



# Machine Learning for Finance and Risk

**ASUG Annual Conference**

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May 7, 2019

PUBLIC



# Agenda

Finance and Risk Solutions and Machine Learning

Finance and Risk Scenarios Leveraging Machine Learning

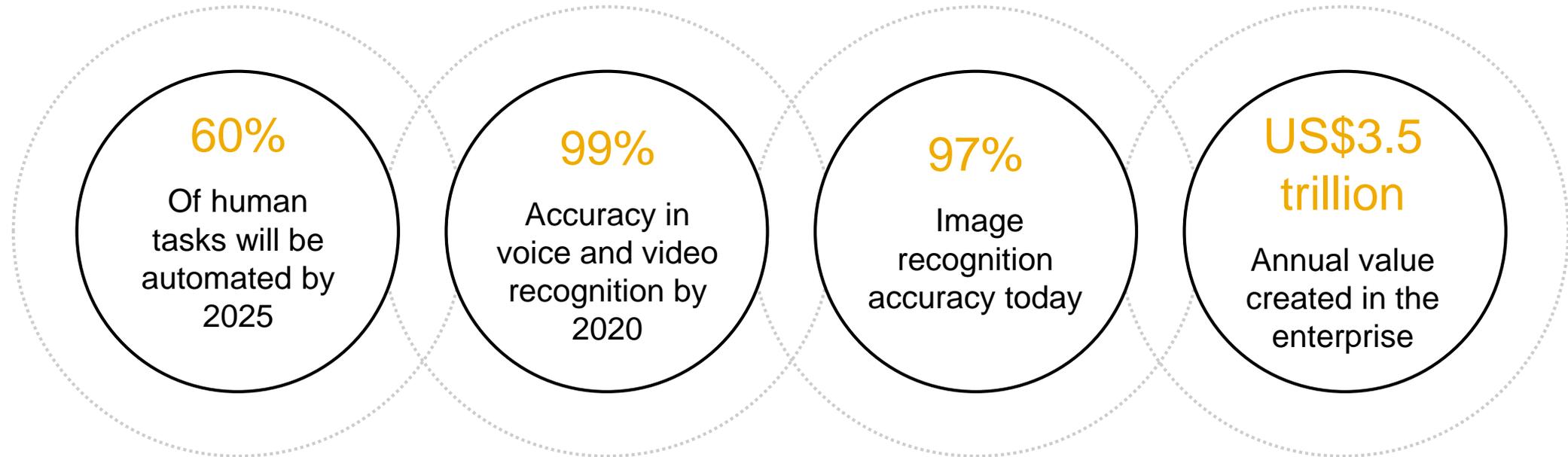
Predictive Scenarios Leveraging Machine Learning

Wrap-Up and Resources

# Finance and Risk Solutions and Machine Learning

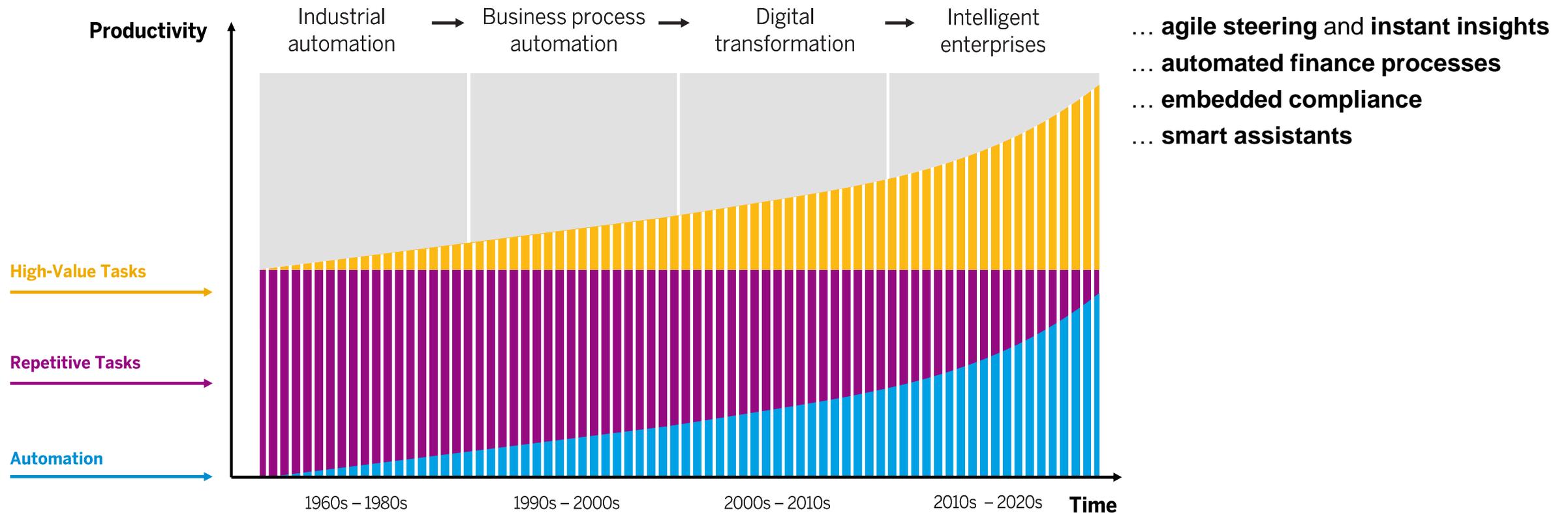


# Intelligent Technologies – drive the next-gen value economy for customers



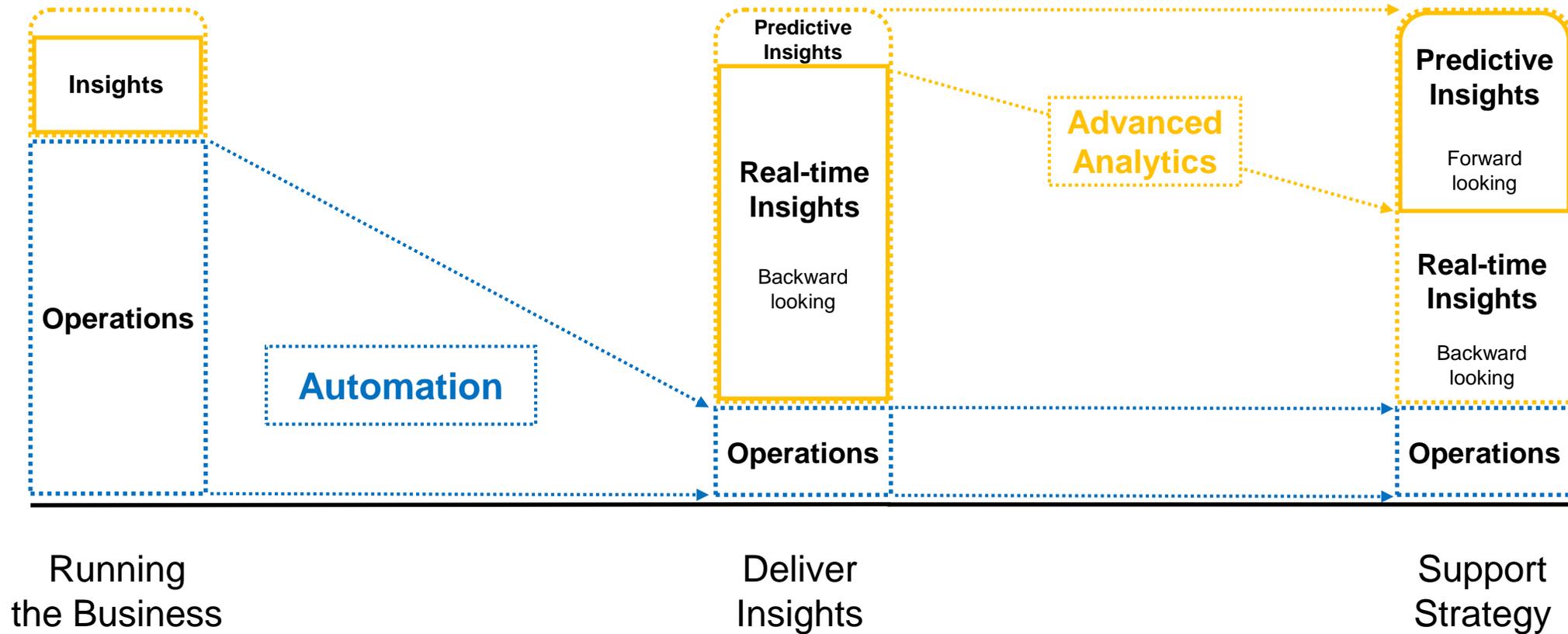
# The Intelligent Finance Function

## enabled through SAP S/4HANA and SAP Leonardo



# Vision of Finance Transformation

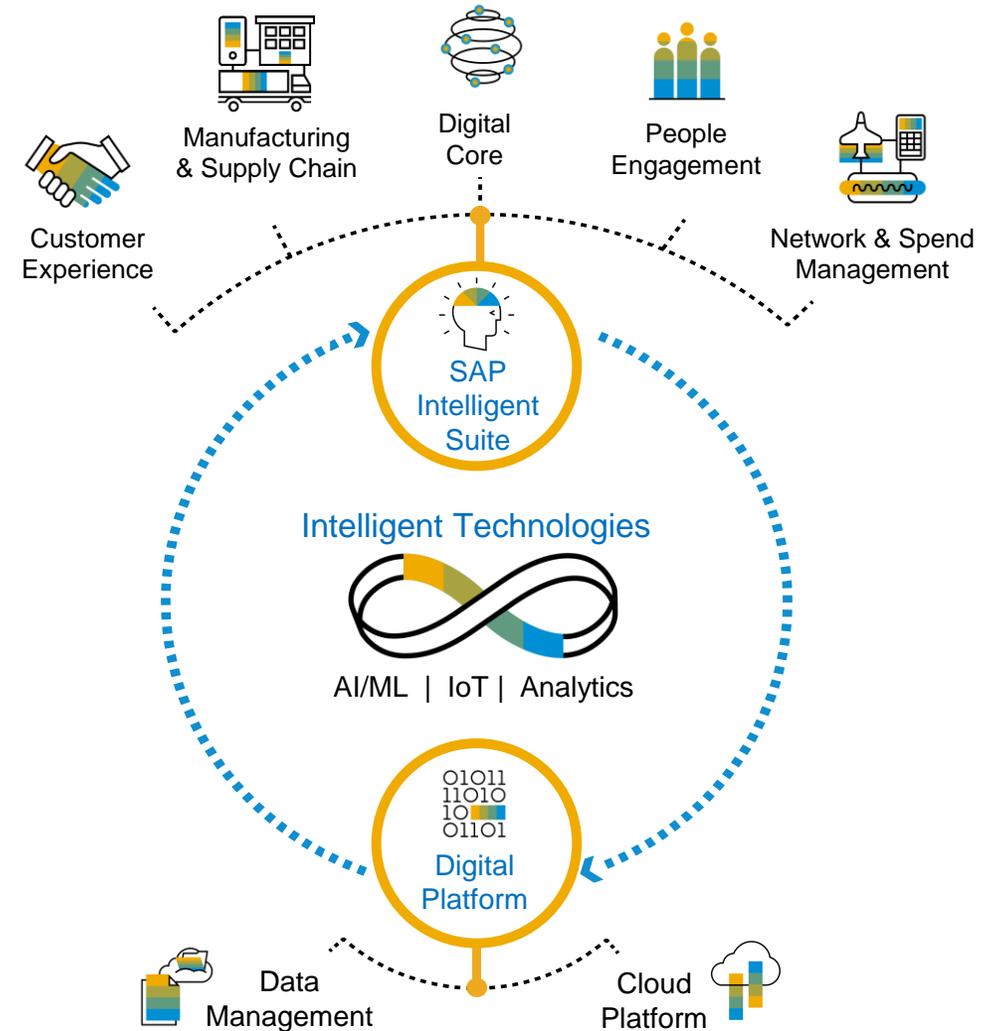
From daily routine to supporting growth and new business models



# SAP S/4HANA Finance supports Your Digital Transformation

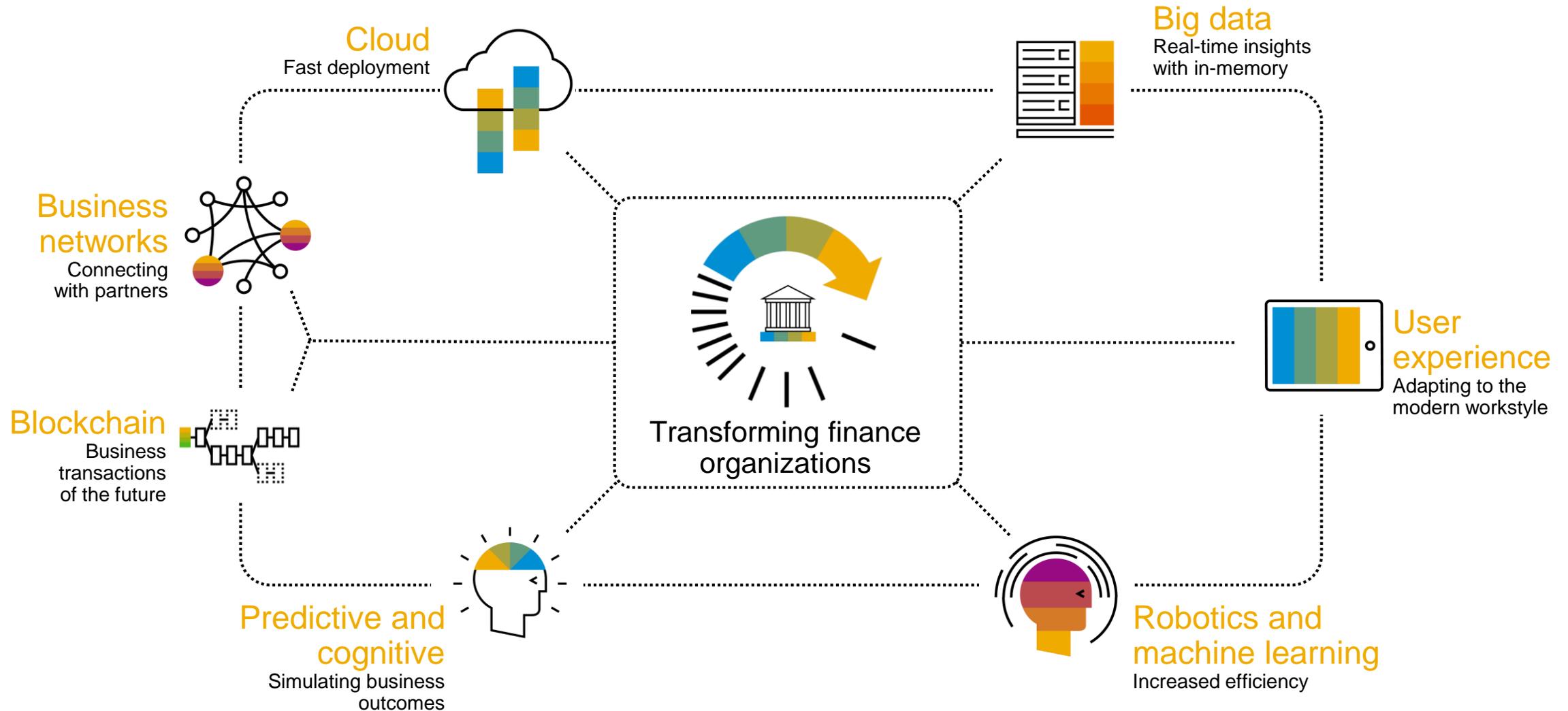
End-to-end innovation of all your processes across your entire value-chain

- **Better decisions**  
with instant, real-time insight and prediction
- **Increased performance**  
through end-to-end reinvented processes
- **Higher productivity**  
with Digital Age UX and intelligent assistance
- **Lower TCO**  
with simplified architecture and cloud deployment



# Digital Technology is transforming how Business gets done

Intelligent technologies will enable finance to define its value across the enterprise



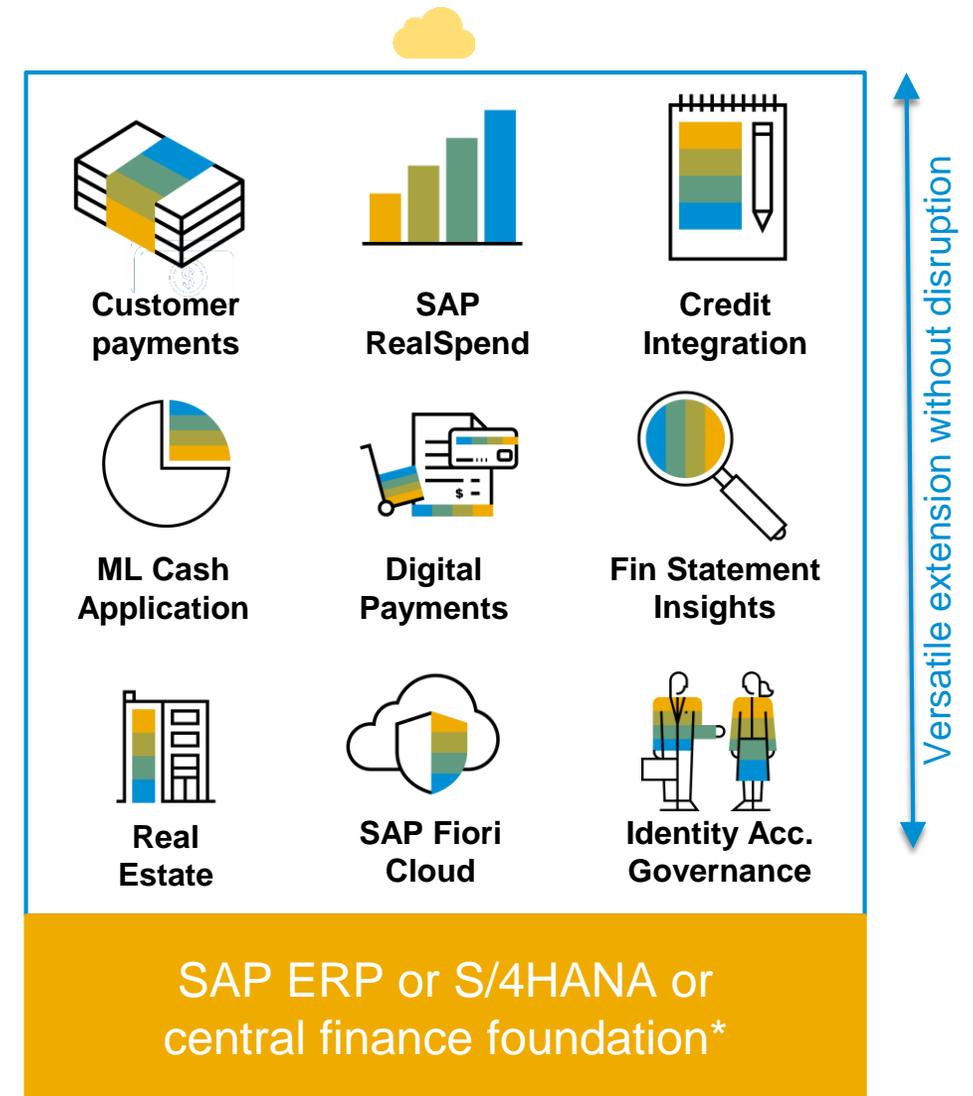
# Technical Pre-requisites for Machine Learning

## Requires SAP S/4HANA Finance

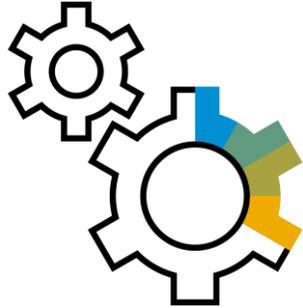
- On-premise SAP S/4HANA Finance
- Cloud: both multi-tenant and single-tenant Cloud offerings from SAP are already based on SAP S/4HANA

## Additional Option: SAP Cloud Platform (SCP) has Cloud Extensions for SAP S/4HANA Finance

- Growing number of specialized apps
- Quickly complement new capabilities
- Quick start, easy to use, subscription-based
- Flexible scalability according to changing needs
- Seamless integration to your existing system landscape, including on-premise, Central Finance, and Cloud deployments with replication-free, real-time integration



# Comparing approaches to automation



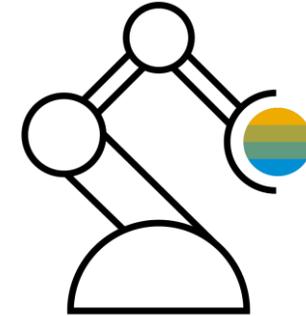
## Rule engines

Engines preloaded with highly specific process knowledge enable **rule-based automation**



## Machine-learning

Machine-learning identifies hidden patterns in knowledge-intensive processes and learns from the data **without being explicitly programmed**



## Robotic process automation

Robotics process automation helps run repetitive, **rule-based**, and user interface-focused tasks and bridges temporary gaps

# What is Machine Learning?

Sheepdog or Mop?



# How does Machine Learning work?

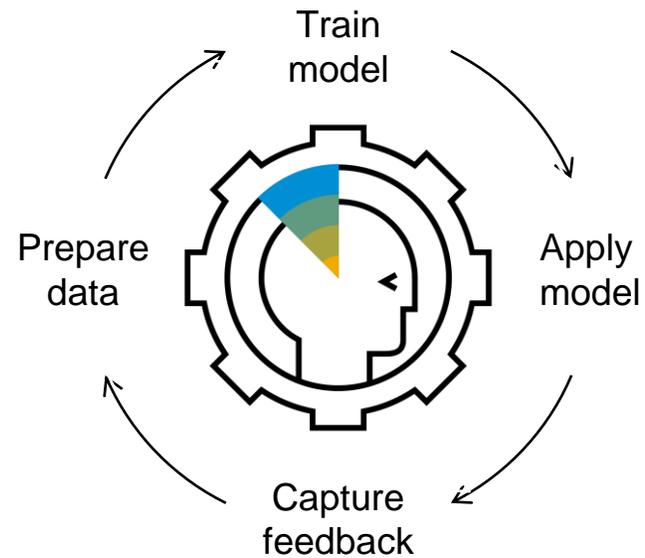
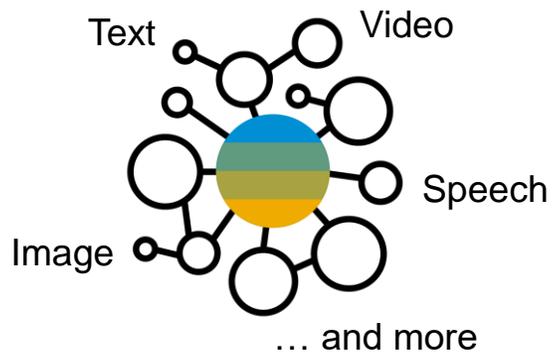
## From data to insights



Data

Training

Inference



Applications  
(such as cash application)

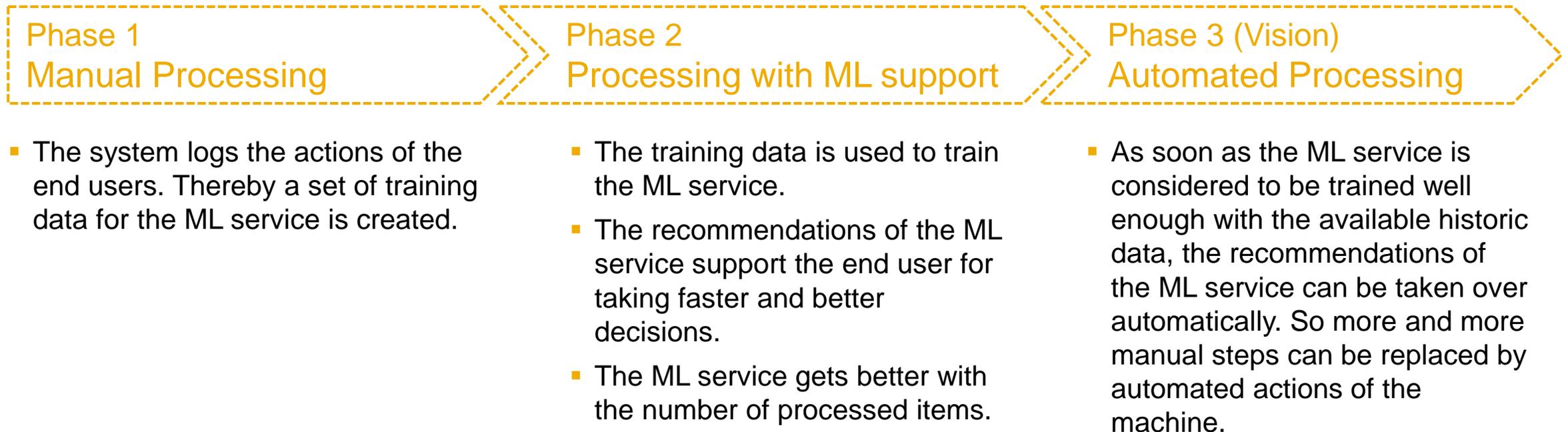


...and more

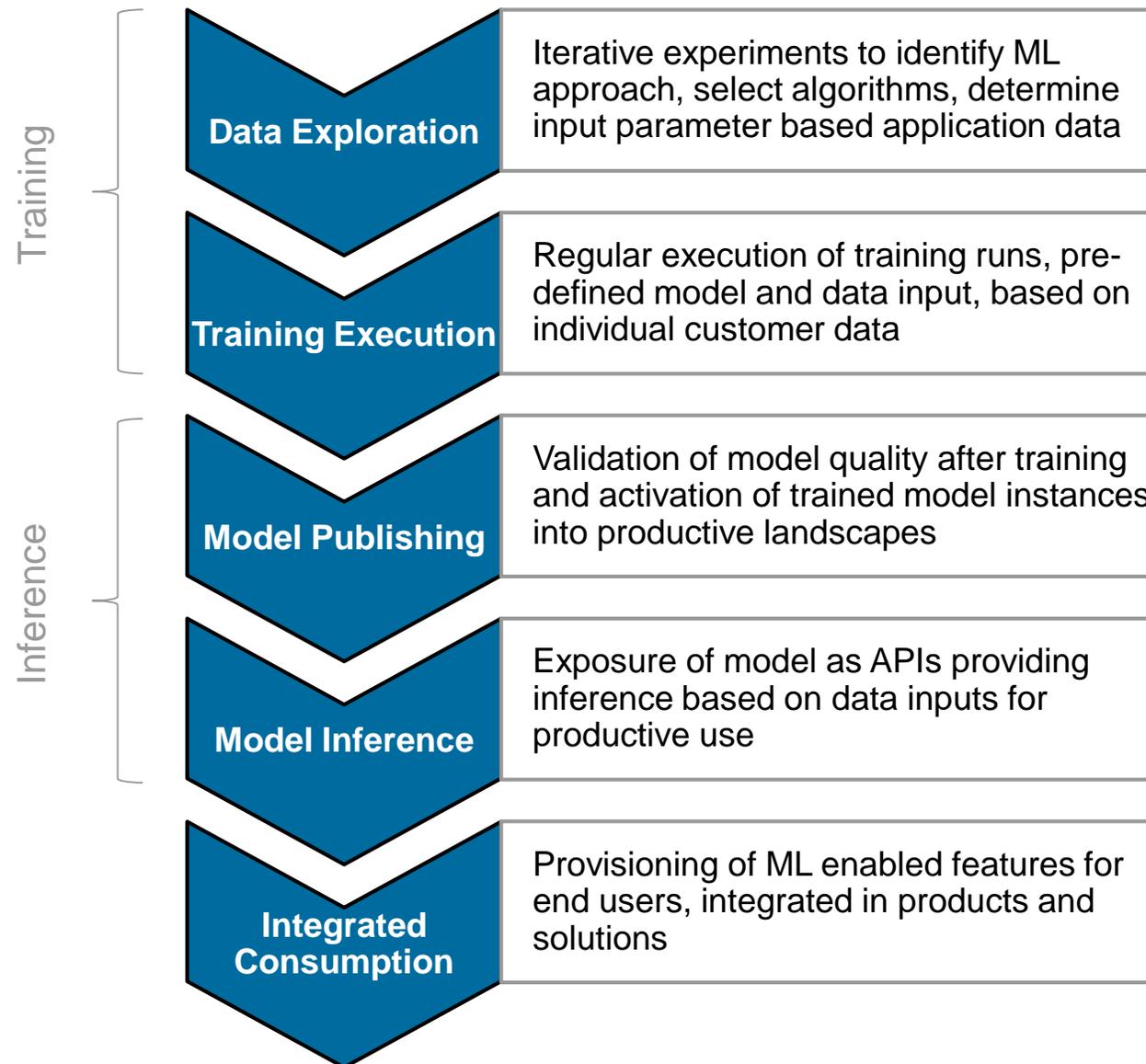
Services  
(such as invoice processing,  
profile matching)

# From manual to automated processing

The quality of the recommendations of the ML service depends on the size of the training set. With the availability of more and more historic data of user actions, the ML service gets better over time and the recommendations of the machine can be translated in automated actions.



# Machine Learning Development Steps



# Finance and Risk Scenarios

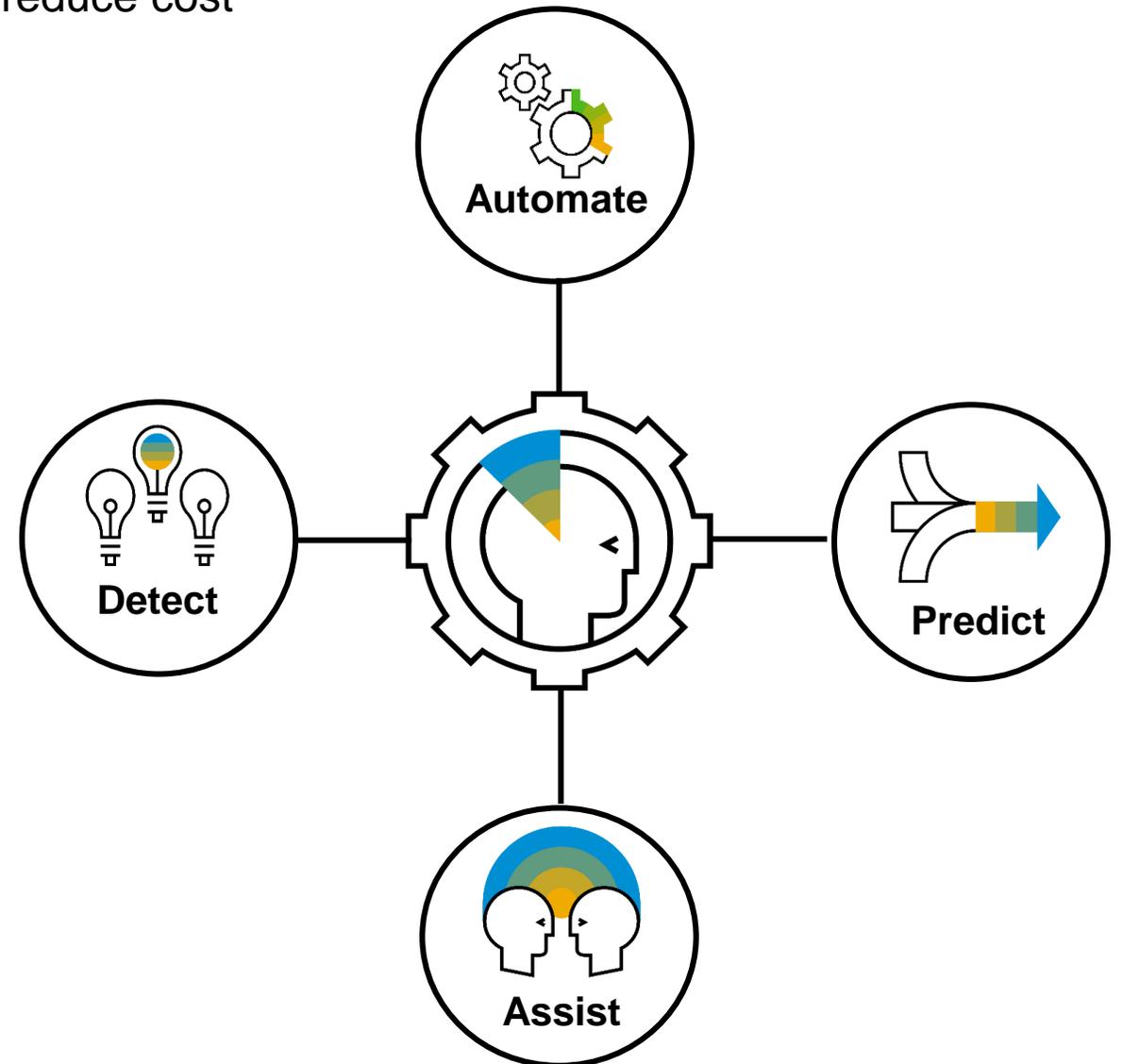
## Leveraging Machine Learning



# SAP Leonardo delivers Breakthrough Technologies

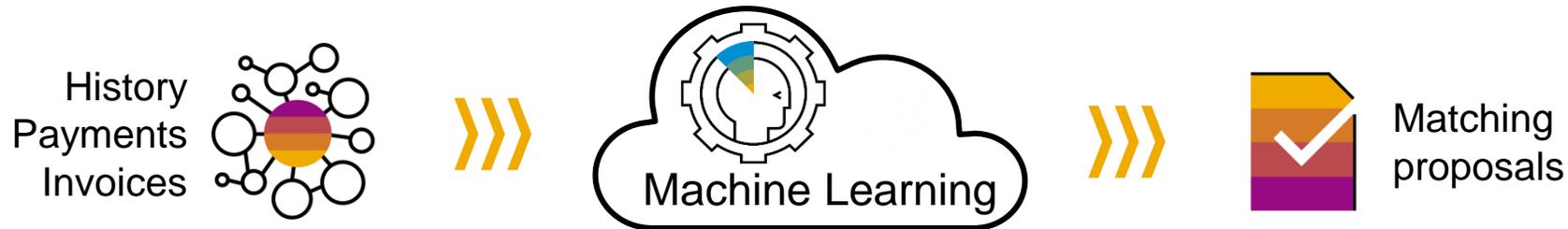
Intelligent finance applications increase efficiency and reduce cost

- **Automating the End-to-End processes**  
Increase efficiency and reduce costs with SAP's Finance Portfolio
- **Detect and prevent fraud**  
Identify and rank information that positively correlates with fraud
- **Proactive context sensitive support**  
The digital assistant boost productivity of your financial experts
- **Prediction of future values**  
More insights into the future to facilitate taking the right decisions



# Example: SAP Cash Application

Next-generation intelligent invoice matching powered by machine learning



SAP Cash Application intelligently learns matching criteria from your history, reads and processes payment advice documents, and automatically clears payments with minimal intervention.

## Automation

- Increase efficiency
- Reduce errors
- Enable finance to focus on strategic tasks

## Speed

- Faster payment matching
- Reduce DSO
- Increase liquidity
- Improve customer service

## Reduce TCO

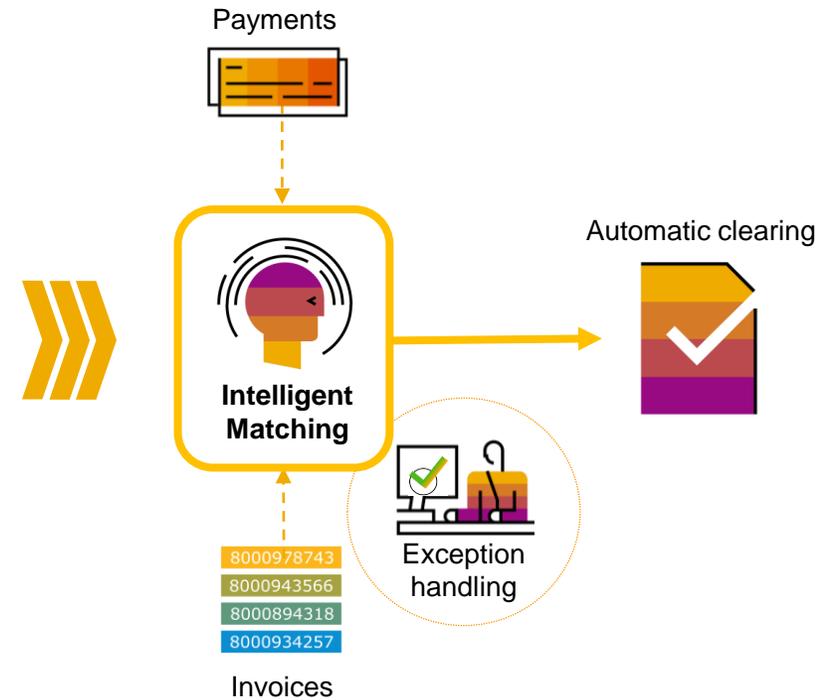
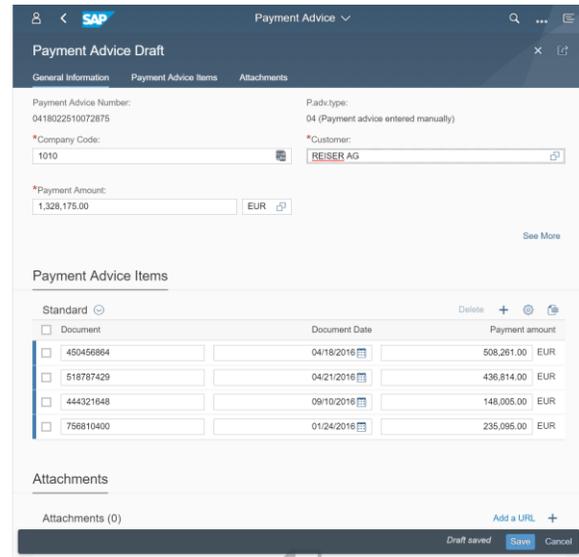
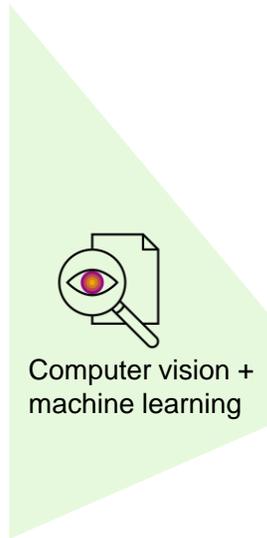
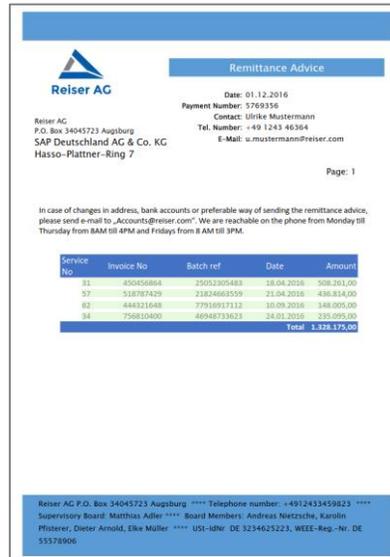
- Learns from historical data
- Learns from accountant behavior
- Does not require on-going maintenance

## Integrated with S/4HANA

- Integrated with SAP S/4HANA Cloud and On-premise
- Compliments standard rules
- Maintain current processing workflow

# Payment Advice Extraction

Automated payment advice processing seamlessly integrated with SAP Cash Application



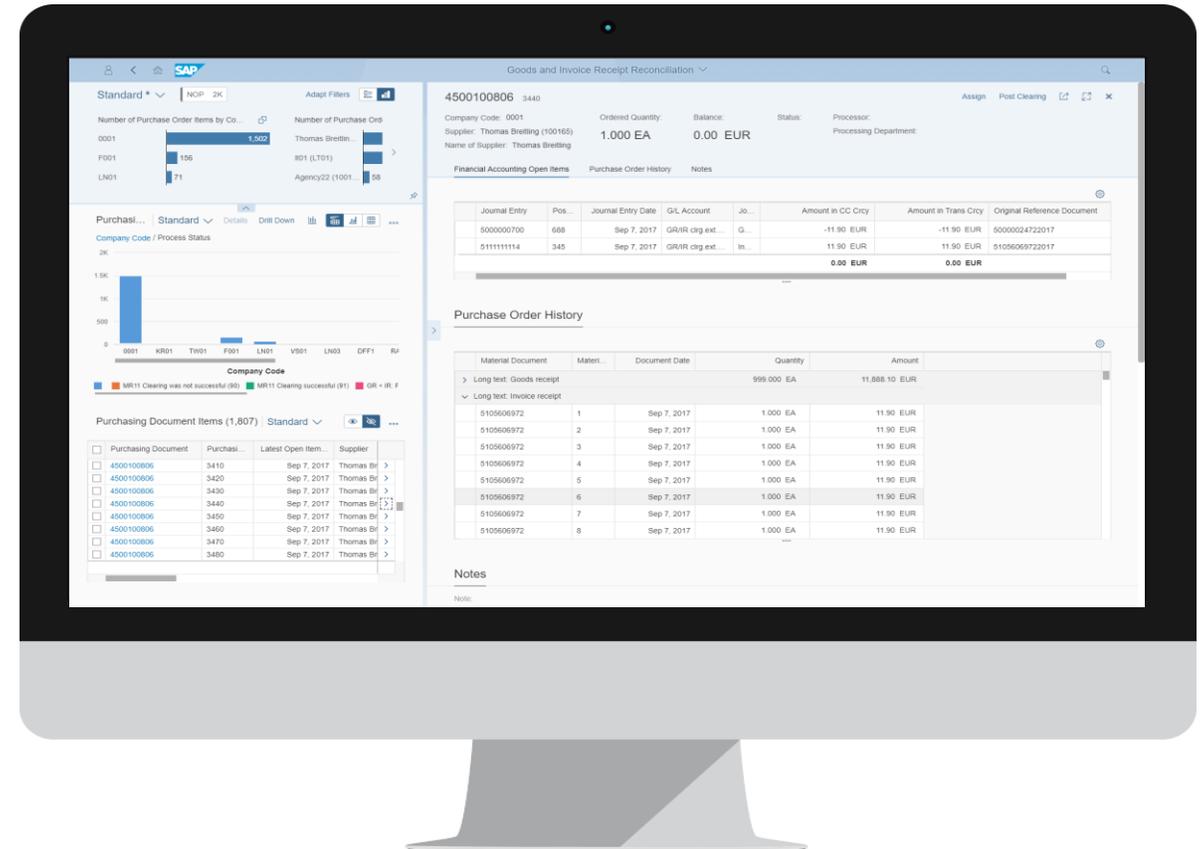
Drastically **lower manual efforts** by automatically extracting remittance information from unstructured advices (email, PDF, paper, etc.) to enhance payment matching

# SAP S/4HANA Cloud for goods and invoice receipt reconciliation

Efficiently clear your open balances on the GR/IR accounts

Enables intelligent processing of the reconciliation of your invoice and goods receipts

- Increases accuracy of your financial statement
- Accelerate period-end closing with less manual intervention, while ensuring compliance with your corporate rules
- Enables real-time insights into open goods and invoice receipts for accounting and procurement organizations
- Higher efficiency through intelligent recommendations with Machine Learning



# SAP Shared Service Framework

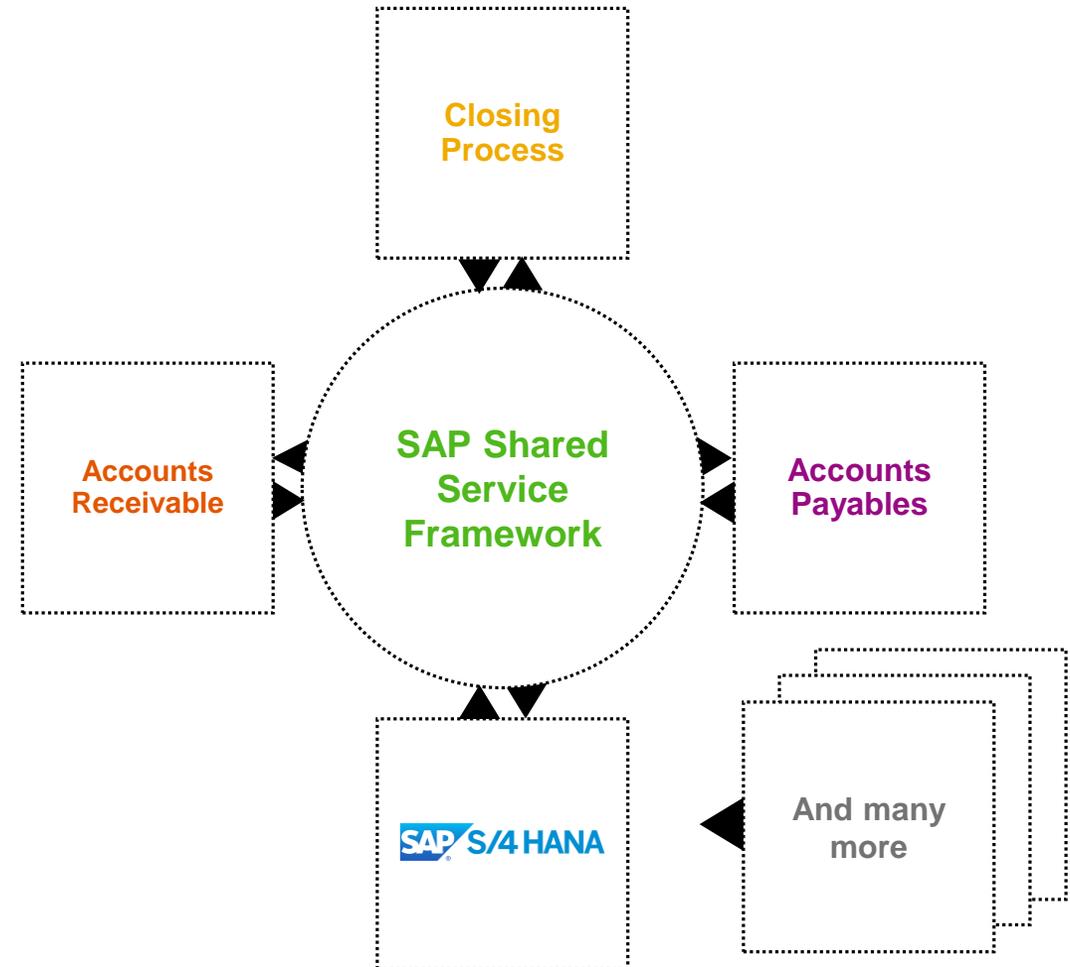
Deeply integrated out-of-the-box into SAP's Finance Solution Portfolio

## Integrated out-of-the-box with SAP end-to-end automation engines

For example:

- Optimized **Accounts Receivable** Process with Integrated collection and dispute worklists with SSF and the SAP Receivables Management solutions
- Simplified communication and automated execution of the **Closing Process** with SSF and SAP Closing Cockpit
- Enhanced issue resolution capabilities in **Accounts Payable** with SSF and SAP Invoice Management by Open Text

..and many more...



# Predictive Scenarios

## Leveraging Machine Learning



# Different types of predictive logic

adding intelligence to finance applications

## TOP-DOWN Prediction

Time series algorithm on historic data in order to predict future values considering trend, cycles and/or fluctuation



## BOTTOM-UP Prediction

Predictive Accounting on the basis of predicted documents being part of an individual business process and its document flow



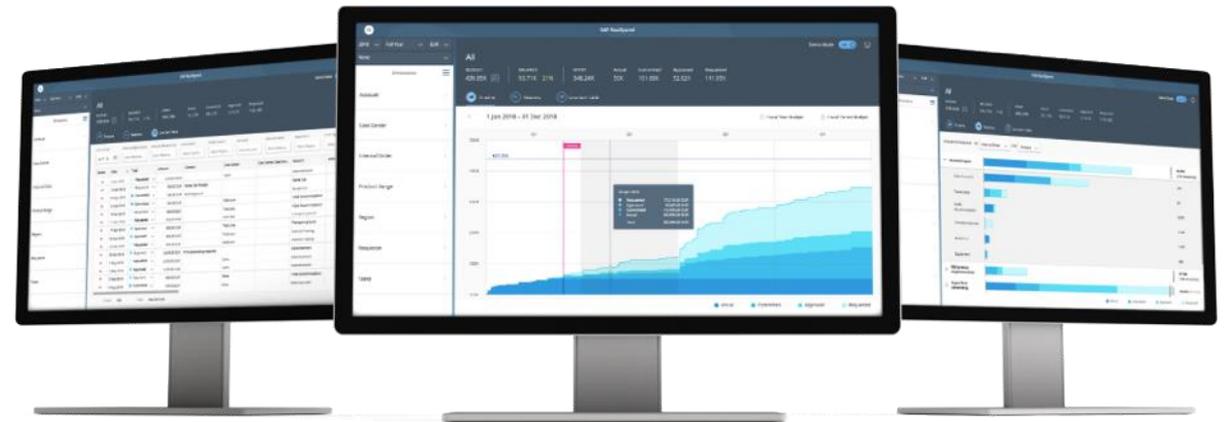
S/4HANA 1809

# SAP RealSpend

Gain better insight into your budget and spending information

Provides visibility and access to up-to-the-minute budget and spending information enabling line-of-business managers perform ad hoc spend analysis and other calculations for live business processing.

- Integrated, real-time, and accurate view of enterprise spend
- Spend performance visibility
- Active Spend Management
- Machine Learning for predictive spend analysis

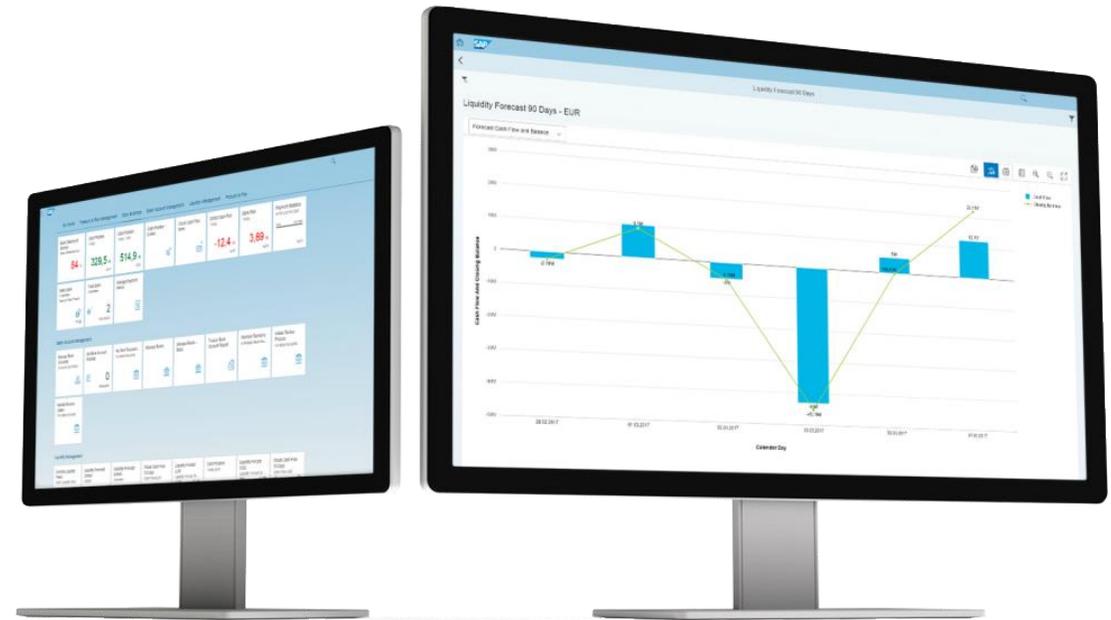


# SAP S/4HANA Cloud for cash management

Gain real-time insight into your current cash and liquidity

Streamlines capital management and liquidity accounting processes by integrating data from multiple sources onto a single platform.

- Stay on top of your company's finances with centralized, real-time data
- Streamlined Payments and Bank Communication
- In-house cash control reducing the need to transfer cash and dependency on banks
- Real-time insights into balances & liquidity forecast predictive analytics



# Creating forward looking margin insights

## using predictive accounting

### Accounting for incoming sales orders

- New concept for handling of predictive data
- Financial line item details for incoming orders reporting
- Review incoming sales order report
- Provides a **comprehensive overview of all orders** and their values for the time period regardless of billing status

### First commitment scenarios

Commitments:

- Are stored in the same basic structure as in the universal journal
- Include cost assignments to work breakdown structure (WBS) element, order, cost center, and so on but also link to the supplier
- Can be shown for derived characteristics, such as profit center and functional area



# SAP Business Integrity Screening

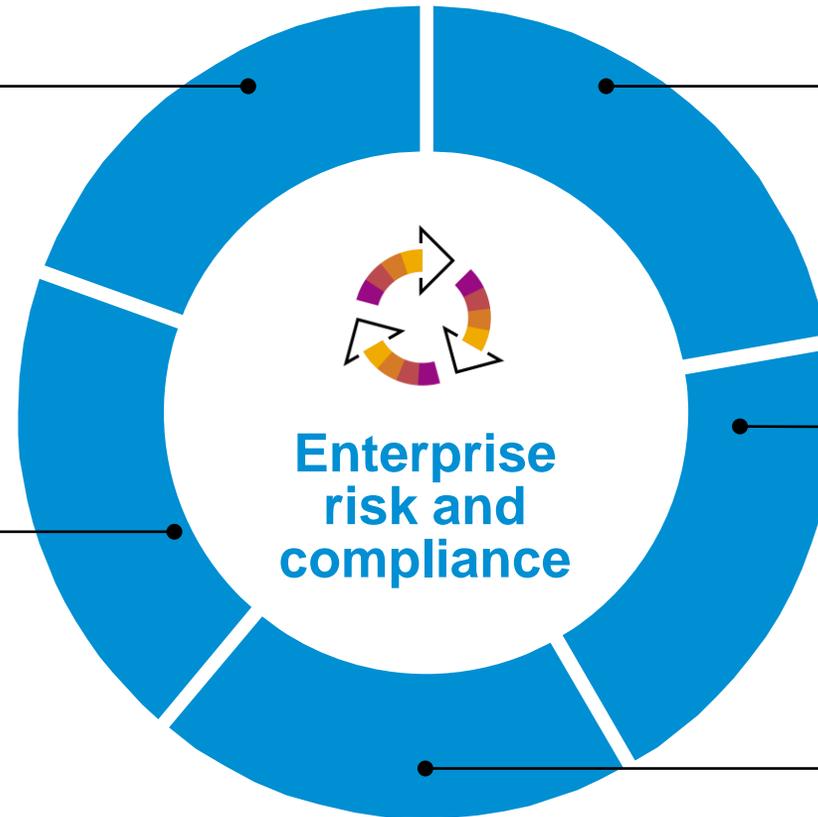
Anomaly, fraud, third-party risk detection, and investigation to protect your business

## Analyze performance

Monitor key performance indicators and create management reports

## Investigate

Manage alert workload with efficient evaluation, qualification, and remediation of issues



## Design

Determine screening lists, analyze patterns, and define detection rules and models

## Setup

Define detection strategy through simulation and calibration

## Detect

Execute mass and real-time detection and stop anomalies or irregular transactions

# SAP Tax Compliance

## Smart Automation on Compliance Issue Processing

With every new decision the company's Tax Knowledge Base grows and **SAP Tax Compliance** leverage this by continually classifying compliance issues and trigger automated correction measures or close them as false positives. In rare cases human interaction is requested to make the decision.

## SAP Tax Compliance allows your Tax Managers to

- Transparently apply HANA's Automated Classification
- Benefit from the company's memory of its tax managers past decisions
- Automate compliance issue processing and limit human interaction to exceptional cases
- Choose level of automation on compliance check basis

## Business Benefits

- Automatically learn from new decisions
- Increase efficiency by smart compliance issue processing automation
- Seamless integration of ML algorithms into the SAP Tax Compliance

Compliance Check Hits

Standard Search

Processing Status: Conclusion: Task List Status:

Compliance Scenario Runs / Checks of Scenario Accounts Payable Basic Checks in Germany / Hits of Check Vendors without VAT ID

Processing Status	Conclusion	Score	Task List Template	Task List	Vendor	Vendor Name	House Number and Street
In Process	Confirmed	527	9878	1000196	Schmelzpunkt	Hauptstr. 123	
In Process	Confirmed	527	9930	1000133	Leif Erant		
In Process	Confirmed	527	9930	1000133	Leif Erant		
In Process	Confirmed	527	9930	BT_SUPP_01	BT Supplier 1	Hasso Plattner Ring 7	
In Process	Confirmed	527	9930	BT_SUPP_02	BT Supplier 2	Hasso Plattner Ring 7	
In Process	Pending	527	1003760		Vendor	Dietmar-Hopp-Allee 16	
In Process	Pending	527	1003810		Vendor		
In Process	Pending	527	1003131		SMC BP1	SMC 1234	
Completed	Not Confirmed	527	10003541		SAP-Julius		
Completed	Not Confirmed	527	300999		Hammer Sports	Hauptstraße 1	
Completed	Not Confirmed	527	1000060		Sonder Locke		
Completed	Not Confirmed	527	AN_BP_0121		Leopold Kostal GmbH & Co. KG	An der Bellmerlei 10	
Completed	Not Confirmed	527	AN_BP_0121		Leopold Kostal GmbH & Co. KG	Hausbleicher Str. 60	
Completed	Not Confirmed	527	9		TEST Yan		
Completed	Not Confirmed	527	12		WTY Dealer WTY Dealer	Hasso-Plattner-Ring 7	
Completed	Not Confirmed	527	524		GP E001 F001	Strasse 1	
Completed	Not Confirmed	527	100030		Supplier WW	Mainstreet 1	

Automated Processing  
User Interaction  
Automated Completion

# Wrap-Up and SAP S/4HANA Resources



# Customer Success – Live Customers on SAP Cash Application



- Public University
- Established 26 March 1636
- Utrecht, Netherlands
- 30,374 students, 5,568 faculty and staff
- 13th best university in Europe

Increase of 24% to **95% overall automation**



- Food and Beverages
- Established 1838
- Darmstadt, Germany
- 6.000 employees
- €1.5bn revenue

Increase of 41% to **92% overall automation**

# Key Take-Aways

The purpose of leveraging technology in Finance is not technology for technology's sake, but to make finance more efficient, to allow finance and risk teams to focus on more strategic topics to provide value to their organizations

SAP Leonardo natively integrates machine learning, which also powers predictive capabilities

The pre-requisite for machine learning capabilities is a SAP S/4HANA system; that being said, SAP S/4HANA is already the basis the default for both single and multi-tenant Cloud deployments

Out-of-the box applications already exist that leverage machine learning; those built on the SAP Cloud Platform can work with both on-premise and Cloud deployments

Machine learning apps include:

- Transactional apps that allow finance and risk teams to focus only on transactional exceptions
- Predictive apps that analyze trends and provide simulation for forward-looking scenarios

# Where to Find More Information – Finance

- Take a look at [www.sap.com/Finance](http://www.sap.com/Finance)
- Machine Learning [www.sap.com/ml](http://www.sap.com/ml)
- SAP S/4HANA Cloud [www.sap.com/cloud](http://www.sap.com/cloud)
- SAP HANA Cloud Platform Apps <https://www.sapappcenter.com/>
- CFO Knowledge [www.digitalistmag.com/finance](http://www.digitalistmag.com/finance)



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# Presentation Materials

Access the slides from 2019 ASUG Annual Conference here:

<http://info.asug.com/2019-ac-slides>

# Q&A

For questions after this session, contact us [birgit.starmanns@sap.com](mailto:birgit.starmanns@sap.com)

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# Thank you.

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