



Driving Digital Transformation and Operational Excellence with AI and Smart Manufacturing Solutions

Innovating manufacturing through intelligent technology and
efficiency

Primary Business Challenges Facing Manufacturers Today

78.2%

& 68.1%

of manufacturers cited **trade uncertainties** as their top business challenge, followed by **increased raw material costs**



Source:
NAM MANUFACTURERS'
OUTLOOK SURVEY Q3 2025

91%

of manufacturing and supply chain leaders **face barriers to product innovation and introduction**, with nearly half struggling to source fast, high-quality solutions for low-volume builds.



Source:
Forbes "What Is The State Of Manufacturing & Supply Chain In 2025?" 4/30/25

77%

of manufacturers **report a lack of resources** (e.g., workforce, budget) **severely limits their ability to manage** their supply chains effectively (an increase over 2024).



Source:
Forbes Fictiv's 2025 State Of Manufacturing & Supply Chain Report

56%

of manufacturing and supply chain leaders identify **AI as the leading trend shaping their long-term strategy**

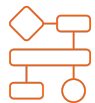


Source:
Forbes "What Is The State Of Manufacturing & Supply Chain In 2025?" 4/30/25

Top Business Responses To These Challenges

78%

of manufacturers say they are engaged in **supply chain process redesign**



Source:
Fictiv's 2025 State Of Manufacturing & Supply Chain Report

83%

of businesses **prioritize customer experience enhancement** in digital business strategy for supply chains



Source:
Gartner

68%

of leaders **prioritize onshoring as a key supply chain strategy in 2025**, especially in industries needing complex parts at scale, like MedTech, clean energy, and EVs.



Source:
Fictiv's 2025 State Of Manufacturing & Supply Chain Report

90%

of manufacturers believe that **digital tools are critical in achieving greater resiliency**



Source:
Manufacturing Leadership Council Survey 4/25: Tariff Tumult Roils Supply Chains

The Application Of Technology To Address The Challenges

90%

of leaders consistently report that **digital manufacturing platforms are an essential service** for production (up from 86% in 2024).



Source:
Fictiv's 2025 State Of Manufacturing & Supply Chain Report

94%

are saying that **AI for manufacturing and supply chain operations is their main implementation**, whether it's inventory management, product design, research, or supplier development.



Source:
Forbes "What Is The State Of Manufacturing & Supply Chain In 2025?" 4/30/25

6%

of businesses achieved full supply chain visibility. Data is still siloed across partners and systems. Until firms standardize data-sharing, even AI fixes can't close these costly blind spots



Source:
GEODIS Supply Chain Worldwide Survey

60%

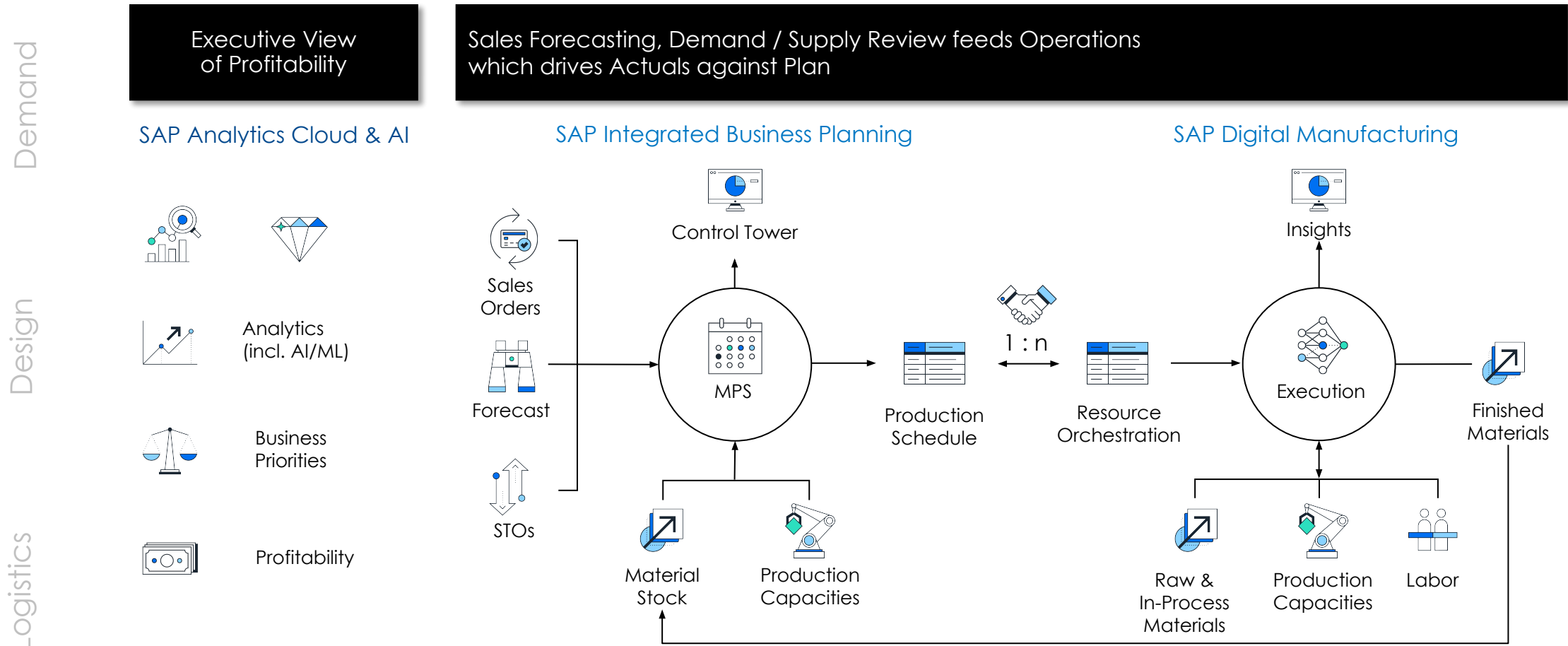
say the **lack of common data platforms is a major challenge** in being able to implement an end-to-end digital supply chain strategy



Source:
Manufacturing Leadership Journal – Survey 4/25: Tariff Tumult Roils Supply Chains

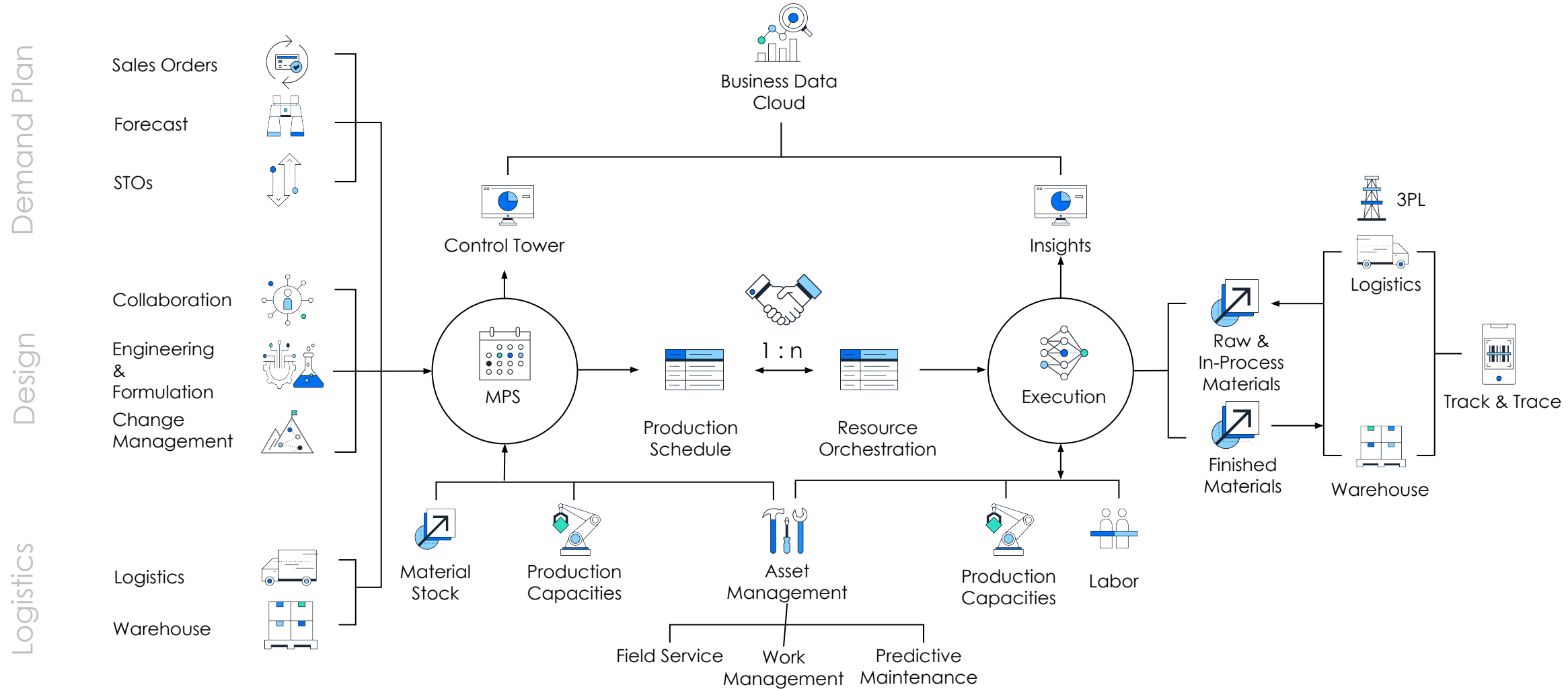
Integrated Supply Chain to ensure efficient Operations

Define Plan to Execute, align Logistics with Execution, coordinate Maintenance with Execution



Fully Integrated Supply Chain to Ensure Efficient Operation

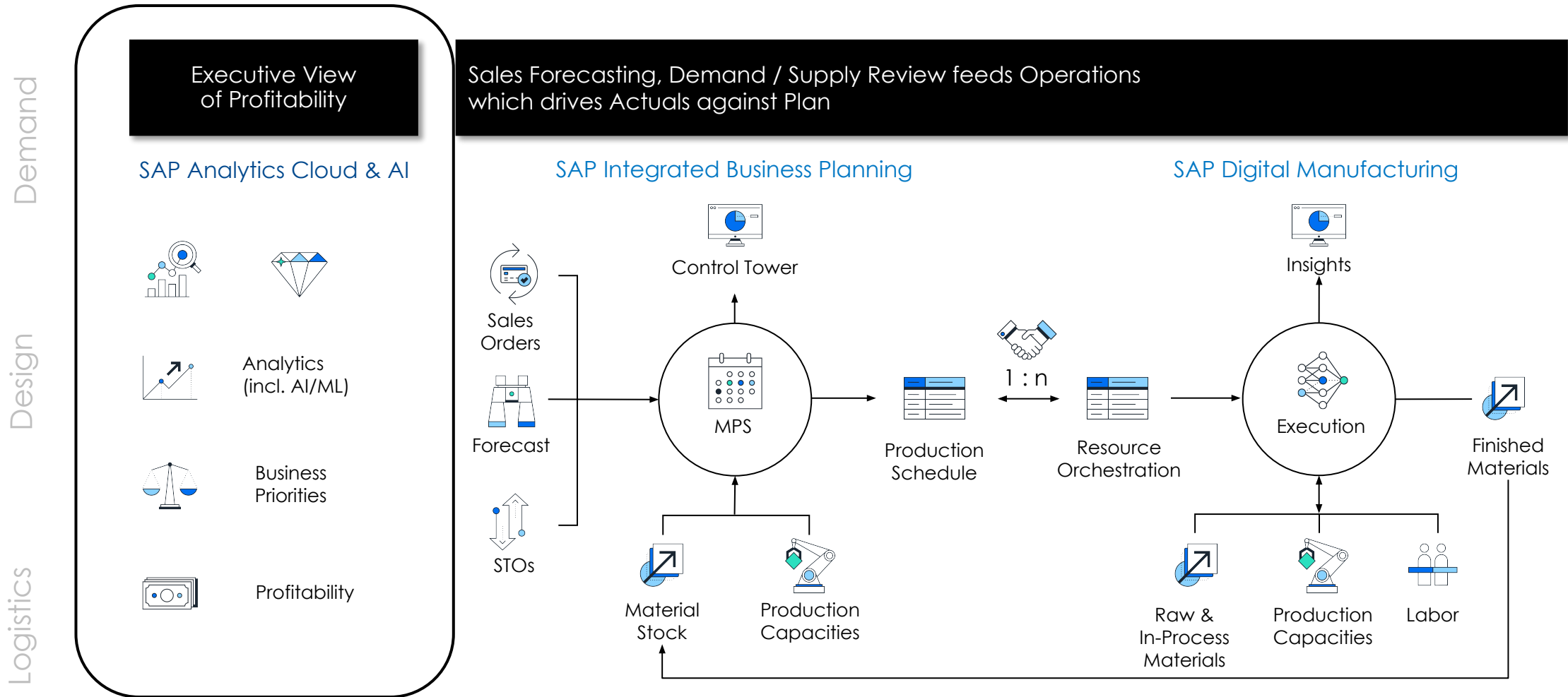
Define Plan to Execute, Align Logistics with Execution, Coordinate Maintenance with Execution



Argano and SAP Partnership Success

Integrated Supply Chain to ensure efficient Operations

Define Plan to Execute, align Logistics with Execution, coordinate Maintenance with Execution



Improving Exception Management and Manufacturing Decisions

Intelligent Alert Systems

- AI-driven alerts identify production variances and prioritize issues by impact and urgency for timely action.

Root Cause Analysis

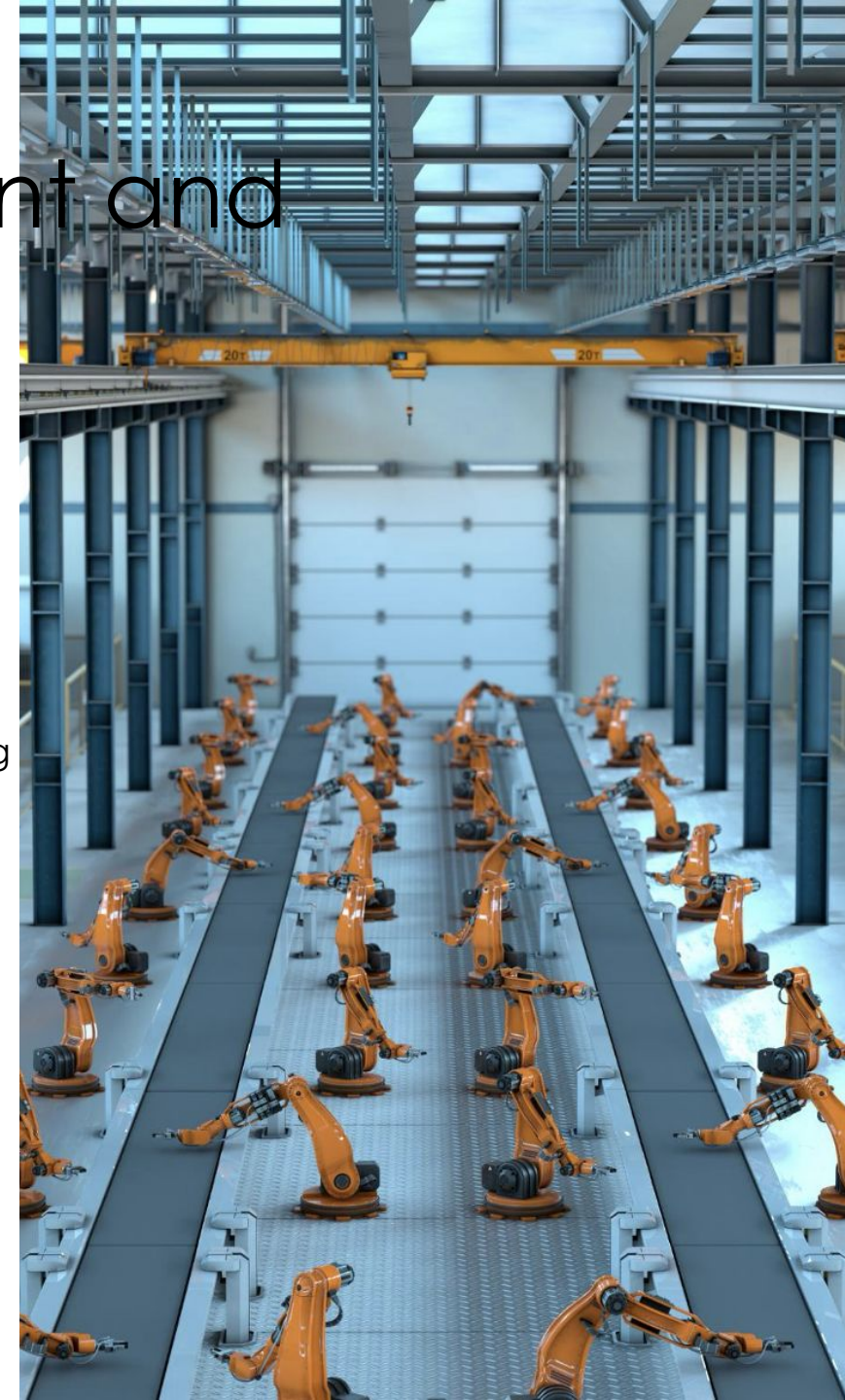
- AI correlates historical and real-time data to perform root cause analysis, enabling faster issue resolution.

Predictive Analytics for Decisions

- Predictive analytics forecast outcomes and recommend actions, reducing uncertainty and improving planning.

Operational Excellence

- Integrating AI streamlines workflows, reduces downtime, and fosters a culture of data-driven decision-making.



Integrated Digital and Data-Driven Solutions

Unified Data Platform

- SAP BTP offers a unified platform for data integration, analytics, and application development to streamline operations.

AI and Machine Learning Insights

- AI models analyze trends and recommend optimizations to drive continuous performance improvements.

Real-Time Performance Tracking

- Dashboards display key performance indicators in real time to support informed decision-making and strategic alignment.

Collaborative Continuous Improvement

- Integrated tools enable cross-department collaboration for agile execution and sustained business excellence.



ML Assistance for Fertilizer Production (Live)



Task:

- To minimize human impact on the operation of the granulation-dryer drum (GDB) process unit at the Chemical Plant in granulated fertilizers production process

Innovation:

- Using ML to analyse historical and current process parameters (about 50 parameters in total) to predict future volume and quality characteristics
- Continuous recalculation of the prediction according to changing parameters
- Operator assistance - permanent recommendations for optimum process values

Business results:

- Increased daily production outcome 2% to 10% (in tons)

ML Predictive Technologies to identify anomalies in energy consumption

BUSINESS TASKS

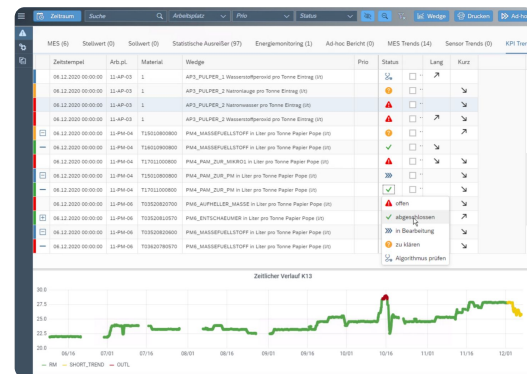


- Reduction of costs and losses everywhere and as far as possible
- Maximum energy efficiency, minimum environmental impact
- Confront the competition

PROJECT TASKS



- A system of continuous monitoring of technological processes
- Understanding of all types of losses and cost reduction potential
- Constant reasonable improvements, even the smallest ones
- Decrease wastes and carbon

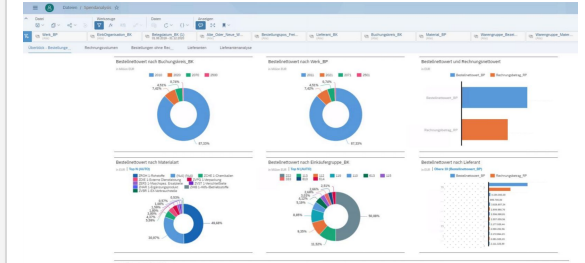


Anomalies monitoring in trends

Energiemonitor Steinbeis Papier



Raw mats and energy consumption monitoring



Detailed cost analysis

SOLUTION CAPABILITIES



- Continuous monitoring of production KPIs in downtime, output, quality, consumption
- Using AI to detect anomalies in production, daily generation of alerts for specialists
- Using AI to detect anomalies in new product launches, real-time monitoring of several thousand process parameters
- Continuous monitoring of raw material and energy consumption (consumption KPIs),
- AI to identify consumption reduction potential
- Continuous quality monitoring,
- AI to detect quality dependencies in the process, quickly troubleshooting quality issues
- Energy monitoring,
- AI to identify excess energy and raw material consumption, ISO 50:001 2018 certification

BUSINESS-RESULTS



- Savings of several thousand EUR per hour in production
- Multiple savings to avoid unplanned stoppages
- Reduction of raw material consumption, reduced excess consumption
- Decrease in energy consumption
- Ability to withstand competition effectively

Integrated Supply Chain to ensure efficient Operations

Define Plan to Execute, align Logistics with Execution, coordinate Maintenance with Execution

Demand

Design

Logistics

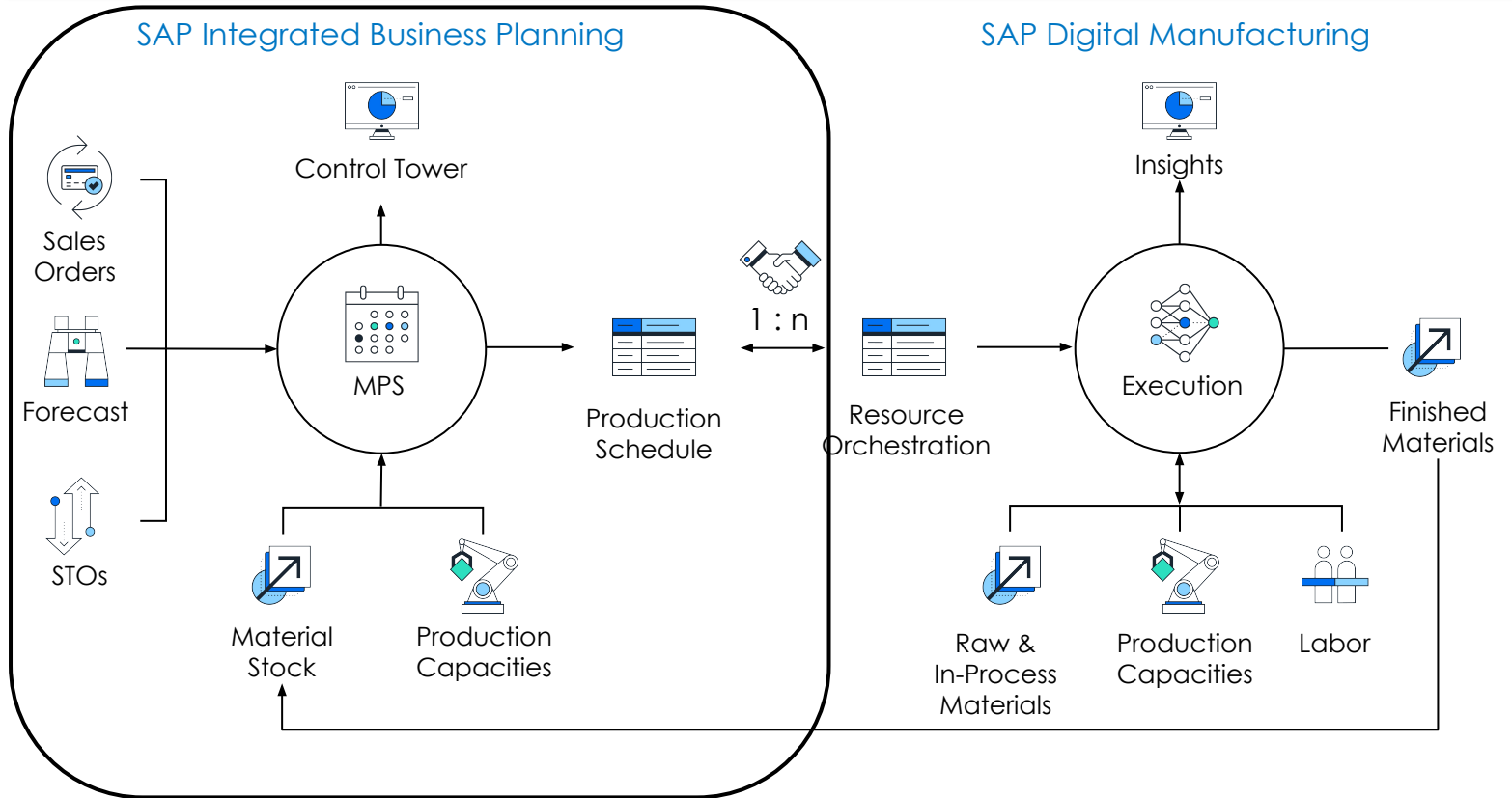
Executive View
of Profitability

Sales Forecasting, Demand / Supply Review feeds Operations
which drives Actuals against Plan

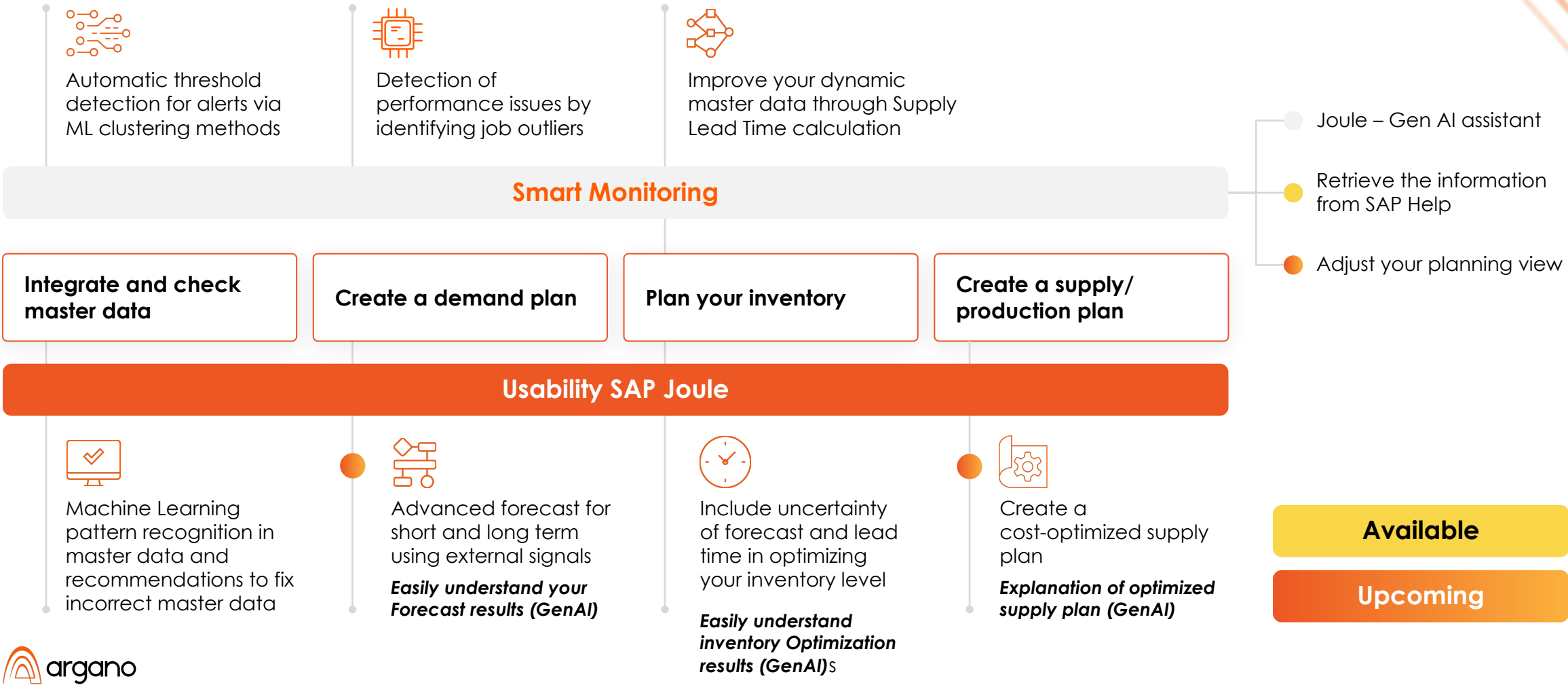
SAP Analytics Cloud & AI

SAP Integrated Business Planning

SAP Digital Manufacturing



Intelligent Planning: How AI in SAP IBP supports your business processes



APO to IBP Migration (Live) For A Process Manufacturing Company



Task:

- Enhance key performance indicators such as inventory turnover, forecast accuracy, and manufacturing cycle time to better evaluate value within the production process.

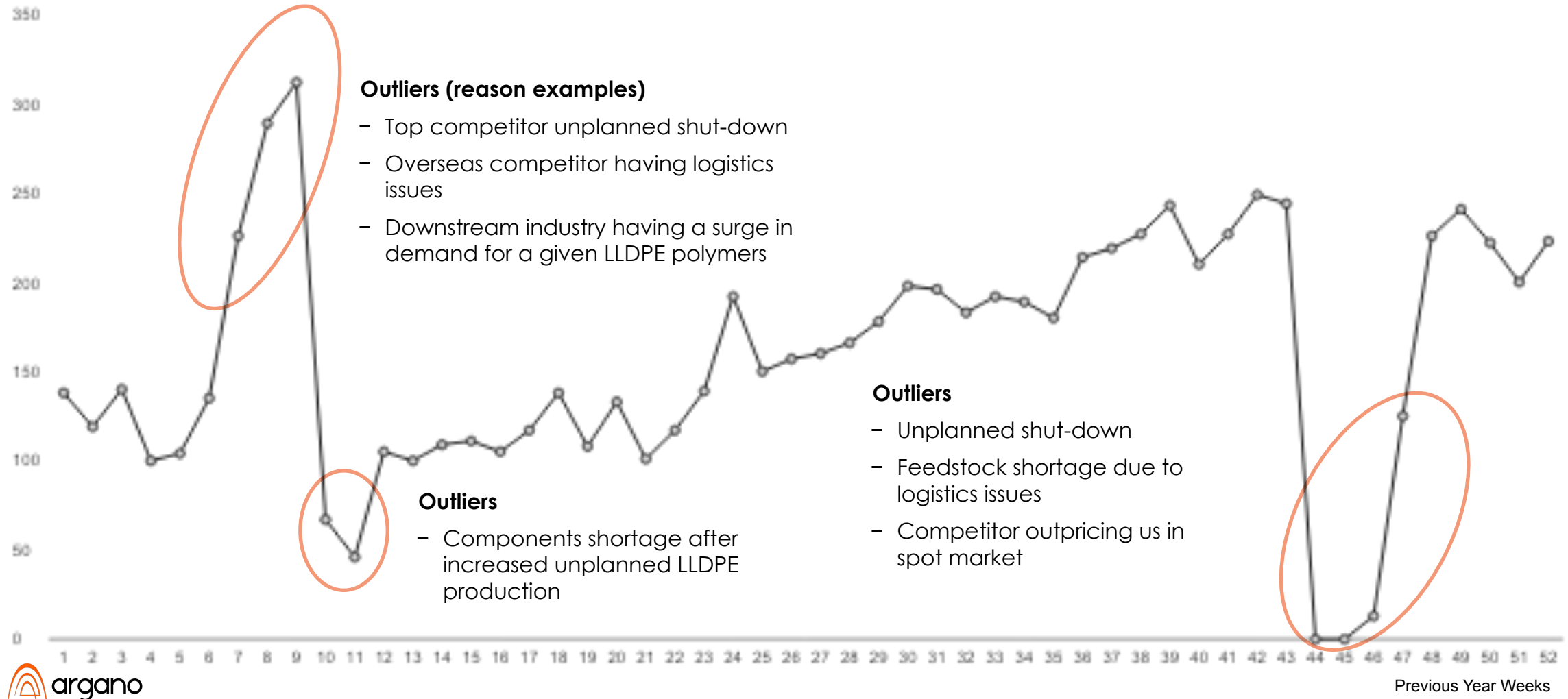
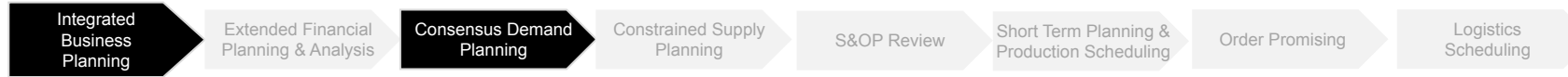
Innovation:

- Advanced statistical forecasting algorithms improved Demand Planning.
- Inventory Optimization reduced bloated inventory and provided insight to supply planning in conjunction to plant operational efficiency.
- Supply Planning with Real Time Integration (RTI) and Order Based Planning (OBP) significantly improved response time.

Business results:

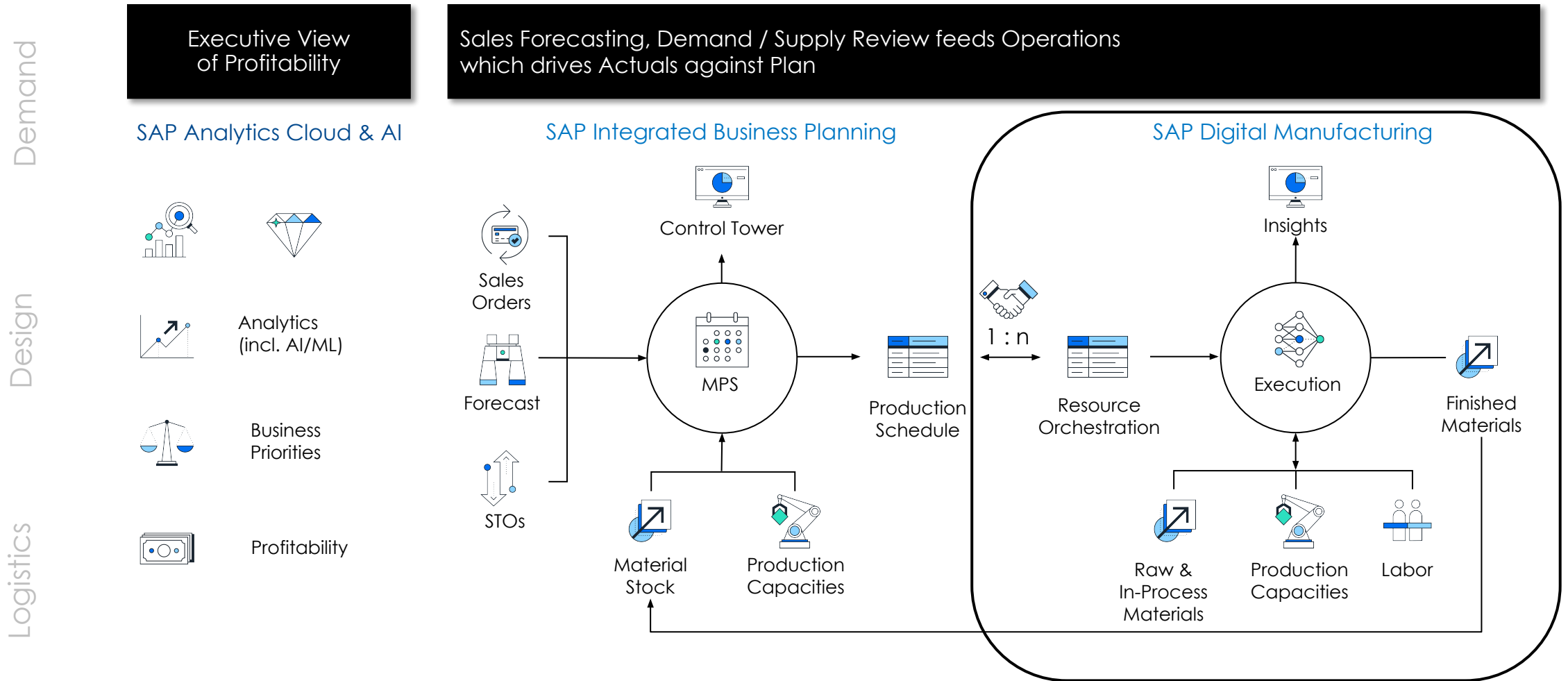
- Migration to IBP boosted forecast accuracy by 12%, while increasing inventory visibility, and planning agility significantly.

ML/AI based Outlier correction in Chemicals



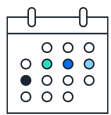
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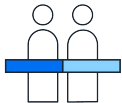


SAP Digital Manufacturing

SAP Digital Manufacturing is a solution optimizing manufacturing operations using state of the art technologies, for discrete and process production scenarios. It integrates seamlessly with enterprise and shop floor systems to provide real-time visibility, control, and orchestrate the manufacturing process end to end.



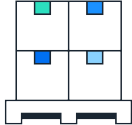
**Dispatch
&
Scheduling**



**Labor
Management**



**Work In Process
Management**



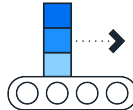
**Shop Floor
Logistics**



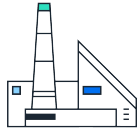
**Quality
Management**



**Insights &
Performance
Management**



**Industrial
Automation**



**Edge
Computing**

Orchestrate labor, resource, tools in shop floor to achieve maximum availability

Benefit from detailed planning, scheduling, availability, tracking & execution

Benefit from fully configurable operator dashboards and production process designs

Orchestrate intra-logistics between manufacturing line and warehouse

Support a closed-loop integrated quality management with quality collaboration

Gain deep production insights for significant process improvements using embedded intelligence

Ensure full data and process connectivity between the shop floor and business applications

Safeguards manufacturing production and processes against cloud outages due to planned/unplanned downtimes, or network latency and outages

React quickly to production events using the built-in intelligence

Improve tools and labor operations

Realizes manufacturing execution by managing shop orders (Production, Process, Planned, Logistics, and Service Orders)

Enable dynamic production operations

Use business networks and enable customers to produce and deliver high-quality products

Optimize manufacturing productivity by measuring Overall Equipment Effectiveness

Create production processes that link shop floor and business systems

Design mission critical processes to run on edge and ensuring business continuity

See How Customers are Using SAP DM Today and Ready AI



What Companies Use SAP Digital Manufacturing? SAP Customer Reviews & Stories



Improving efficiency with one end-to-end solution



Learn why King's Hawaiian chose SAP Digital Manufacturing for all of their in-house bread production.

[Watch the video](#)

Future-proofing manufacturing in a highly regulated market



Raumedic is driving long-term success by saving time and increasing compliance now and in the future with SAP Digital Manufacturing.

[Read the story](#)

Overseeing the entire shop floor in real time



Siemens Energy turned to SAP for a unified manufacturing execution system that would increase productivity at its lighthouse plants.

[Read the story](#)

Creating seamless operations



Learn why King's Hawaiian chose SAP Digital Manufacturing for all of their in-house bread production.

[Read the story](#)

SAP Digital Manufacturing AI Strategy

Unleash unparalleled **efficiency and productivity with AI**, transforming your production process into a powerhouse of **innovation and competitiveness**.

Operator &
Supervisor
Experience

Real-time guidance to operators and **intelligent insights** to supervisors that **increases efficiency and accuracy**

Shop Floor Automation &
Optimization

Assist machine onboarding and configuration, automate shop floor processes and improving output quality to significantly **boosting operational efficiency, reducing downtime and maximizing production throughput**.

Innovation &
Operational
Efficiency

Using Joule, our unified Co-Pilot, the AI foundation on SAP Business Technology Platform and our ecosystem of innovations to **reduce overall efforts and resources while increasing speed of innovation**

Shop Floor Supervisor Agent

Business Need

- Shopfloor disruptions are one of the major reasons for late deliveries and thus reduced customer satisfaction
- The mitigation of disruptions is typically triggered with a delay as transparency is often missing throughout all levels
- WIP stock already staged to the shop floor needs to be adjusted

Solution

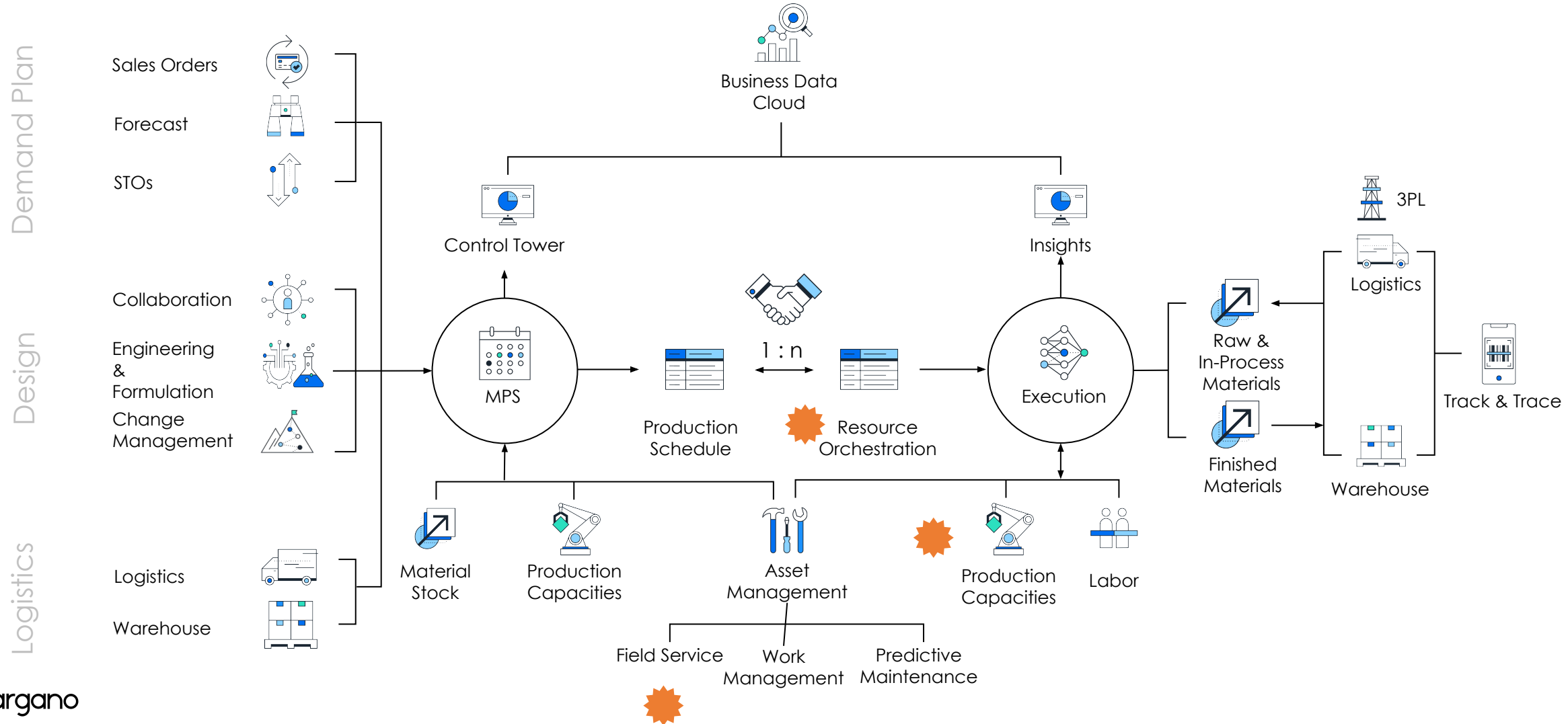
- The Shopfloor Supervisor Agent adjusts schedules and reallocate orders to address the potential disruptions on the shop floor
- The solution orchestrates orders and triggers relevant stock adjustments

Benefits


- Improvement in Production Supervisor productivity
- Reduction in loss due to un-productive time

Fully Integrated Supply Chain to Ensure Efficient Operation







Define Plan to Execute, Align Logistics with Execution, Coordinate Maintenance with Execution




Shop Floor Supervisor Agent


 Home ▾

Search or ask Digital Assistant ...




Tue, Feb 23 | 57°F 

Good morning, Tom



To Dos



Set criticality for Resources

Dispatch and Monitoring 2.0


1 Day Ago

Coating Line 1

Monitor as critical resource?

Approve

Reject



Release Production Orders


Manage Production Orders

6 Days Ago

Unreleased Orders: 15

Release

Reject



Schedule Equipment Maintenance

Patrick Mischo

2 Days Ago


Dates: May 24th to May 28th, 2024

Planned Maintenance Compliance: 90%

Approve

Reject

View More

 Task Center

Insights


Utilisation of Machines

Battery


By Category


100%


75%



Production Rate

89.36PC/H 





Want more information?

Contact us!



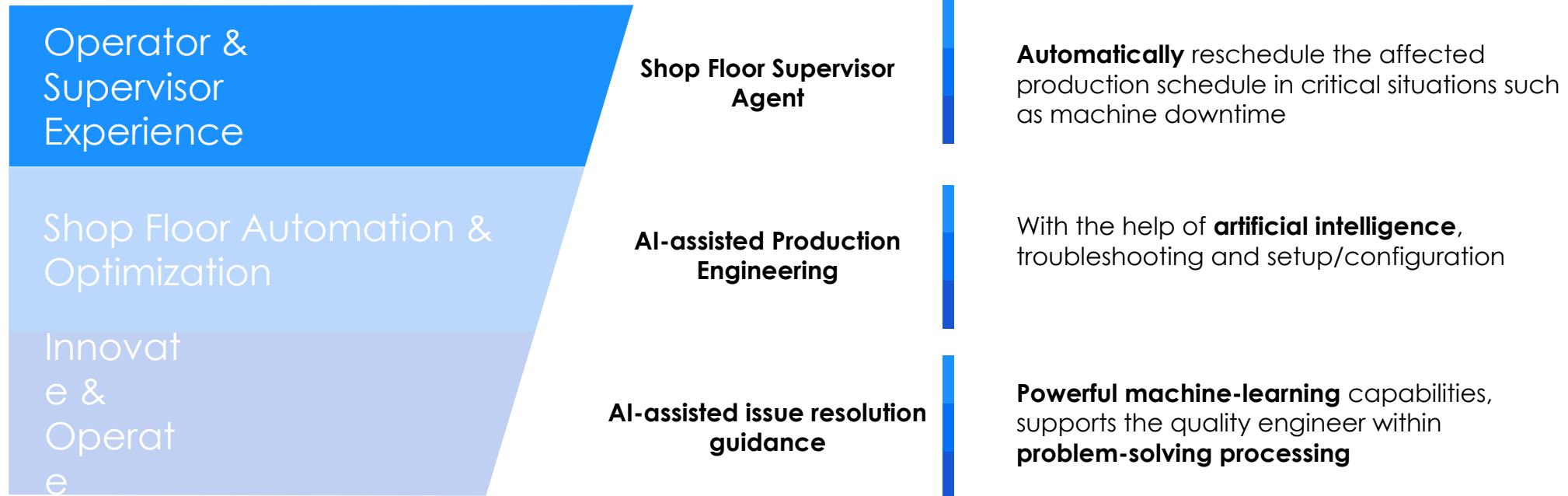
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Connecting Shop-Floor and Top-Floor Systems

Operator & Supervisor Experience

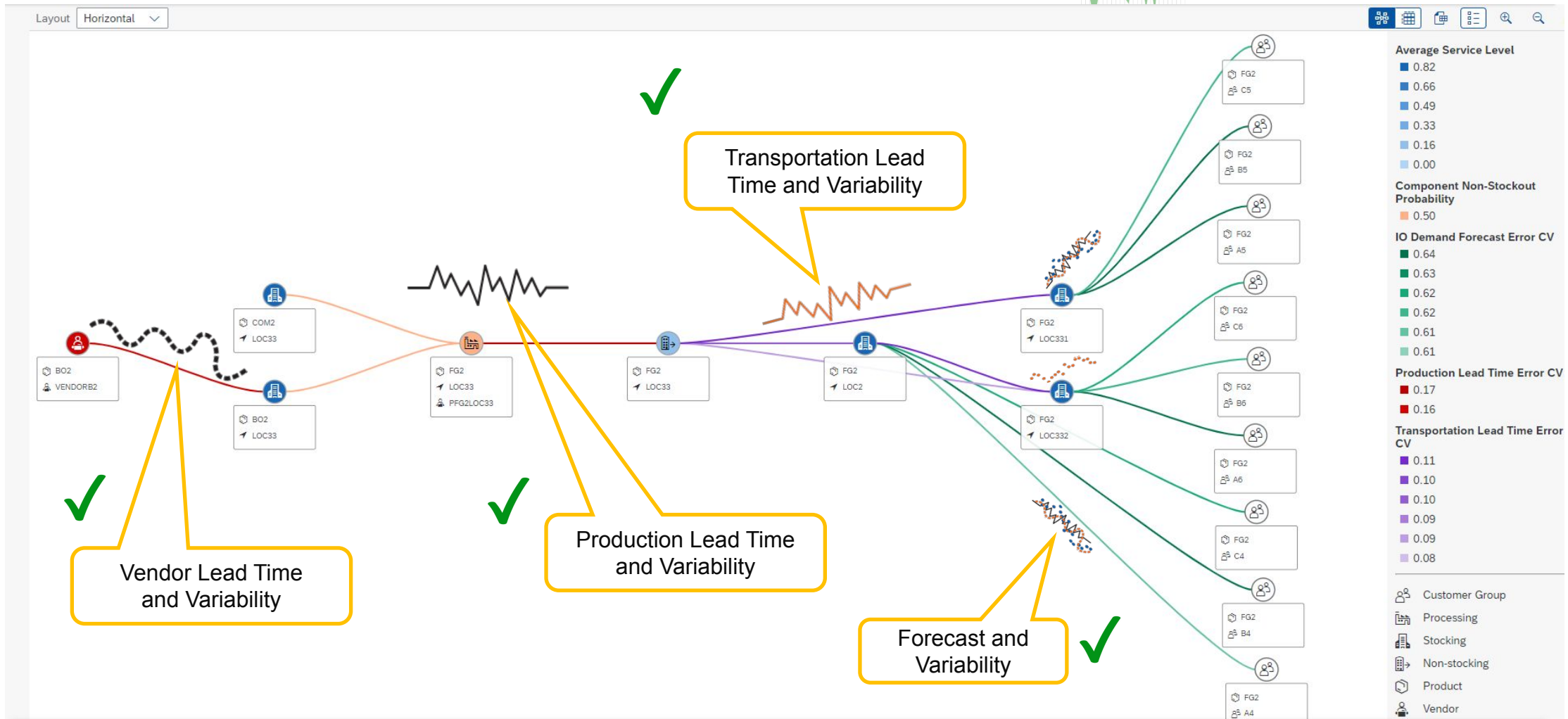


Artificial Intelligence in Inventory Planning

Incorporating uncertainty

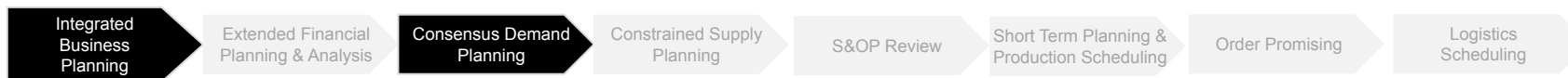


Making decisions in an increasingly **complex & uncertain environment**



AI-Enabled demand forecast for chemical market

Multinational Petrochemical
Company | Live | BTP plus IBP for
Demand



INPUT DATA for EXTERNAL FACTORS



Semi-products prices history



Raw material prices history



Substitution material prices



Stock prices, futures



Global consumption and transportation volumes



Global manufacturing capacity



Financial reporting (public)



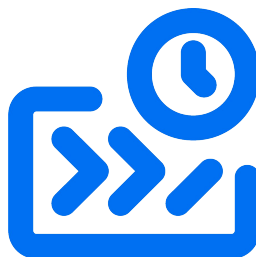
Trends, News, Events



Government regulations, budget projects, etc

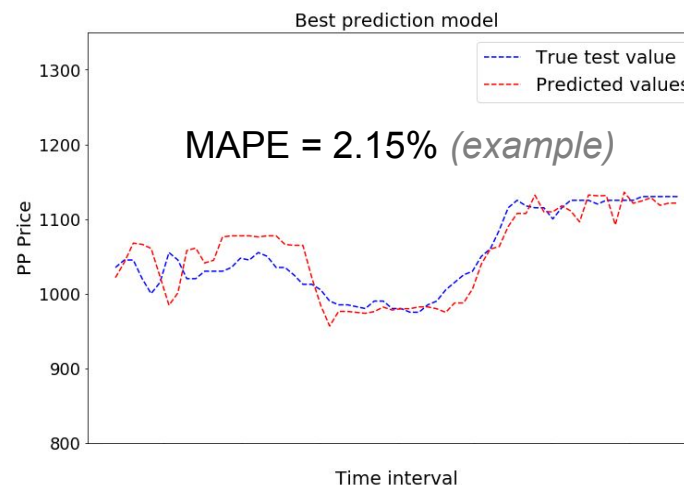
COLLECTION & PROCESSING

SAP Machine Learning data processing



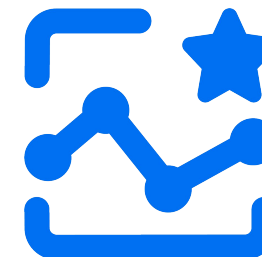
RESULTS

Mean absolute percentage error (MAPE) on the test data interval for 8 weeks is 2.15% (*customer's example result*)

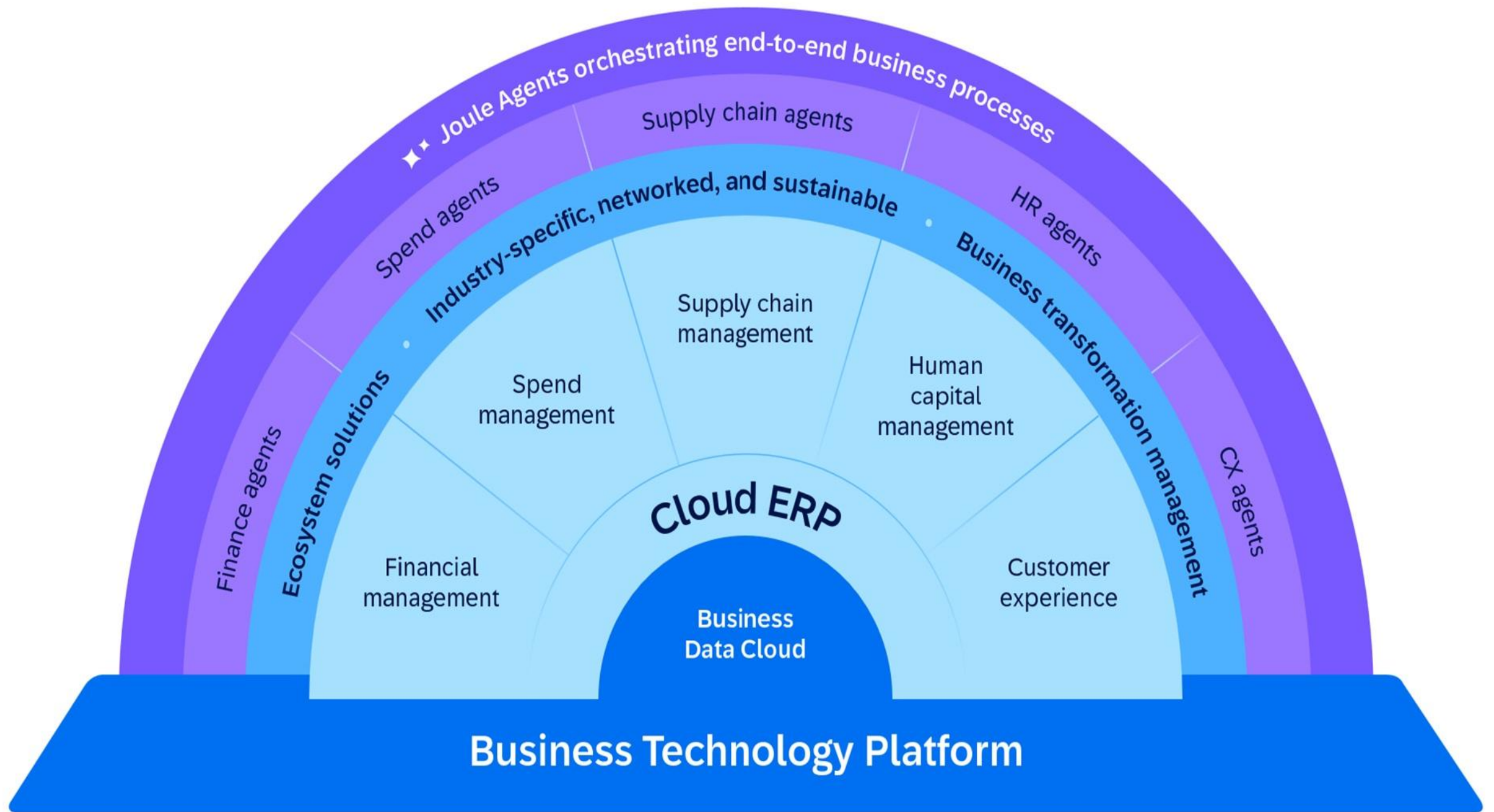


OUTCOME

Forecast of the future prices and volumes by regions







Demand planning, integrated planning on mid-term horizon







Offerings

	SOLUTION AREA	OFFERING TYPE	DESCRIPTION
1	Automation & AI	Workshop	The outcome is a prioritized AI use case portfolio, a readiness assessment checklist, and a clear next-step strategy for piloting and scaling AI with Argano's enterprise-grade tools and governance.
2	Automation & AI	Assessment	This assessment helps organizations create process map, identify high-impact opportunities for process automation and AI enablement using proven and emerging technologies.
3	Automation & AI	Copilot Pilot	Enablement, governance, rollout and adoption of Automations/Copilots.
4	Automation & AI	Agentic AI Pilot	Agent Design & Build Pilot aligned with the AI on solution criteria
5	Automation & AI	Managed Services	Continuous improvement and Governance

Enhancing Plant Maintenance and User Experience

AI COMPONENT	FUNCTION	BENEFIT
 Sensor Data Analysis	Detect anomalies and predict failures	Enable accurate OEE tracking
 AI Models	Process historical and real-time data	Provides actionable insights
 SAP Joule	Provide contextual decision support	Improves strategic decision-making
 Inventory Optimization	Manage spare parts efficiently	Enhance visibility and control

Improving Overall Equipment Effectiveness (OEE)

COMPONENT	FUNCTION	BENEFIT
 Shop-Floor Sensors	Collect real-time data on equipment performance	Enable accurate OEE tracking
 SAP Digital Manufacturing Cloud	Processes and analyzes sensor data	Provides actionable insights
 ERP Systems	Integrates operational data with business processes	Improves strategic decision-making
 Executive Dashboards	Visualize key performance indicators	Enhance visibility and control

AI for Automation and Maintenance

Real-World Examples in Process Manufacturing

Improved Operational Efficiency

A chemical manufacturer increased OEE by 15% using digital manufacturing cloud and integration services.

Waste Reduction in Food & Beverage

A food and beverage company reduced waste by 12% via sustainability control tower and strategic consulting.

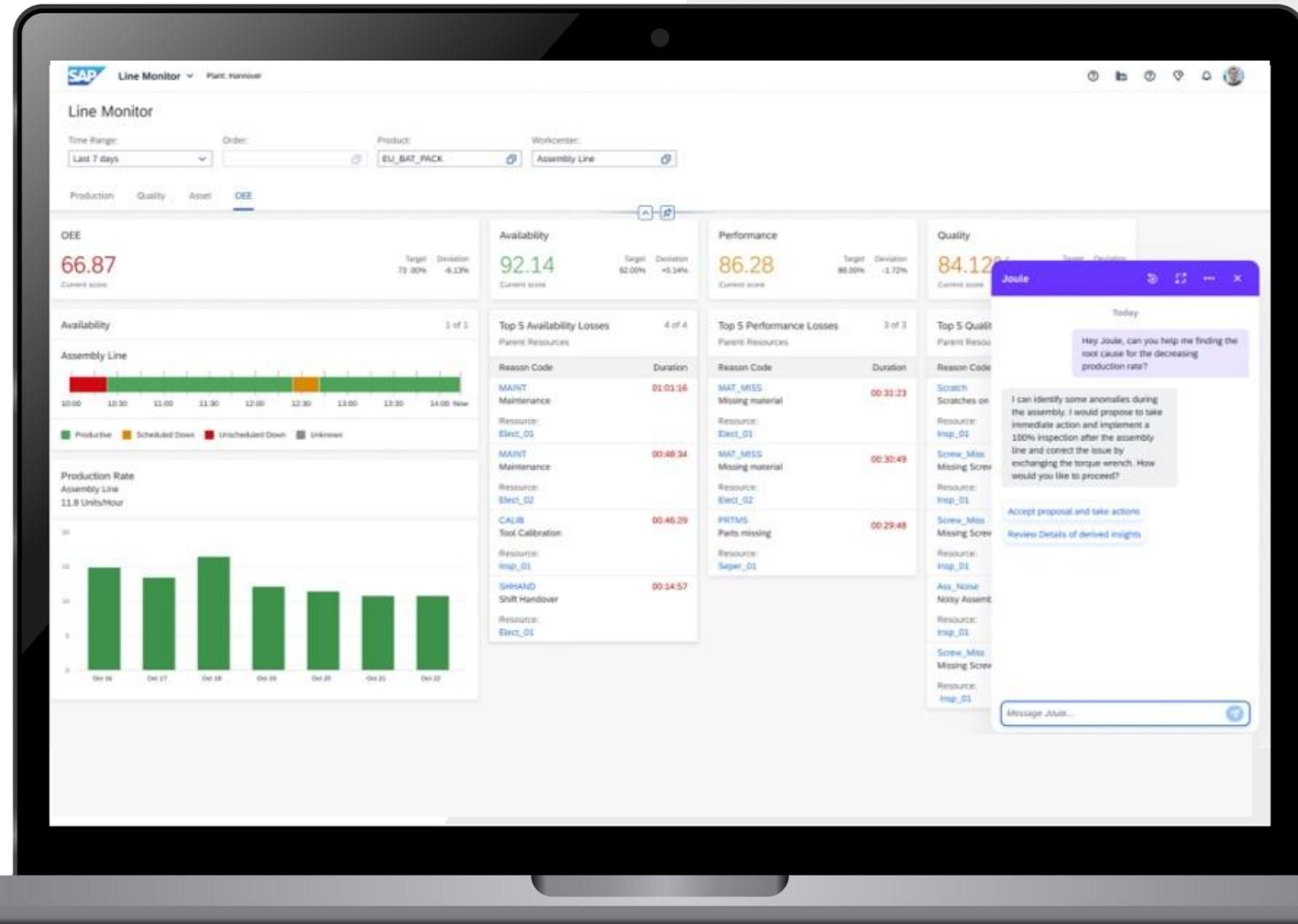
Automated Compliance Reporting

A pharmaceutical plant automated compliance reporting using AI tools to streamline operations and ensure regulatory adherence.



Intelligent Insights with SAP Digital Manufacturing

- Readymade data and analytics for “no-code” building and sharing of key performance indicators (KPIs) across a global and local operations.
- Combined business and operational data from ERP (SAP ECC or S/4HANA) and manufacturing to ensure the right context is available to drive meaningful change into operations.
- Empower collaboration around common goals and priorities across the different areas of production and guided by AI.



Plan to Fulfill SAP Business AI Capabilities for Chemicals Integrated Business Planning

Delivered in SAP Integrated Business Planning:

Joule Assistant

- Conversational Assistant on application help

Demand Planning

- Improved Forecasting Algorithms
- Integration with external forecasting algorithms
- Outlier Correction Logic
- Enhanced Demand Sensing

S&OP, Supply Planning

- Planning Results Explanation
- AI Assisted Scenario Planning

Planned in SAP Integrated Business Planning:

Joule Assistant

- Navigational Capability
- Analysis of Time Series Optimization Results

Demand Planning

- Improved Forecasting Algorithms (Extreme Gradient Boosting)

Custom Scenarios realized by SAP for Industry Customers

Demand Planning

- External Data Gathering, Extraction & Analysis to Improve Forecast Accuracy
- Forecasting of Prices and Product Volumes



Plan to fulfill SAP Business AI Capabilities for Chemicals Manufacturing & Quality Management

Delivered in SAP Digital Manufacturing:

Joule Assistant

- User Assistance for Application Interactions
- Joule for Digital Manufacturing

Visual Inspection

- Manage multiple visual-inspection tasks guided by machine learning

Safety & Product Compliance

- Safety Sheets Data Extraction (SAIFTY)

Planned in SAP Digital Manufacturing:

Joule Assistant

- Improved User Assistance for Application Interactions

Visual Inspection

- Train your own visual inspection models
- Analyse efficiency and effectiveness of visual inspections
- Automated visual inspection

Custom Scenarios realized by SAP for Industry Customers

Process Optimization

- Predictive Product Quality to Improve Performance
- Energy consumption optimization

Hazardous Materials Management

- Hazardous Material Label Generation

