SAP Digital Supply Chain

Desires, Delivered in the Experience Economy

Franz Hero, SAP
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The Impact of Global Disruption
The need for a resilient supply chain

- **Uncertain supply** of critical materials
- **Demand volatility** for goods and services
- **Constrained capacity** in manufacturing & logistics
- **Human risk** of balancing labor shortages and health and safety of employees
- **Oversteering** – Intensifies the bullwhip effect
Managing a Resilient Supply Chain
Leading by example

Medical Shortages
Desperate need of hand sanitizers, masks, supplies, and ventilators

Distribution Disruption
Networks are stretched thin

Consumer Shortages
Panic buying of vital commodities such as food, water, hygiene products
**A Modern Digital Supply Chain –**

Perfecting all the experiences that lead to the final product helps you deliver the ultimate customer experience.
Customers Want **What They Want, When They Want It.**

- Unique flavors
- Custom bottle shapes, sizes, and colors
- Personalized logos, photos and labels
- Ethical sourcing
- Sustainable packaging
Consumers Just Grab Their Favorite Beverage and **Enjoy It**

SAP helps automate the entire world of complexity behind delivering a simple beverage.
Top Floor Wants the Connected Supply Chain but
... continues to organize in departmental silos
The Intelligent Digital Supply Chain
Desires, Delivered in the Experience Economy
Digital Supply Chain: Desires, Delivered in the Experience Economy

**Design**
- Reduce time to market
- Continuously and sustainably innovate
- Deliver on customer demand

**Plan**
- Holistic view of demand
- Balance inventory and service levels
- Improve forecast accuracy

**Manufacture**
- Optimize manufacturing processes and minimize waste
- Improve collaboration with contractors
- Increase agility and responsiveness

**Deliver**
- Improve speed, efficiency and sustainability
- Deliver perfect orders consistently and profitably
- Increase utilization of warehouse and transportation

**Operate**
- Manage lifecycle of physical assets efficiently and sustainably
- Predict and simulate asset behavior
- Avoid unplanned downtime

**Network**
- Enable better collaboration between shippers and carriers for improved process efficiency
- Improve collaboration between manufactures and operators for Asset Management
The Intelligent Digital Supply Chain Portfolio

SAP S/4HANA® DSC

- Logistics and Maintenance Execution
- Complex Manufacturing
- Detailed Production Planning and Scheduling
- Product Lifecycle Management
- Inventory & Material Requirement Management
- Environment Health & Safety

SAP DSC Cloud

- SAP Supply Chain Networks
- SAP Enterprise Product Development
- SAP Digital Manufacturing Suite
- SAP Integrated Business Planning
- SAP Intelligent Asset Management
The Intelligent Digital Supply Chain
Connect Digitally to Perfect Reality
The Evolution of Planning

Current State

- Integrated demand, supply & production planning
- Demand driven
- Interactive problem-solving
- Mass customization & postponement

New Paradigm

- Continuous and Real-time Planning
- Segmented Supply Chains
- Value-chain oriented
- Automated touchless planning
- Individualized customer experience
- Multi-enterprise collaboration

Efficiency

Experience
Synchronized Planning – **BRAIN** of Design2Operate

Synchronized Planning offers a **harmonized Supply Chain Planning** from Customer Demand to Deployment. Ensuring a consistent planning process **vertically and horizontally**, leveraging the combined capabilities of S/4HANA and IBP.

**SAP Supply Chain Control Tower**

- **SAP S/4HANA**
  - Embedded PP/DS
  - Transportation Management
- **SAP Integrated Business Planning**
  - Response & Supply
Enable better ‘Customer and Product Experience’ by staying continuously aligned across departmental silos with a **unified view** of real-time ‘demand and supply’ of the Extended Supply Chain.
SAP Integrated Business Planning (SAP IBP)
Continuously Aligned, Real-time connected

Unified User Experience

- Real-time insight and monitoring on aggregated and detailed level
- Flexible and extensible data model and pre-built business model templates
- Integrated business alignment for entire value chain
- Real-time planning and simulation capabilities
- Embedded social collaboration for transparent communication
- Role-based user experience with consumer grade interface
- Interoperability with Financial Planning in SAP Analytics Cloud
- Interoperability with Business Network in SAP Ariba

Real Time Scenario Analysis

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APO Transformation Strategy

Product Direction

SAP Integrated Business Planning

Supply Chain Control Tower
Sales & Operations Planning
Demand Inventory Response & Supply

Network-Centric Planning
Innovative & Rearchitectured Supply Chain Planning Processes

SAP Advanced Planning & Optimization (APO)

Demand Planning (DP)
Supply Network Planning (SNP)
Lean Service Parts Planning (SPP)

Production Planning/Detailed Scheduling (PP/DS)
Global Available-to-Promise (gATP)
Adv. Service Parts Planning (SPP)

Finance Sales Supply Chain
aATP Sourcing & Procurement SPP
MRP Production Planning PP/DS

SAP S/4HANA

Plant-Centric Planning
Unified Manufacturing Processes Plan to Produce in ONE System

= Cloud
= On Premise

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APO Transformation Strategy
Product Direction

SAP Integrated Business Planning

Network-Centric Planning
Innovative & Rearchitected Supply Chain Planning Processes

Supply Chain Control Tower
Sales & Operations Planning

Demand
Inventory
Response & Supply

Tight Process Integration
Synchronized Planning & Near real-time Integration

Finance
Sales
Supply Chain

SAP S/4HANA

= Cloud
= On Premise

Sourcing & Procurement
SPP

aATP

MRP
Production Planning
PP/DS

Plan to Produce in ONE System

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APO Transformation Strategy

Product Direction

S/4HANA

Production Planning
Demand Driven Replenishment
Transportation Management
Production Planning/ Detailed Scheduling (ePP/DS)
Advanced Available-to-Promise (aATP)
Service Parts Planning (SPP)

APO

Demand Planning (DP)
Supply Network Planning (SNP)
TP/VS
Production Planning/ Detailed Scheduling (PP/DS)
Global Available-to-Promise (gATP)
Adv. Service Parts Planning (SPP)

IBP

Demand
Response and Supply
Inventory
Sales & Operations Planning
Supply Chain Control Tower
Demand Driven Replenishment
The Intelligent Digital Supply Chain
Connect Digitally to Perfect Reality
SAP Digital Supply Chain Solutions for Design

Digitally orchestrate product development from Idea to product industrialization, resulting in reduced time to market R&D return on investment, higher margins, and reliable product launches

**Product Lifecycle Management**

**SAP S/4HANA**
- Engineering Control Center for Mechatronic Products
- E2E PLM for Discrete & Process Industries
- Advanced Variant Configuration
- Product Compliance, Lifecycle Costing and Sustainability
- Enterprise Project and Portfolio Management
- Visual Enterprise

**SAP Enterprise Product Development**
- Collaboration
- Engineering
- Connected Products
- Visualization
- Formulation (Process Industries)
- Lifecycle Costing*
- Advanced Variant Configuration and Pricing*

Differentiate by using **design data beyond engineering** to simulate and visualize the business impact of product development on costs, supply chain, procurement, manufacturing, and service to enable fast decision making while reducing time to market, improving profits and design with quality

Note: * Separate products, not part of SAP Enterprise Product Development
The **digital thread** that ties **Design2Operate** together

The holy grail of product and asset lifecycle management is born.

It’s been the dream of every manufacturer, product design team and service lifecycle manager, to have a single digital thread that integrates all the real-time information, feedback, performance and data on a product from cradle to grave. Now every downstream team will have in-the-moment access to what every other group is doing. Processes will go from reactive to predictive.
A common logical model for Product / Asset supporting next generation e2e scenarios in service & maintenance management but also in engineering and manufacturing
Intelligent Assets within a Unified Business Network
Complete Asset Lifecycle of Industrial Assets with SAP Asset Intelligence Network

Key Business Benefits
1. From reactive to prescriptive maintenance
2. Manage the balancing-act between profitability, asset health and availability
3. Transformation of service models with Equipment Manufacturers and Maintenance Service Providers

Key Business Benefits
1. Better Service Levels
2. Higher Profitability
3. Service Differentiation

Supplier (Design & Construction)
Industrial Equipment Manufacturers
Asset Operator (Owner)
Asset Operator (Owner)
Asset Operator (Owner)
SAP Asset Intelligence Network

PLM Information
Digital Twin
Digital Twin
Digital Twin
The Intelligent Digital Supply Chain
Connect Digitally to Perfect Reality
SAP Digital Supply Chain Solutions for Manufacture

Digitally orchestrate manufacturing operations, resulting in better customer service levels, higher margins, lower Cost-of-Goods Sold, and higher return on assets.
Industry 4.0: Digitalize your Manufacturing and Beyond
Profitably predict, automate, innovate: from transactional to data-driven business processes

Move digitalization and Industry 4.0 from factory-focused initiatives to a company-wide, competition-beating business strategy. Combine manufacturing automation with enterprise business execution.

1. Center on Customers
   so their input and preferences are the source of all you do

2. Reinvent Production
   using intelligent assets and processes that dynamically adapt to production priorities and deliver customization at scale

3. Connect the Entire Company
   orchestrating sales, service, and logistics with production to transform how you work
SAP Industry 4.0 and the Intelligent Enterprise
Center on Customers, Reinvent Production and Connect the Entire Enterprise

Industry 4.0 by SAP

Artificial Intelligence
Data Driven Processing
IT/OT Integration
Discrete Factories

SAP S/4HANA & Digital Supply Chain

Manufacturing Operations Management

- Inventory
- Manufacturing
- Quality
- Maintenance
- Environment Health, Safety
- 3rd Party Extensions
- Manufacturing, Engineering, Process & Simulation

Automation, CNC, IO, PLC, … (physical shop floor)

- Machines, Devices, Sensors, Tools, Shelves, Kanban Boxes, Workers, Forklifts, Tags, AGVs, etc.

Key Differentiators

- IT/OT convergence enables **vertical integration** to achieve real time data driven processes
- Ad-Hoc decision support and **Factory Insights** on the Shop-Floor to manage critical exceptions
- Automated production supply and manufacturing to run **autonomous, fast and cost efficiently**
- A vendor lock-in is turned into an **open, highly connected and transparent** environment
- Deterministic processes are re-engineered to **prescriptive**
- Increase **product quality** by deeply embedding quality assurance and root cause analysis
- An Intelligent Manufacturing **Cloud** combined with a powerful **EDGE**
Evolving from Classic PP to S/4HANA Production Engineering & Operations

Seamless information flow from Design-to-Manufacturing Execution

**ERP with classic PP**

- PLM
  - E-BOM
  - M-BOM
  - VMP
- PP Routing
- MRP, PP/DS
  - Planned Order
- PP Order

**S/4 HANA with PEO**

- Production Engineering
  - E-BOM + PMI
  - VMP
  - M-BOM
- Shop Floor Routing
- MRP, PP/DS
  - Planned Order
- Production Operations
  - Shop Floor Routing

**ME**

- Manuf. Execution
  - Order
  - Master Data Routing
  - Routing

**DMC**

- Manuf. Execution
  - Order
  - Master Data Routing

Manufacturing Change Management & Change Impact Analysis

Note: Integration from PEO to DMC and ME is planned for 2020
The Intelligent Digital Supply Chain
Connect Digitally to Perfect Reality
SAP Digital Supply Chain Solutions for **Deliver**

Enables just-in-time consumption creating the product experience by making delivery part of the promise
Digital Logistics
Architecture

**STANDALONE**

SAP S/4HANA®

Transportation Management
Warehouse Management

SAP S/4HANA® & ECC or other ERP

**EMBEDDED**

SAP S/4HANA®

Transportation Management
Warehouse Management

<table>
<thead>
<tr>
<th>Business</th>
<th>Transportation</th>
<th>Warehouse</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Global, multi-modal</td>
<td>High Volumes, Automation</td>
</tr>
<tr>
<td></td>
<td>Global, multi-modal, ERP-LE-TRA Customers</td>
<td>Low to medium complexity, ERP-LE-WM Customers</td>
</tr>
</tbody>
</table>

| IT | Easier consumption of innovation | Independent of core feature changes | Lower TCO compared to Standalone | Tightly connected with one master data set |
S/4HANA for DSC Standalone
Accelerate **Flexibility and Speed** in implementation with S/4 HANA DSC Edition

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**Plan**

**S/4 HANA for DSC**
- PPDS
- TM
- EWM
- PEO
- ECC

**Integrated Business Planning**
- SD
- MM
- CO
- ATP
- FI
- HR

**Business Networks**
- Business
- Networks

**Execution Insights**
- SAP DSC Cloud
Order to Delivery with SAP S/4HANA Digital Supply Chain

Inbound

Just-in-Time / Just-in-Sequence

Modernized and redesigned processes for Just-in-Time and Just-in-Sequence & Quality Management

Higher visibility and easier collaboration with suppliers with harmonized processes

Supply to Line

Industry-specific processes (e.g. route trains) and simplified operations with standardized packaging materials

Outbound
The Intelligent Digital Supply Chain
Connect Digitally to Perfect Reality
SAP Digital Supply Chain Solutions for **Operate**
Connects people and processes across the enterprise and networks, and connects them with assets through Industry 4.0

**Intelligent Asset Management**

- **S/4HANA for Asset Operations & Maintenance** with Scheduling, Mobile, EHS
- **Asset Performance Management** SAP Asset Strategy & Performance Mgt
  SAP Predictive Maintenance & Service
- **SAP Asset Intelligence Network**

**Manage NEW Business Models**

**From...**
- Selling equipment
- Untrusted asset information
- Limited analytical capabilities
- Reactive maintenance

**To...**
- Pay per use / equipment as a Service
- Collaborative Single source of truth
- Real time analytics with simulation
- Prescriptive maintenance
The Intelligent Digital Supply Chain
Connect Digitally to Perfect Reality
Global economy has evolved into a network economy.
Vision: Evolve into “one” Digital Supply Chain Network

- Networks improve visibility, efficiency and collaboration in all stages/phases of planning in the continuous improvement loop from design, manufacture, deliver to operate.
- SAP is reducing ‘friction’ by orchestrating specific networks across the supply chain to improve stakeholder visibility and collaboration for improved process efficiency with collective intelligence.

Partner Networks

- Central Network Onboarding, Search & Discovery
- Network to Network Collaboration for Synchronous Action
- Common data foundation product and asset information

- Increased visibility across the entire supply chain
- Collaboration for improved process efficiency driving Collective Intelligence
Single Network Platform for Onboarding, Search & Discovery

1. **Logistics Business Network**
   - Freight Collaboration
   - Track and Trace
   - Visibility

2. **Asset Intelligence Network**
   - Asset Collaboration
   - Visibility

3. **Ariba Network**
   - Supplier Collaboration

**Unified Business Networks Portal**
- Single Business Networks Entry Point
- Information / Learning Assets Repository
- Trading Partner Discovery
- Trading Partner Registration
- Trading Partner Invitation
- Trading Partner Relations Management
- Company Profile Maintenance
- User Management
- And More…

**Design & Manufacturing Network**
- Design and MFG Collaboration
- Visibility
The Intelligent Digital Supply Chain
Desires, Delivered in the Experience Economy
Sustainable Supply Chain Management
Enabling our customers to create a sustainable enterprise

- Enabling sustainable supply chain is entrenched in our products
- We enable sustainability index reporting as well as the circular economy case
- Intelligent Environmental Health and Safety (EHS) – Process Safety and Operational Integrity

**Design** products that are recyclable and environmentally sustainable

**Plan** to reduce emissions, and ethically source materials

**Manufacture** with minimal waste and environment impact

**Deliver** with logistics processes that optimize loads to reduce mileage, and carbon footprint

**Operate** assets and equipment in an energy-efficient manner that is safe for the environment and workforce

Leverage **Networks** to enable collaboration within the supply chain. To support a circular economy and overall sustainable business models.
Thank You.

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APPENDIX
Digital Supply Chain
Business Steps on Big Data Target Architecture

Common reference architecture to simplify connectivity, analysis and storage of big data in order to improve your business processes.

Devices
1. Securely connect and manage Devices
2. Process and analyze data

SAP Cloud Platform
3. Persist and manage business and device data
4. SAP Applications
   Enhance and optimize business processes
Why SAP?
Why SAP?
Let our customers do the talking

Cascades
How Has Optimizing Its Supply Chain Helped Create Value for Customers?

Microsoft
Digital Supply Chain Initiative with AI, Predictive Analytics, and Machine Learning

Kennametal
How Digital Manufacturing Is Delivering Real-Time Visibility into People, Material, and Machines?
Why SAP?
Let our customers do the talking

SteelCase
The value of standardized transportation processes across three regions

AstraZeneca
Delivering Innovative Medicines to Patients Worldwide On Time

Syngenta
Improving customer satisfaction and loyalty while keeping crops healthy
Why Experience Matters

- **52%** of U.S. consumers have switched providers in the last year because of poor experience.
- **95%** of dissatisfied customers tell others about their bad experience.
- **$550B** Employers suffer as much as $550B of lost productivity every year because of employees having poor workplace experiences.

Today’s Business Challenges

62% of CEOs are adjusting their supply chain and sourcing strategy in response to the threat posed by trade conflicts to their operating model and growth strategy.

Companies that earn $1 billion annually can expect to earn, on average, an additional $700 million within 3 years of investing in customer experience.

Only 9% of world’s economy is circular. Yet, resource extraction is expected to rise further from 84 billion tons in 2015 to 180 billion tons in 2050.

Unmatched Supply Chain Expertise

SAP’s solutions for Digital Supply Chain enable:

1-2%
Top line revenue growth

10-15%
Better order fulfillment metrics, and improved customer experience

10-15%
Decrease in ‘Total Logistics Cost’ through improved planning and real-time visibility

12-15%
Decrease in ‘Days in Inventory’ with a pull-based production schedule driven by actual demand

10%–15%
Reduction in maintenance costs by optimizing maintenance strategies

Benefits are based on early adopters of SAP or conservative outside-in benefits due to moving from a traditional ERP to enhanced SAP S/4HANA, SAP S/4HANA, LoB/ cloud applications and SAP Leonardo solutions. As each enterprise is at a different level of maturity, our recommendation is to work with you to determine the value proposition for your enterprise.