Americas' SAP Users' Group

A Real-life Digital Transformation Journey

Decision Path from Embracing SAP S/4HANA to Innovating on SAP HANA

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Jordan Cao, Senior Director, SAP
Session ID 83793

About the Speakers

Marius Vermeulen

- Lead SAP Emerging Tech. Bristol-Myers-Squibb Co.
- 24 years SAP experience in innovation and emerging technology.
- 10 years SAP (South African Police) experience

Jordan Cao

- Senior Director, SAP
- Ph.D in computer science major, MBA, and 12 years in SAP
- Ski to Snowboard

Key Outcomes/Objectives

1. Explore decision points to upgrade to S/4HANA in a live case
2. Understand why we are looking at SAP HANA, enterprise edition
3. Check innovative projects based on HANA technologies

Agenda

Background

S/4HANA Project

- Why
- Plan
- Strategy
- Business Goal

SAP HANA, Enterprise Edition

Innovation Projects on SAP HANA

- Blockchain Project: Saleable Returns Verification
- Machine Learning Project: Chat-bot Application
- IoT: Predictive maintenance of refrigeration systems

Background

Bristol-Myers Squibb

Our mission is to **discover**, **develop** and **deliver** innovative **medicines** that help patients prevail over serious diseases.

WHO ARE *you* WORKING FOR?

Company Facts & Figures

SUPPLYING
82 Markets Globally

MEDICINES FOR PATIENTS
12 NEW Since 2011

A PORTFOLIO OF
69 Products

EXTERNAL NETWORK OF
100+ Contract Manufacturing Partner Sites

INTERAL NETWORK OF
15 Manufacturing and Process Development Sites

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BMS' World-Class* SAP System

- 26 Languages and 17 time zones
- Average Response Time ~ 600ms
- 40 Dedicated Servers
- Single worldwide database – 21.5TB
- Named Users ~ 13,400
- Concurrent Users ~ 2,500
- 2,000,000 sales orders per year
- 841,000 invoices per year
- 64,000 production orders per year
- 9,000,000 journal entries per year
- 3500 transactions used
- 3,000 interfaces

* World class based on single global instance of SAP and Gartner ERP spend benchmarks in 2014

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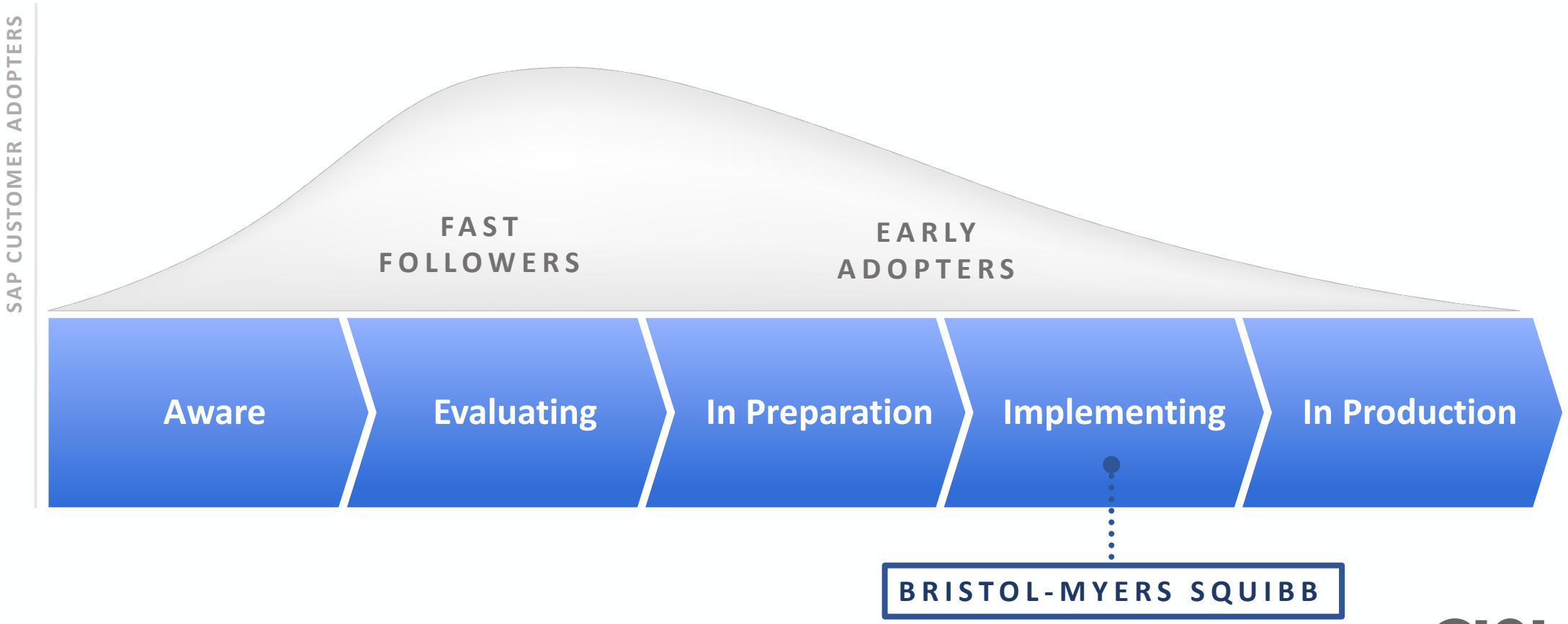
BMS S/4HANA Project

Why?

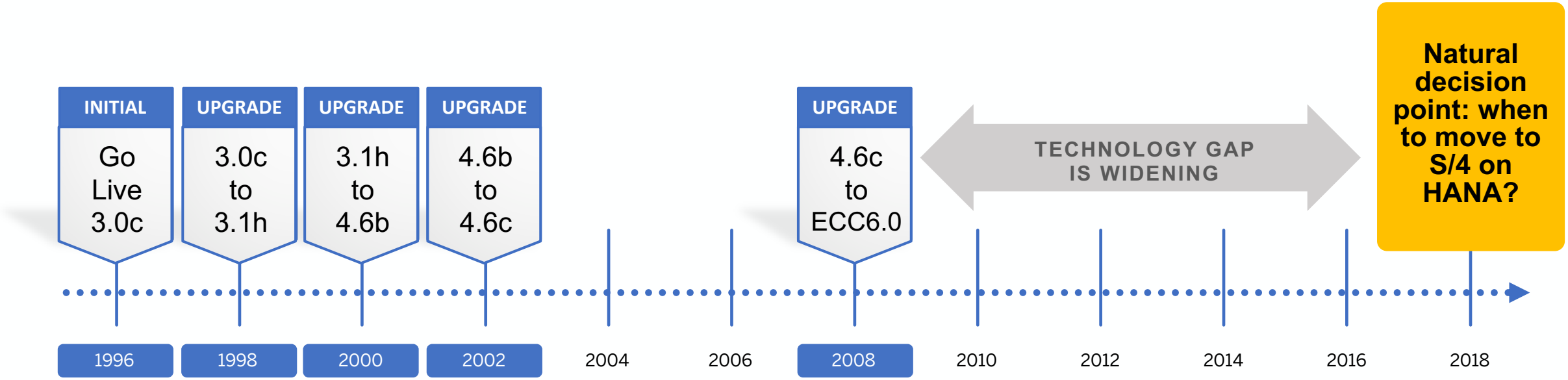
Early adopters have already moved to S/4 or are in mid-implementation

Fast followers are in active planning or in execution of their own journey to S/4



Why?

Missing new features and advanced technologies



As the SAP software matures and our processes undergo less change, the time between upgrades is increasing and it has been 10 years since the last major upgrade

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Cloud Strategy

Strategic investment on **enterprise platforms**

The primary enabler of BMS Enterprise Architecture

Simplify

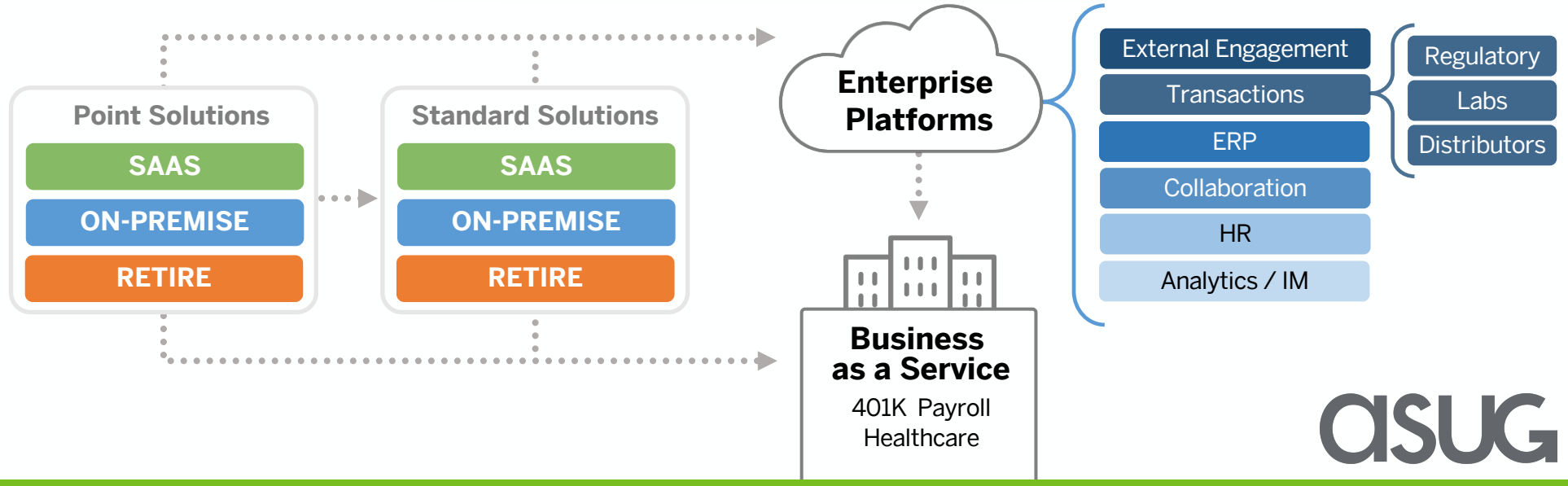
- Shed technical debt
- Leverage set of enterprise platforms for consistent experience across BMS
- Move to minimal set of tech, tools, & business apps

Integrate

- Unify business processes across units
- Integrate data for greater insights
- Increase ability to variablize via integration with external partners

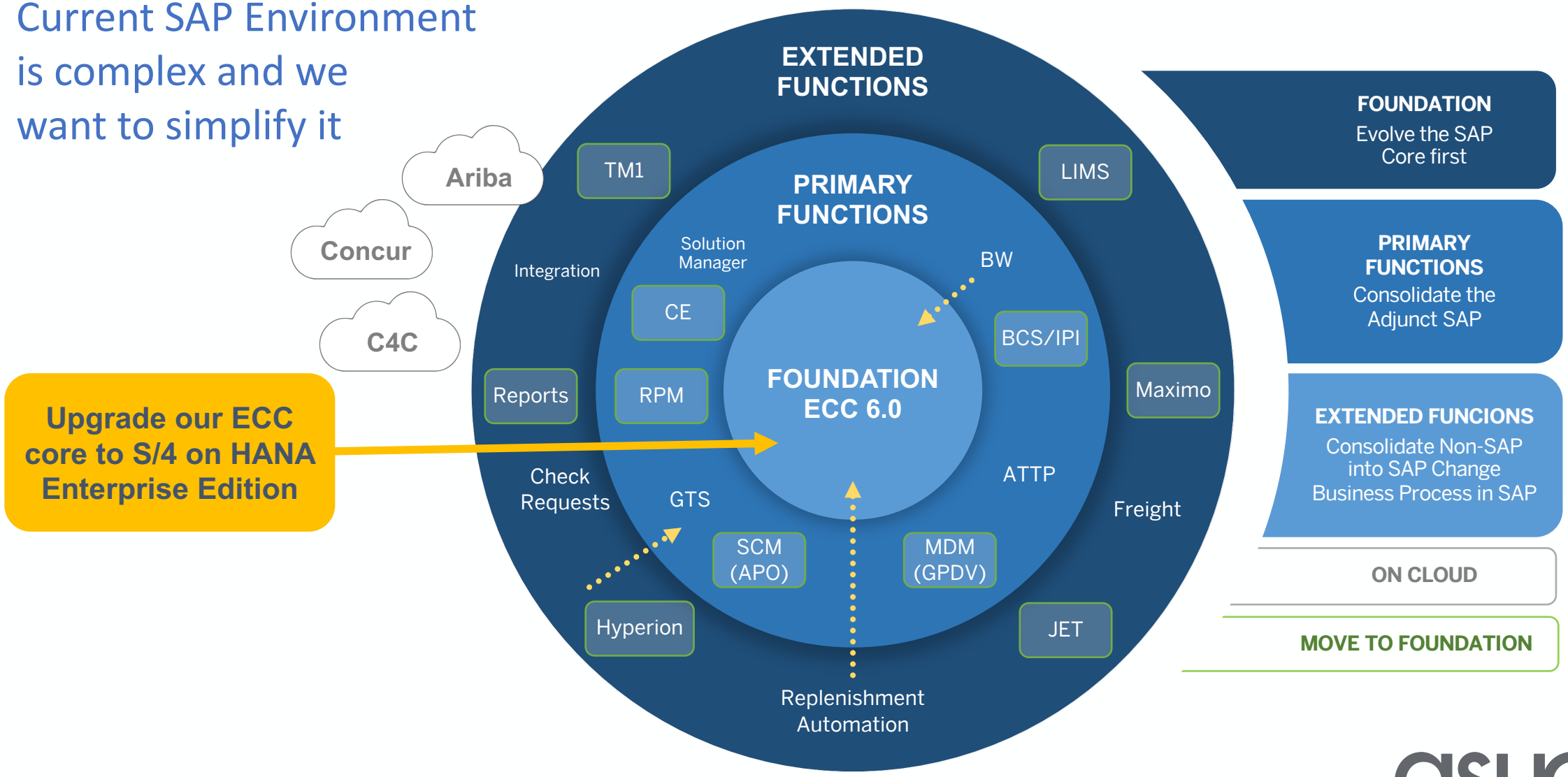
Focus

- Focus efforts on differentiated capabilities and technologies; leverage market-driven innovation for all else
- Focus on defined set of tech and build differentiated expertise
- Governed architecture for speed and agility



Why?

Current SAP Environment is complex and we want to simplify it



Why?

How specific groups in BMS benefit from SAP S/4 on HANA

	Benefits	What does this mean for BMS?	Immediate	Consider
Global Product Development & Supply (GPS)	New functionality	• Full constraint based scheduling at a site • Material segmentation		✓
	Real-time information	• End of IT batch processing • In line decision making • Machine learning capabilities	✓	✓
Global Business Operations (GPO)	New functionality	• Universal journal • Extended currencies	✓	
	Real-time information	• Near real-time close • In line decision making • Machine learning capabilities		✓
Business Intelligence & Analytics / Information & Data Management / Cross-Functions	Analytics	• Simplified information in real-time • Machine learning capabilities	✓	
	Simulation	• Ease of scenario creation		✓
	SAP HANA Foundation			

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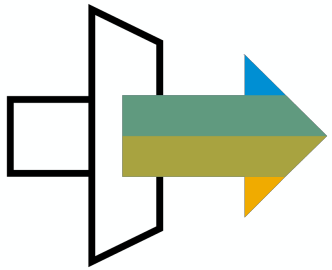
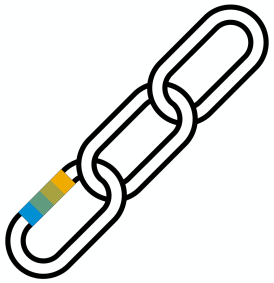
Business Goal



- **Migrate to new architecture** including minimizing customizations and convert to standard SAP
- **Instantiate new IT processes** for: validation, automation, analytics;

- **Identify new platform capabilities** as machine learning and predictive analytics
- **Enable transformed BMS**

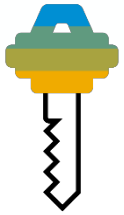


- **Educate business users** on new capabilities to drive business transformation
- **Improved end user experience**

SAP Hana, Enterprise Edition

Why?

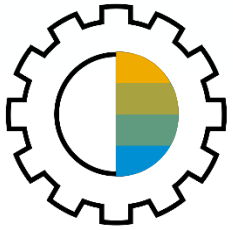
For running SAP applications on the enterprise edition of SAP HANA



Data Access and Integration

Full access to data combined with robust data integration and transformation capabilities

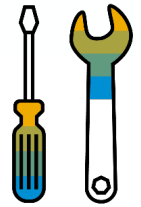
- Direct SQL access
- Data integration and quality



Advanced Analytical Processing

Unrestricted native use of the advances capabilities of SAP HANA to innovate ahead of the curve

- Predictive analytics and machine learning
- Graph modeling
- Spatial analysis
- Text and search



Development Toolkits

Incremental capabilities provided to enable data-centric process innovation

- SAP HANA extended application services, advanced model
- Operational process intelligence
- Enterprise architecture designer

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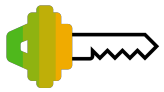
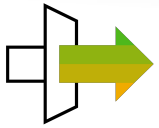
Top reasons to choose the enterprise edition for SAP applications



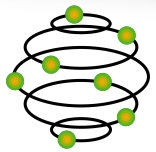
1. **Gain unlimited access to all platform features**

Versatile technology for digitalization and innovation



2. **Simplify data access**

Higher performance and more agility

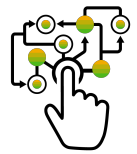


3. **Run any applications (SAP and non-SAP)**

Pay only for the capacity what you use

4. **Reduce IT landscape complexity**

Lower TCO with all-in-one data management platform



5. **Innovate ahead of the curve via predictive and ML**

Take advantage of advance features before SAP applications use them

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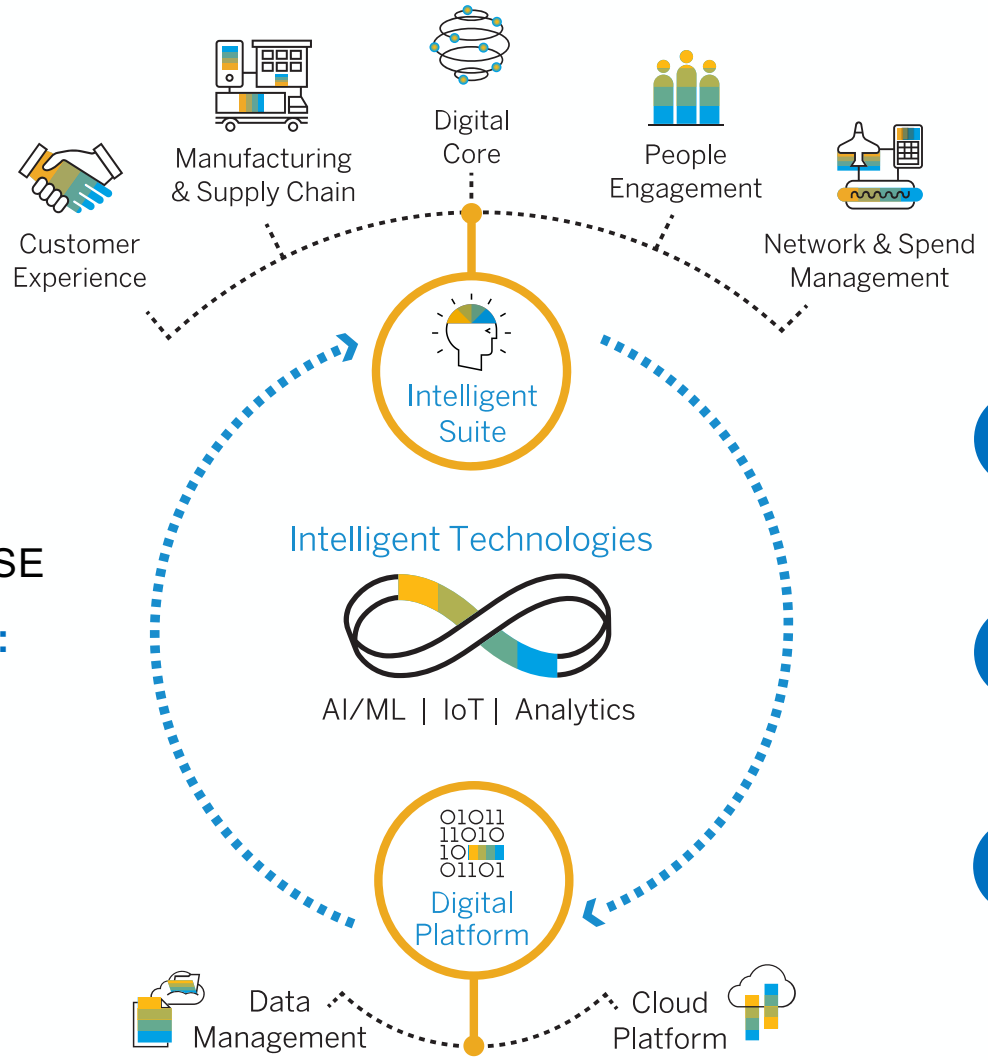
Innovation Projects on SAP HANA

SAP Strategy – Deliver the Intelligent Enterprise

THE INTELLIGENT ENTERPRISE

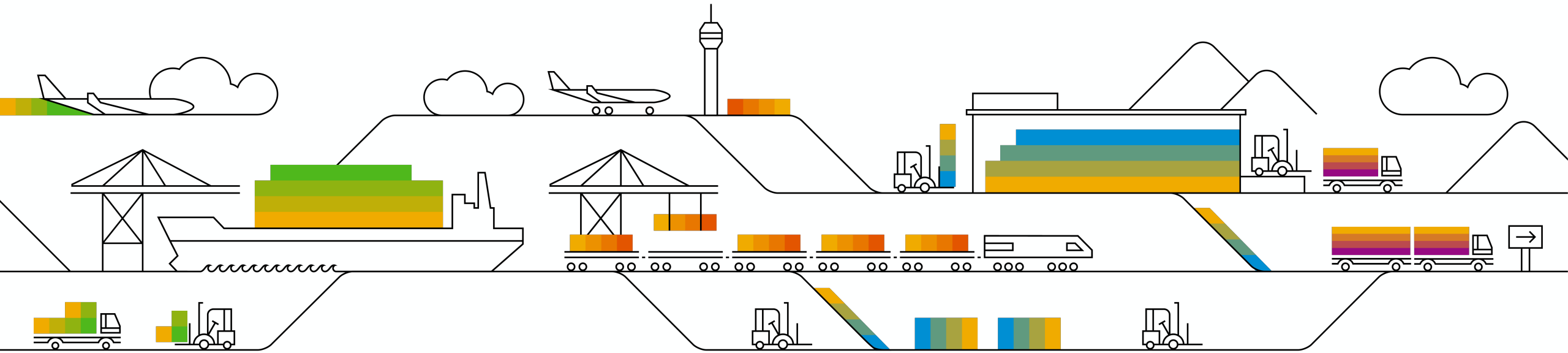
features **3 KEY COMPONENTS:**



1. Intelligent Suite
2. Digital Platform
3. Intelligent Technologies

Blockchain Project

Saleable Returns Verification

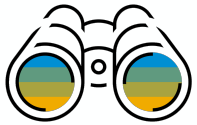


Unifying blockchain data with the enterprise

BUSINESS DRIVERS

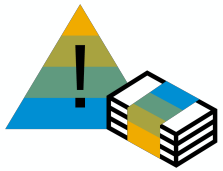
Process Optimization

Multi-party collaboration on a single version of the truth



Transparency & Auditability

Undeniable history due to immutability of records



Risk & Fraud Minimization

Provability and automated business rules (smart contracts)

CHALLENGES

Need a unified view across traditional business and blockchain transactions

Need powerful and advanced computational techniques to analyze blockchain data

Business applications need to interact with multiple blockchain networks and other transaction environments

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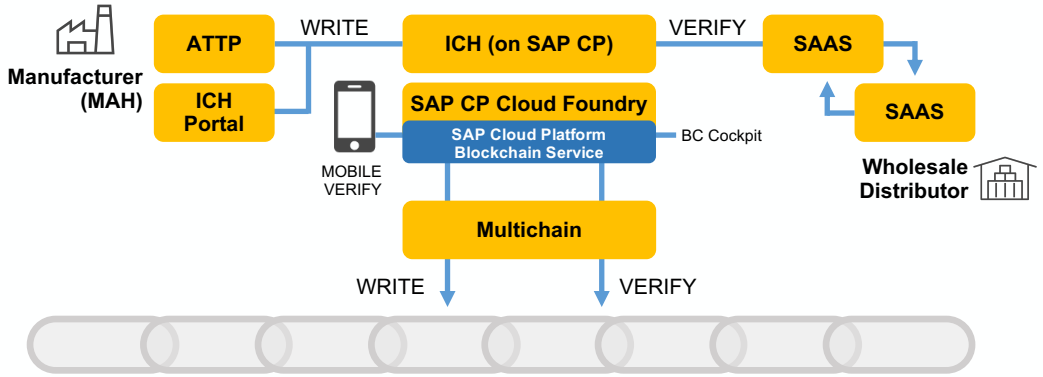
Blockchain – Sellable Returns – a case of Regulatory Compliance

Infrastructure	2017 Phase I Usage with production data on a small scale	2018 Phase II Productive usage on a larger scale	2019 Phase III Full productive usage for any required volume
• SAP CP and SAP CP Cloud Foundry infrastructure • SAP Multichain on CP (aka. SAP CP Blockchain Service) • Subscription for MultiChain node • AWS infrastructure (m5.2xLarge node)	• ICH process to send EPCIS message into ICH and write data into • ICH process to verify pack data (single request only) • Blockchain data model defined by SAP • Mobile App / Portal for single request verification against blockchain only	• ICH Supply Chain Notification to US Wholesalers (EPCIS 1.2 USHC) • Web-services to build own mobile app for verification • Simple portal for single verification for dedicated customers • VRS Pilot: – GTIN exchange with a lookup directory (B2B) – VRS* for wholesalers to verify pack data not stored in SAP blockchain including read from Lookup Directory	• BMS implementation by Q3 2019 • From a regulatory perspective, wholesalers have to start verifying sellable returns by 27 November 2019 • Full integration with 3rd party lookup directory (VRS)

Blockchain Project

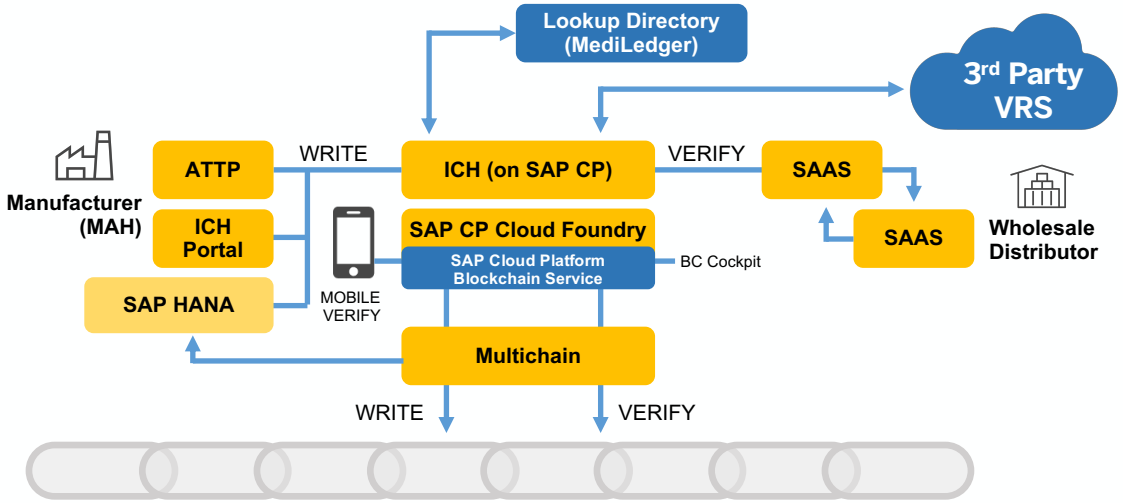
Phase I: PoC Scope

- **Goal:** Allow usage with production data

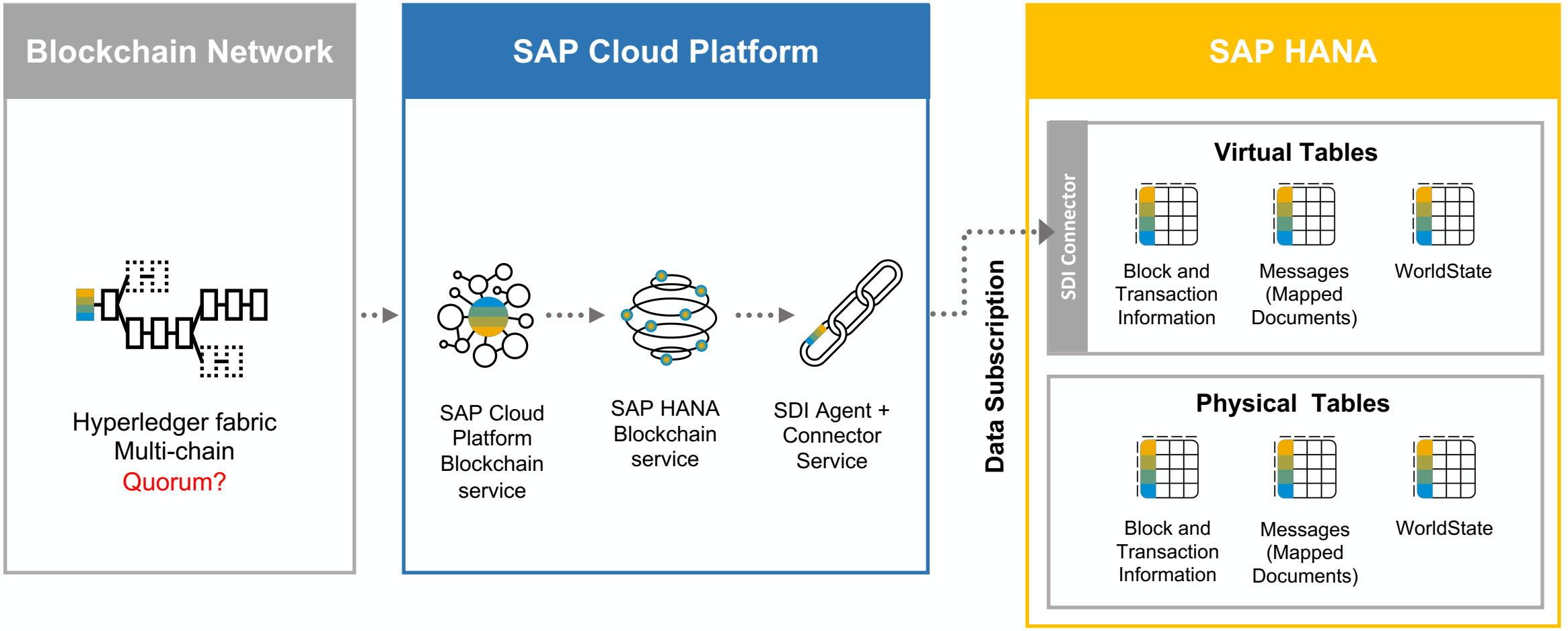


Phase II: Extend to include VRS Capabilities

- **Goal:** Ensure production readiness for initial scope including qualification & support initial VRS testing and pilots

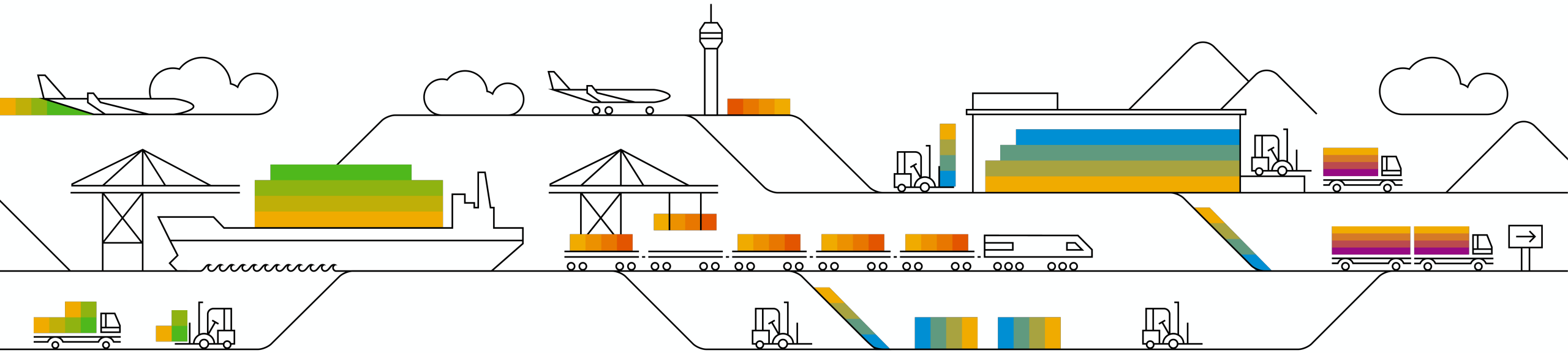


Architecture Overview



Machine Learning/Artificial Intelligence Application

Chat-bot Application for Services



Strategy for Chat-bot Project

Using SAP CoPilot Technology to lower cost and improve user experience following our “Shift-Left” strategy

OF TICKETS

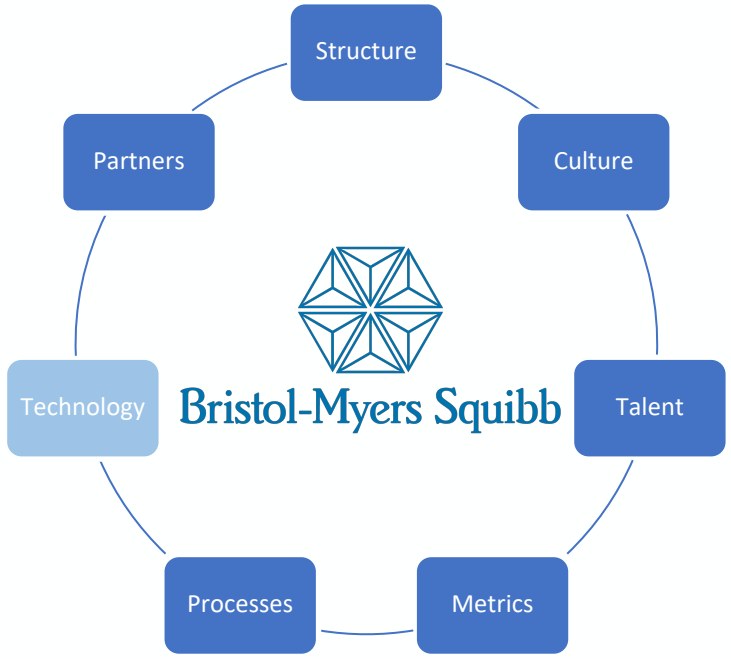
SHIFT LEFT

Leverage less expensive support tiers through direct access/self-provisioning

SHIFT DOWN

Reduce support volumes through simplifications, app landscape, footprint changes

	L0 Direct Access	L1 Service Desk	L2 End User Site Services & IT Concierge	L2/L3 App Maintenance & Support
Average Cost Per Ticket ($)	$0	$X	$5X	$10X

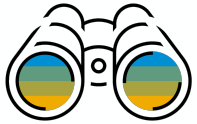


Chat-bot Project

BUSINESS DRIVERS

Process Optimization

Quicker solution of for SAP help desk tickets – user self-service and ensure ticket is routed to correct support team



Large Historical Database

21 years of support history should allow for process automation

Cost Avoidance

User self-service for 22+ of the most common support scenarios will lower our support (run) cost

CHALLENGES

Integration to Service-Now will require mining of data in SAP Solution Manager

Need powerful and advanced computational techniques to analyze non-structured data

The cost of deploying and supporting the technology should be lower than the current support model

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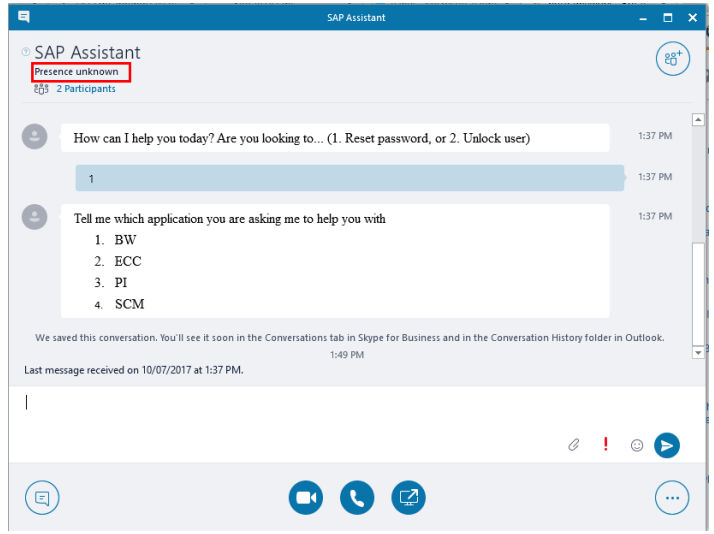
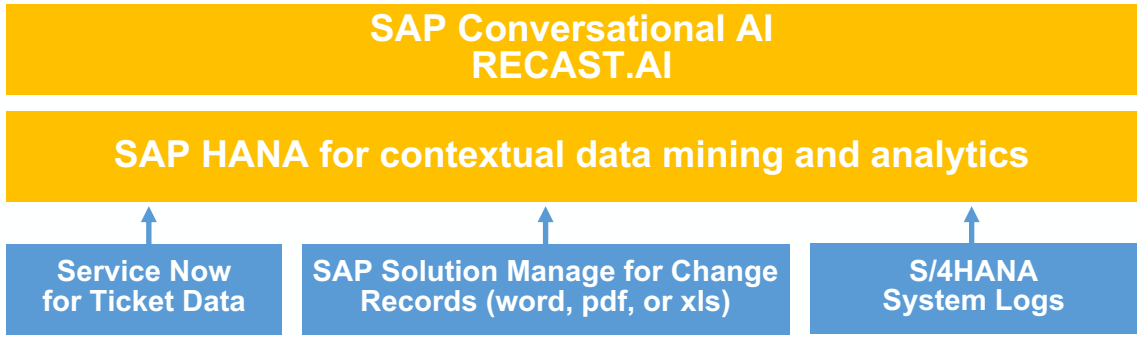
Chat-bot Project: Copilot/Content Advisor

- Using SAP's CoPilot technology to provision a voice/text self-service bot to automate some of the routine user requested maintenance tasks.
- Using ML to match prior HD tickets and propose solutions from our extensive system support history.
- Identified 22 business support scenarios (i.e. create and assign printers, MRP controllers, etc.)
- Makes up the majority of routine user requested maintenance that can be automated by SAP's conversational AI technology.





Turn Conversations into Actions with SAP CoPilot

Get your work done with one intuitive conversational interface across all SAP applications and beyond

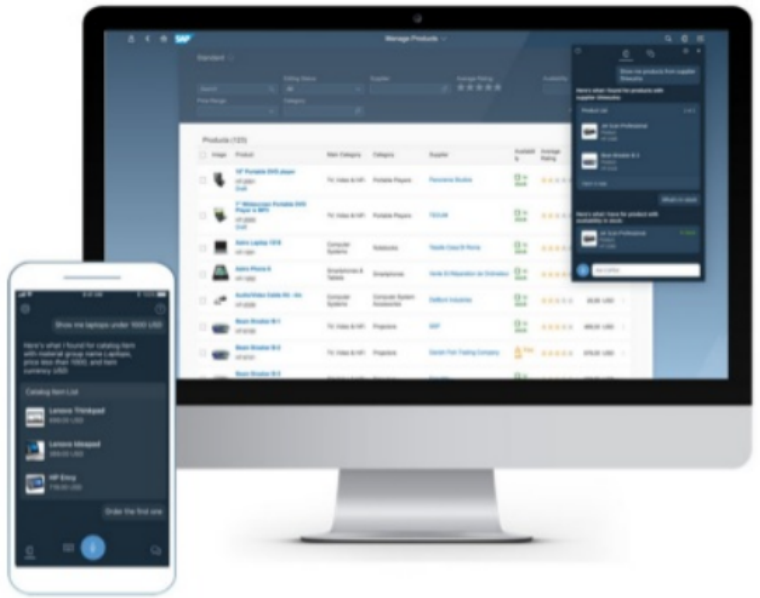
Conversational User Experience (UX) enabling natural language interaction

Business Context Awareness understanding the business situation and pro-actively suggesting solutions

Self Learning system using machine learning functionality to gain knowledge based on historical data and experience

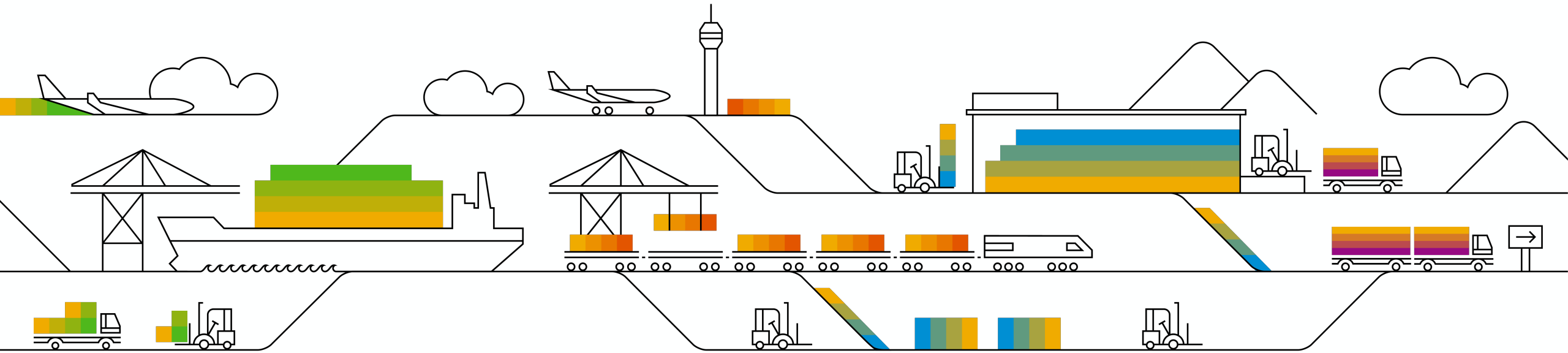
Cross Applications with One Personality and One Memory across all SAP

Open and Extensible for integration to SAP and Non-SAP Solutions enabling our customers and partners to extend CoPiolt Skills through bots, agents and APIs



Internet of Things (IoT)

Predictive maintenance of critical refrigeration systems

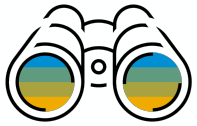


BMS IoT Project

BUSINESS DRIVERS

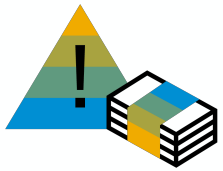
Process Optimization

Emerging Issue Detection (EIT) predict failure modes of refrigeration systems to prevent unplanned outages



Protect Critical Assets

Protect critical refrigerated biological supplies, work-in-progress (WIP) and finished product



Cost Reduction

Predictive maintenance can prevent costly equipment repairs and reduce energy usage

CHALLENGES

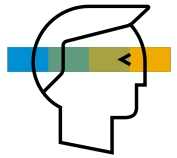
Previous case study showed an issue with data consistency across different refrigeration system vendors

Need powerful and advanced computational techniques to analyze and model non-conforming data

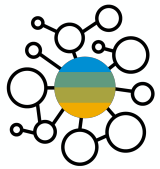
Lack of a dedicated IoT wireless network infrastructure – an info security issue.

Predictive maintenance of critical refrigeration systems

- BMS facilities manually monitor building air condition systems for the critical refrigeration system.
- Need to automate the monitoring and maintenance process.
  - Install vibration sensors on key air-conditioning components such as compressors and fans
  - using ML/predictive analysis to build a predictive model from the telemetric data.
- Predictive/proactive plant maintenance capability to predict failure modes up to 2 days to 2 weeks for critical refrigeration systems.



SENSE
Sense operational data from equipment

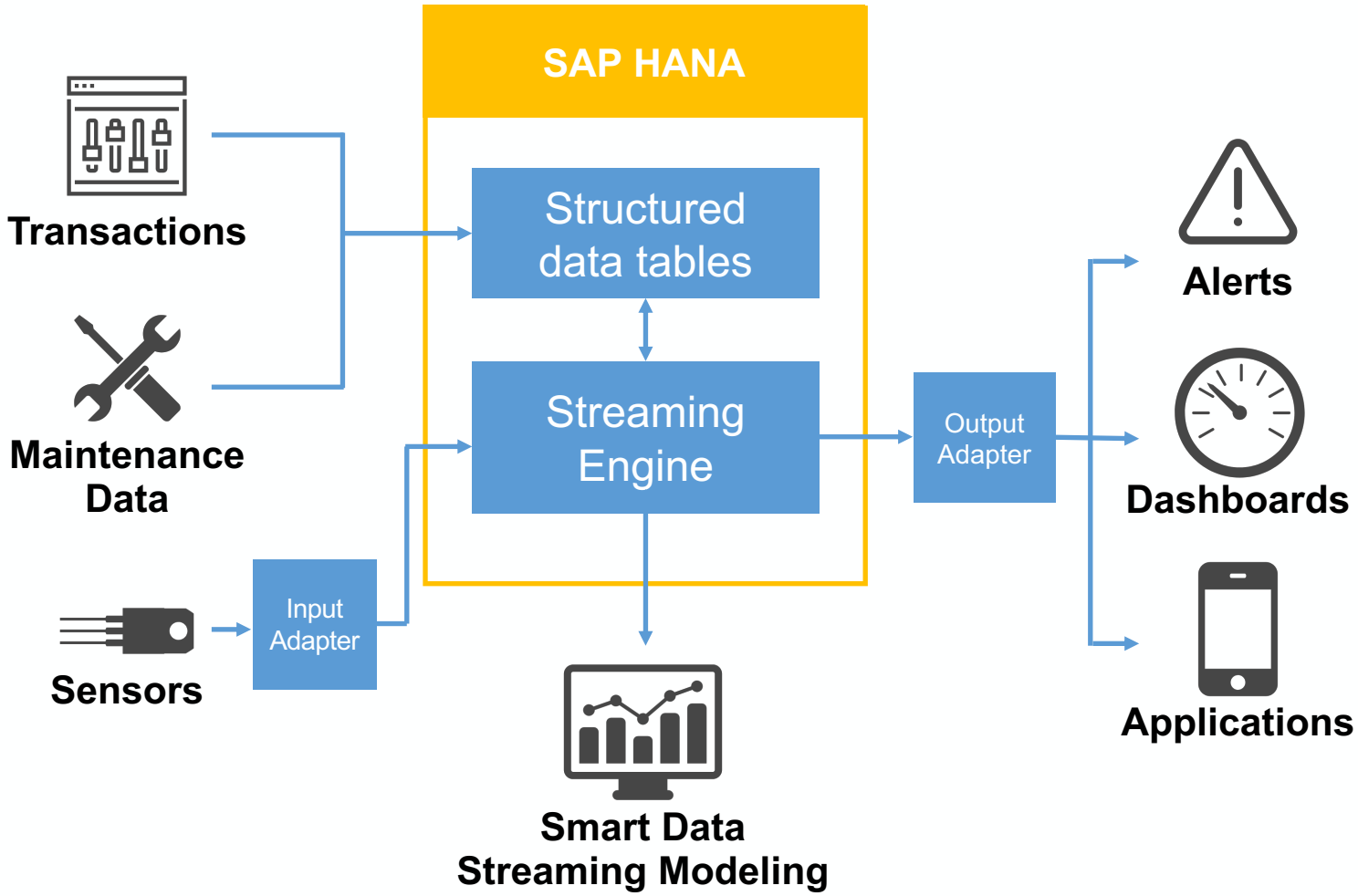


MONITOR ANALYZE PREDICT
Analyze and monitor equipment data and correlate with business information to predict future malfunctions

ACT
Optimize maintenance and service operations and eliminate unnecessary maintenance costs.

BMS IoT Strategy

- Analyze events in the context of your business data (transactions) and take proactive action
- Apply real-time intelligence to streaming data
- Plan and predict with confidence
- Embed intelligence in business processes (maintenance data) to take smart decision

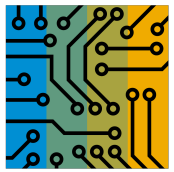


SAP HANA® express edition Intelligent Container

Advanced analytics at the network edge

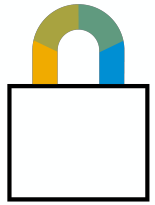
Spoilage of perishable goods, like food and medicine, can be a hazard for companies due to:

- **The cost** of goods lost to spoilage
- **Legal risks** for corporate officers in the case of food or pharmaceutical safety concerns



Intelligent containers digitize the goods they carry:

- Digitizing perishable products can **revolutionize** the entire cold chain
- Such containers could have **application far beyond** just food or pharmaceuticals



Intelligent containers like the one here can help secure perishable goods with:

- **Real-time monitoring** of freshness
- **Predictive analytics** on product health

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Q&A

For questions after this session, contact us at:

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