The Future of Supply Chain with SAP Business AI

Draw Your Future

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Agenda

- Overall SAP Business AI Strategy and Future Direction
- SAP Business AI Strategy for Supply Chain Management
- AI in SCM Roadmap

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Overall SAP Business AI Strategy And Future Direction

AI can Benefit your Business:

Everywhere

ERP and Finance	Supply Chain	Customer Experience	Procurement	Human Resources	IT and Cross-Function

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PUBLIC

The future with SAP Business AI

Important business insights are delivered with clarity.

Employee productivity is augmented, delivering improved outcomes.

Entirely new processes are generated to transform business performance.

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Real Business Results through AI that is Built to be

Business AI

Relevant	Reliable	Responsible
Drive **immediate business** impact with AI embedded across your organization.	Make **confident decisions** based on AI grounded in your business data.	Minimize **business risk** with the highest ethical, security, and privacy standards.

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AI in Business Needs to be Relevant

Characteristics of Relevant AI

Pertinent

Aligned with business context and addressing organizational needs

Impactful

Immediate measurable business value

Prompt

Timely and relevant insights for improved decision-making

Integrated

Seamless incorporated into business processes and workflows

Adaptable

Flexible to changing requirements

Benefits of AI embedded in business processes and applications

Lower development costs vs building AI on different technology stacks

Latest AI technologies pre-selected for optimal performance and cost

Compliance with the latest AI regulations

Higher ROI by leveraging AI fully embedded in core business processes

AI in Business Needs to be Relevant | Example

SAP Field Service Management
AI-assisted Equipment insights

Challenge

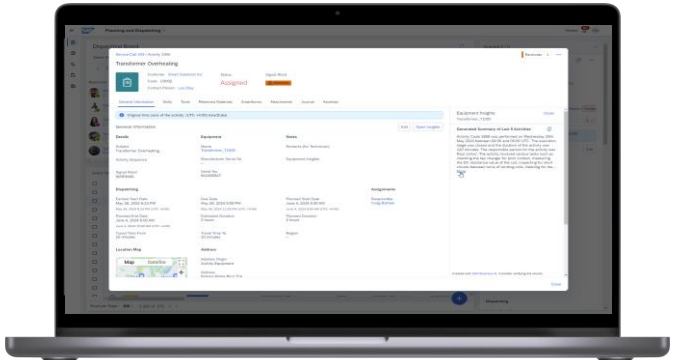
Margo
Dispatcher

"As a dispatcher, I want to get all relevant equipment history information with one click so I can make educated decisions on who is the best-skilled technician to do the job."

Tara
Field Service Worker

"As a Field Service Worker, I want to quickly see the past service history before I go on my job so that I can plan accordingly and take the right equipment or spare parts with me"

Solution



SAP Business AI in SAP Field Service Management provides dispatchers with intelligent service recommendations at an asset level by identifying patterns and trends based on equipment history and performance data.

The Solution helps Margo to better identify the issue with the equipment and pick the best service worker for the job.

The solution also helps Tara in faster service issue resolution with self diagnostic capabilities by streamlining the resolution process through the swift identification of equipment issues.

Benefits

65%
Improvement in Field Service FTE productivity

5%
Increase in first-time resolution rate

Reduced
Equipment Downtime

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AI in Business Needs to be Reliable

Characteristics of Reliable AI

Grounded

AI is anchored into business context

Precise

AI-generated insights are accurate

Transparent

AI-generated responses needs to be explainable, traceable, auditable

Trustworthy

AI-generated responses are dependable

Benefits of business context-aware AI responses

Improved decision-making

Enhanced operational efficiency & productivity

Increased stakeholder trust to leverage AI for strategic initiatives

Higher ROI by leveraging AI to optimize processes, reduce costs, drive revenue growth

AI in Business Needs to be Reliable

Grounding AI Makes it Context-Aware

Grounding techniques and technologies for more business context-aware responses

Prompt Engineering

Vector Engine

Retrieval Augmented Generation

In-context Learning

Human-in-the-loop Validation

Fine Tuning

Confidence Scoring

SAP Knowledge Graph

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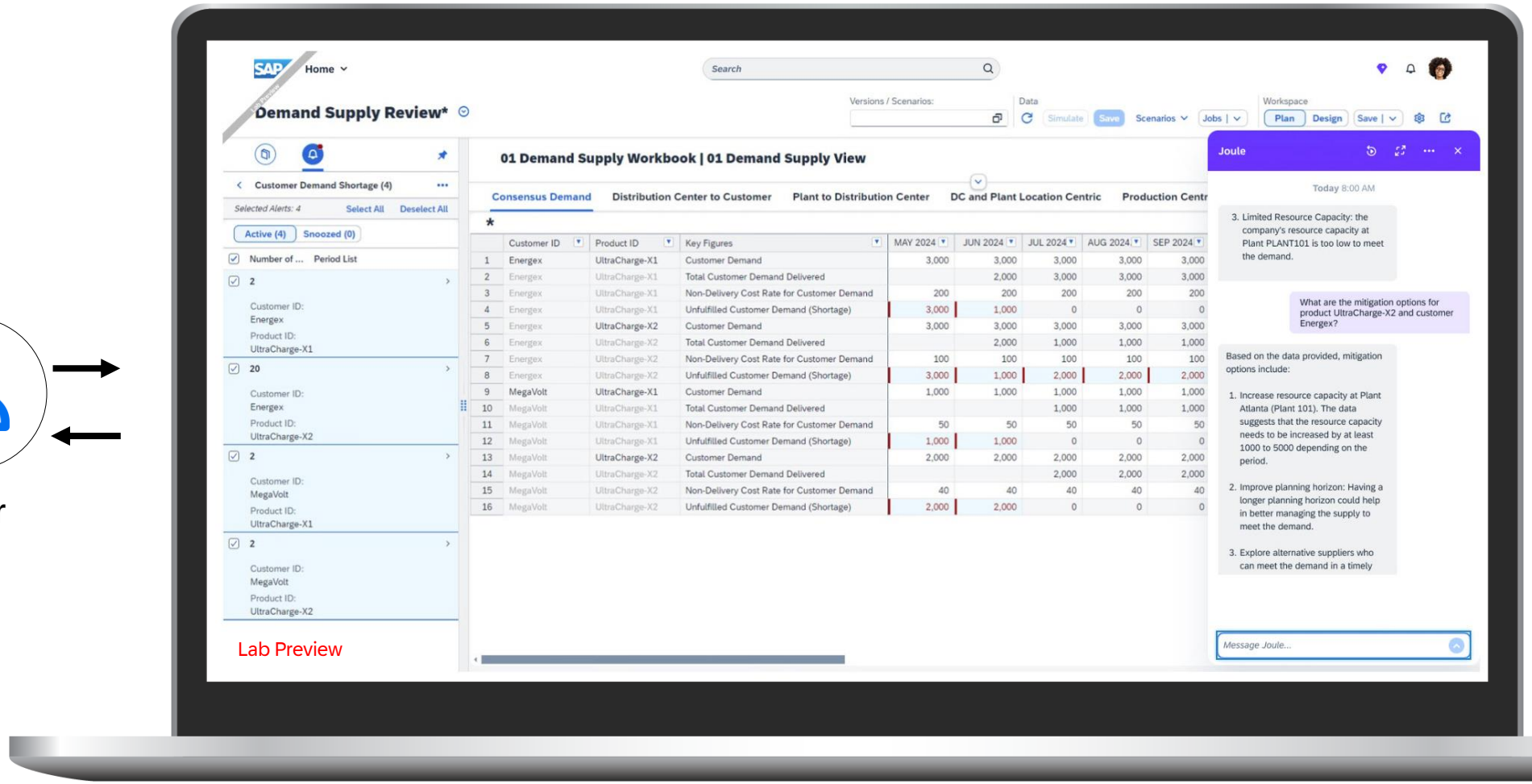
AI in Business Needs to be Reliable

SAP AI Grounded in Business Context

SAP Integrated Business Planning – Explanation of Planning Results*



User

SAP cloud applications

(e.g. SAP IBP)

*roadmap

AI in Business Needs to be Responsible

Areas of Responsible AI

AI Safety & Ethics

Moral and societal considerations

AI Compliance

Protection of individuals' personal information

AI Security

Protection of digital data from unauthorized access, corruption, or theft

AI in Business Needs to be Responsible

How we operationalize AI Ethics

From regulations to embedded ethics

Regulations

- AI EU Act
- US AI Bill of rights
- Human Rights

Local Policy

- SAP AI Ethics Policy
- SAP Data Protection & Privacy Policy

Local Processes

- AI Business Process
- Product Standards

Tools

- Technical tools
- Non- technical tools

Audit

- Steer Co

SAP's Internal Governance: Steering Committee, AI Ethics Core Team, Impact Assessment, Policy Assessment

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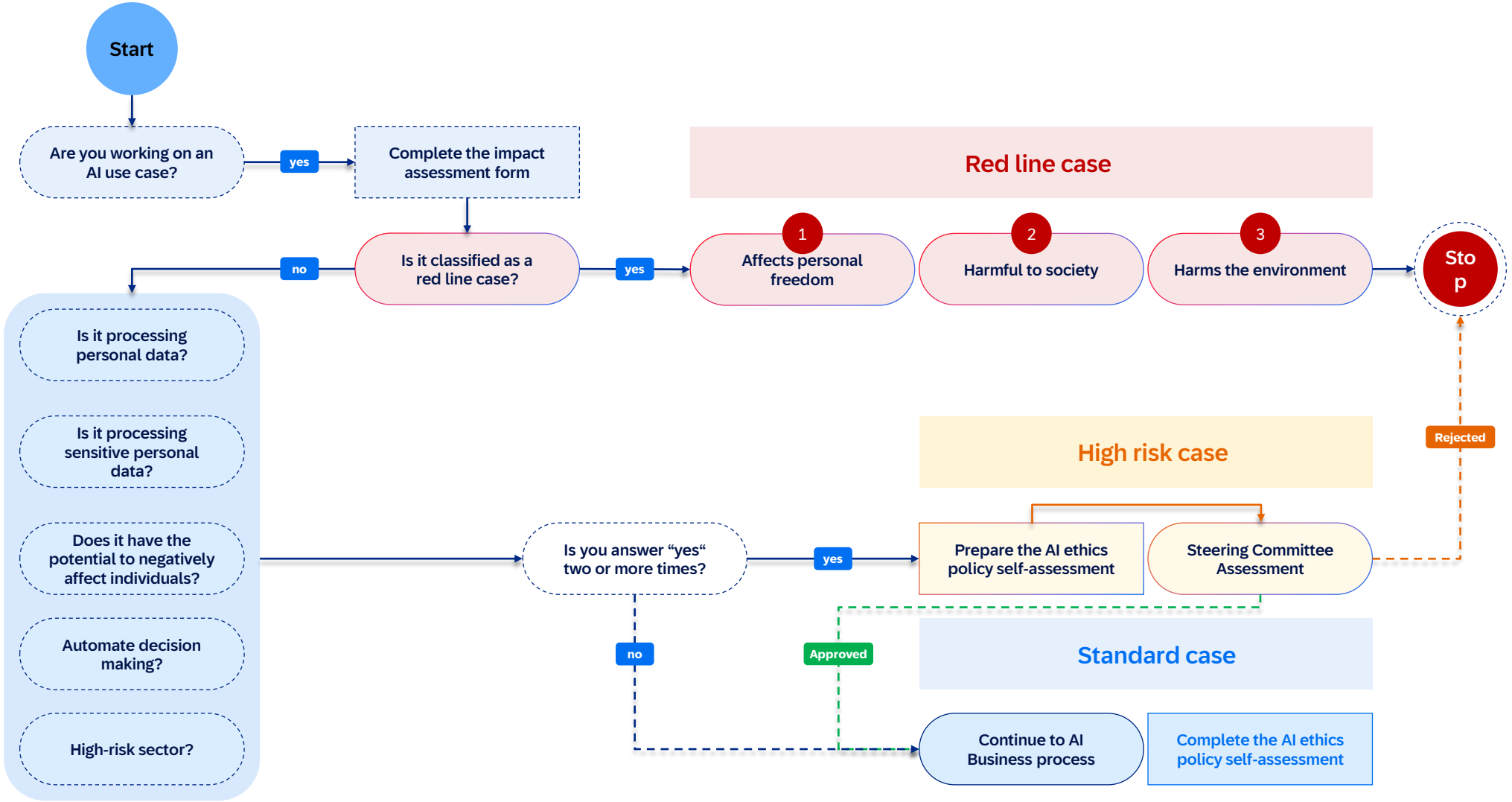
AI in Business Needs to be Responsible

AI Ethics Assessment Process



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AI in Business Needs to be Responsible
Data Privacy with Generative AI

SAP pursues enterprise-ready partner agreements for generative AI technology with vendors that cater for data privacy and isolation.

Contractual Assurance

No customer data used without written consent and following SAP Terms & conditions. See contractual assurance

Foundation Models

SAP provides all the necessary technology to securely access foundation models

Data Usage

Data usage with Foundation Models adheres to zero retention, no third-party access, and regulation compliance.

Masking & Anonymization

SAP leverages data anonymization and/or data masking when needed. SAP also provides the technology for custom built-AI scenarios. See other privacy techniques

AI in Business Needs to be Responsible

Security Extensions for AI

We are building on our existing security measures

- Staff Training in AI & security
- Security Research in AI
- AI Specific Product Security Standards
- AI Specific Penetration Testing
- Hardening Procedures for AI Solutions

SAP Role in Multiple Security and Standards Organizations

NIST, SANS INSTITUTE, AIxCC, OWASP, ETH zürich, EU AI ACT

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AI in Business Needs to be Responsible

Additional Security Measures

Authentication, Authorization and Access Control

SAP ensures robust authentication, authorization, and rigorous access control measures.

Data Transport Security

SAP ensures secure data storage and transport through robust security measures such as data encryption

Secure Foundation Models Connections

Secure & pooled connections to 3rd party LLMs over TLS and contractual agreements

One Unified AI Platform Empowering Your Solutions

Relevant | **Reliable** | **Responsible**

Joule

A copilot that truly understands your business

Embedded AI capabilities

- SAP Cloud ERP
- SAP Supply Chain Management
- Human Capital Management
- Spend Management and SAP Business Network
- SAP Customer Relationship Management
- SAP Business Technology Platform

Your customized AI application

AI Foundation

on SAP Business Technology Platform

AI ecosystem partnerships and investments

ALEPH ALPHA · ANTHROP\C · aws · cohere · databricks · Google Cloud · IBM · Meta · Microsoft · MISTRAL AI_ · NVIDIA

SAP Business Technology Platform | AI Foundation

Relevant Reliable Responsible

Joule

A copilot that truly understands your business

AI Foundation

on SAP Business Technology Platform

SAP AI Services	Document Information Extraction	Data Attribute Recommendation	Personalized Recommendation	SAP Translation Hub
AI Lifecycle Management	Generative AI Hub			
Business Data & Context	SAP HANA Cloud Vector Engine	SAP HANA Cloud knowledge graph engine	SAP Datasphere	SAP Knowledge Graph

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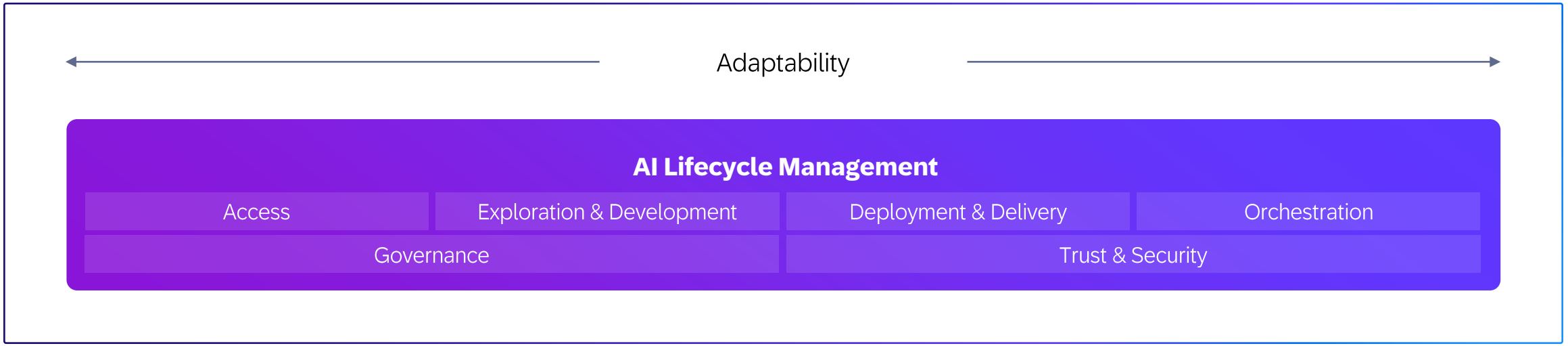
Generative AI Hub

Develop, deploy, and manage custom-built AI solutions
and AI-powered extensions of SAP applications.



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Generative AI Hub | Orchestration

Relevant | Reliable | Responsible

Joule

A copilot that truly understands your business

Embedded AI capabilities

SAP Cloud ERP

SAP Supply Chain Management

Human Capital Management

Spend Management and SAP Business Network

SAP Customer Relationship Management

SAP Business Technology Platform

Your customized AI application

Orchestration

Grounding

Prompt templating

Content filter

Data masking

LLM access

Generative AI Hub

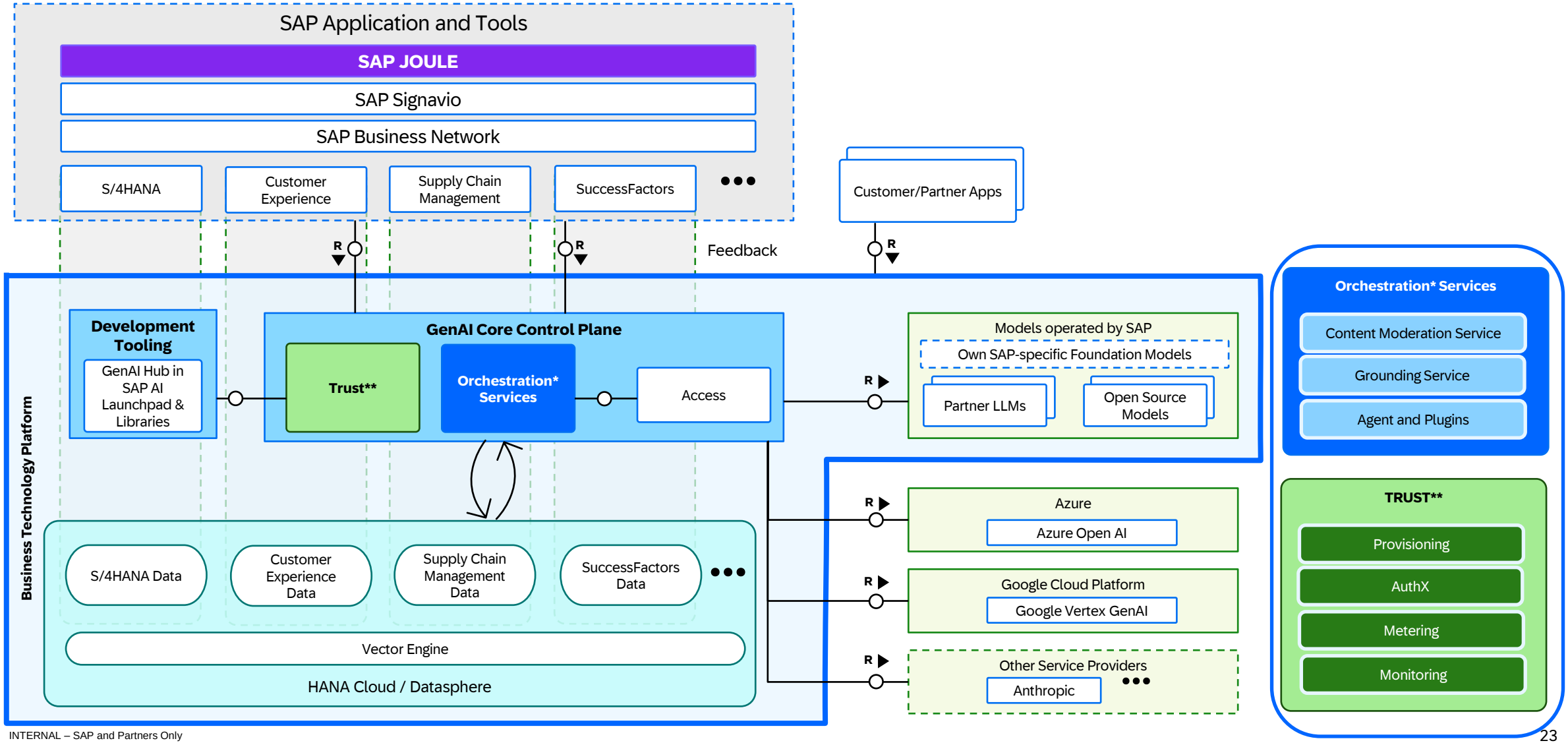
on SAP Business Technology Platform

AI ecosystem partnerships and investments

ALEPH ALPHA ANTHROP\C aws cohere databricks Google Cloud IBM Meta Microsoft MISTRAL AI_ NVIDIA

AI in Business Needs to be Responsible

Secure Large Language Model Access



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25 models currently available

Generative AI Hub

Managed by SAP

- Mixtral 8x7b
- Llama 3 70b
- Llama 3.1 70B
- Aleph Alpha Pharia-1 (soon)
- Mistral Large V2
- Granite v2

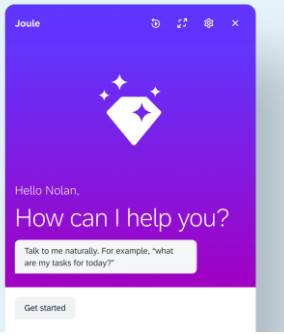
Built by Partners

- GPT-4
- GPT-3.5 Turbo
- Text-embedding-ada
- Gemini 1.0 Pro
- Textembedding-gecko
- Textembedding-gecko-multilingual
- Claude 3 Haiku
- GPT-4o
- Text-embedding-3-large
- Titan Text Express
- Titan Text Embeddings
- Gemini 1.5 Flash
- Claude 3 Sonnet
- Claude 3 Opus
- GPT-4 Turbo
- Text-embedding-3-small
- Titan Text Lite
- Gemini 1.5 Pro
- Claude 3.5 Sonnet
- GPT-4o mini
- DALL-E (soon)
- Amazon Titan Image Generator G1 (soon)

Built by SAP

- ABAP Code Generation (soon)
- ABAP Code Explain (soon)

100+
Generative AI use cases



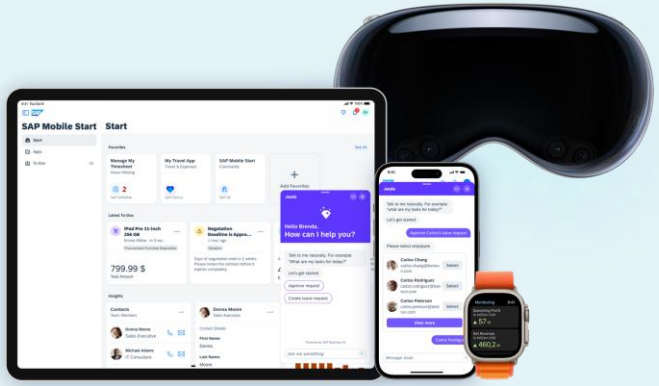
All new
SAP Business AI
announcements

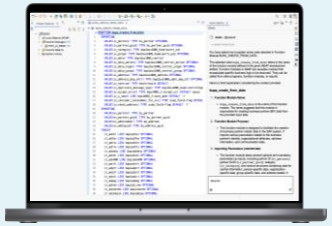
New Models
MISTRAL AI_
Meta
IBM

SAP Knowledge Graph
SAP HANA Cloud Knowledge Graph Engine

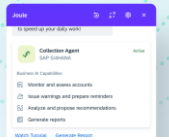
AI Orchestration
Data masking

Joule & Copilot
Joule | Copilot

Joule for Mobile


ABAP capabilities
Generate & explain code


Joule studio
Build your **Joule skills**

Joule Agents
across all business processes


SDKs
Python
JavaScript
Java
ABAP

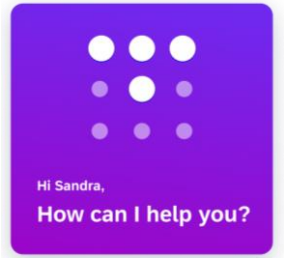
Hey Siri, ask SAP

access to top tier models
We got you covered
with generative AI hub

Visionary

Joule Agents – SCM Hypothetical Example

User Level



Query: Due to increasing pressure and expectations from Walmart, we need to increase our service level* from 89% to 96%. I'd like you to provide a root cause analysis on our current performance and your suggestions of improvement with its associate costs, implications, and trade-offs. Finally create an executive summary providing the best solution, including a realistic timeframe for achieving the new service level and the implementation costs.

Coordinator Agent Level

Orchastrator Agent

Agentic Workflows:
Planning, Reflecting, Reasoning, Collaborating

Task Agents Level

Data Analyst Agent | Supply Chain Planning Agent | Finance Agent | Project Management Agent | Summary Generator Agent

Tools Level

Data Analyst Agent

- Analyze historical service level data
- Identify patterns and trends in performance
- Investigates factors contributing to the current 89% service level
- Identifies bottlenecks and inefficiencies in the supply chain
- Correlates various factors to pinpoint primary causes of underperformance

Supply Chain Planning Agent

- Suggests improvements to existing processes
- Model and simulates different scenarios to achieve the 96% service level
- Proposes innovative solutions for supply chain enhancement
- Runs "what-if" scenarios to test proposed solutions
- Predicts outcomes of various intervention
- Evaluate potential supply chain risks and challenges
- Assesses the implications of changes on other business area

Finance Agent

- Calculates costs associated with proposed improvements
- Estimates potential ROI for each suggestion
- Analyzes the financial impact of changes on overall profitability
- Evaluates potential financial risks for each proposed solution and implications on other business areas
- Identifies potential trade-offs between service level and other KPI

Project Management Agent

- Create a project schedule with milestones, activities and durations
- Do resource (human, financial, technological) allocation for each project phase
- Create step-by-step plan for implementation and execution

Summary Generator Agent

- Synthesizes insights from all other agents
- Prioritizes recommendations based on impact and feasibility
- Creates a concise, action-oriented summary for decision-makers

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* Service level could be measured with e.g. OTIF (On-time In Full), Perfect Order Rate (combines delivered on time, shipped in full, free from damage, accurately documented)

SAP Business AI Strategy for Supply Chain Management

Tacking Supply Chain Challenges Needs a Different Approach

“The reality is that global supply chains have become so complex and are both generating and receiving bewildering amounts of data that the human brain can no longer keep up. “

Simon Ellis, Group Vice President IDC
US Manufacturing Insights,
US Energy Insights and Global Supply Chain Strategies

Global disruptions have cascading effects, impacting suppliers, manufacturers, and distributors worldwide.

Decision-making requires accurate and timely information

Balancing economic viability and goals requires coordinated efforts and accurate measurements of performance

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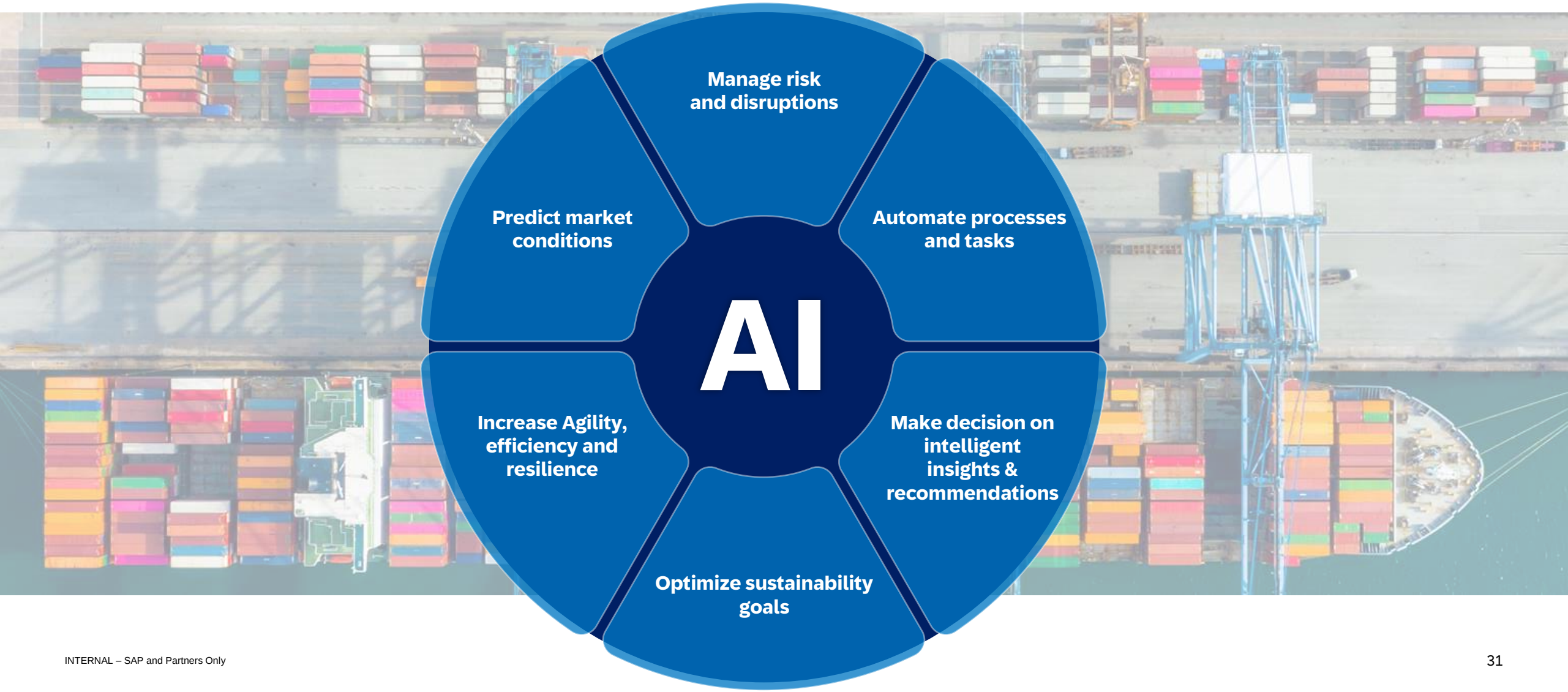
Success Within Supply Chain needs AI that Helps:



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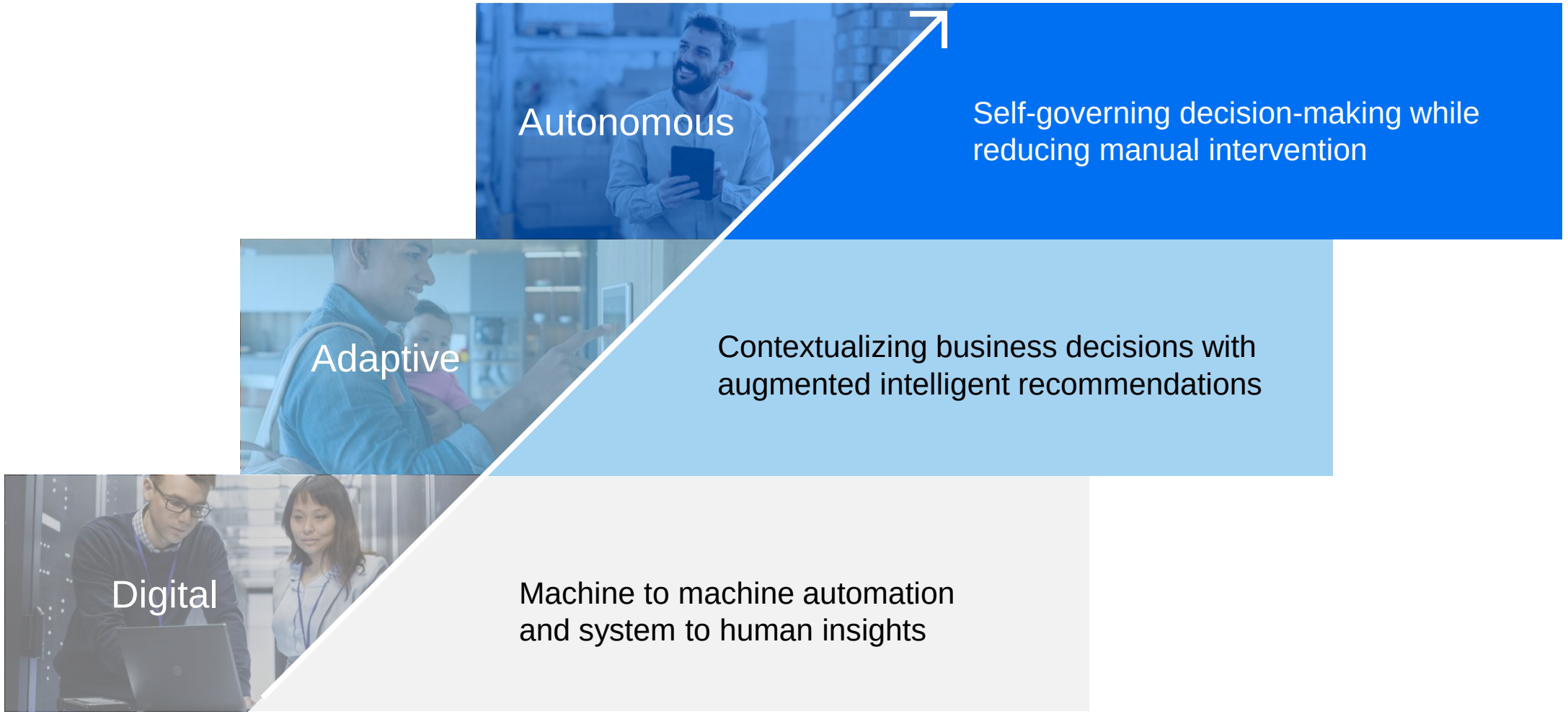
SAP Supply Chain Management Overall AI Strategy



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AI Throughout History in SAP Supply Chain Management

Optimization

- Optimization as a service as a common backend for cloud applications
- Rule based and heuristic algorithms
- Predictive Analytics Library (PAL)
- Solvers (Gurobi, SCIP, etc.)
- Examples:
  - Optimizing of transportation plans
  - Supply network optimization
  - Optimize workflows in a warehouse
  - Optimize production scheduling
  - Optimize spare part fulfilment

Machine Learning

- SAP owned ML models augmented by partner extensibility for specific domains 'bring-your-own model'
- SAP owned ML use/cases across DSC portfolio, for example:
  - IBP: Gradient boosting algorithms for demand forecasting
  - IBP: Intelligent lead time prediction
  - EWM: Intelligent slotting
  - APM: Failure Curve Analytics
- Bring-your-own-model examples:
  - Visual inspections
  - Anomaly detection

GenAI

- Joule powered conversational assistant for application search for all DSC cloud products
- Flagship use-cases confirmed for 2024 beta release:
  - IBP: Explanation of supply chain planning run → Evolve to what-if scenarios
  - EPD: GenAI assisted idea and image generation, assisted master data tagging for 3D visual data analytics
  - DM: Manufacturing issue analysis and solution assistant
  - APM: Advanced Failure Modes Analysis
  - Logistics: Intelligent cargo receipts

Next

- Combine optimization with ML models (e.g. re-enforcement learning for production planning)
- Explore quantum computing (partnership with IBM)

- Increase, scale and evolve via (Research) Partnerships e.g. to improve data quality / decrease manual data maintenance efforts (e.g. lead times)

- Launch value adding capabilities as an integral part of the SAP Supply Chain Management portfolio
- Combine GenAI with optimization, and ML
- AI Agents

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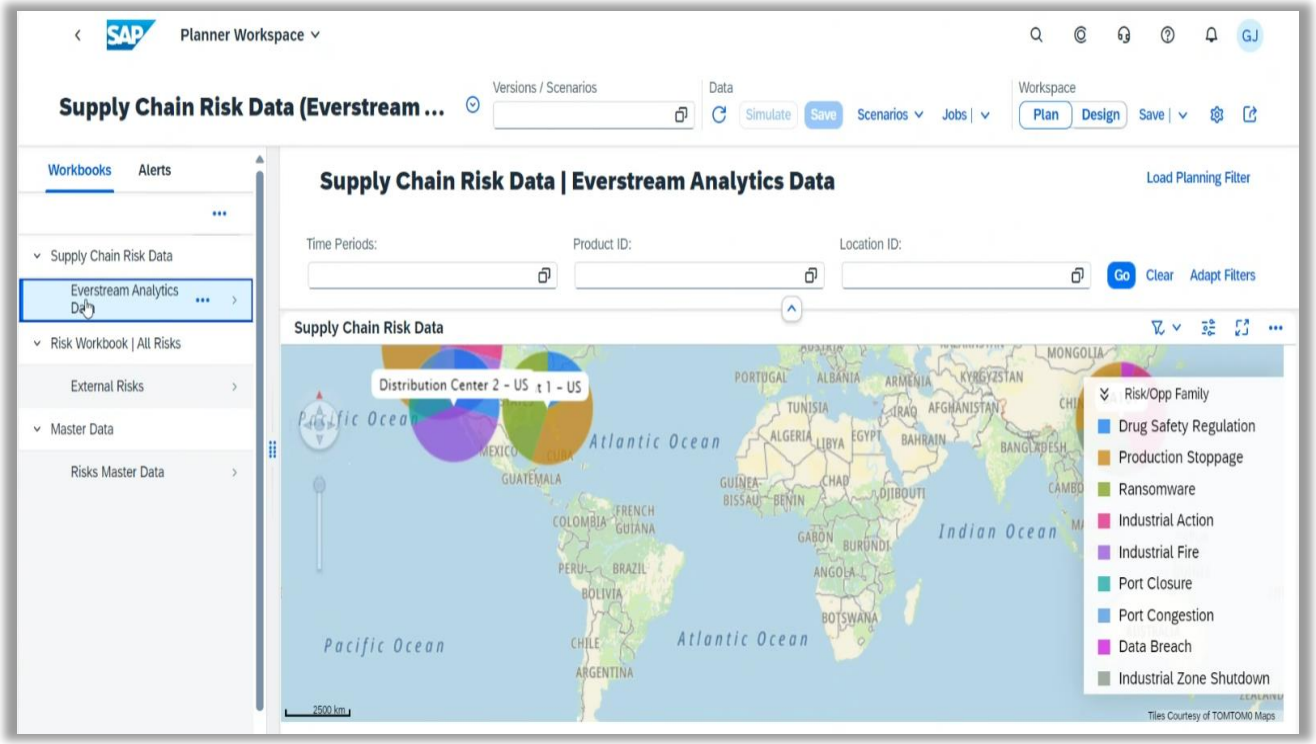
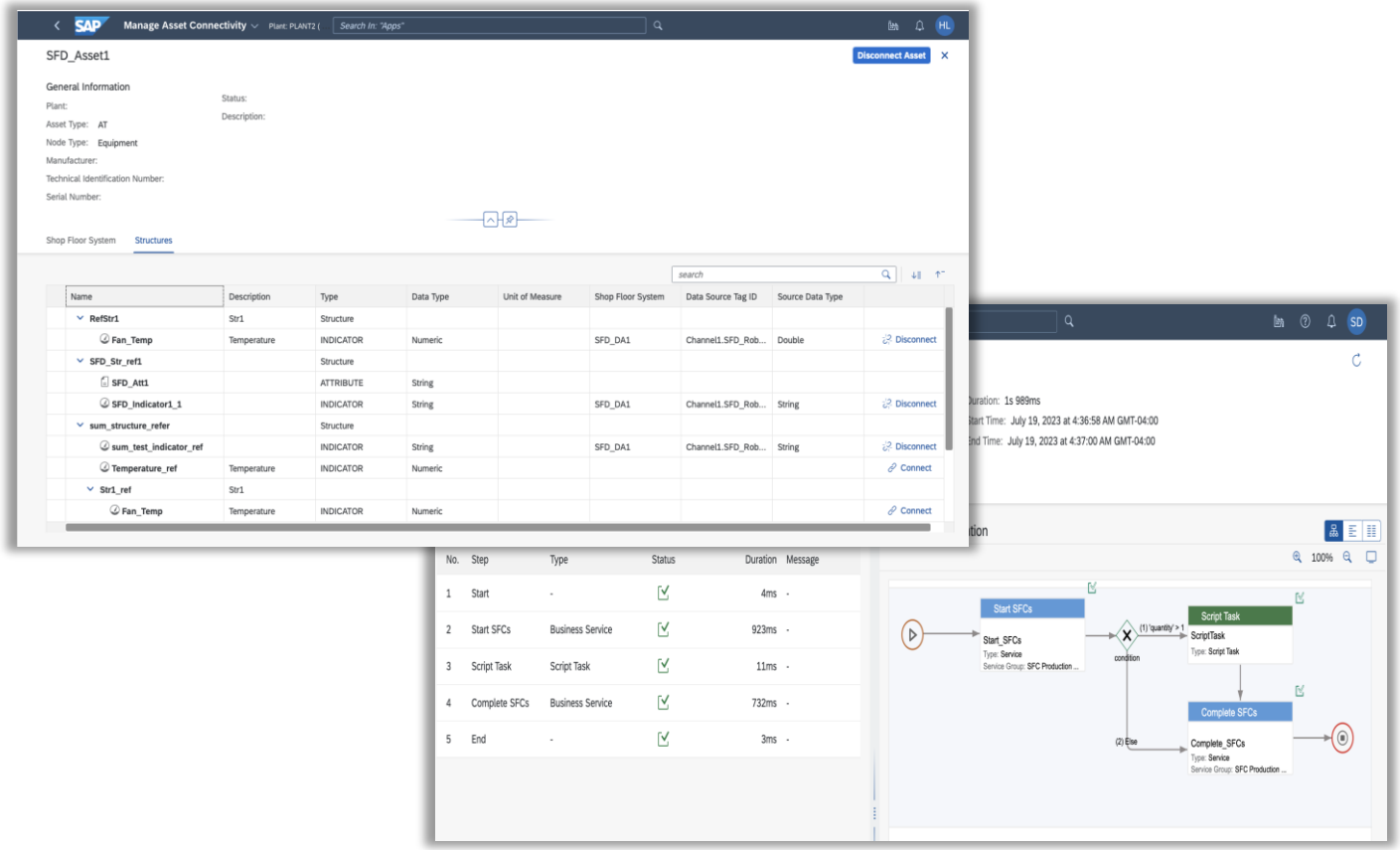
Digital | Autonomous Supply Chain requires a Data-Driven approach – from internal and external sources

Everstream Powered Risk-Aware Supply Chains



Digital | Autonomous Supply Chain requires a Data-Driven approach – from internal and external sources

Industry 4.0: Shop-Floor to Top-Floor Integration

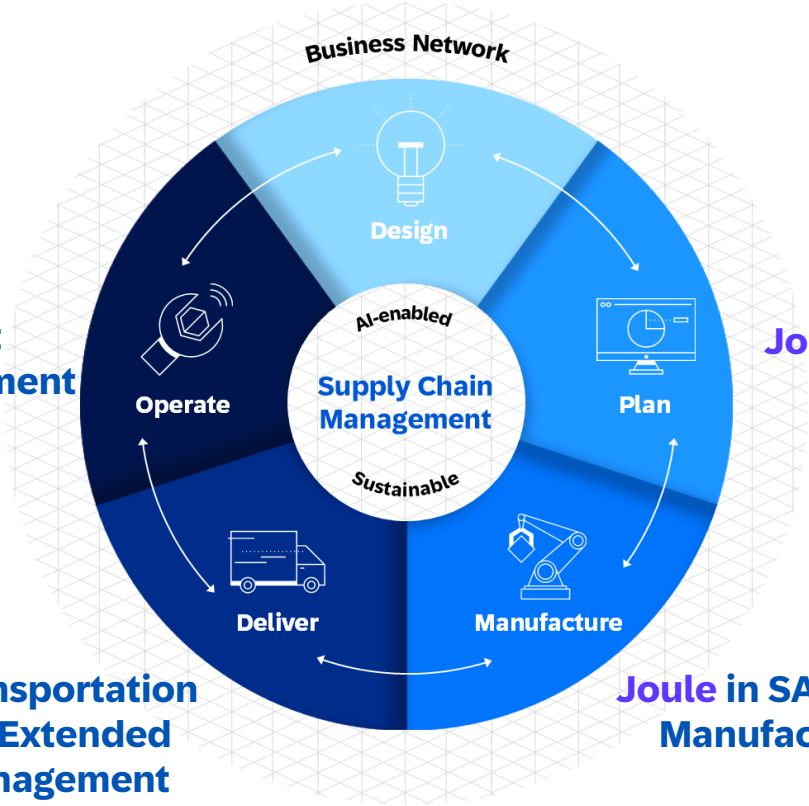


Adaptive | Embedded AI and optimization guides users to take intelligent decisions

Joule Across SAP Supply Chain Management

Joule in SAP Integrated Product Design

Joule in SAP Asset Performance Management



Joule in SAP Integrated Business Planning

Joule in SAP Transportation Management & Extended Warehouse Management

Joule in SAP Digital Manufacturing

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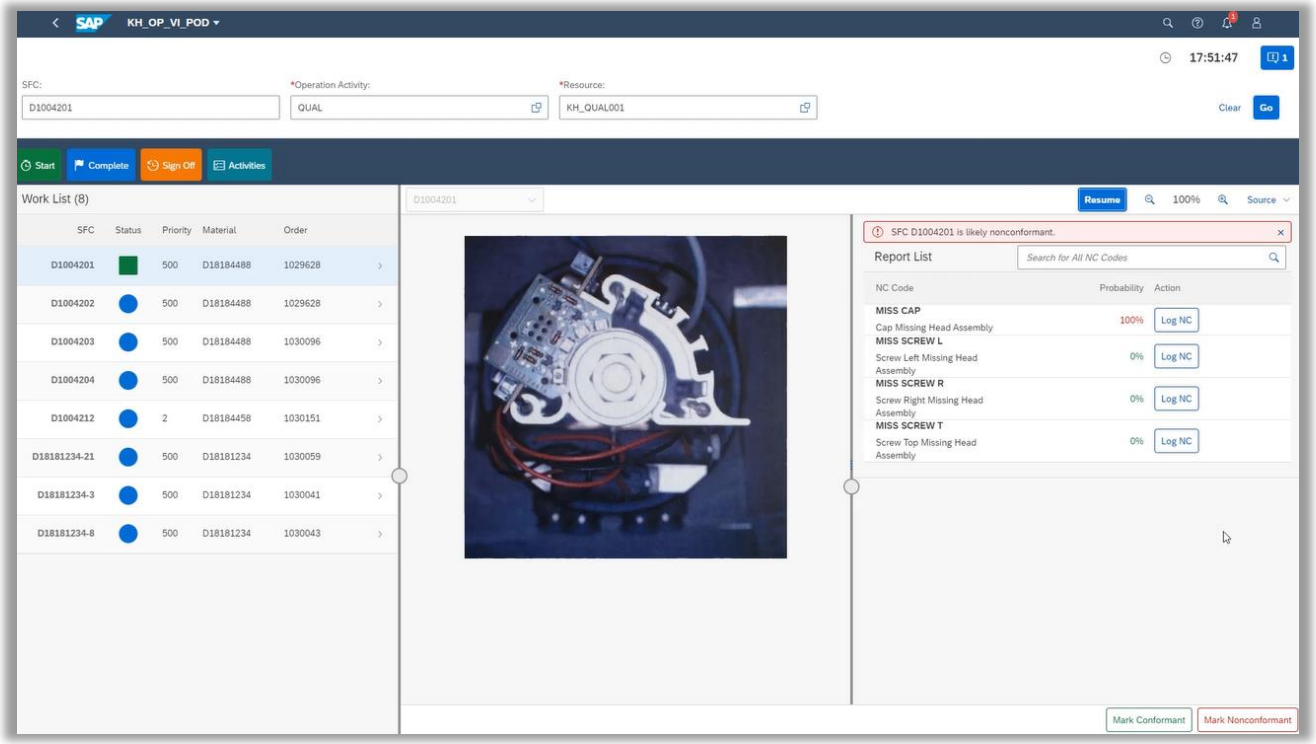
Autonomous | Touchless creation, prioritization, and execution of complex tasks

Visual Inspection in SAP Digital Manufacturing



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Thank you.

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