

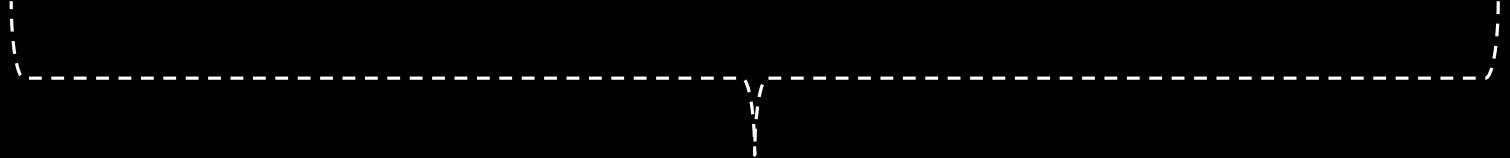


D3: Natural Language Processing und Robotics / Chatbots und RPA mit SAP

Mike, Solution Advisor, SAP Switzerland

PUBLIC

Digitalisierung ≠ Automatisierung ≠ digitale Transformation



Machine Learning als “Enabler”

Intelligent Technologies

Interact

Conversational AI (CAI)

Chatbots to interface and hand-over to execution bot

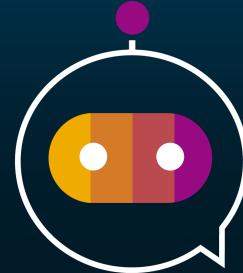


Interfacing

Execute

Intelligent RPA

Multiple bot workflows for execution
(attended + unattended)

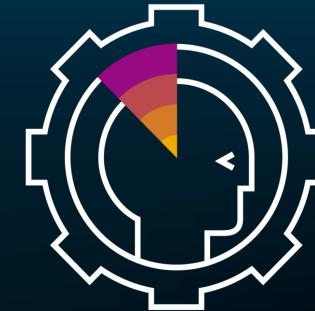


Performing tasks

Optimize

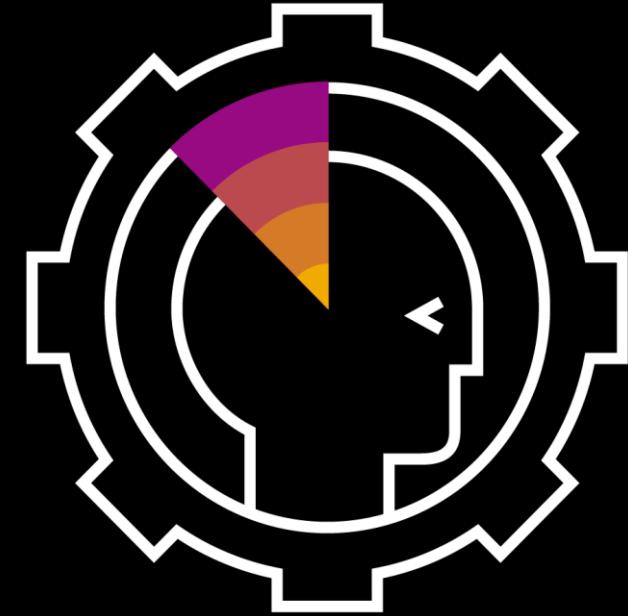
Machine Learning (ML)

Self-learning bots with dynamic adaptability

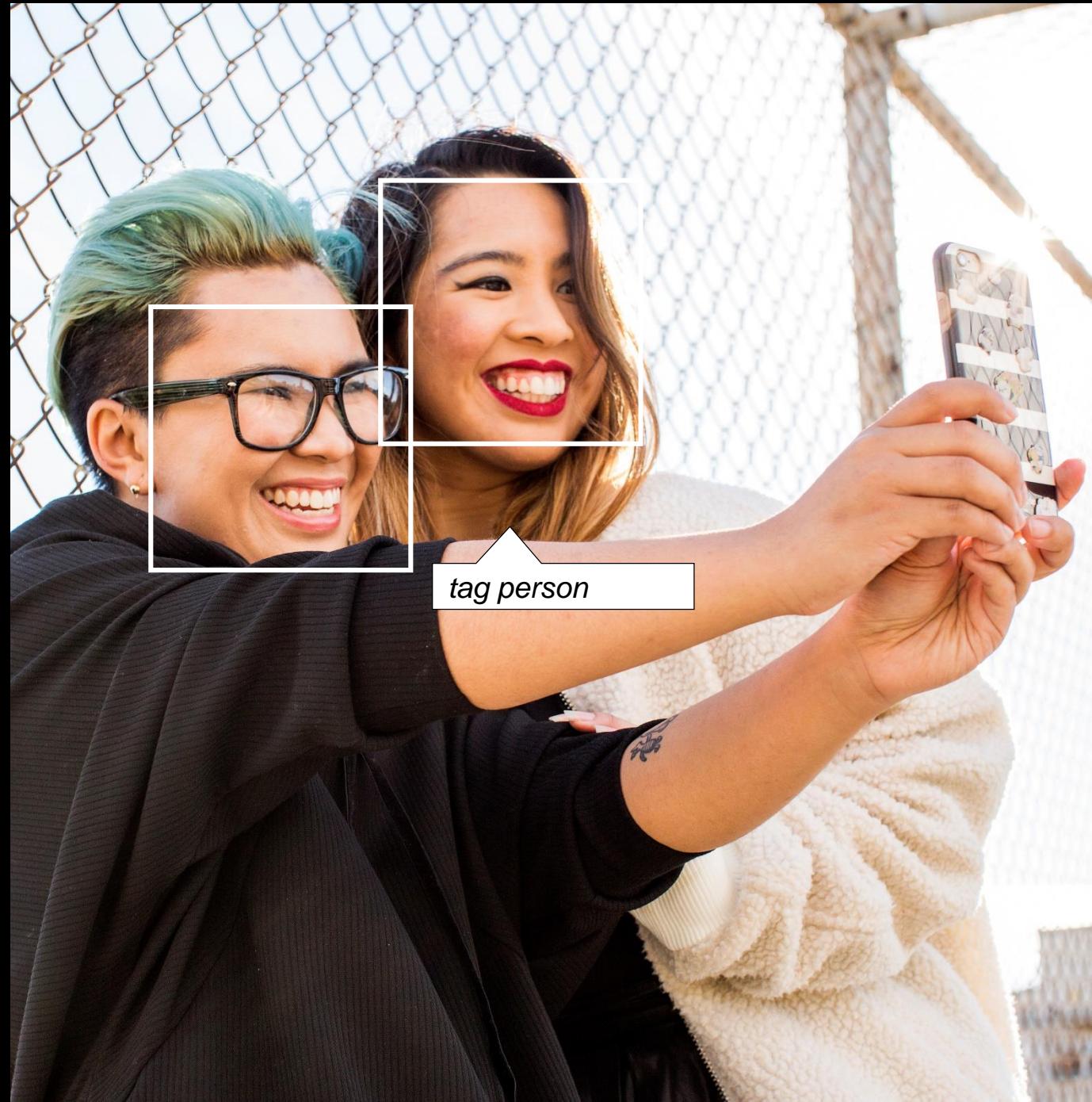


Learn from exceptions

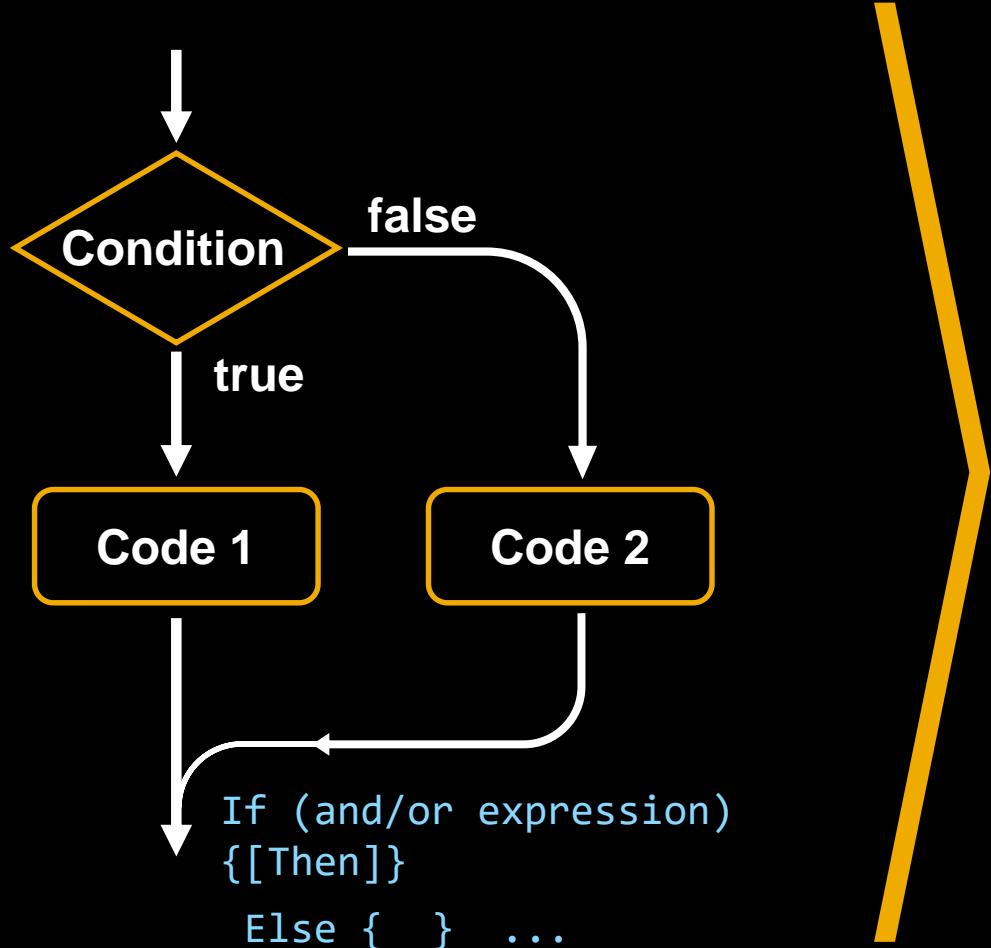
Machine Learning (ML)



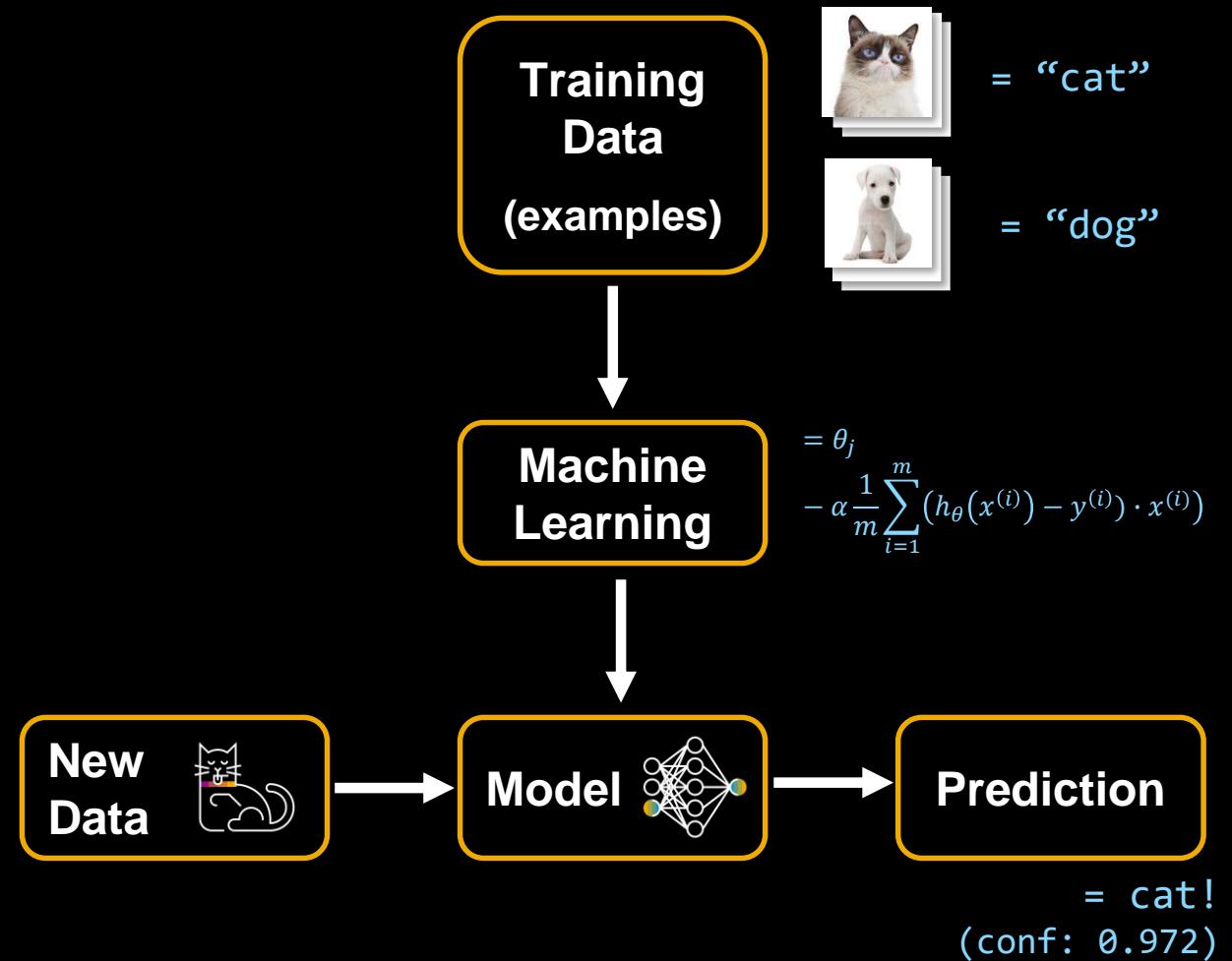
Many of us help to
train **Machine**
Learning models on
a daily basis without
knowing...



Rules-based “expert systems”:
explicitly codify knowledge

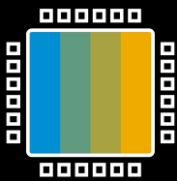


Probabilistic approach

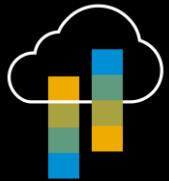


Why suddenly the hype? And what can machine learning enable?

Why now?



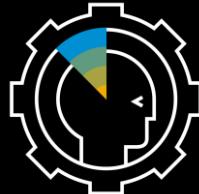
Powerful hardware



Cloud computing
and digital platforms



Digitization /
Big data



Advancements
in applied deep
learning

What can computers do now?

Computer vision (See)



OCR
Image classification
Face detection
Emotion recognition

Unstructured text



Topic detection
Translation
Text feature
extraction

Predict & Find Patterns



Recommendations
Classification
Anomaly detection
Forecasting
Matching & proposals

Converse, Read, Understand Context



Speech-to-text, Text-to-speech
Natural-language chatbots
Sentiment analysis, topic detection
Translation

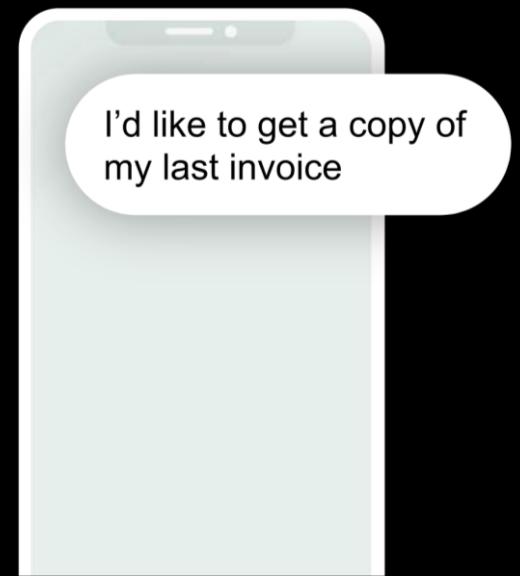
Conversational AI (CAI)



What is a chatbot?

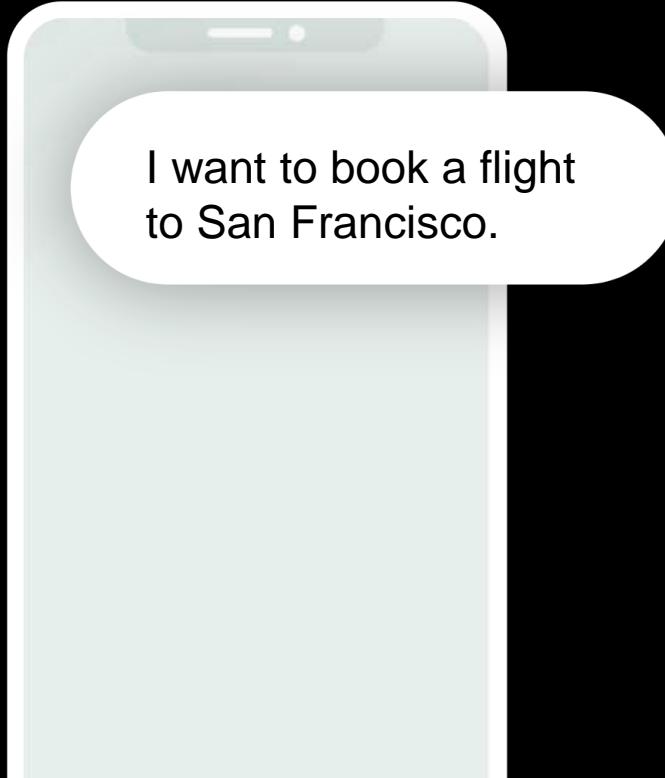
A **conversational interface**, or a **chatbot**, is a computer program capable of understanding human language, written or spoken, and to carry out actions based on the input.

A chatbot uses **natural language processing (NLP)*** to **mimic simple conversations** with real people.



**NLP belongs to the field of artificial intelligence (AI)*

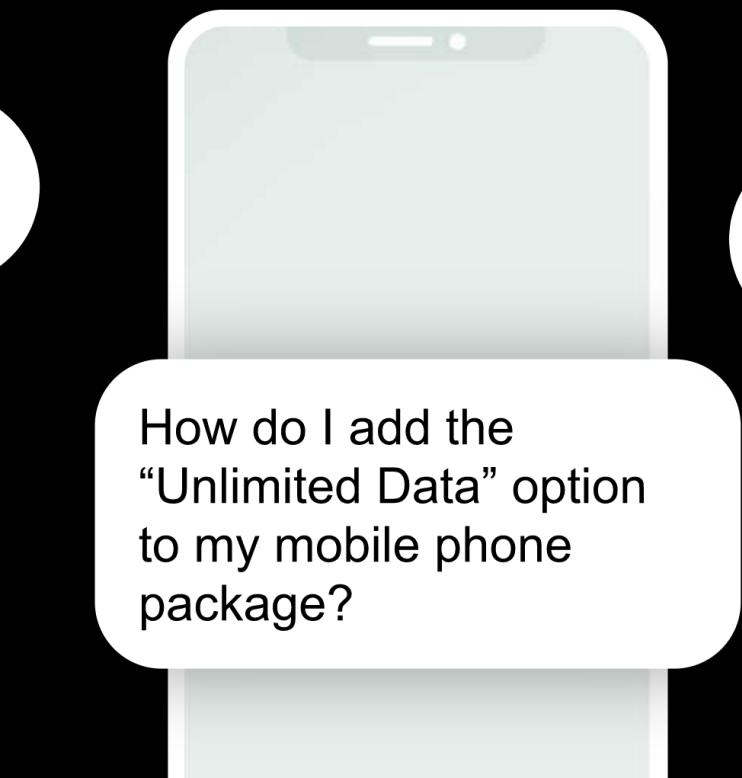
Chatbots are great at automating
customer and employee requests
that are **simple conversations**

A light gray smartphone icon on the left side of the slide.

I want to book a flight
to San Francisco.

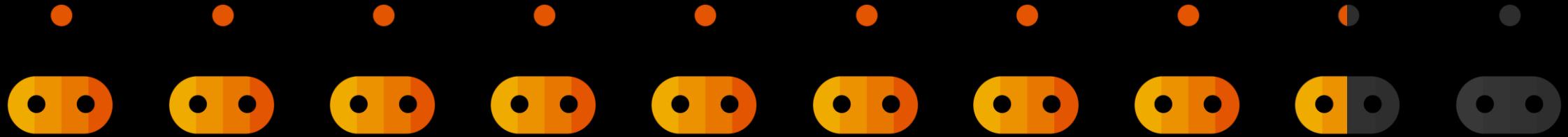
A light gray smartphone icon on the right side of the slide.

Can I have a day off on
August 16?

A light gray smartphone icon in the center of the slide.

How do I add the
“Unlimited Data” option
to my mobile phone
package?

The world is growing conversational



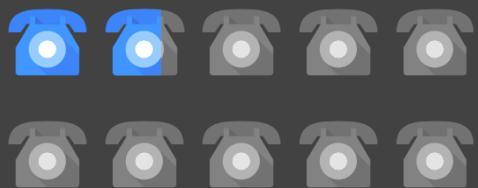
“Chatbots will power 85% of all customer service interactions by 2020.”

Gartner’s Top 10 Strategic Predictions for 2017 and Beyond: Surviving the Storm Winds of Digital Disruption

Customer supports can't keep up

with the huge increase in volume of customer demands

17% of people are kept on hold



42% of people speak to **different agents** to get an answer



78% of clients end contracts because of bad support



This amounts to **\$1,6tr** business **annual losses** due to poor customer service in the US

Accenture

Bots are efficient, 24/7, multichannel and relationship based



They bring a gain of efficiency and reduce costs

Efficient

They are available 24/7, in any country, in any language

24/7

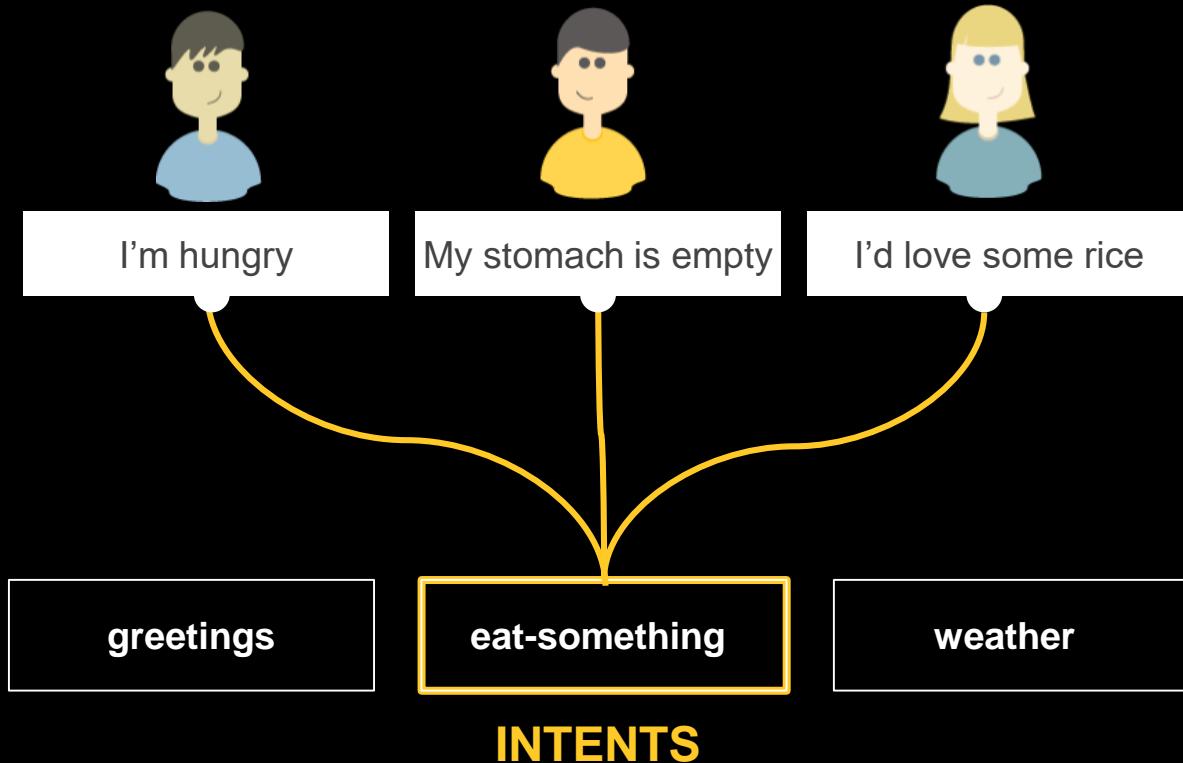
They are on many channels (web, apps, messengers, ...)

Multi-channel

They think in client relationship and not only transaction

Relationship-based

Conversational AI concepts: Demystifying advanced chatbots



EXPRESSIONS

Expressions: different sentences people say to communicate what they mean

Intents: represent a concept that the bot will be able to understand by analyzing the user expressions, i.e. what the bot should know. Intent recognition is a core capability of a chatbot. For example, intents might be “get PO status”, “book vacation”, “reset password” etc.

Conversational AI concepts: Demystifying advanced chatbots

ENTITIES

Next month I'd like spend time with my wife Victoria.

DATETIME

NAME

Entities: important keywords extracted from expressions. SAP CAI automatically extracts ~31 entities from advanced languages and allows unlimited custom entities.

CONTEXT & MEMORY

At that time we'd like to go to Victoria, B.C.

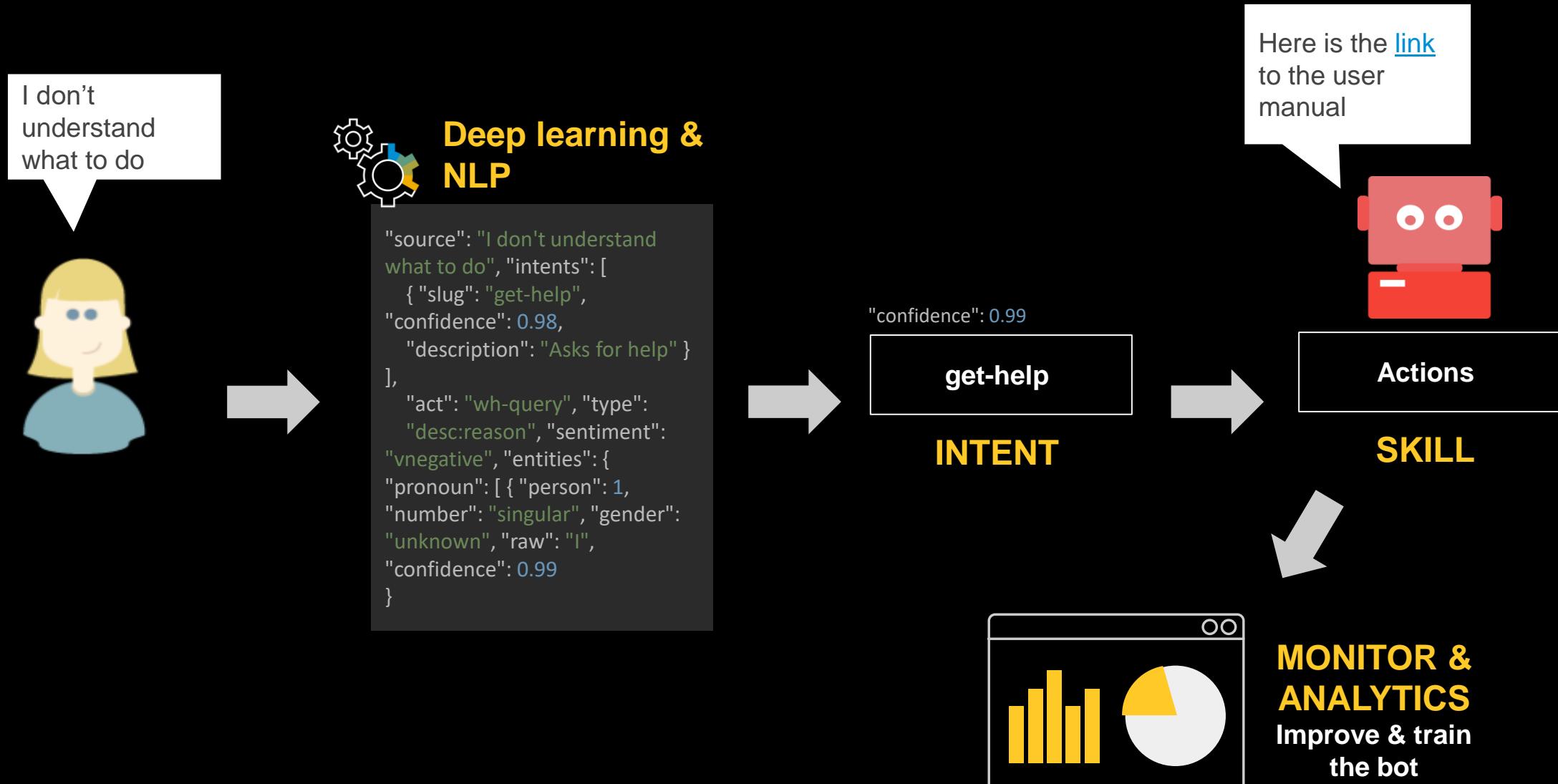
DATETIME

LOCATION

Context: keywords have different meanings according to syntax, rest of the conversation, etc.

Memory: a good bot understands that “at that time” means “DATETIME: Next month” and can retain memory throughout the conversation.

Conversational AI concepts: Demystifying advanced chatbots



SAP CAI provides a user-friendly and collaborative end-to-end bot platform

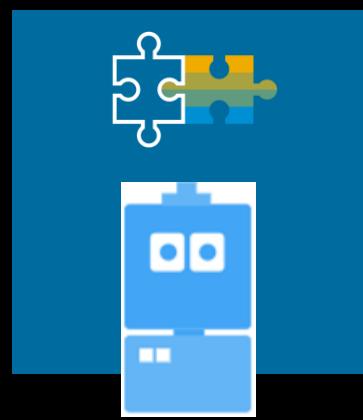
TRAIN



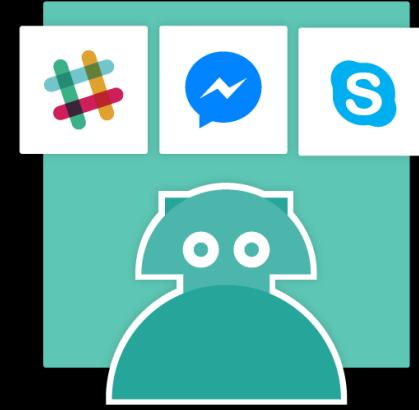
BUILD



INTEGRATE



CONNECT



MONITOR



Train your bot with intents to understand human language

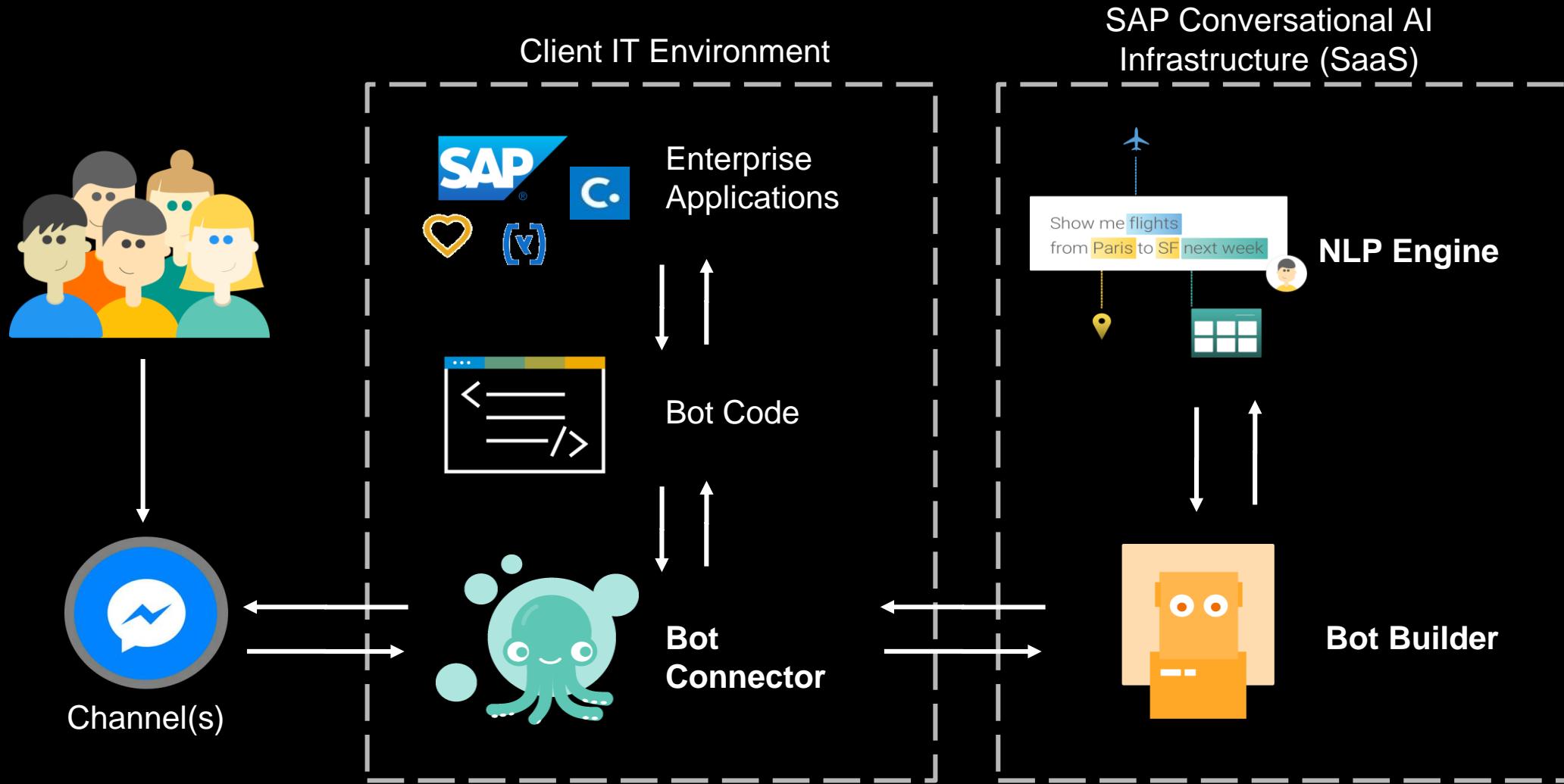
Build complex conversations, skills, and logic

Integrate your bot into data-providing systems and processes

Connect your bot to multiple messaging or fallback channels

Monitor through logs and usage analytics to improve your bot

SAP CAI can be deployed such that the customer retains control over the bot code, Bot Connector, and enterprise data, providing enterprise-grade security and integration.



Recast.AI has 20+ corporate clients providing consumer-facing bot services



Invoice bot



Contract manager bot



Account manager bot



Invoice manager bot



Desjardins

Internal IT bot



Lead generation bot



Recast.AI is acquired by SAP! (Jan 2018)



Technology leaders that partnered up with
SAP Conversational AI

How an insurance company improved customer service through automation

Challenge

- Reduce the number of calls to the client's call center while still providing outstanding support
- Automate the process of modifying, cancelling or suspending insurance contracts

Key benefits

The team now manages the 2 months of rush of the year with 100 people and the bot, instead of 400 people.

The screenshot shows a website for 'Groupe Mutuel' with a navigation bar for 'Clients privés', 'Clients entreprises', and 'Groupe Mutuel'. The main menu includes 'Blog', 'Mon espace', 'Contact', 'Recherche', and language selection ('FR'). The top right features a button to 'CALCULER MA PRIME d'assurance 2018'.

The page title is 'Assurance-maladie de base'. The left sidebar contains three informational boxes:

- "Vous pouvez changer de médecin de premier recours une fois par année."
- "Pour cela, nous vous invitons à compléter et envoyer le mail ci-joint ou à nous communiquer le nom de votre nouveau médecin par courrier postal."
- "Notez que pour les 3 modèles d'assurance suivants, le médecin doit figurer sur la liste des médecins agréés par votre réseau :
- Réseau de soins Managed Care
- Optimed
- BasicPlus"

The main content area features a large red banner with the text 'Assurance-maladie de base' and 'Principe sur l'assurance-maladie (LAMal)'. Below it, a paragraph explains that the mandatory coverage covers medical treatments under LAMal, and users can choose between standard or alternative models. A note specifies that for certain models, the doctor must be on the network.

A central section titled 'Modèles d'assurance de base' shows two options: 'Modèle alternatif' (represented by a phone icon) and 'Modèle alternatif RÉSEAU DE SOINS' (represented by a heart icon). At the bottom, there is a message input field with a robot icon, a red 'ENVOYER' button, and social sharing icons for 'Partager'.

Real Customer Case

Round $\frac{1}{4}$
of inputs are
entirely managed
by the bot

Round $\frac{1}{3}$
of inputs are
correctly treated
by the bot after
gathering data

Almost $\frac{1}{2}$
of inputs are
routed to the
correct service by
the bot

**Ongoing
improvements**
to handle inputs
that are not yet
treated by the bot

Several thousands
conversations with
the bot per day

Routenplaner für die Chatbot-Einführung

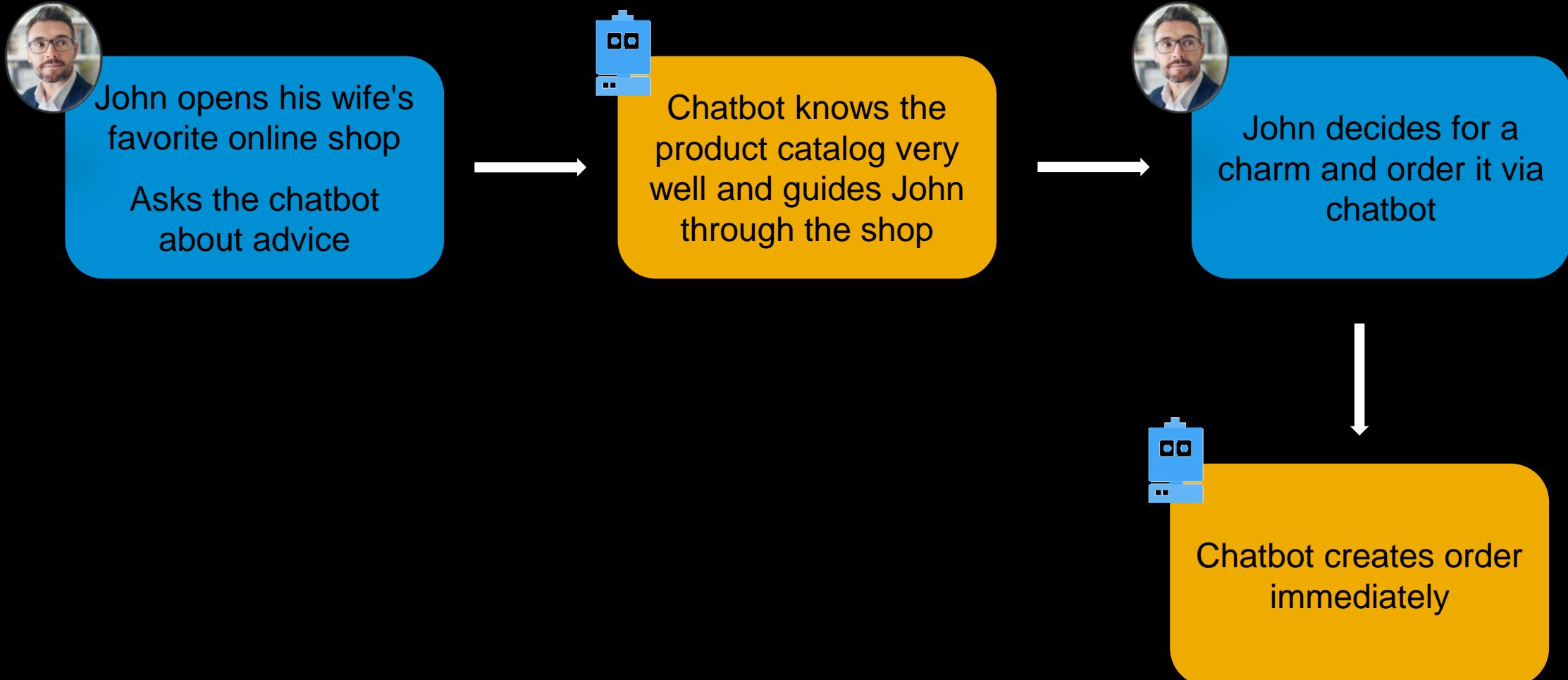
1. Intern oder extern? Definition von Anwendungsfall und Erfolgsmessung
2. Chatbots sind keine Wunderwaffe: Erwartungen festlegen
3. Funktionalität und Time-to-Market müssen stimmen
4. Klein starten und peu à peu erweitern
5. Interne Chatbot-Anwendung als Informationsquelle nutzen

<https://www.computerwoche.de/a/chatbots-auf-den-zahn-gefuehlt,3547527>

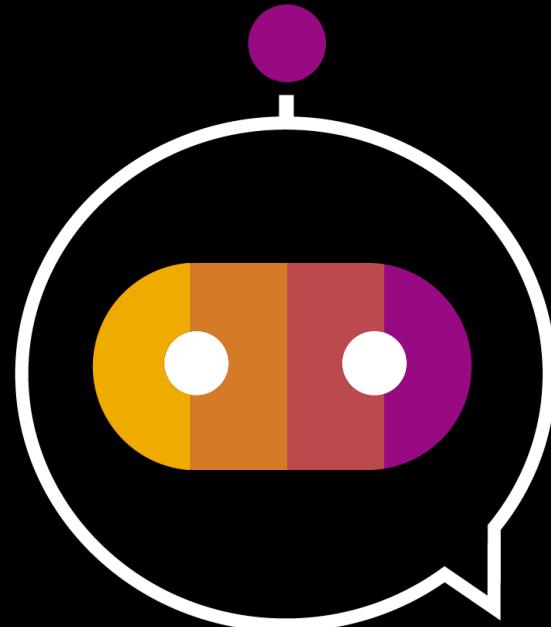
Demo



SAP CAI with storefront buying process



SAP Intelligent RPA



Intelligent Technologies for End-to-End Automation

Interact

Conversational AI (CAI)

Chatbots to interface and hand-over to execution bot



Interfacing

Execute

Intelligent RPA

Multiple bot workflows for execution
(attended + unattended)

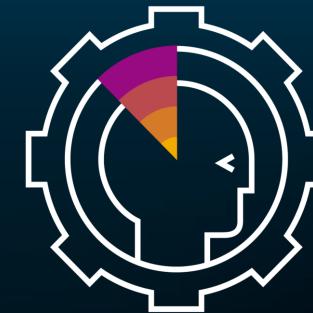


Performing tasks

Optimize

Machine Learning (ML)

Self-learning bots with dynamic adaptability

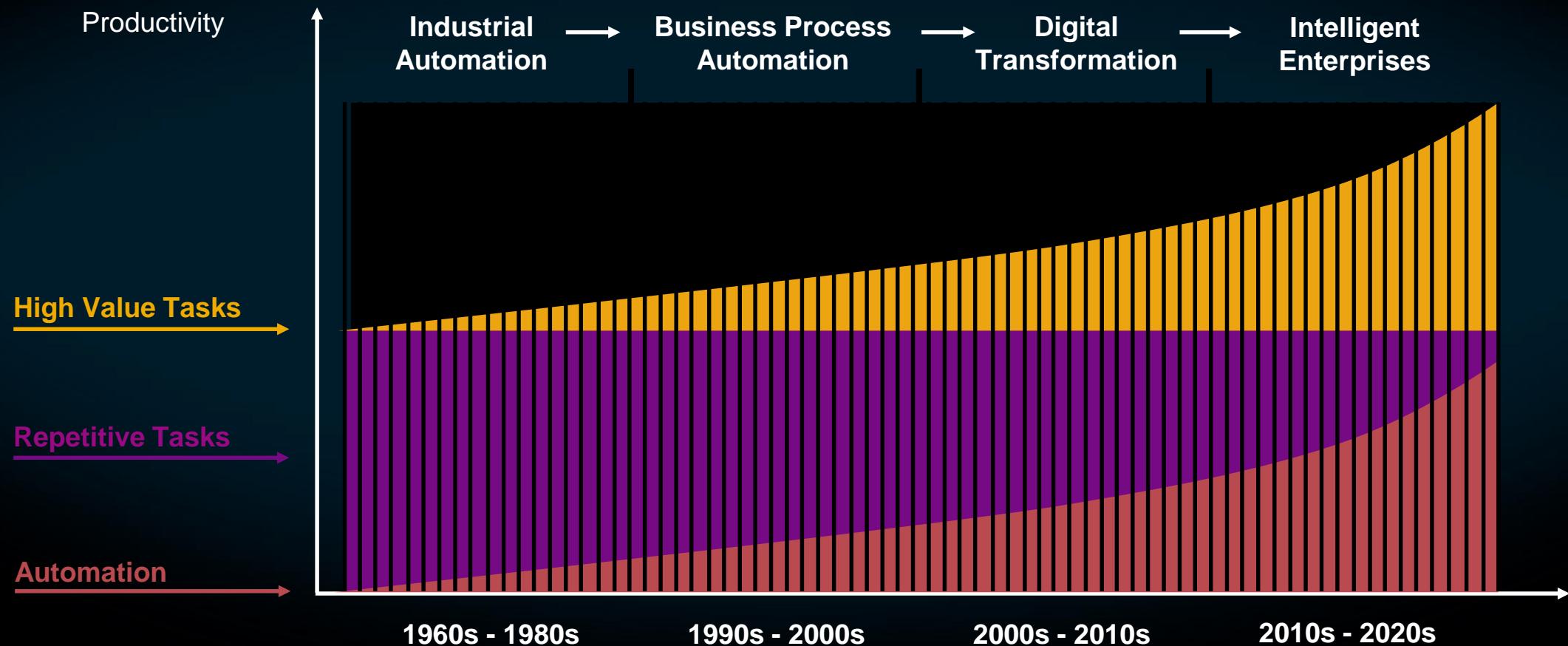


Learn from exceptions

Let us help

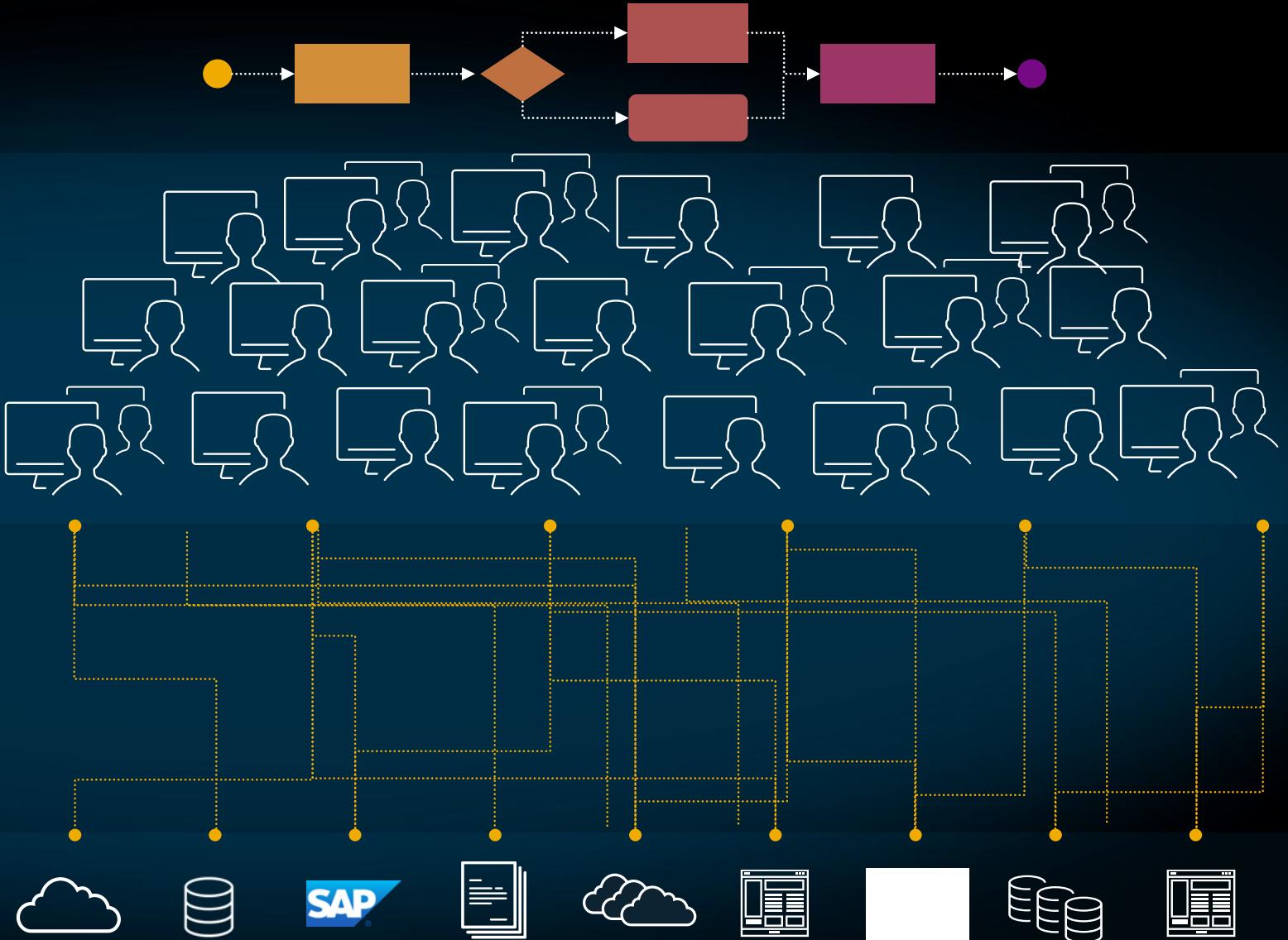


Intelligent Enterprises elevate employees to focus on higher-value tasks



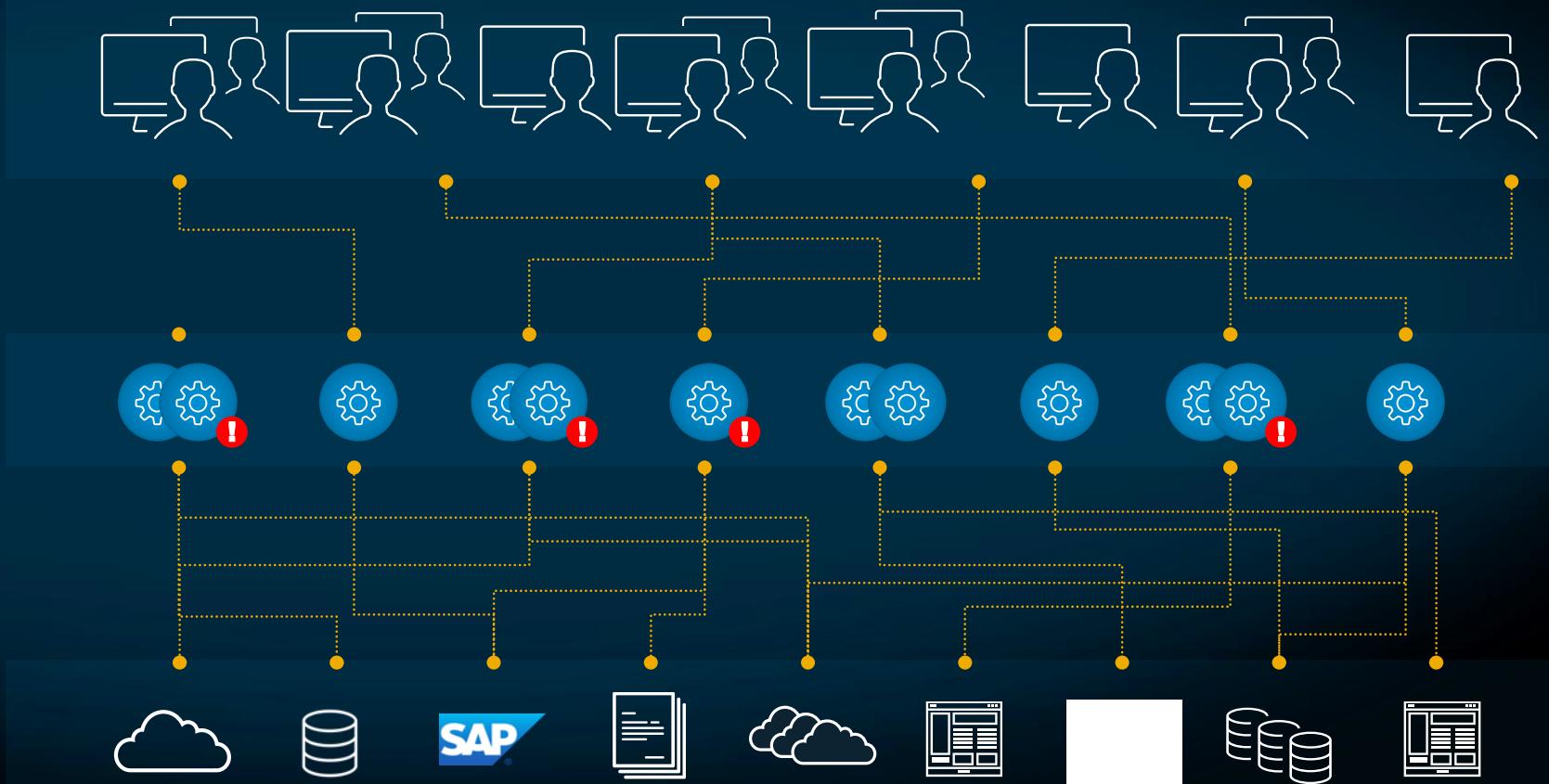
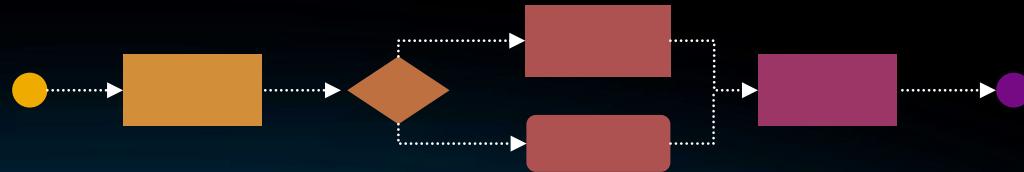
Processes Today

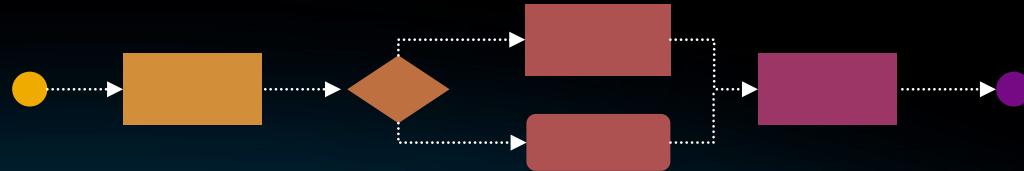
- Processes today are **complex**.
- They are still too **manual**.
- This leads to **errors** and **inefficiencies**.



Standard RPA

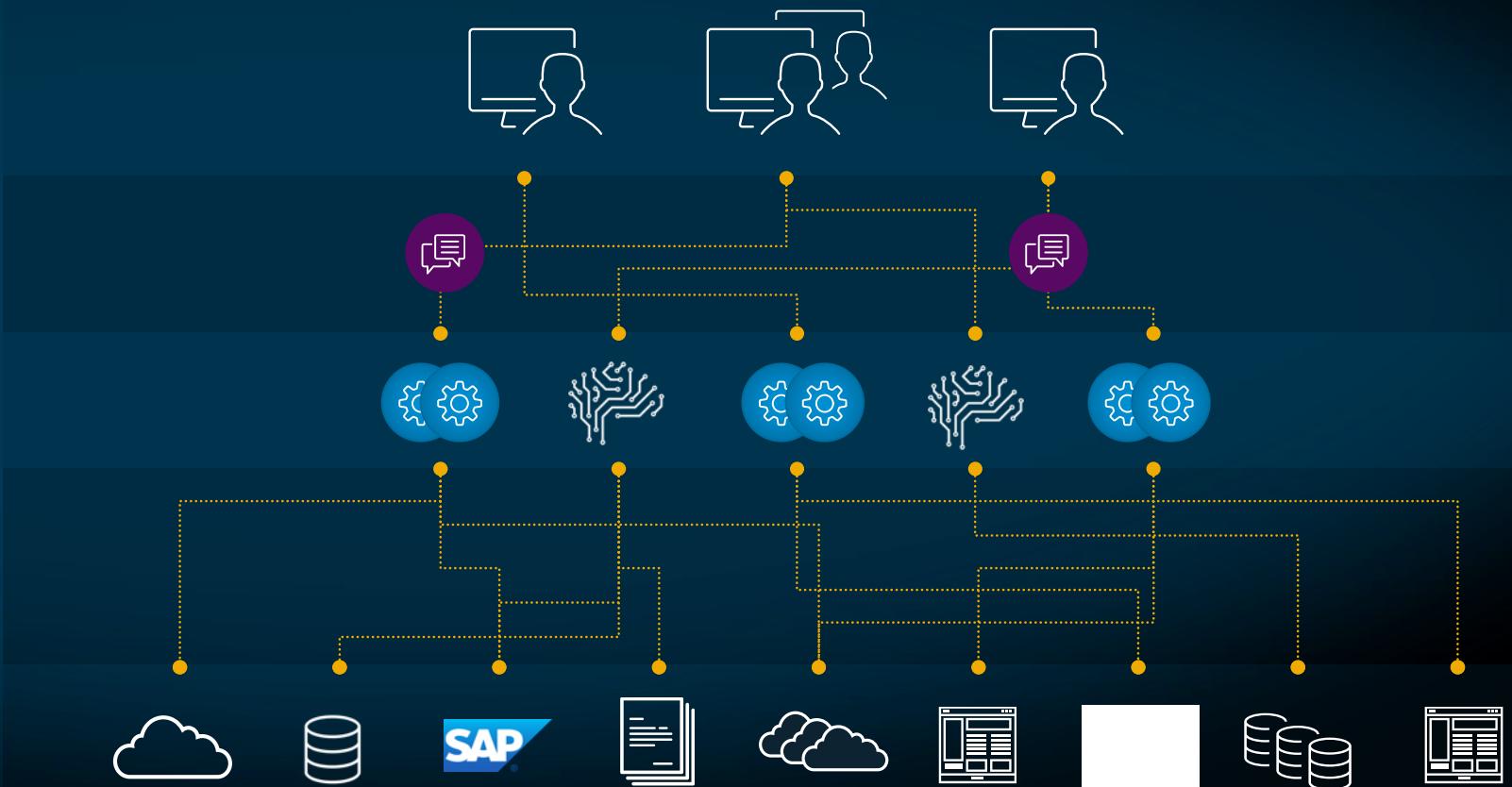
- Removing manual steps may drive efficiency. But it often leads to complexity under the hood.
- What happens when a UI changes or a system is upgraded?



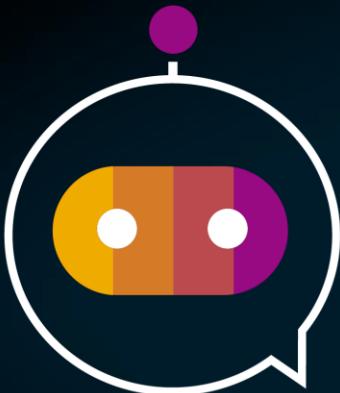


Add intelligence

- SAP simplifies implementation by using **native APIs**.
- Interactions are natural with **Conversational AI**.
- Automations get intelligent with **Machine Learning** capabilities.



What is SAP Intelligent RPA?



Robotic Process Automation (RPA) accelerates digital transformation of business processes by automatically replicating tedious actions that have no added value.

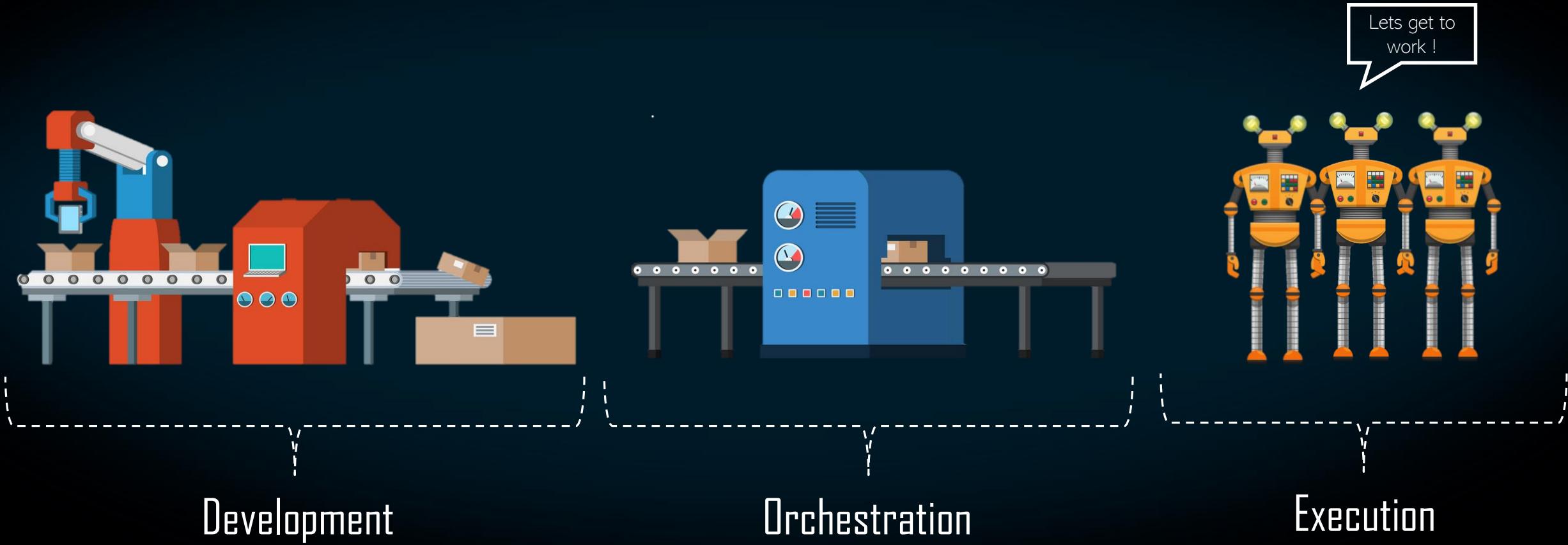
Attended

Partially automated process, where robots are co-working with humans, also called **Robotic Desktop Automation (RDA)**

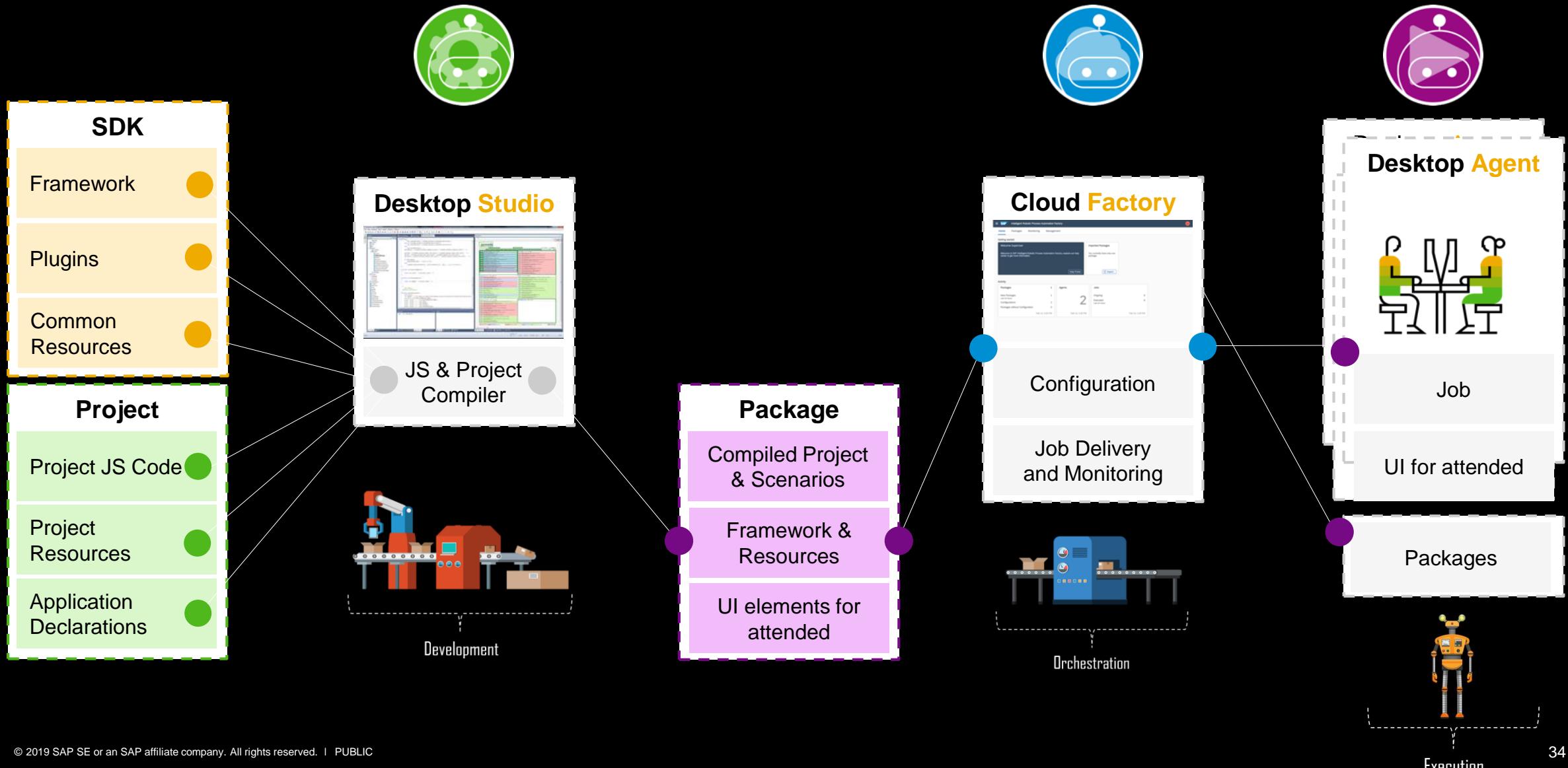
Unattended

Fully automated process, where robots are working autonomously with human supervision only

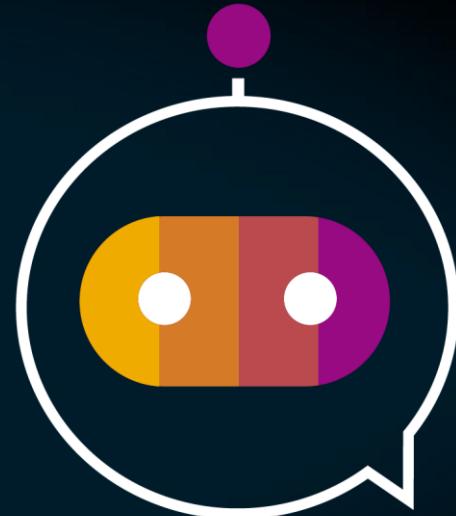
How does it work?



Project Delivery



Use Cases



Criteria for Selecting Processes for Automating with RPA



Manual & repetitive



High volume



Multiple systems



Workaround for native integration

Why you need Intelligent Robotic Process Automation?

Shared Service Automation



Execute faster, reduce errors, optimize processes & resources by automating manual tasks

Financial Transformation



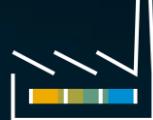
Faster financial closing, lower manual efforts & optimize resources

Customer Service Automation



Increase customer satisfaction and higher throughput

Operation Automation



Manual task automation, monitoring & visibility

Data Management



Faster onboarding for employees and customers, consistent master data

- Manage payment advise
- Financial closing task list automation
- Manage bank statements
- Claims processing
- Financial Closing
- G/L allocation
- Cash operations automation
- Asset accounting operation
- Bank integration with FSI
- Customer onboarding
- Return tasks
- Sales quotations, order processing and data entry
- Automating work orders and change requests
- Populating subcontracting forms
- Intercompany SO processing (internal)
- Purchase Order automation
- Supplier classification & segmentation
- Master data management
- IT service ticket assignment & resolution
- Data migration and entry
- New employee onboarding
- Contract data maintenance

Add content with SAP Best Practices for SAP Intelligent RPA

Scope Option	Source System(s)	Type of Automation
Dispute Management – Email Notification to Customer	S/4HANA Cloud/On-Prem	UI
Dispute Management – Manage Customer Email Response	S/4HANA Cloud/On-Prem	UI
Manage Sales Order – Automated Upload Down Payments	S/4HANA Cloud/On-Prem	UI
Automated Upload of General Ledger Entries	S/4HANA Cloud/On-Prem	UI
Manage Payment Advice	S/4HANA Cloud/On-Prem	UI
Purchase Order Confirmations	S/4HANA Cloud/On-Prem	UI
Supplier Master Data Check	S/4HANA Cloud	API
Simple Purchase Requisition Creation from Excel	S/4HANA Cloud	API
Supplier Invoice Status Inquiry	S/4HANA Cloud	UI & API
Production Order Operation Confirmation	S/4HANA Cloud	API
Mass Change of Names for Project Attributes	S/4HANA Cloud	API
Generation of Physical Inventory Count List from a Single PI Document	S/4HANA Cloud	API
Upload Physical Inventory Count List from a Single PI Document	S/4HANA Cloud	API
Supplier Down Payment Request	S/4HANA Cloud	UI

Intelligent Robotic Process Automation

Dispute Management Resolution

THE PROBLEM

- The dispute process requires the creation of an email to be sent to a customer and collection of its reply.
- This bot automates the initial email process available in S/4 HANA and subsequently record the customer feedback to the case.

BUSINESS VALUE – BENEFITS

- Bot will check the contact information before sending the email (and notify the user if a field is missing)
- Bot will trigger the email and monitor the mailbox of the sender. It will attach the customer reply to the content of the dispute.

BOT SKILL DESCRIPTION

The screenshot shows the SAP S/4HANA interface for managing disputes. A new case is being created with the following details:

- Title:** sd
- Customer:** Computer Systems (DE) / D-69191 Walldorf
- Company Code:** Company Code 1010
- Status:** New
- Reason:** Damaged Goods
- Process Deadline:** MM/dd/yyyy
- Case ID:** 1000000002
- Case Type:** Dispute Management YT01
- External refer.:** [empty]
- Escalation Reason:** [empty]
- Category:** [empty]
- Planned Close Date:** MM/dd/yyyy
- Priority:** Very High
- Processor:** CB99800030... Lehning Andreas
- Coordinator:** [empty]
- Person Response:** [empty]
- Orig. Disp. Amt:** EUR 526.229.90
- Credited:** EUR 0.00
- Paid:** EUR 0.00
- Disputed Amount:** EUR 526.229.90
- EUR 0.00**
- Audited:** Multiple Off.
- Classified:** Multiple Off.

At the bottom right, there are buttons for "Void Dispute Case", "Save Changes", and a highlighted "Create Email" button.

Dispute Creation

The screenshot shows the SAP S/4HANA interface for managing disputes. A dispute case is open with the following details:

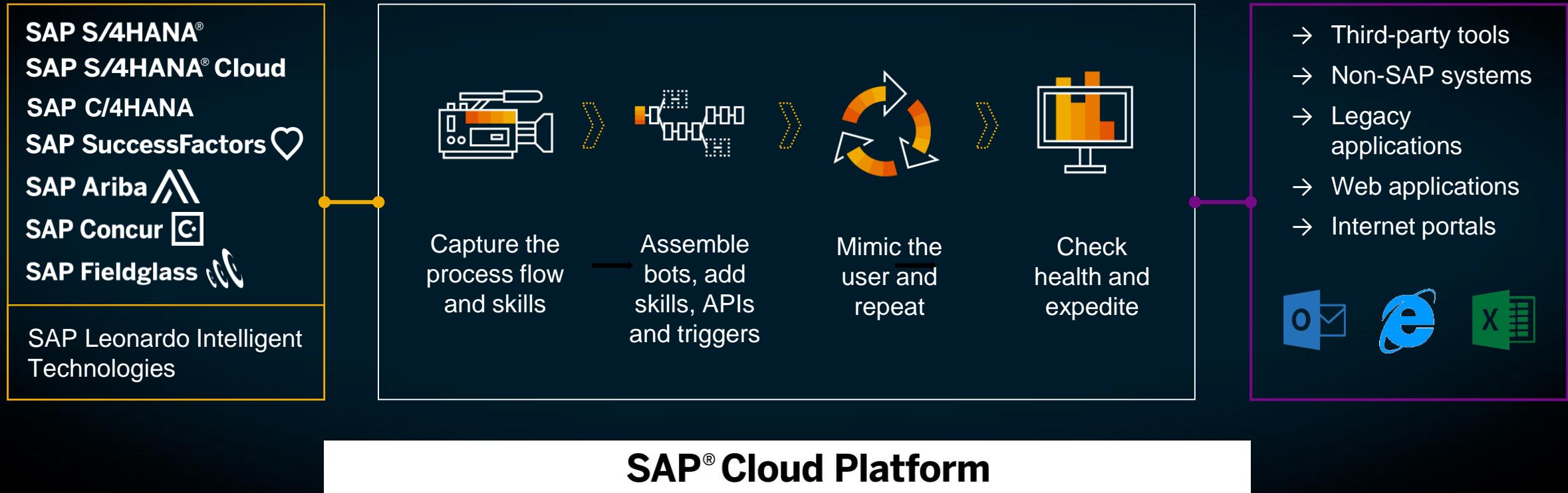
- Case ID:** 1000000002
- Case Type:** Dispute Management YT01
- External refer.:** Test
- Escalation Reason:** [empty]
- Category:** [empty]
- Planned Close Date:** MM/dd/yyyy
- Priority:** Very High

In the main area, a message box displays: "Got the reply from customer, please see the attachment." Below it, a note states: "No items are currently available".

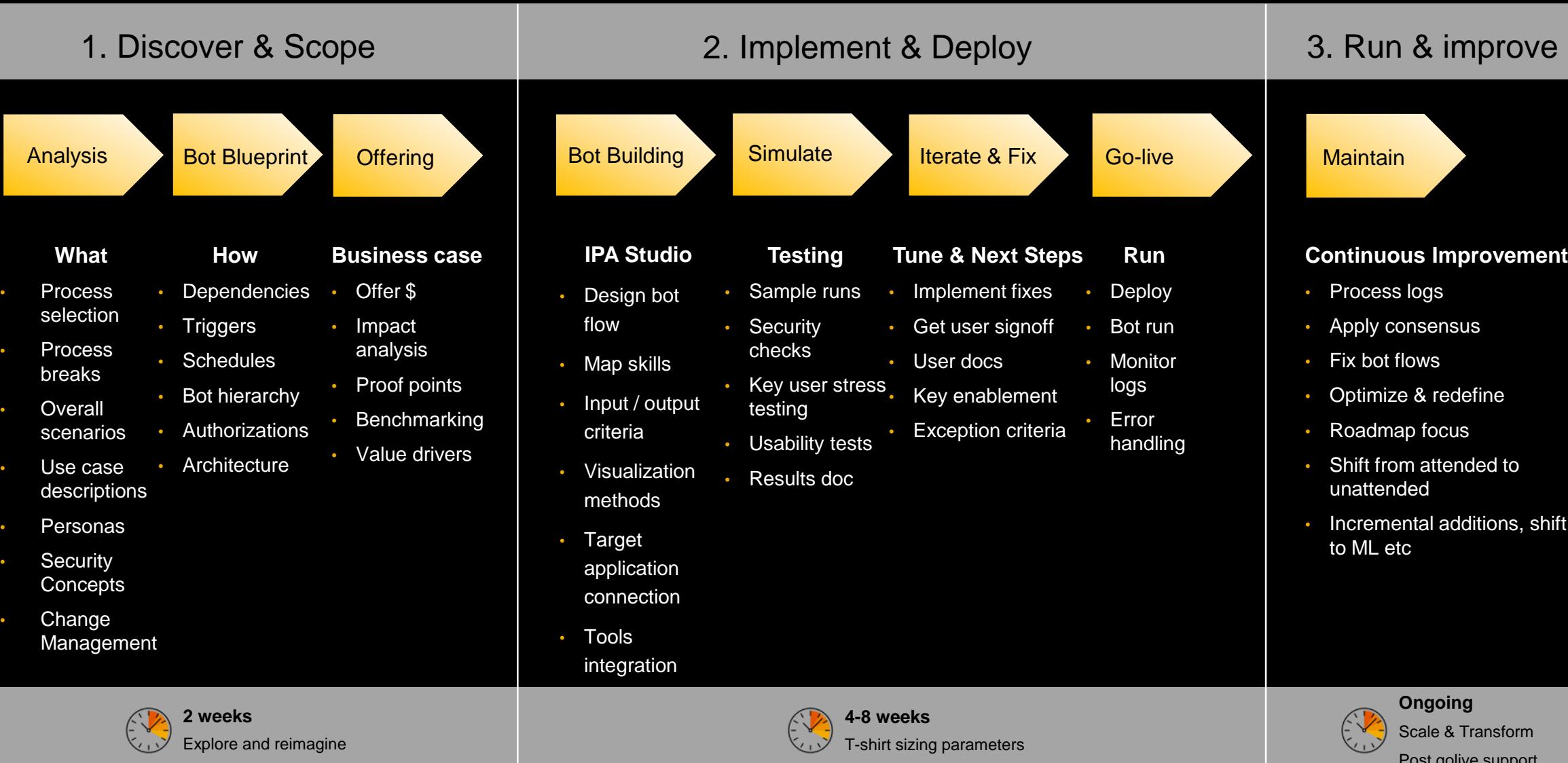
Customer response is set as an attachment to the case

SAP Intelligent Robotic Process Automation

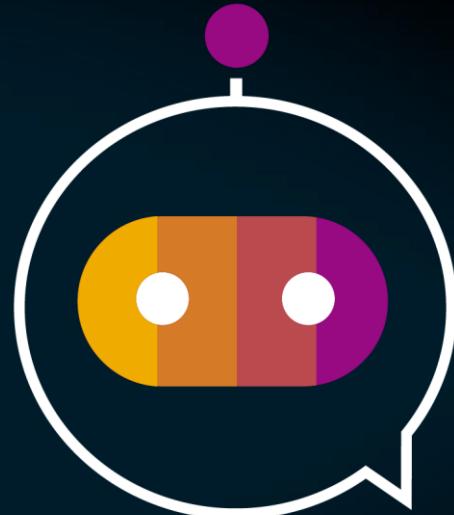
Unified cloud solution including on-premise automation tools



SAP Intelligent RPA: Best Practice



Demo



Add Intelligence

Read Invoice API (ML)

[LINK](#)

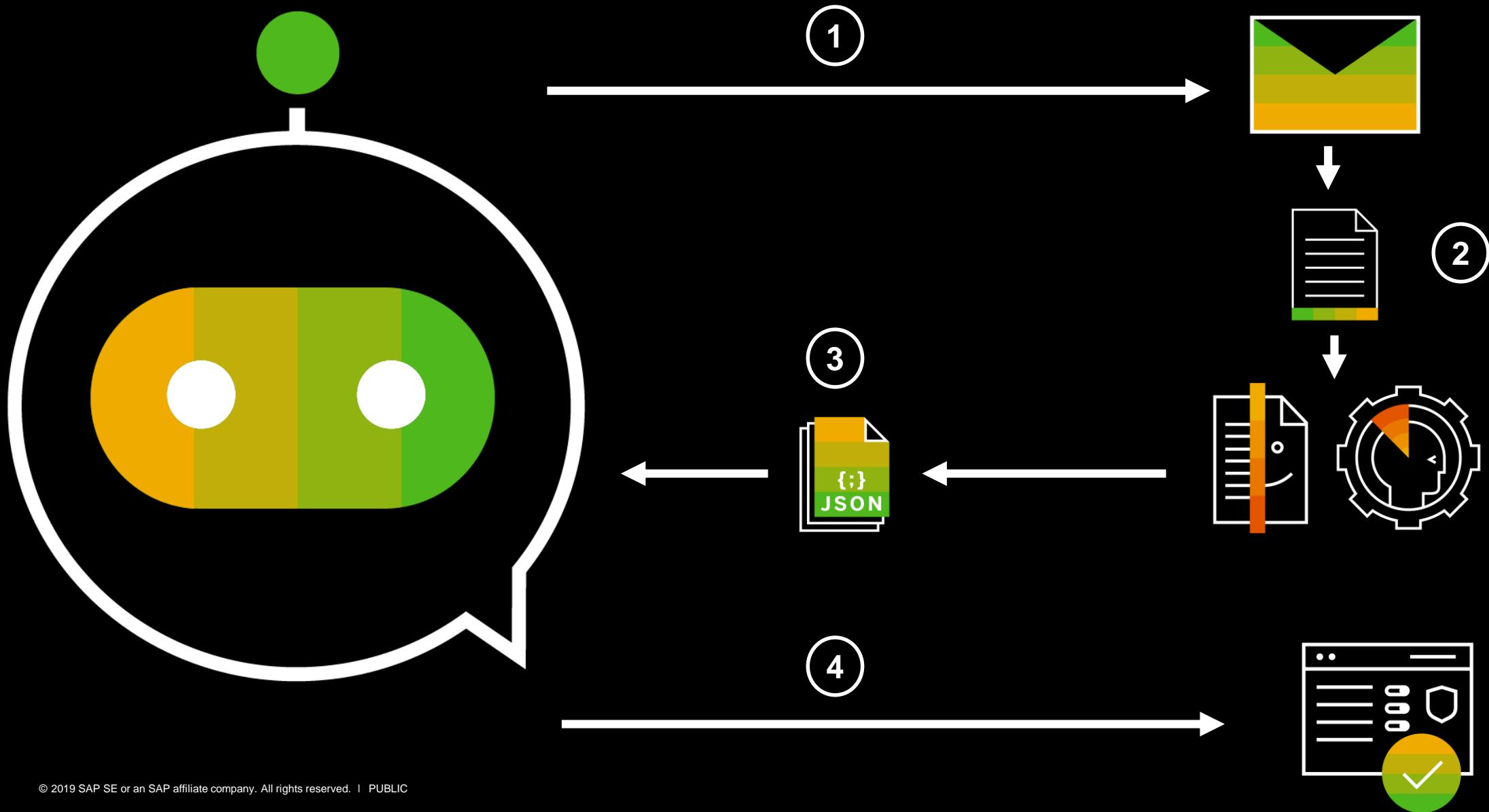


Invoice-2-Record Unattended Bot

Accounts Payable (ML+IRPA+Office+ERP)



Process Flow



Pricing

Pricing IRPA

Unique **pricing** model to **ease** the adoption

- You can deploy as many robots as you want
- You can install as many design studios as you need
- Unique pricing based on consumption
- Attended / unattended transparency
- Direct link between your savings and your invoice
- Cloud Platform Enterprise Agreement (CPEA) options for multiple intelligent services credit (Example: RPA + Chatbots)



Vision: Combine Intelligent Technologies for End-to-End Automation

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Conversational AI (CAI)

Chatbots to interface and hand-over to execution bot

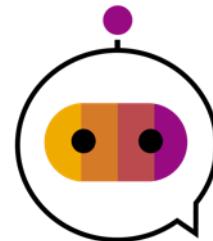


Interfacing

Execute

Intelligent RPA

Multiple bot workflows for execution
(attended +unattended)

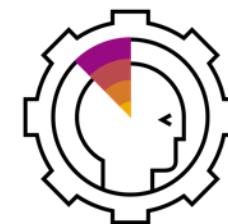


Performing Tasks

Optimize

Machine Learning (ML)

Self-learning bots with dynamic adaptability



Learn from exceptions



SAP Intelligent RPA seamlessly integrated



Outlook on SAP Intelligent RPA Roadmap

Subject to change*

Release 2 – Oct 2019*

- Business Activity Monitoring
- Usability enhancements for bot design and workflow
- Integrate with SAP Cloud Platform Workflow
- Integrate with Business Process Management (SAP BPM)
- Introduce store capabilities for content delivery and collaborative bot building
- Integration accelerators for consuming Conversational AI and Machine Learning services
- Build further bot templates and APIs for S/4-based processes
- Advanced OCR for screen capture

Release 3 – Dec 2019*

- Expand bot creation and runtime environment to deepen integration with SAP LoB products
- Possibility to execute bots only in cloud
- Introduce marketplace for out-of-the-box industry best practices commercialization
- Handle unstructured data for end-to-end automation
- Identify further SAP LoB automation scenarios cases
- Connector improvements for SAP GUI and SAP UI5
- Smart declaration to identify unique parameters in Desktop Studio

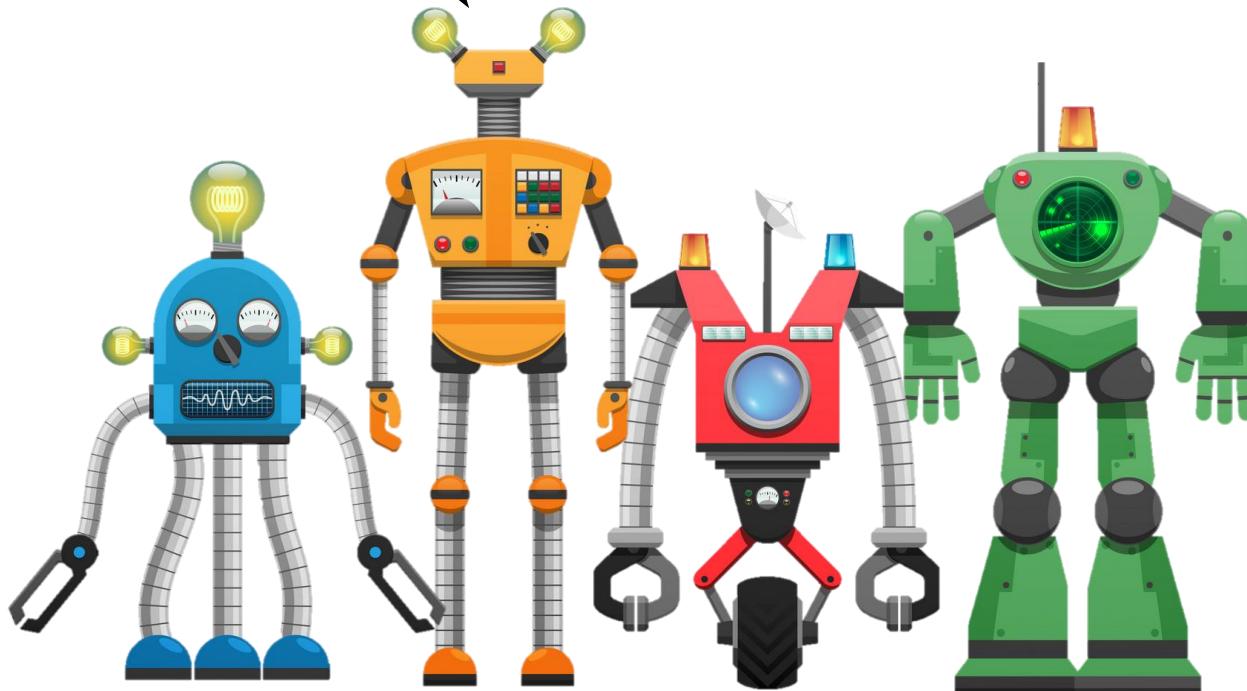
Release 4 – Q1 2020*

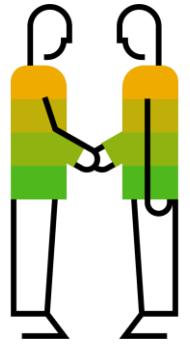
- Introduce Cloud design Studio and revised Desktop Agent and Cloud runtime Agent
- Provide unified process recorder
- Provide further integration capabilities to cover entire SAP technology portfolio
- Integrate SAP Cloud Platform Open Connectors for non-SAP services
- Improve bot stability using Computer Vision
- Expand Marketplace for partner bot content commercialization
- Integrate with SAP Analytics Cloud product family

Release 5 – Q2 2020*

- Computer-aided bot creation leveraging process mining insights
- AI-based skill recommender to fasten selection of re-usable content out of marketplace for bot creation
- Introduce AI-based bots for exception handling
- Intelligent assistants for bot mitigation runs to take corrective actions

Danke





Vielen Dank!

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