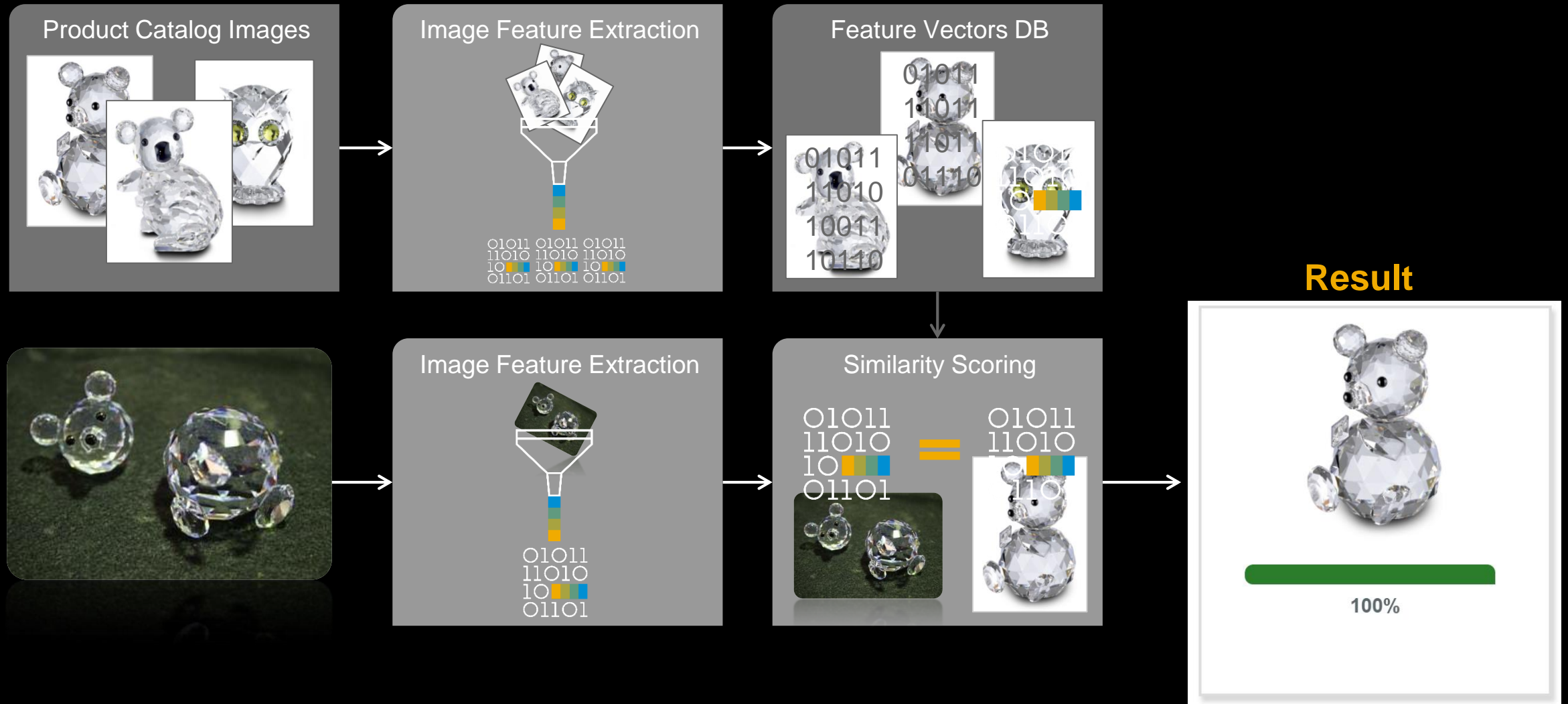


Benefit: Accelerated repair and service process





Combining Machine Learning services



Automotive manufacturer: Bringing customer experience to a new level



Challenge: Accelerating the **conversion** in the car sales process in early stages



Solution: Intelligent app enabling **car model identification** by taking a photo



Benefit: Improved **customer experience**



The car model detector

DAIMLER

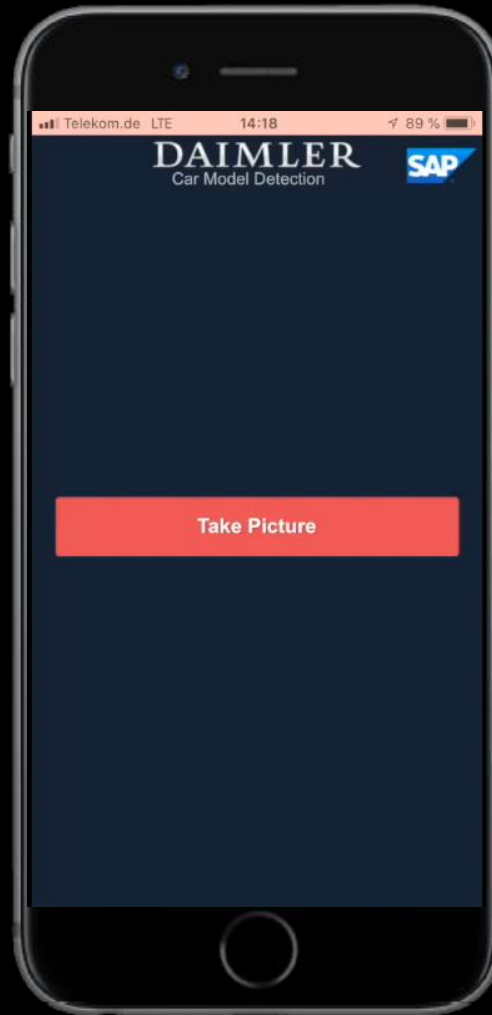
1 Identify your dream car



2 Object Detection Model



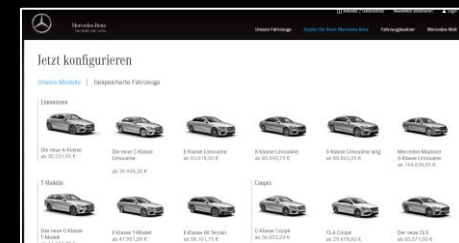
3 Classification Model



4 Find next Mercedes-Benz Dealer



5 Configure your dream car



Solution architecture and integration model

Mobile Application



SAP Leonardo ML Foundation

Object Detection Model



Classification Model



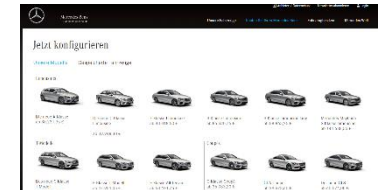
SAP Cloud Platform

DAIMLER

Mercedes-Benz.de



Configurator



Geo-Location-Service



Virtual Reality App (cAR)



Car Image



Configuration Code incl:

- Rim: AMG LMR im Vielspeichen Design
- Color: Jupiterrot
- Line: AMG Line

Car Detection
CF APP

Image Preprocessing

Color identification

[...]

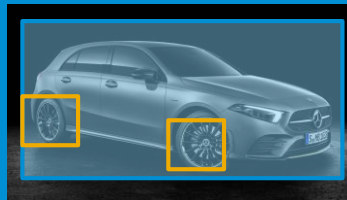
Configurator Code

Detected Information + Default Config

SAP Leonardo Machine
Learning Foundation



Multi-Class
Object Detection Model



Car Classification Model



A Class 2018 (AMG Line)

Rim Classification Model



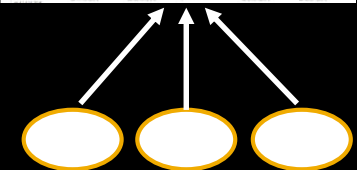
AMG LMR im
Vielspeichen Design

Either stack ML models or have one „big“ multi-class object detection for Line + Rim classification

Daimler
Configurator



Open API (Apigee)



Potential other Customers



SAP Cloud Platform

Ensuring legal compliance for product development teams



Challenge: Keeping track of **legal changes** and assessing their relevance



Solution: Intelligent app for automated collection and **assessment of legal documents**



Benefit: **Reduced effort** for monitoring and checking legal changes



Find and assess legal changes to ensure product compliance

Example: Build new capabilities quickly with ready-to-use services



Challenge

- **1000+** legal changes in **100+** countries per year
- Localized country versions – SAP S/4HANA: 64+ SuccessFactors Employee Central: 70+
- Challenge to quickly identify relevant changes

Scope

- Classify relevance of new changes
- Alert experts and potentially affected customers
- Initiate follow-up activities

Functional services

- Language detection
- Text classification
- Text feature extraction
- Similarity scoring

The screenshot displays the 'Law Documents' interface for Romania (RO). It shows a list of documents with columns for Title, Content preview, Rank, ML Classification, and User Classification. The first document is 'ordin-privind-principalele-aspecte-legate-de-intocmirea.doc' with a rank of 9.4 and is classified as 'Relevant'. The second document is 'http://discutii.mfinante.ro' with a rank of 7.2 and is classified as 'Maybe Rel.'. The third document is 'hgdespagubcec2017.pdf' with a rank of 2 and is classified as 'Not Relevant'. All documents have a 'Pending' user classification.

Title	Content preview	Rank	ML Classification	User Classification
<input type="checkbox"/> http://discutii.mfinante.ro 12/18/2017, 3:44:33 PM ordin-privind-principalele-aspecte-legate-de-intocmirea.doc	MINISTERUL FINANTELOR PUBLICE Ordin privind principalele aspecte legate de întocmirea și depunerea situațiilor financiare anuale și a raportărilor contabile anuale ale operatorilor economici la unitățile teritoriale ale Ministerului Finanțe	9.4	Relevant	Pending
<input type="checkbox"/> http://discutii.mfinante.ro 12/12/2017, 10:39:38 AM	Ministerul Finanțelor Publice Nr. din Ministerul Agriculturii și Dezvoltării Rurale Nr. din ORDIN pentru modificarea Ordinului ministrului finanțelor publice	7.2	Maybe Rel.	Pending
<input type="checkbox"/> http://discutii.mfinante.ro 10/2/2017, 3:16:48 PM hgdespagubcec2017.pdf	HOTĂRÂRE privind aprobarea elementelor tehnice necesare în vederea aplicării art. 3 ² din Ordonanța de urgență a Guvernului nr.156/2007 privind despăgubirea persoanelor fizice care au constituit depozite la Casa de Economii și Consemna	2	Not Relevant	Pending

Hard hat
(model: ZM8, ...)



Person
(gender: male)

Reduce incidents and improve **workplace safety**



Safety gear identification

Analyze video snippets/pictures for unsafe conditions



Process integration

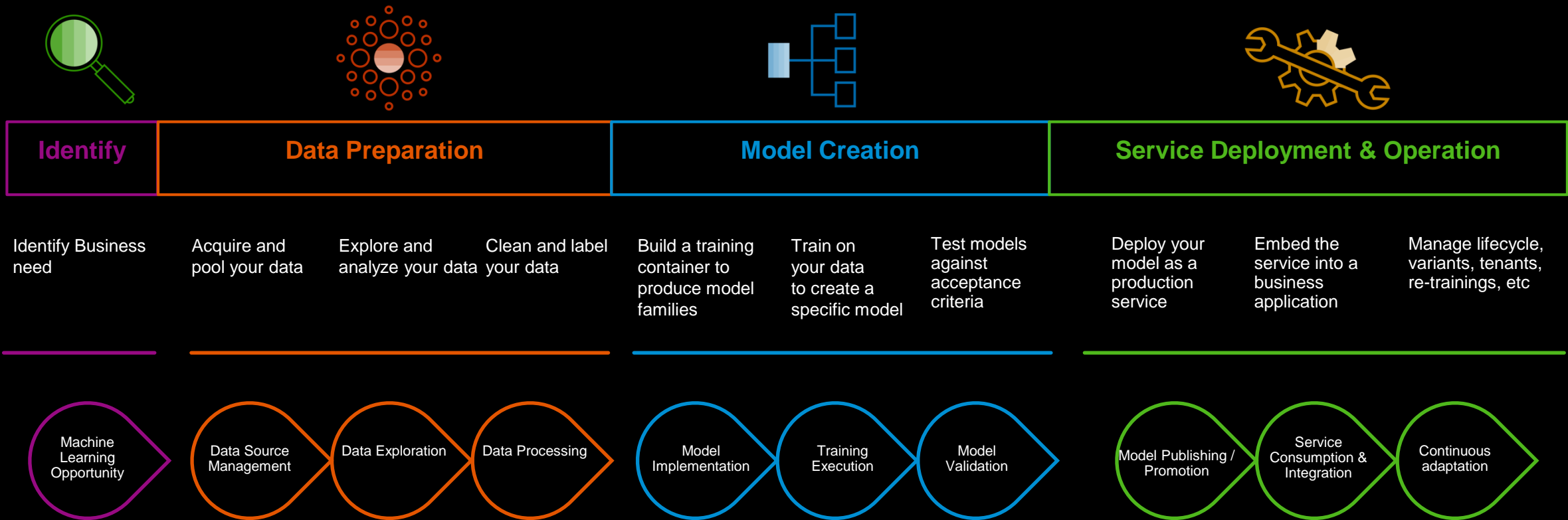
Make health and safety information actionable



Compliance dashboard

Improve safety through real-time global insights

The Core AI Lifecycle Defined



Towards a unified ML & Data Science Platform

Components



SAP Data Hub

Data sharing, pipelining, and orchestration.
Including data preparation and cleaning.



SAP Predictive Analytics

Operationalization and automation



SAP Leonardo ML Foundation

Deep Learning (text, image, video, audio)



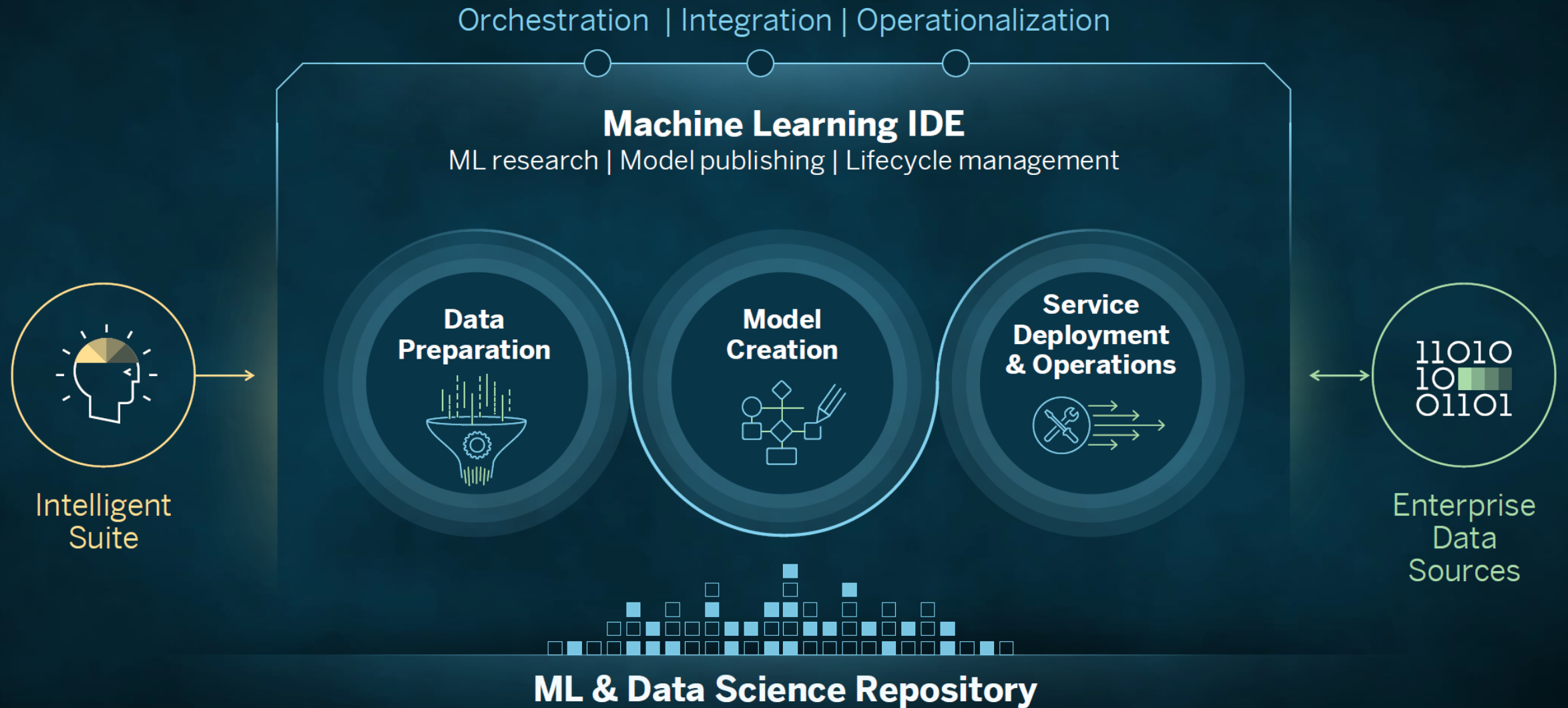
SAP HANA ML

In-database Machine Learning

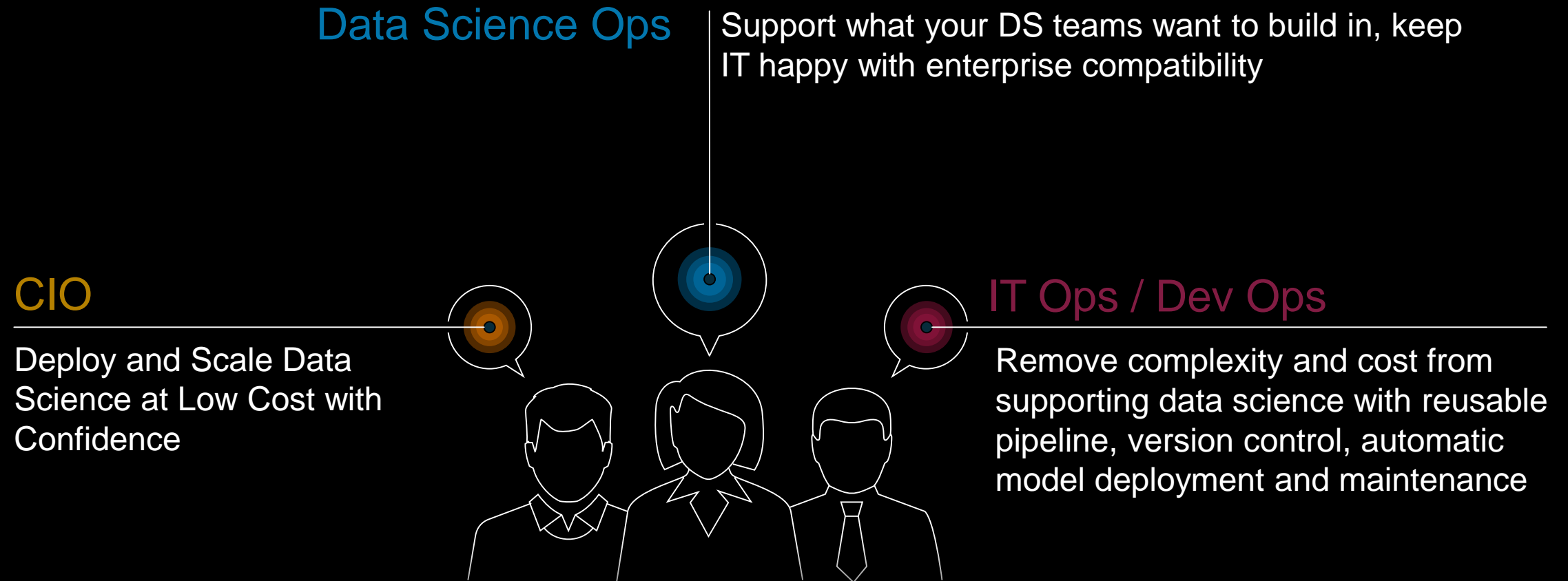
Solution

One integrated offering
One data science front end
Full lifecycle management
Integrated with SAP

Towards a coherent Machine Learning & Data Science Foundation



AI delivered at scale



SAPs Machine Learning and Data Science Platform: **Mission**

Scalable

- deploy with a click
- manage thousands of models in production
- automate retaining, maintenance, and retirement



Open

- bring your own model
- open language and framework support
- deploy anywhere

Complete

- every SAP ML capability
- Integration into any application via API
- embed into SAP applications

Learn more

Websites

- ML [overview website](#)
 - [Product website](#) Machine Learning Foundation
 - [Developer website](#) ML
 - Documentation on [SAP Help Portal](#)
-

Courses

- [Enterprise ML in a Nutshell](#)
 - [Enterprise Deep Learning with TensorFlow](#)
 - [SAP ML Foundation course in openSAP](#)
-

Try out

- Try out the MLF APIs on [SAP API Business Hub](#)
 - Try out ML Services via [SAP CP Trial](#)
-

Any open questions?

Thank you.

Susanne Nosky

Solution Expert – SAP Leonardo Machine Learning

SAP Leonardo Machine Learning, SAP SE

+49 151 62345564

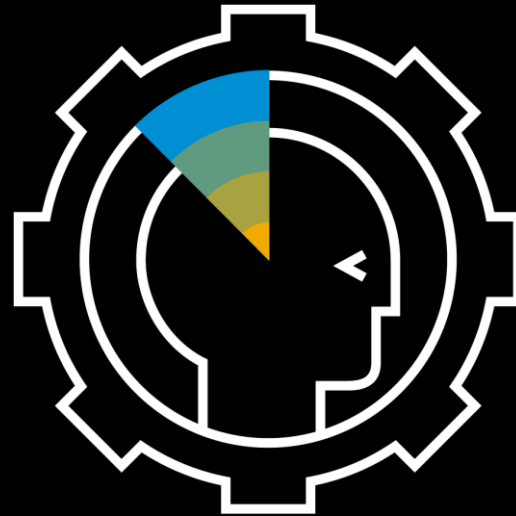
Susanne.Nosky@sap.com



Machine learning is the reality behind artificial intelligence

What is machine learning?

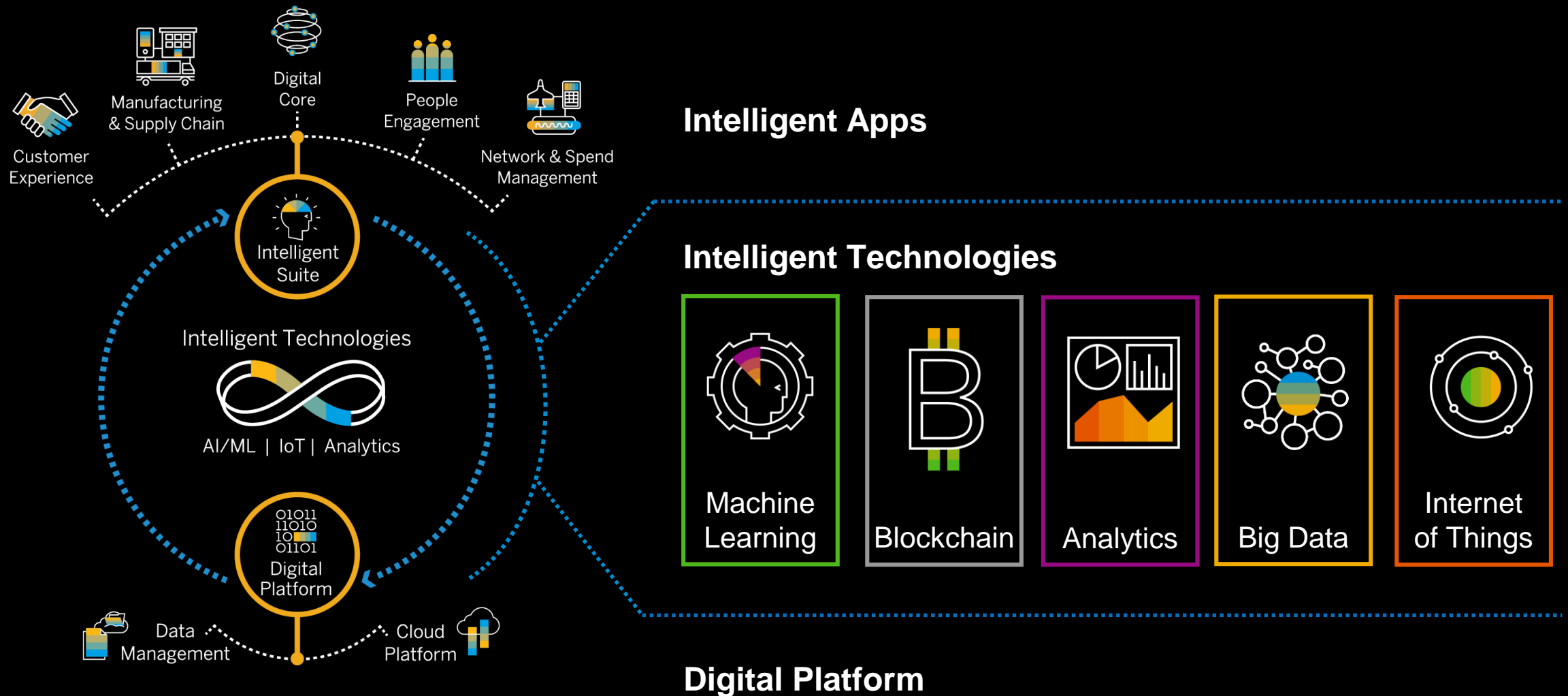
- Computers **learn from data** without being explicitly programmed.
- **Machines** can see, read, listen, understand, and interact.



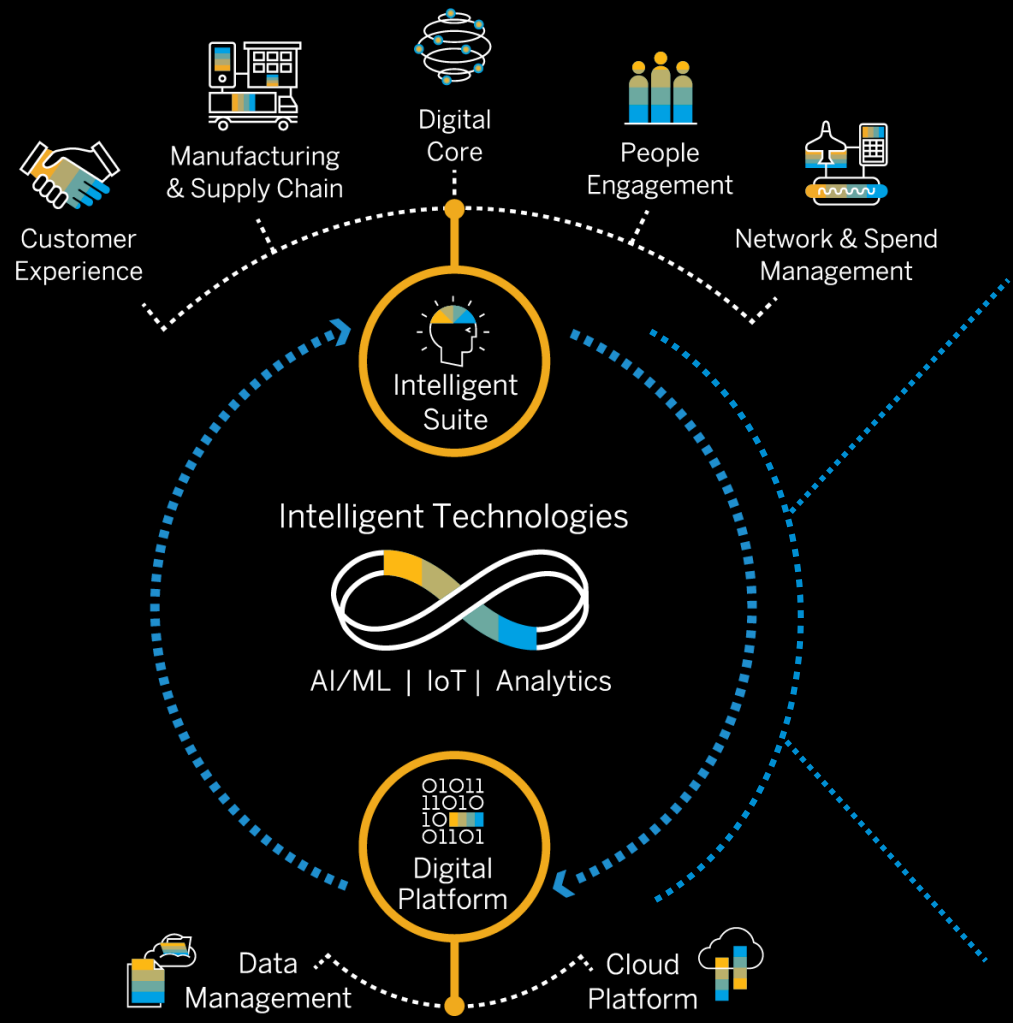
Why now?

- **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) and **cloud computing**
- Deep learning **algorithms**


The Intelligent Enterprise: Enabling Digital Innovation




Intelligent Technologies




Intelligent Apps



Conversational AI

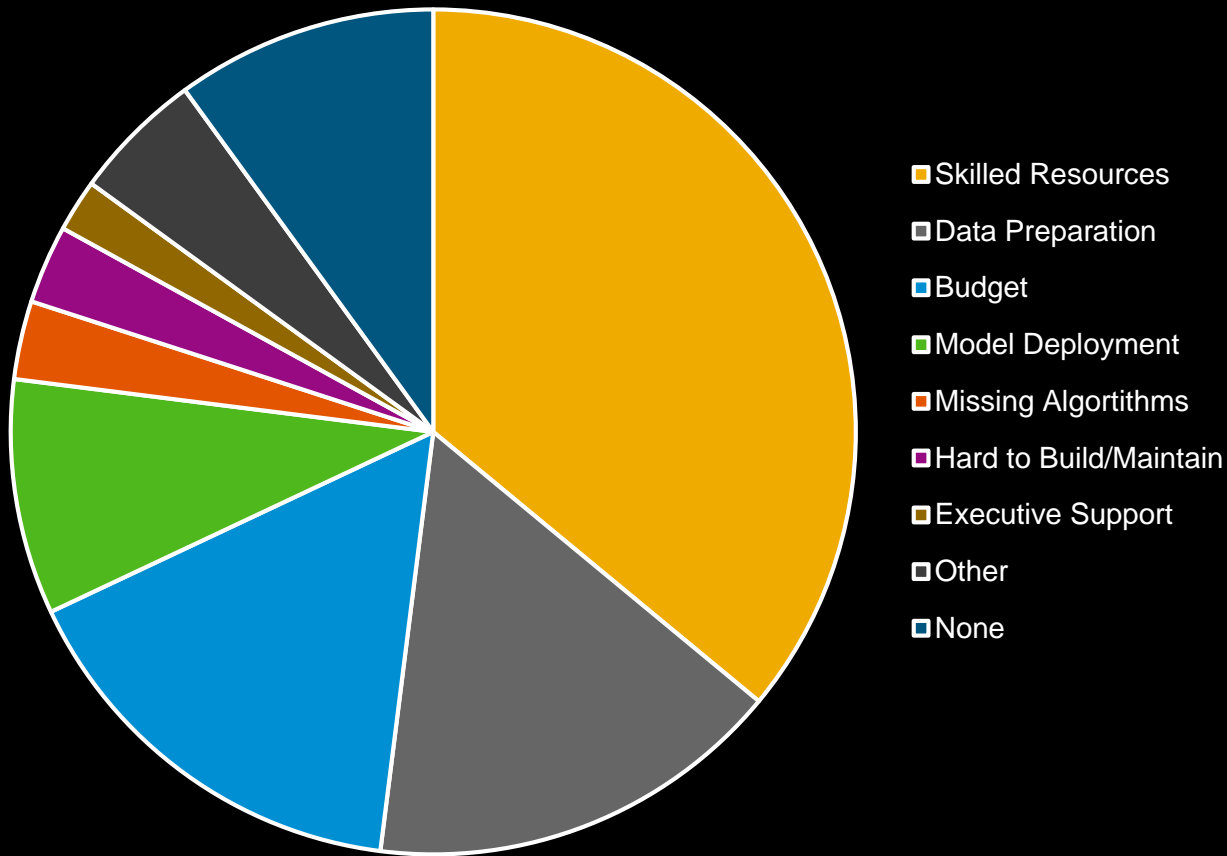


ML & Data Science



Intelligent Robotic Process Automation

Barriers in Machine Learning



What do you think are the hurdles in your organization for ML?

Source: 451 Research

How SAP Leonardo Machine Learning helps deliver the Intelligent Enterprise



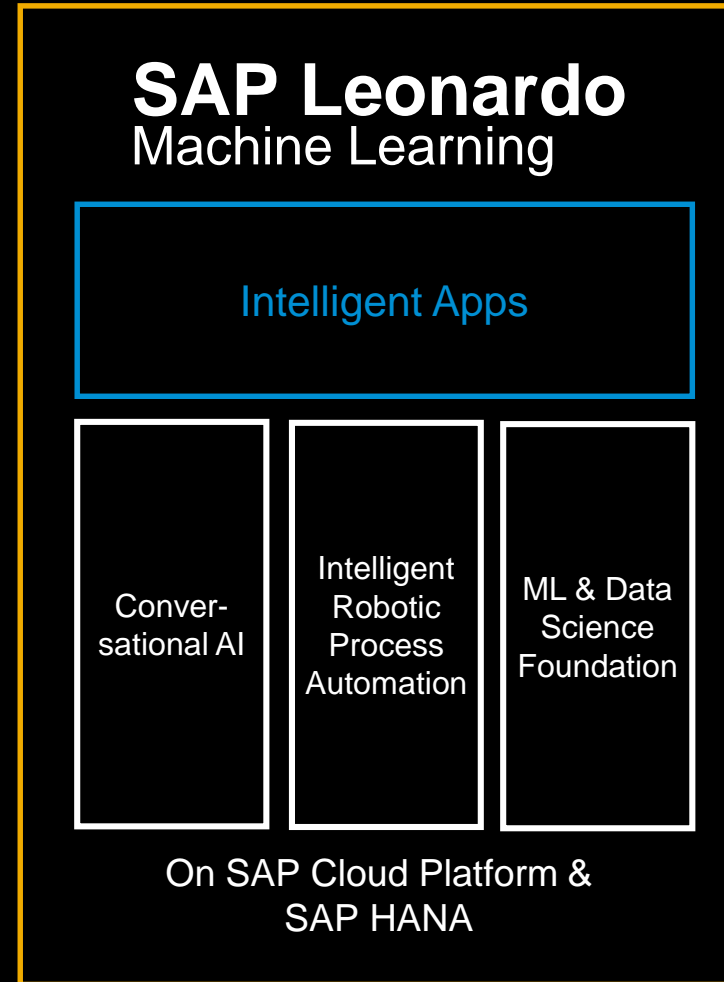
Data &
Integration

77% of the world's
transaction revenue

25 industries

7 lines of business

The world's largest
business network



Business Outcomes



Increase
revenue



Re-imagine
processes



Quality time
at work



Customer
satisfaction

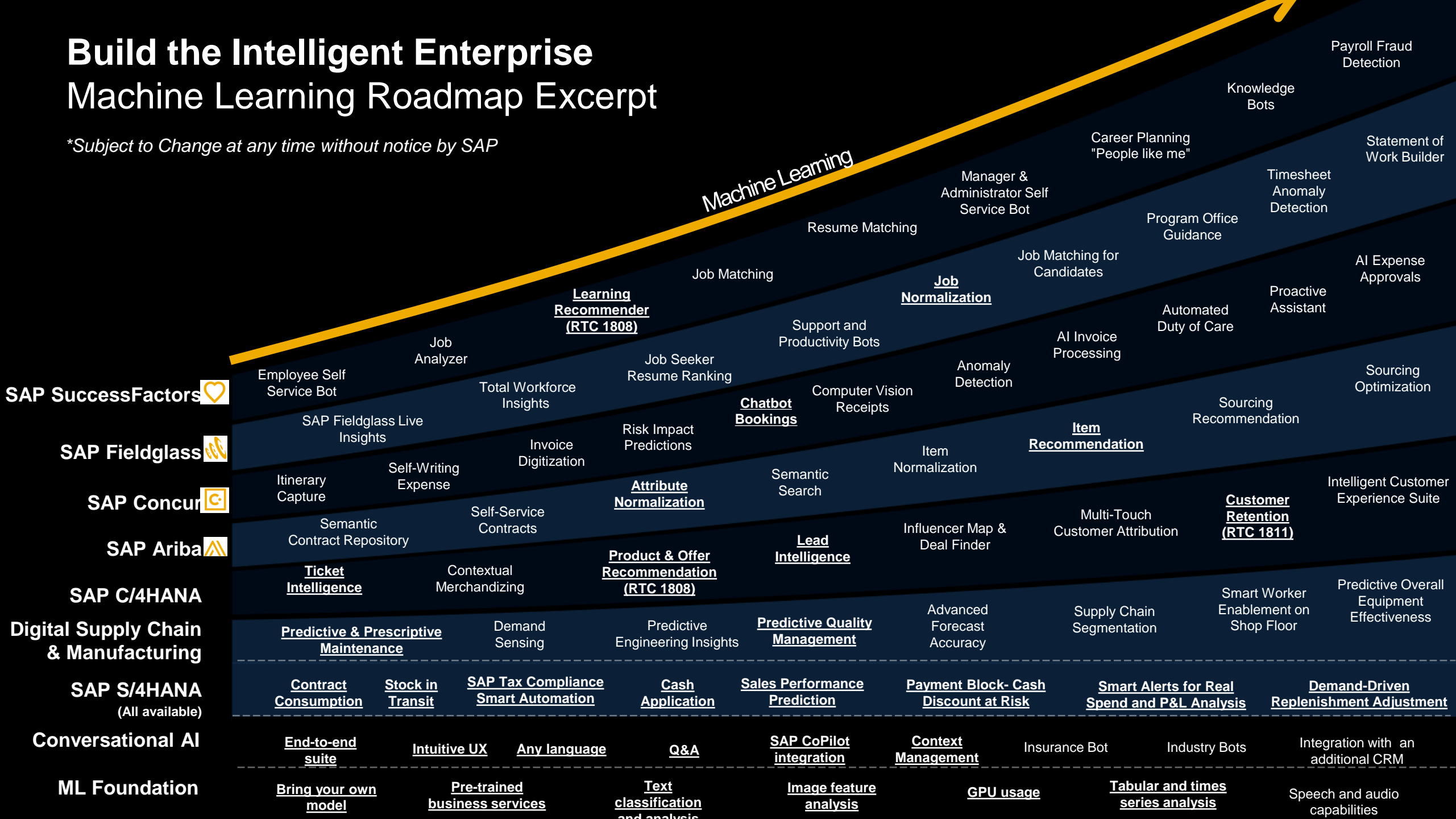


Enabling
innovations

Build the Intelligent Enterprise

Machine Learning Roadmap Excerpt

**Subject to Change at any time without notice by SAP*



Automated Processes with Service Ticket Intelligence

- When a customer submits a text via e-mail or social post, machine learning algorithms analyze **sentiments** and **content**
- **Ticket categories** such as “complaints”, “service requests”, “product support” are identified
- Automatically categorized tickets are **routed** to the appropriate service team and **solutions are recommended**

SAP Hybris

Home

Calendar

Service

Tickets

Work Tickets

Unassociated E-Mails

Live Activity Center

Ticket Hierarchy

Feed

Customers

Sales

Activities

Products

Dashboard

Visits

Contracts

Installed Base

Time Recording

Tickets

6837 - fridge door doe...

6837 - fridge door does not close properly

Taylor Jones

OVERVIEWINTERACTIONSEMAILS (BETA)SOLUTION FINDERSURVEYSACTIVITIESATTACHMENTSNOTESITEMSSERVICESPARTSTIME

Priority NormalEscalation Status Not EscalatedStatus OpenService and Support Team Field Squad

CUSTOMER

Customer Taylor JonesContact -E-Mail taylor.jonesh@gmail.comPhone +1 9168889696

DESCRIPTION

Hello,
My name is Taylor Jones and I am writing to you because I am concerned about our Monarch Smart Fridge. We bought it four weeks ago and the door doesn't seem to close properly. As the fridge is still under warranty, can you please send a technician to take a look and adjust it.

Thank you very much*,*

Taylor Jones

CATEGORY

Service Category Customer Support

TIMELINE

Initial Review Due 02/06/2017 4:29 AMInitial Review Completed -

Completion Due 02/06/2017 7:29 AMRequested Start 02/07/2017 4:00 PM

Reported On 02/06/2017 3:29 AMDue On-Site -

Arrived On-Site -Resolution Due -

Resolved On -Reported By Taylor Jones

Service Category Proposal

ID 6837

Category customer support

SAP Leonardo ML Foundation: Partner Use Cases



Image pattern recognition for paper decor manufacturers

T.CON



Smart Material Finder



Utility Pipeline Monitoring and Repair

Atos



Trigger order for missing or faulty parts



Smart Demand Planning for self adjusting supply chain

GeneXus



Quality monitoring of scrap purchase



Smart Task Management with NLP based classification



Predictive Maintenance and Detection for Railways

How SAP Leonardo Machine Learning helps deliver the Intelligent Enterprise



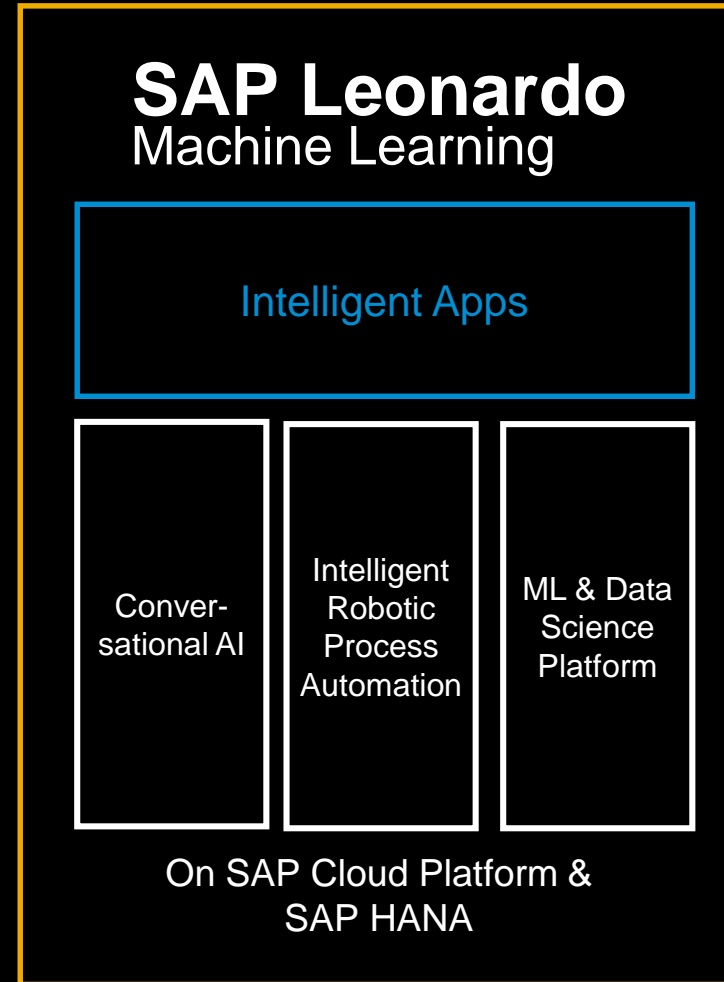
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Enabling
innovations

SAP Conversational AI Revolutionizes Your Customers' Journeys

60,000 bots were build by our customers and community already



Smart and accurate

Our multi-lingual deep-learning based technology outperforms the best in the world, as proven by Andreessen Horowitz in his AI playbook.



Fast and easy

Our platform makes bot building smooth and quick, amounting to the shortest bot time-to-market in the industry (9 week average) through SAP C/4HANA, SAP CoPilot and other powerful integrations.



Trained and to-go

We are building self-trained and integratable deep intelligence in the telco, banking, insurance and utilities industry.

Introducing the Enterprise Grade offer of SAP Conversational AI

Our **Enterprise Grade offer makes bot building a smooth process** for any corporation wishing to automate their customer support with chatbots. This offer is carried by the release of five major features:



Training analytics



Usage analytics



Q&A



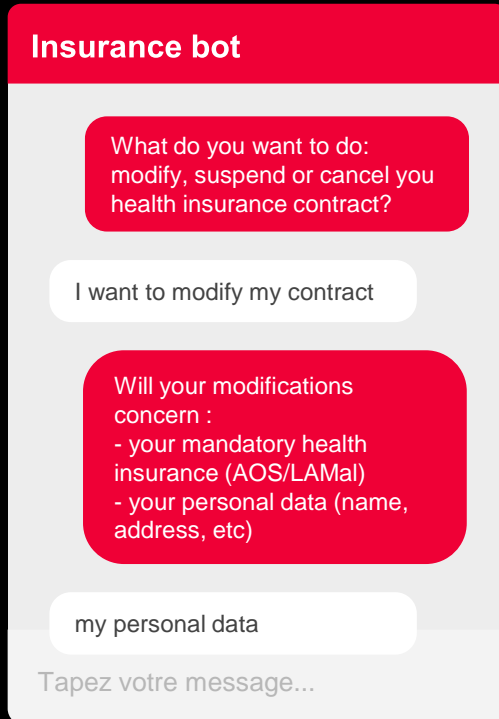
Versioning



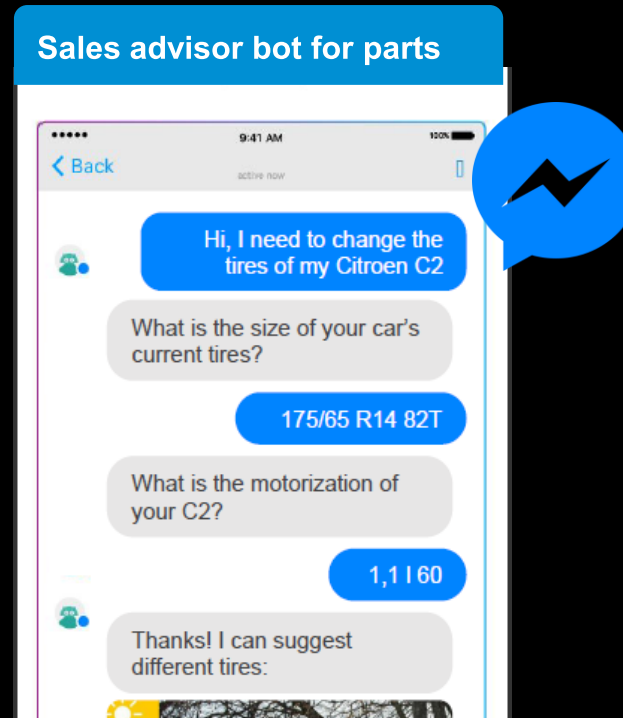
Big bot management



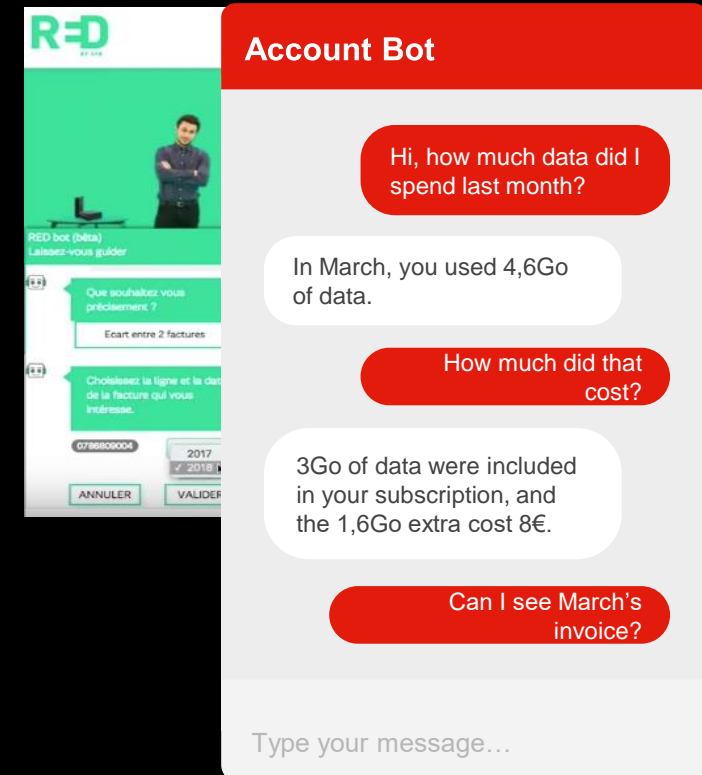
Examples: customer implementations for mission-critical processes



A Swiss insurance company allows customers to **modify contracts** via the bot, so the service team avoids adding staff during peak periods.



Sales advisor helps field services and customers **find the right parts**, integrated into the customer's CRM / PIM system including a proposal of a purchase.



SAP CAI manages 20% of all customer requests for sensitive topics like **invoices** and **phone PUK codes**.



SFR on stage at Sapphire:
<https://events.sap.com/sapan/dasug/en/session/37377>

Partners Enabled on Leonardo ML



SAP and Google partner in the area of infrastructure-as-a-service to lift enterprise cloud applications to the next level.

SAP and Google partner to integrate SAP applications and Google's G Suite to get the best out of both worlds.

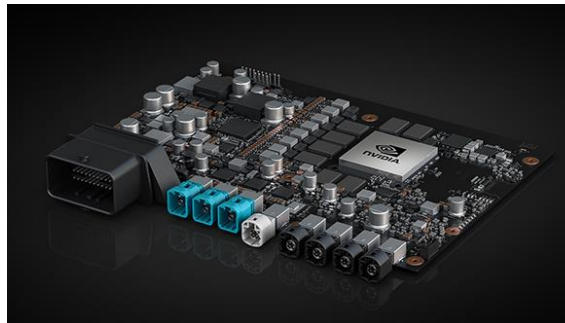


Apple and SAP Partnership – delivering SAP Cloud Platform SDK for Apple iOS for Next Gen Transformational Apps for the Enterprise

Posted on [July 28, 2017](#) by [Soum Chatterjee](#)



SAP and NVIDIA:
Bringing Machine Learning to the Enterprise



nVIDIA®

How SAP Leonardo Machine Learning helps deliver the Intelligent Enterprise



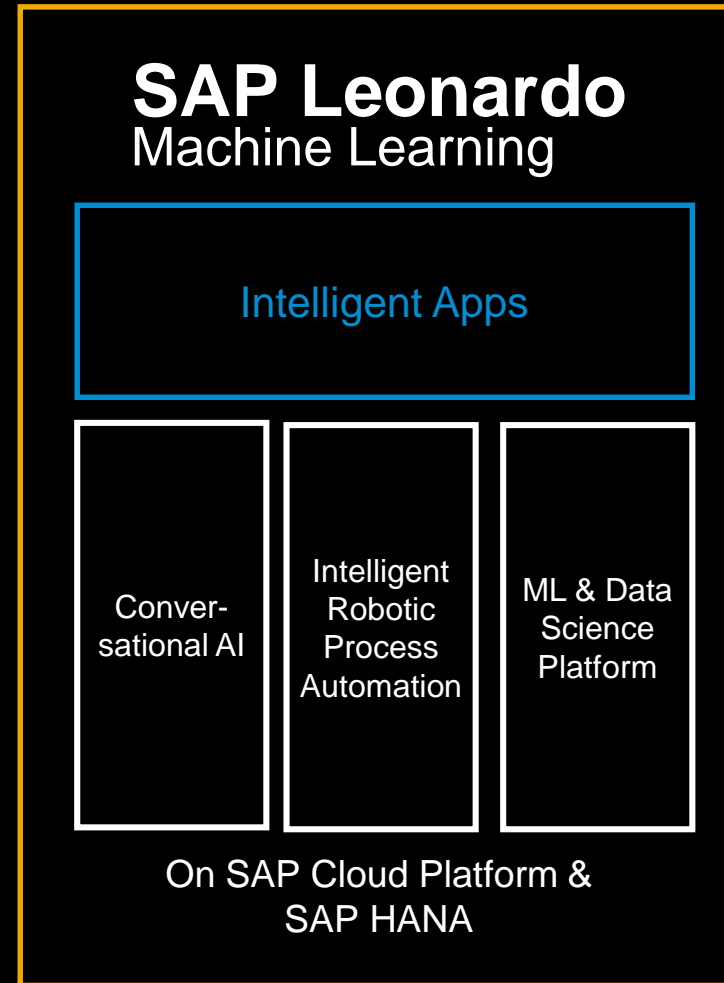
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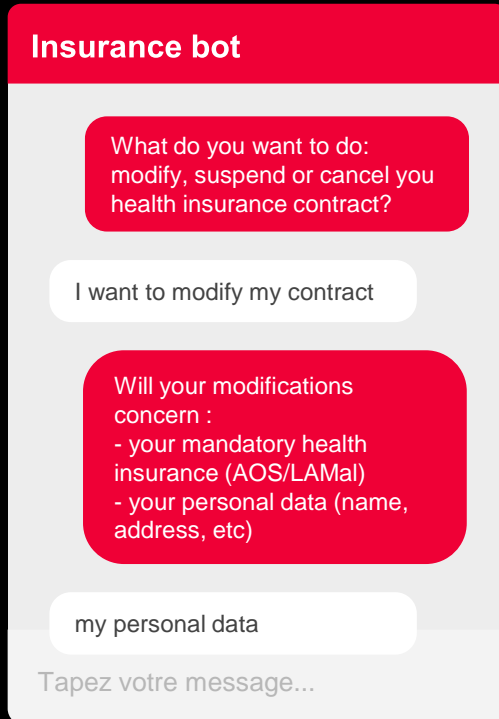
Versioning



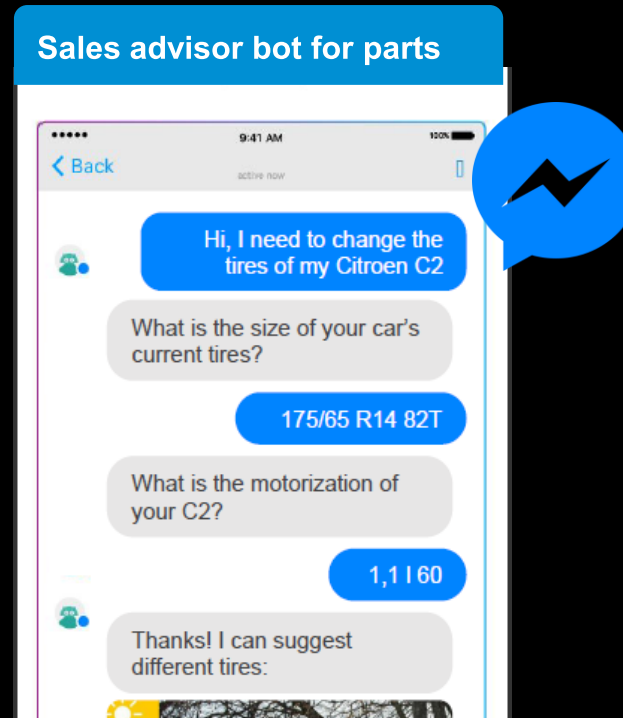
Big bot management



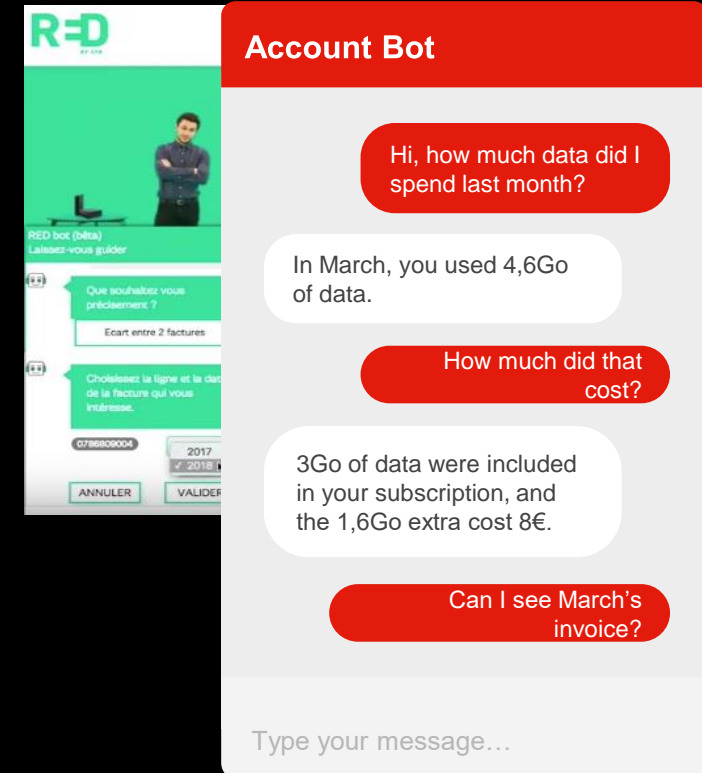
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<https://events.sap.com/sapan/dasug/en/session/37377>

413,000+
Customers

94,900+
Employees

18,300+
Partners

25
Industries

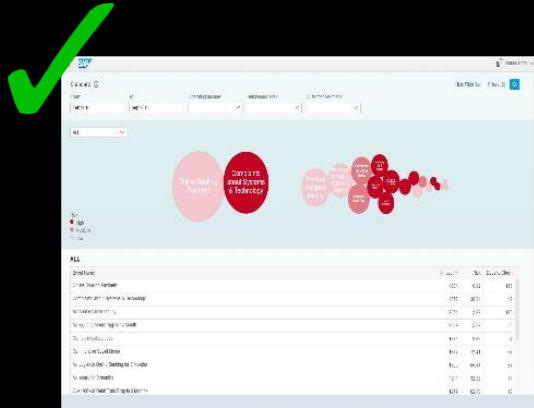
€23.77B
Revenue
in 2017

92%
of the Forbes
Global 2000
are SAP
Customers

#28
of Fortune's
2017 top 100
places to work

180+
Countries

SAP Leonardo Machine Learning Applications



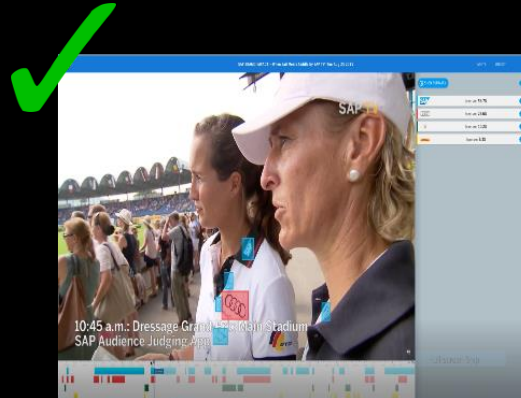
SAP Customer Retention

The screenshot displays the SAP Cash Application application interface. It shows a table of bank statements with columns for 'Bank Statement No.', 'Bank Statement Date', 'Bank Statement Amount', 'Bank Statement Currency', 'Bank Statement Description', and 'Bank Statement Status'. The table lists various bank statements and their corresponding details.

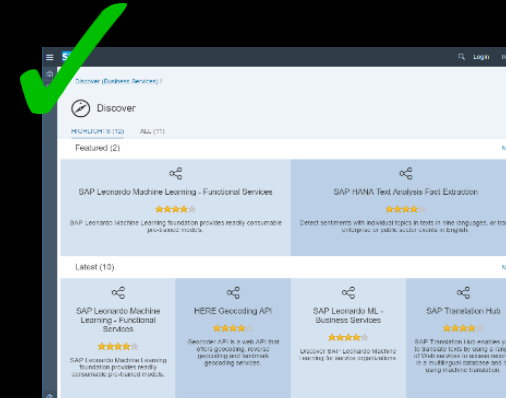
SAP Cash Application

The screenshot displays the SAP Service Ticket Intelligence application interface. It shows a table of service tickets with columns for 'Ticket ID', 'Ticket Title', 'Ticket Category', 'Ticket Status', 'Ticket Priority', 'Ticket Assigned To', 'Ticket Created Date', and 'Ticket Last Modified Date'. The table lists various service tickets and their corresponding details.

SAP Service Ticket Intelligence



SAP Brand Impact



SAP ML Foundation

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