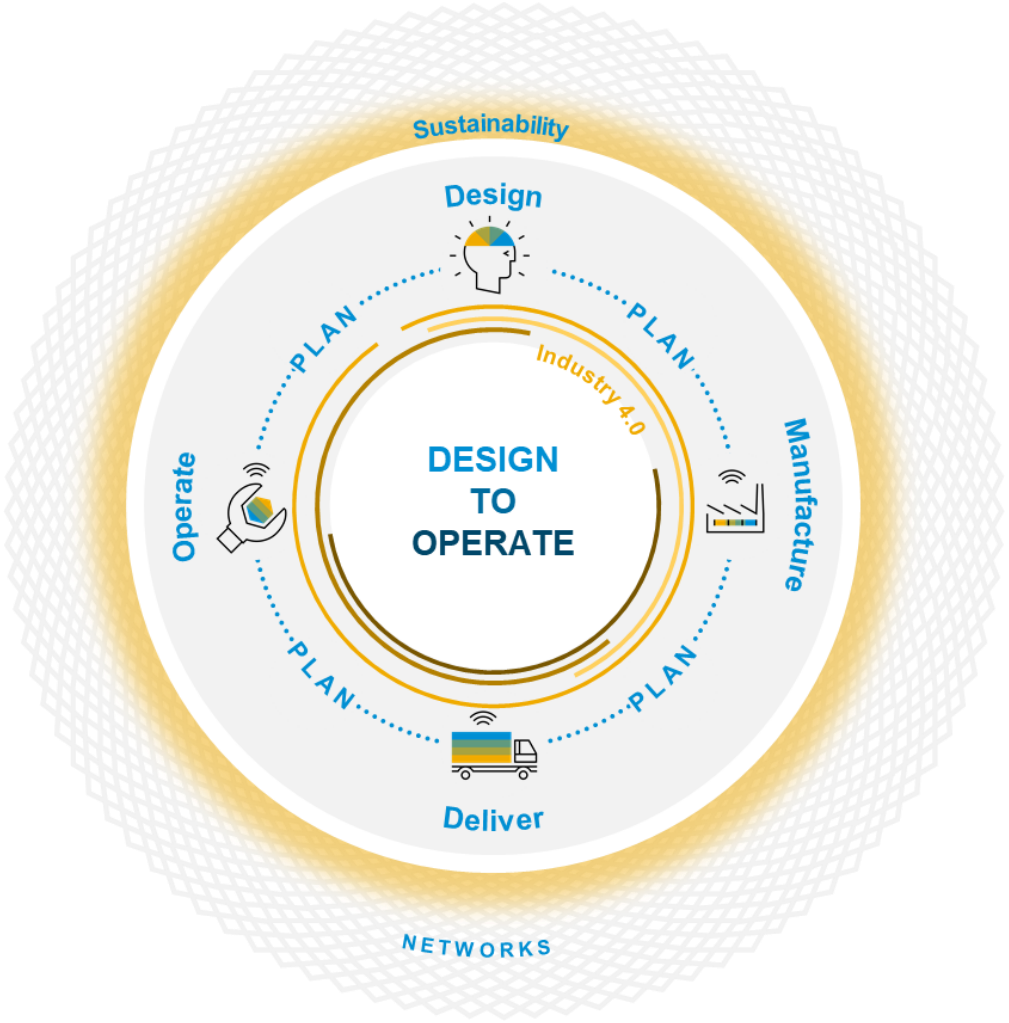
Design to Operate
Building a Resilient Supply Chain



23 September, 2020

Anubhuti Shah
Solution Manager, Design-to-Operate
SAP Digital Supply Chain

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Agenda

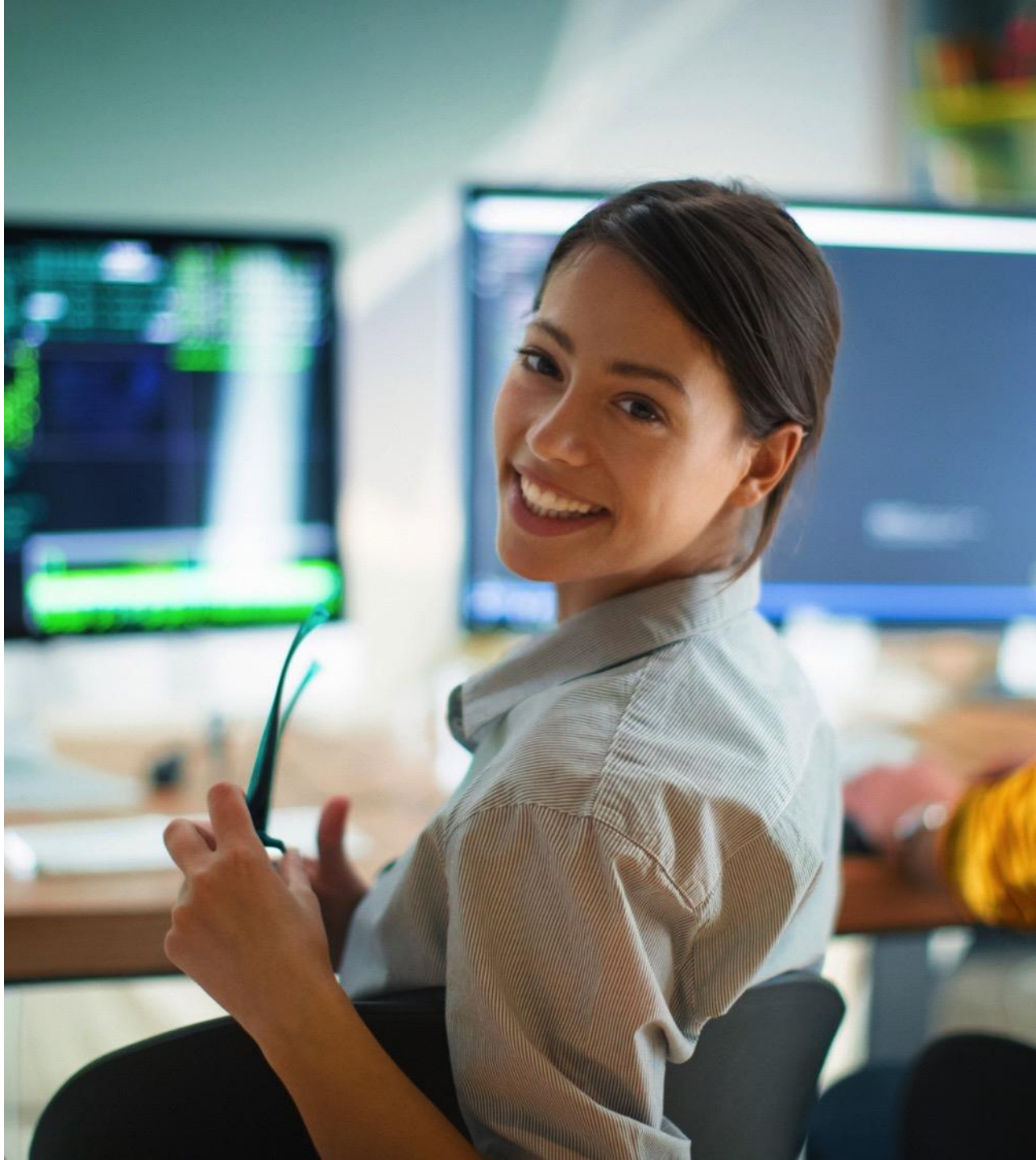
The Intelligent Enterprise and Design to Operate

Design to Operate

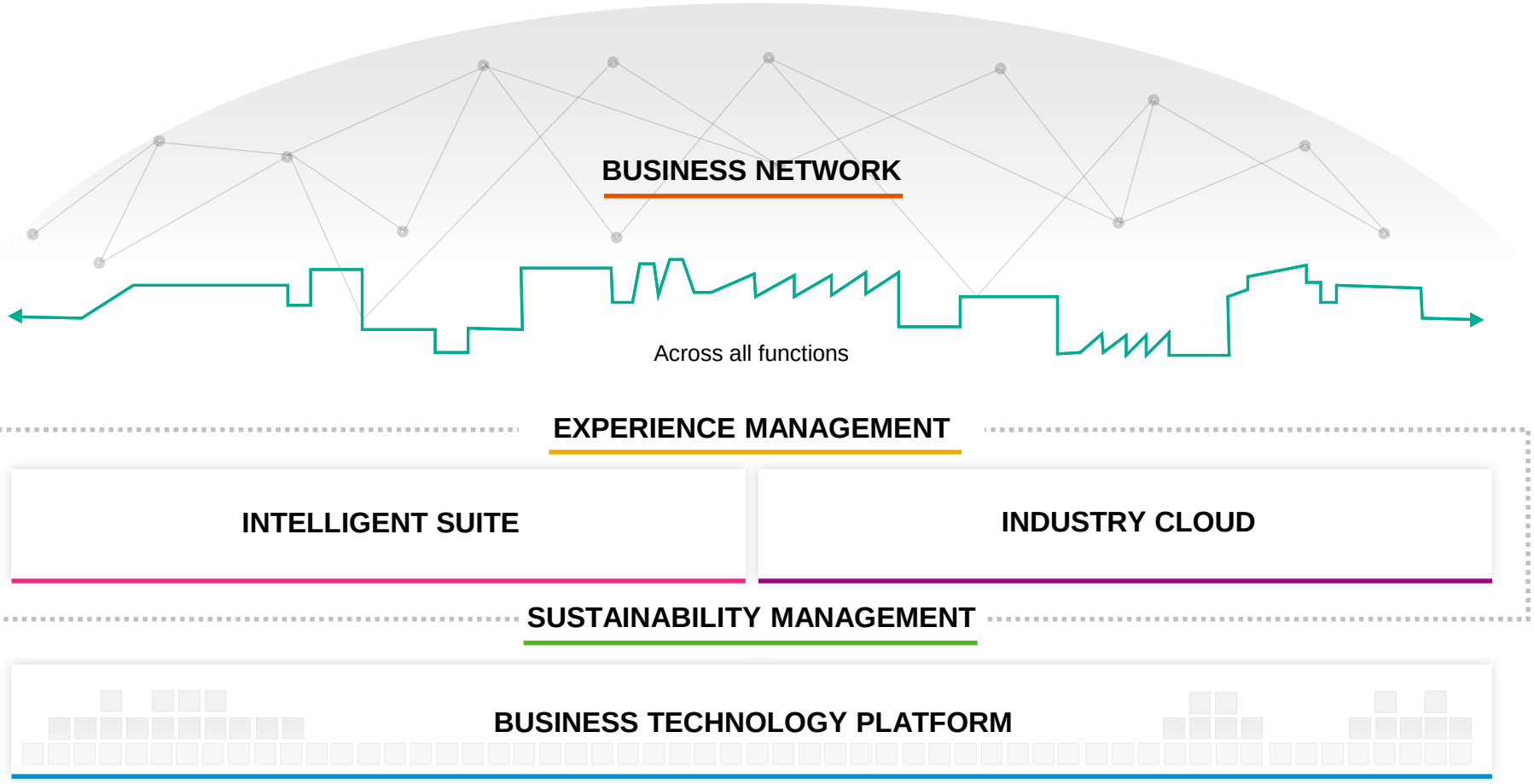
- Overview
- Technology Highlights
- Find Resources and Influence D2O
- Demonstration

Key Take Aways

Q&A

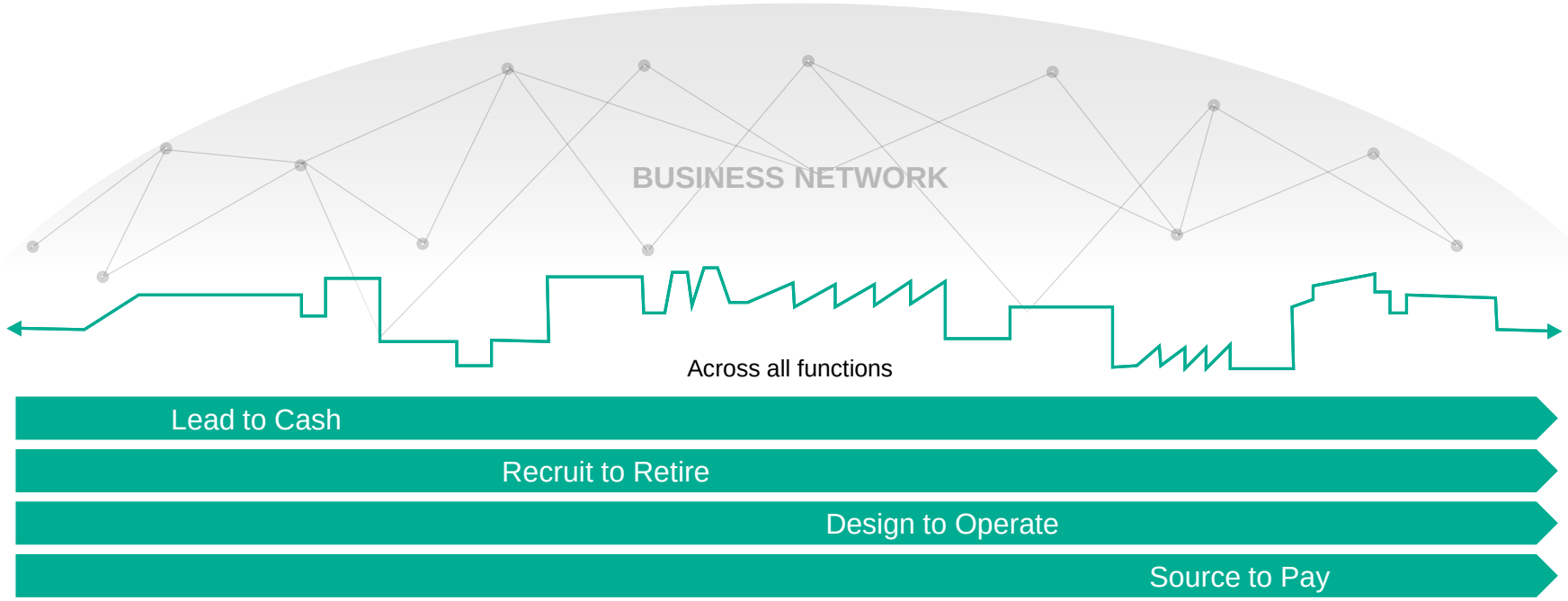


Intelligent Enterprise



THE BEST RUN SAP®

End-to-End Processes



BUSINESS PROCESS

APPLICATIONS

TECHNOLOGY

EXPERIENCE MANAGEMENT

INTELLIGENT SUITE

INDUSTRY CLOUD

SUSTAINABILITY MANAGEMENT

BUSINESS TECHNOLOGY PLATFORM

THE BEST RUN SAP

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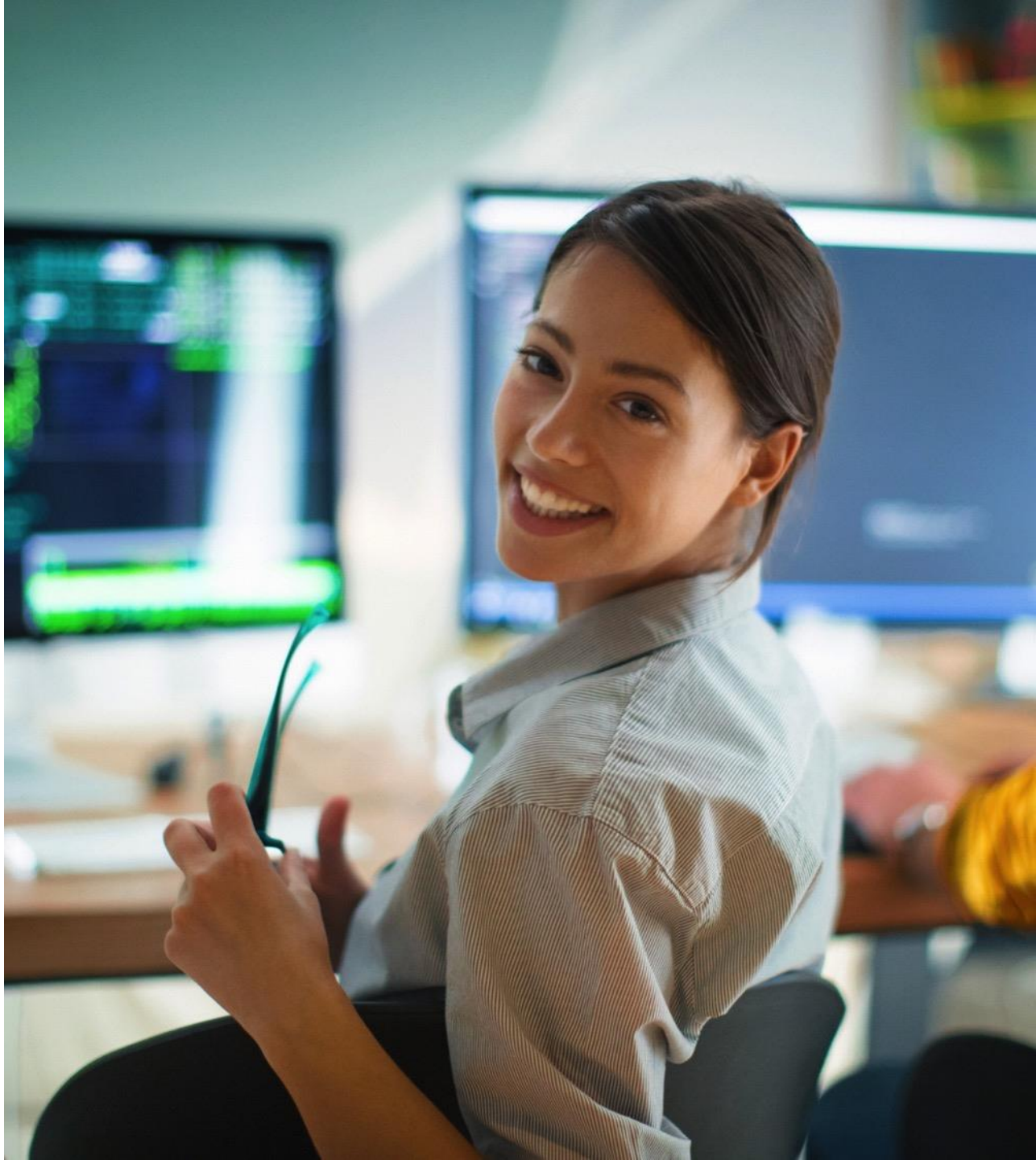


The Impact of Global Disruption

Supply Chain Risks and Vulnerabilities

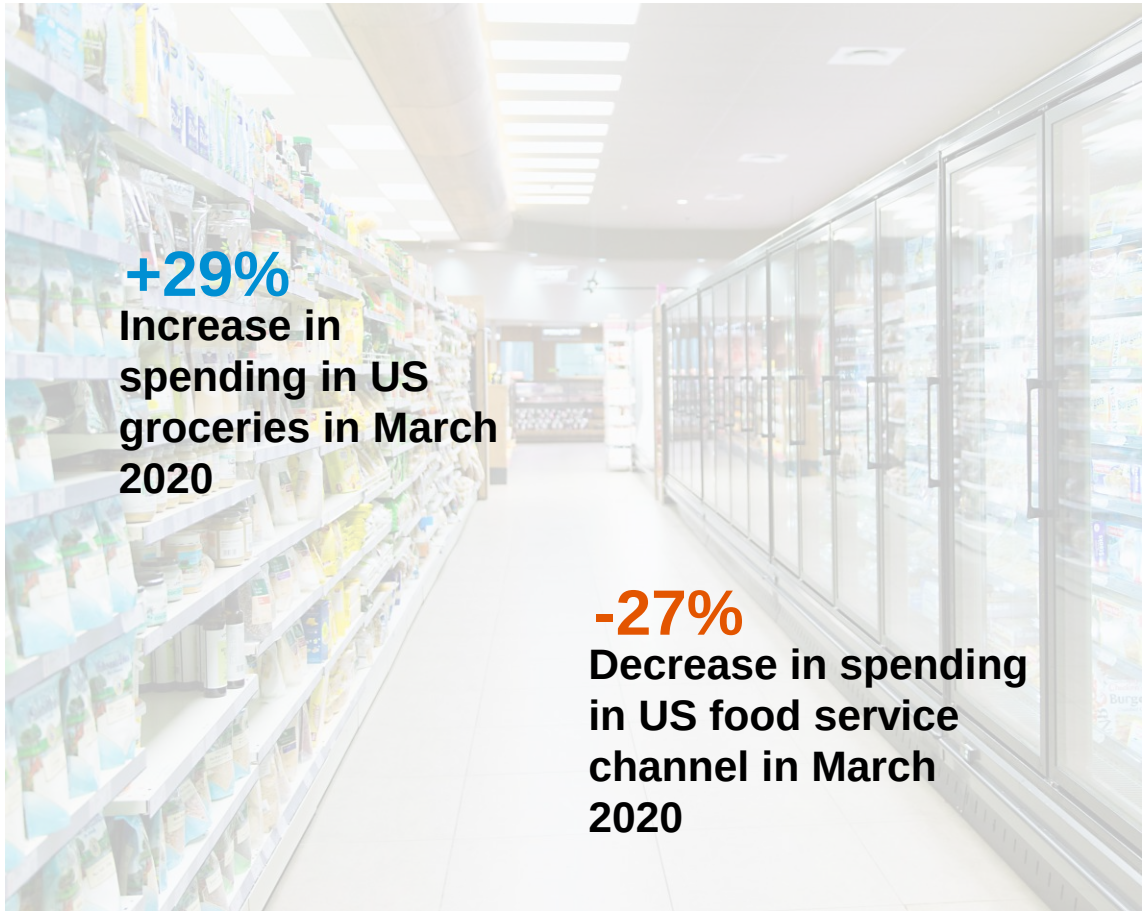
Demand volatility for goods and services

Uncertain supply of critical materials

Constrained capacity in manufacturing & logistics

Human risk of balancing labor shortages and health and safety of employees

Unpredictable downtime as a result of deferred maintenance



*McKinsey, “US Food Supply Chain: Disruptions and implications from COVID-19”, June 2020

A Resilient Supply Chain

Predictive, Intelligent, Agile, and Digital

Sourcing Strategies

- Visibility across supplier network
- Source sustainable materials

Optimized Supply

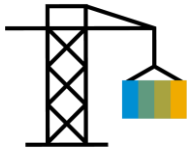
- Identify materials in short supply
- Right-sized inventory optimization buffers

Employee Health

- Ensure environmental health & safety of workforce

Demand Visibility

- Accurate picture of demand



Balanced Manufacturing

- Balance of offshoring vs. near-shoring vs. on-shoring
- Plan for contingent workers

Digital Supply Chain Twin

Create a Resilient Supply Chain Insulated from Disruption

A systematic approach – or A methodical approach

Respond

With agility and speed

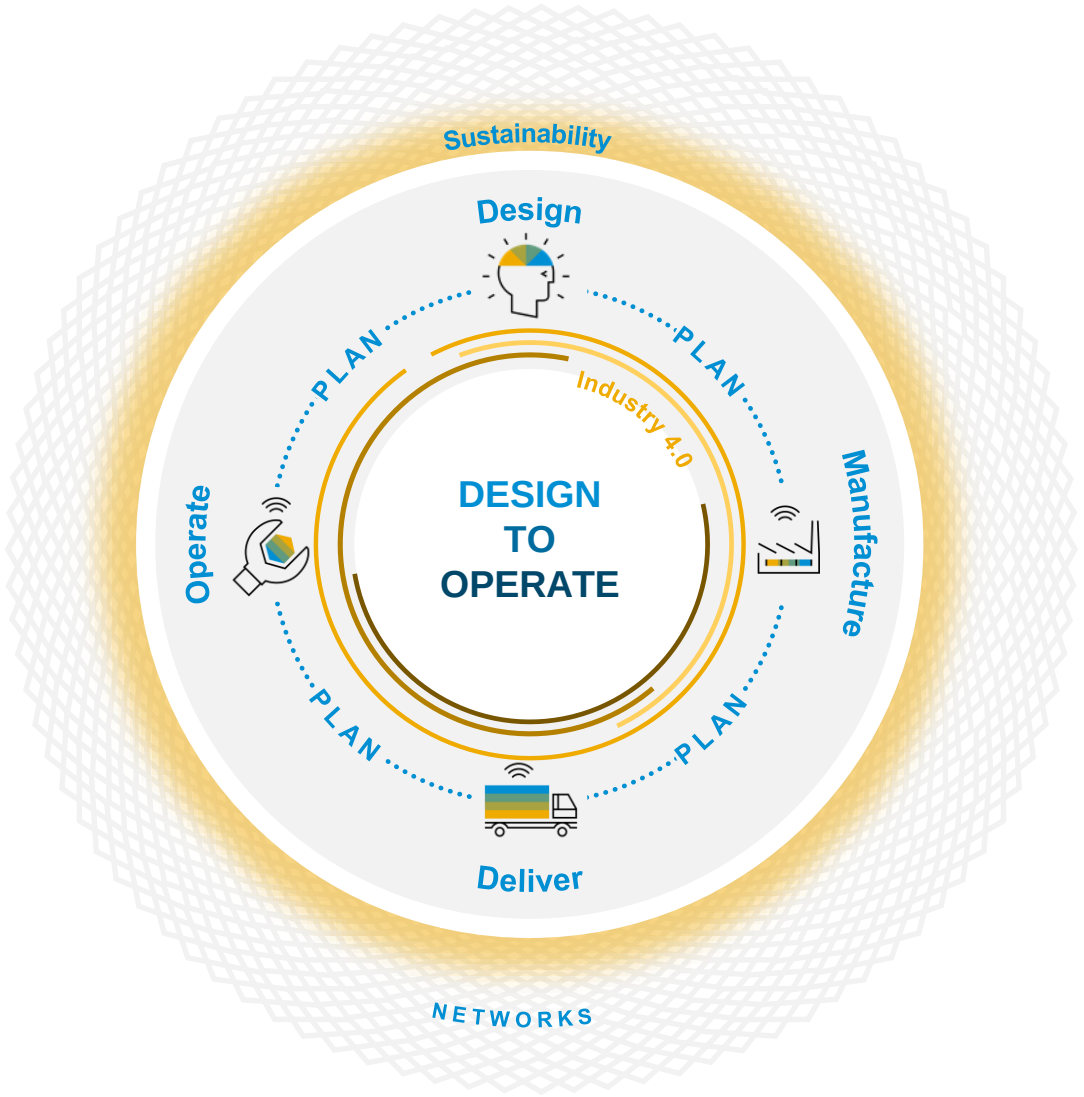
Recover

Prepare for growth after disruption

Reimagine

Profitably predict, automate, and innovate

Recover to Prepare for Growth After Disruption



Design

- Make informed design choices with consistent product data
- Visually communicate product design to a distributed ecosystem

Plan

- Run what-if scenarios and simulations for faster decisions
- Balance inventory buffers and optimize supply

Manufacture

- Adjust production schedules to changed demand and supply
- Optimize your scarce available resources and labor

Deliver

- Increase resilience in warehouses by deploying automation
- Address lock-downs with optimized scheduling and routing

Operate

- Ensure critical assets are available to service customers
- Switch from planned to condition based maintenance

Networks

- Design anywhere/build anywhere with remote collaboration
- Collaborate across supplier, logistics, manufacturing and asset networks

Reimagine to Profitably Predict, Automate, and Innovate

Customers

Deliver
Perfectly

+

Employees

Work
Productively

+

Shareholders

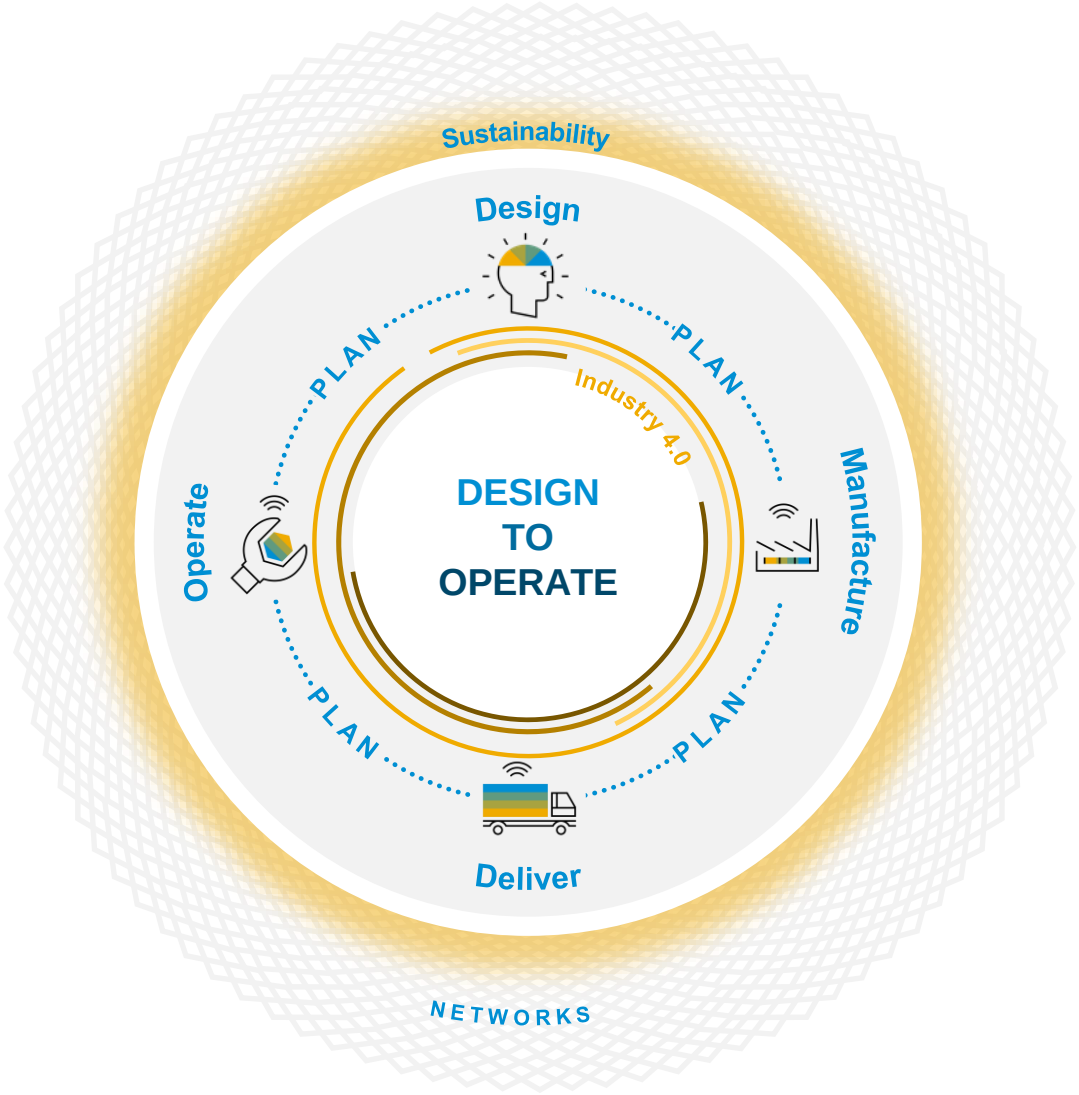
Grow
Profitably

+

Environment

Act
Sustainably

Resilient Supply Chains from Design to Operate



Customer Centricity

Close the Experience Gap

Visibility

Build Business Networks

Productivity

Focus on Industry 4.0

Sustainability

Engage in the Circular Economy

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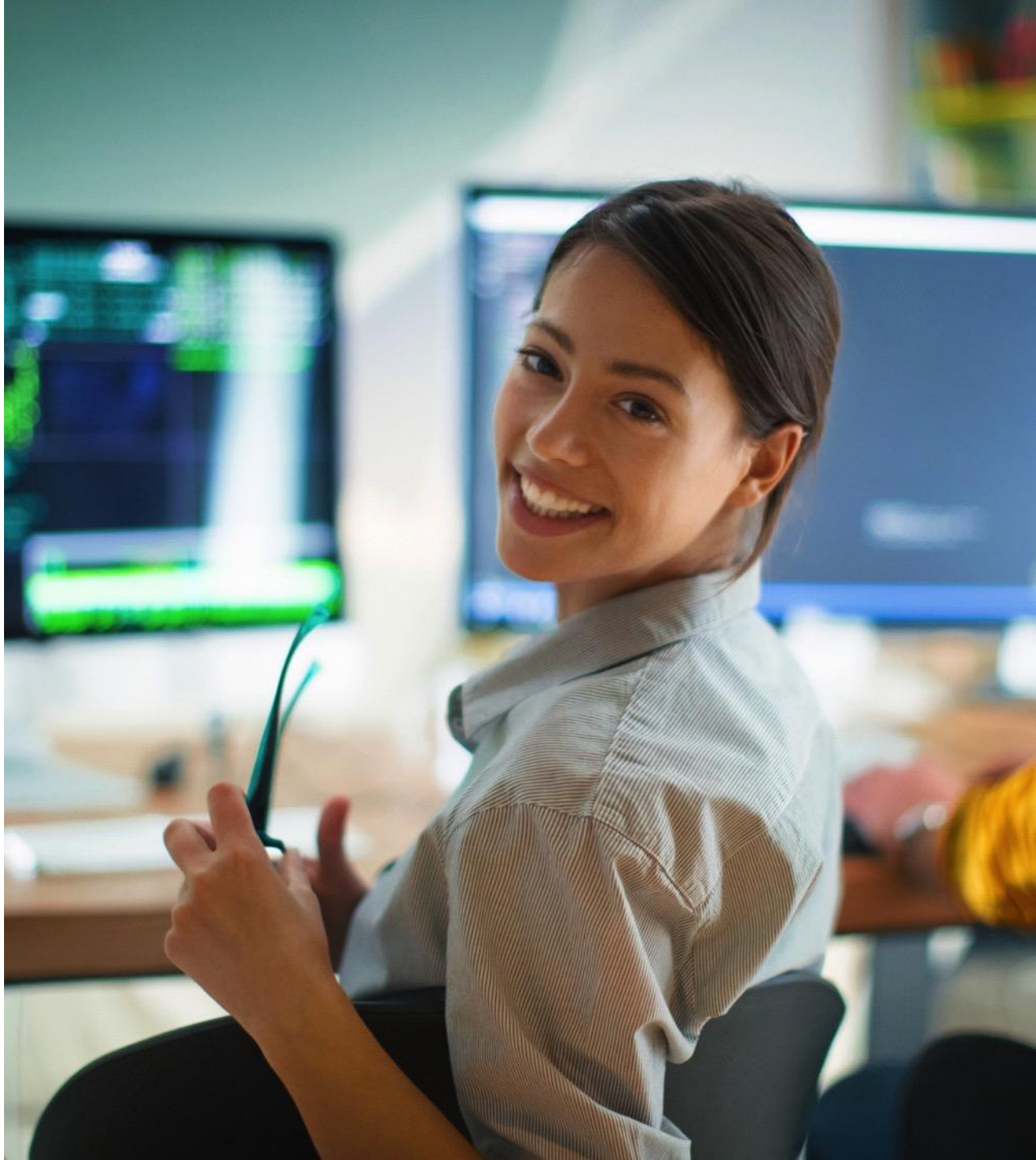


Design to Operate: End to end business process flow

Design

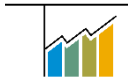
Receive customer feedback – define **requirements** and **system concept** for new/changed product.

Create **product design, early cost estimates** and master data for new/changed product.

Hand over to manufacturing and service to manage BOM and routing.

Plan

Plan **demand** for new / changed components.



Plan **supply** for new/changed components.

Create master **production schedule.**

Procure

Procure **components** to build subassemblies

Manage and track inbound delivery.

Receive procured components into warehouse.

Manufacture (subassemblies)

Schedule subassembly production.

Produce subassemblies and track progress.

Receive subassemblies into warehouse.

Sell

Receive customer **sales order. (assemble to order)**

Manufacture (finished product)

Schedule finished product production.

Produce finished product and track progress.

Register serialized finished product.

Receive finished product into warehouse.

Deliver

Plan transport, pick, pack, and load product for **delivery.**

Perform and track **outbound transportation** and receive proof of delivery.

Operate

Receive asset master data and **onboard** asset.

Monitor assets with IoT data, perform analysis, **predict** asset failure.

Plan asset mainte-nance.

Perform inspection, **maintenance,** and repair.

Request **product improvement**

Decommissi on asset.

Design to Operate: End to end business process flow

Design

Receive customer feedback – define **requirements** and **system concept** for new/changed product.

- SAP S/4HANA Cloud for intelligent product design

Create **product design, early cost estimates** and master data for new/changed product.

- SAP S/4HANA*
- SAP 3D Visual Enterprise*
- SAP Engineering Control Center
- SAP Product Lifecycle Costing

Hand over to manufacturing and service to manage BOM and routing.

- SAP S/4HANA*
- SAP Engineering Control Center
- SAP Asset Intelligence Network

Plan

Plan **demand** for new/changed components.

- SAP Integrated Business Planning*
- SAP S/4HANA*

Plan **supply** for new/changed components.

- SAP Integrated Business Planning
- SAP S/4HANA*

Create master **production schedule.**

- SAP S/4HANA*

Procure

Procure **components** to build subassemblies.

- SAP S/4HANA*

Manage and track inbound delivery.

- SAP S/4HANA*
- SAP Logistics Business Network

Receive procured components into warehouse.

- SAP S/4HANA* (EWM**)
- SAP Logistics Business Network

Manufacture (subassemblies)

Schedule subassembly production.

- SAP S/4HANA*

Produce subassemblies and track progress.

- SAP S/4HANA*
- SAP Digital Manufacturing Cloud*

Receive subassemblies into warehouse.

- SAP S/4HANA* (EWM**)
- SAP Digital Manufacturing Cloud*

Sell

Receive customer **sales order. (Assemble to Order)**

- SAP S/4HANA*

Manufacture (finished product)

Schedule finished product production.

- SAP S/4HANA*

Produce finished product and track progress.

- SAP S/4HANA*
- SAP Digital Manufacturing Cloud*
- SAP Asset Intelligence Network

Register serialized finished product.

- SAP Digital Manufacturing Cloud*
- SAP Asset Intelligence Network

Receive finished product into warehouse.

- SAP S/4HANA* (EWM**)
- SAP Digital Manufacturing Cloud*

Deliver

Plan transport, pick, pack, and load product for **delivery.**

- SAP S/4HANA* (TM***, EWM**)

Perform and track **outbound transportation** and receive proof of delivery.

- SAP S/4HANA* (TM***)
- SAP Logistics Business Network

Operate

Receive asset master data and **onboard** asset.

- SAP S/4HANA*
- SAP Asset Intelligence Network

Monitor assets with IoT data, perform analysis, **predict** asset failure.

- SAP Pred. Maintenance and Service
- SAP Predictive Engineering Insights

Plan asset maintenance.

- SAP S/4HANA*
- SAP Asset Strategy and Performance Management
- SAP Pred. Maintenance and Service

Perform inspection, **maintenance** and repair.

- SAP S/4HANA*
- SAP Asset Manager
- SAP Pred. Maintenance and Service
- SAP Predictive Engineering Insights

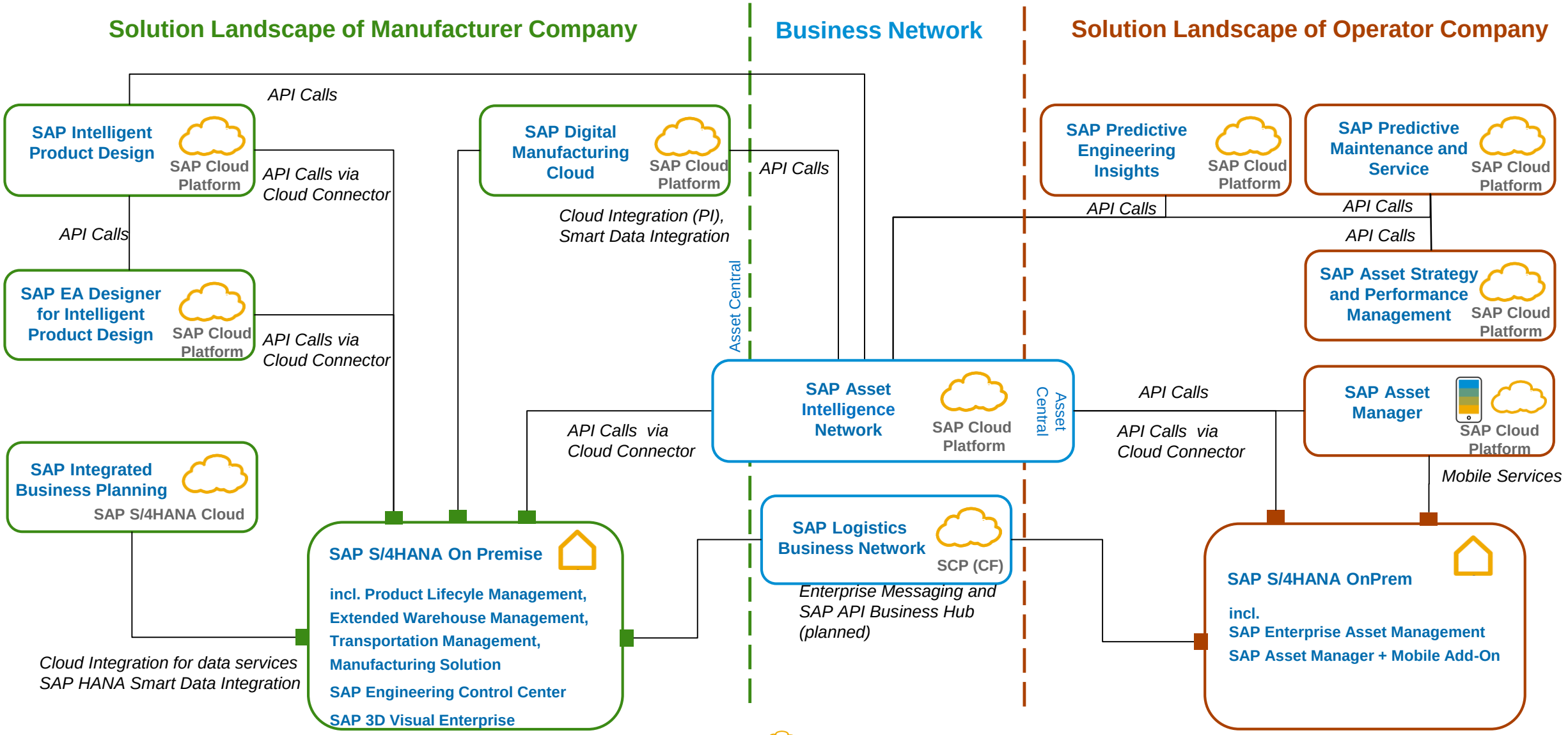
Request **product improvement.**

- SAP Asset Intelligence Network
- SAP S/4HANA Cloud for intelligent product design

Decommission asset.

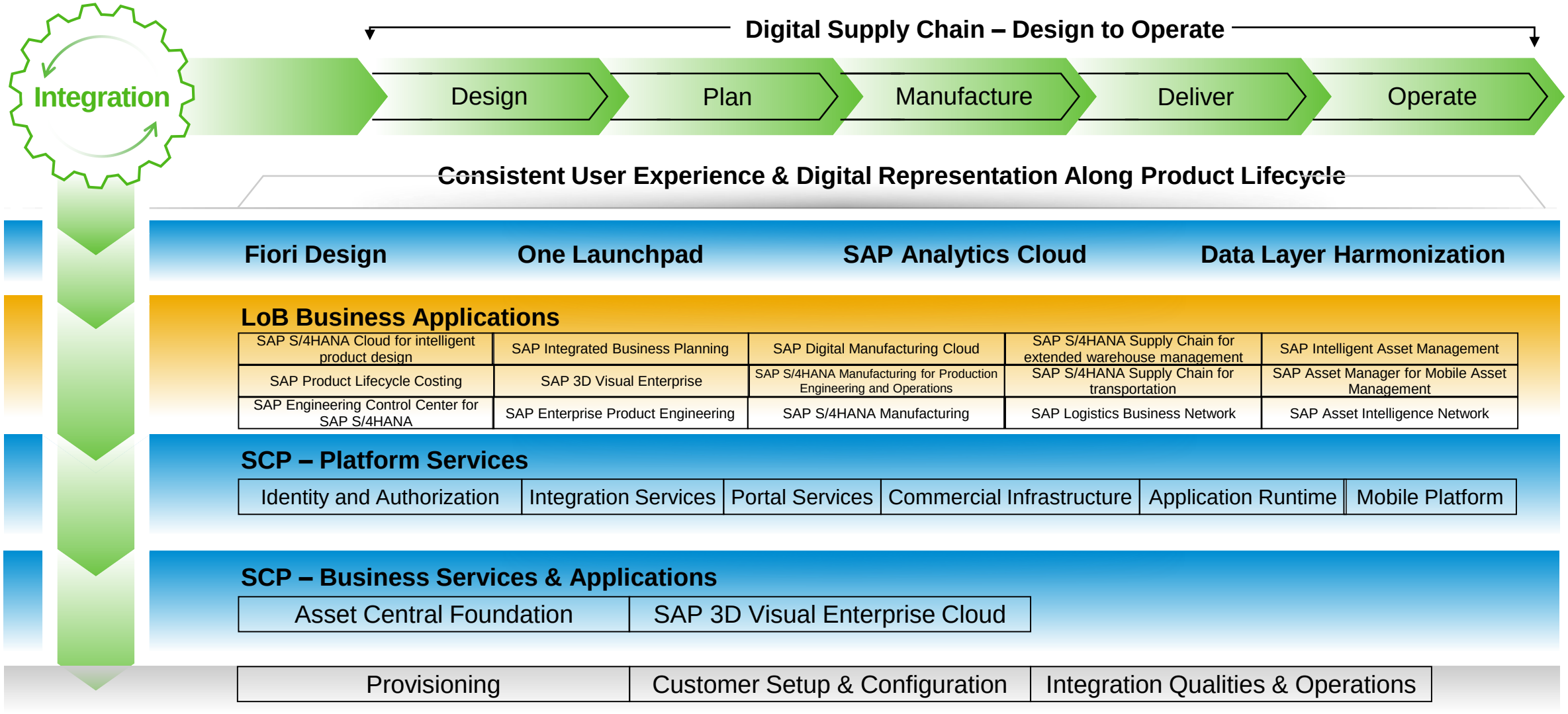
* Represent product families, see subsequent slide for detailed material list ** SAP S/4HANA Supply Chain for extended warehouse management *** SAP S/4HANA Supply Chain for transportation management

Design to Operate: Landscape topology & integration



From integration to integrated business processes

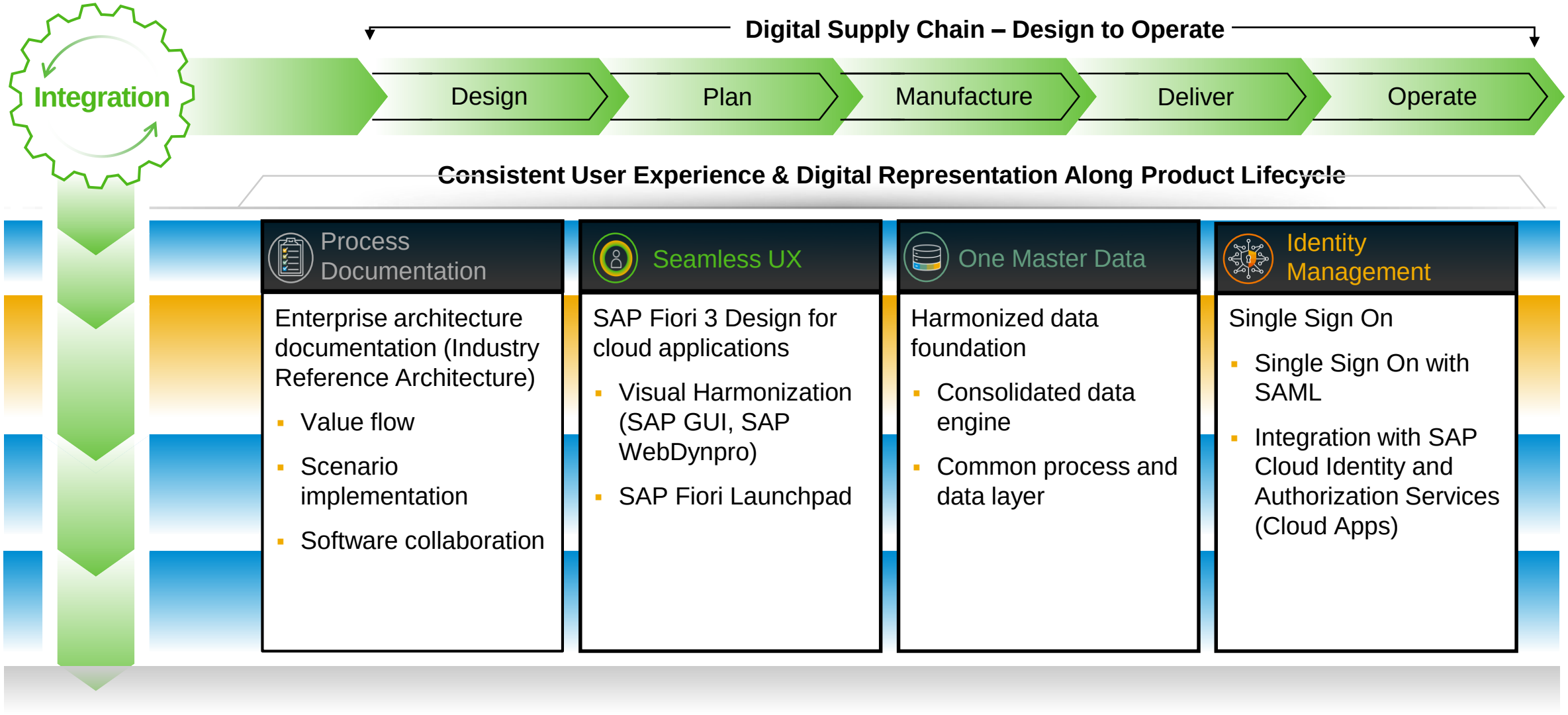
Illustrative view for Design to Operate guiding principles*



*some of these are on the roadmap

From integration to integrated business processes

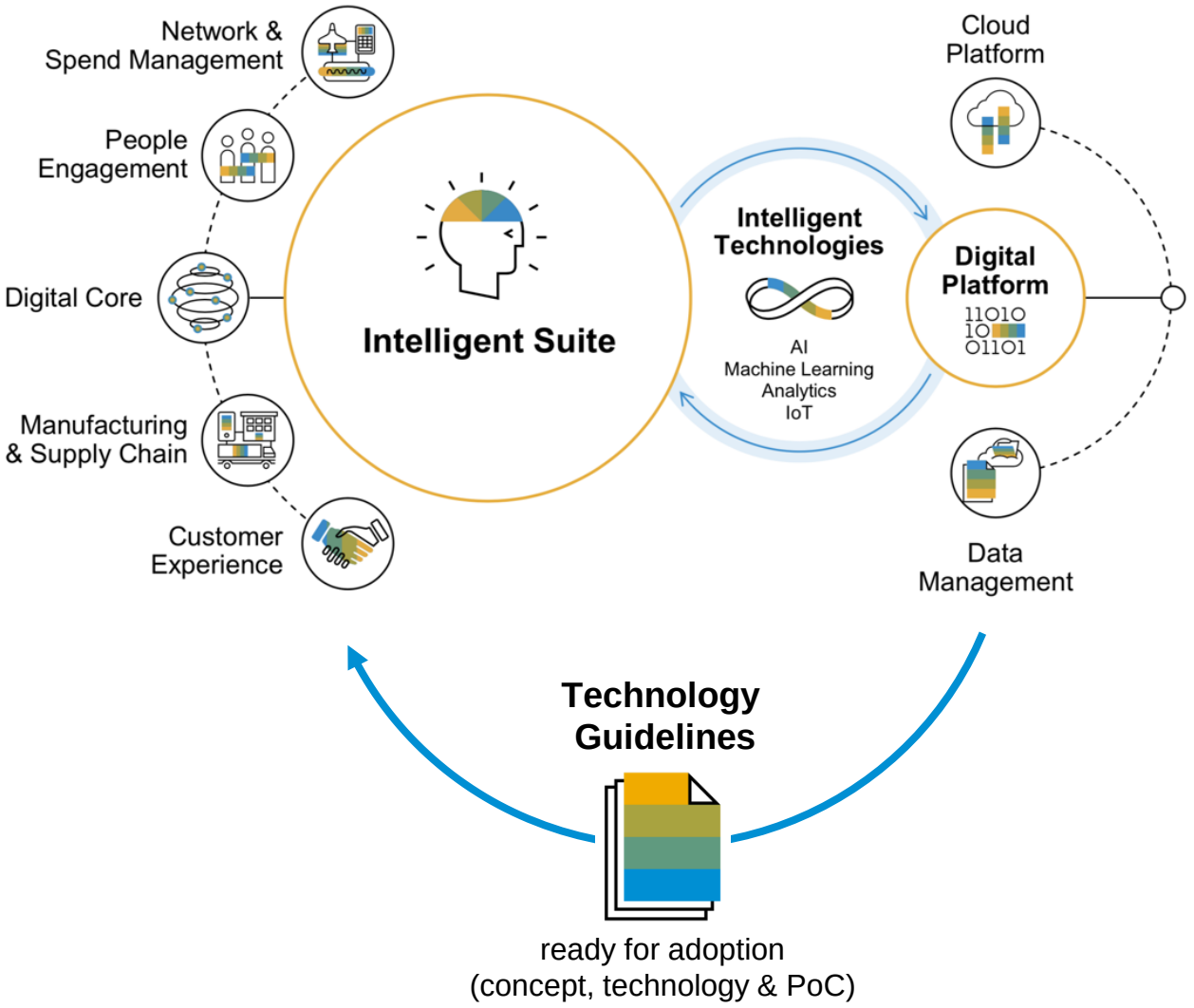
Illustrative view for SAP's internal Design to Operate technology standards



Consistent Technology Guidelines

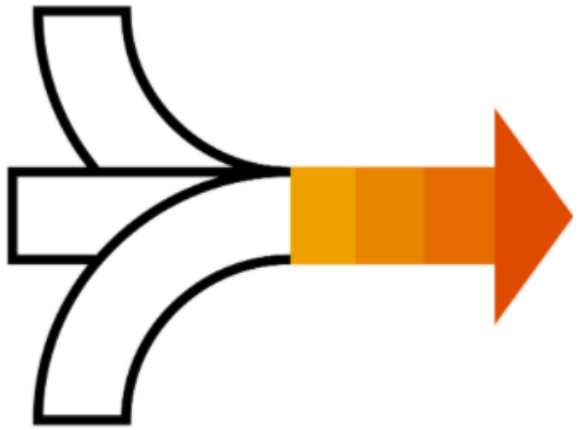
Technology Guidelines

- Ensure out-of-the-box integration, modularity, ease of extension, and consistent experience across the Intelligent Enterprise business processes
- Derived from customer requirements (Executive Advisory Board, Pilot Customers, Intelligent Enterprise Program, etc.)
- Centrally rolled out by Intelligent Enterprise Program Office and to be adopted by LoBs delivering applications for the Intelligent Enterprise business processes



Suite Qualities for the Intelligent Enterprise

Getting Started



Technology Guidelines (TGs) aid the out-of-the-box integration between SAP solutions. They provide architectural blueprint solutions, best practices, and how-to's to address technical integration challenges such as master data exchange, extensibility, or consistent user experience.

Experts from all lines of business have jointly developed the TGs and continue to do so. This work is coordinated by the Intelligent Enterprise Technology team from Central Engineering headed by Michael Ameling.

TGs are grouped into the following six clusters and advocate or require the use of particular technologies such as Kernel Services.

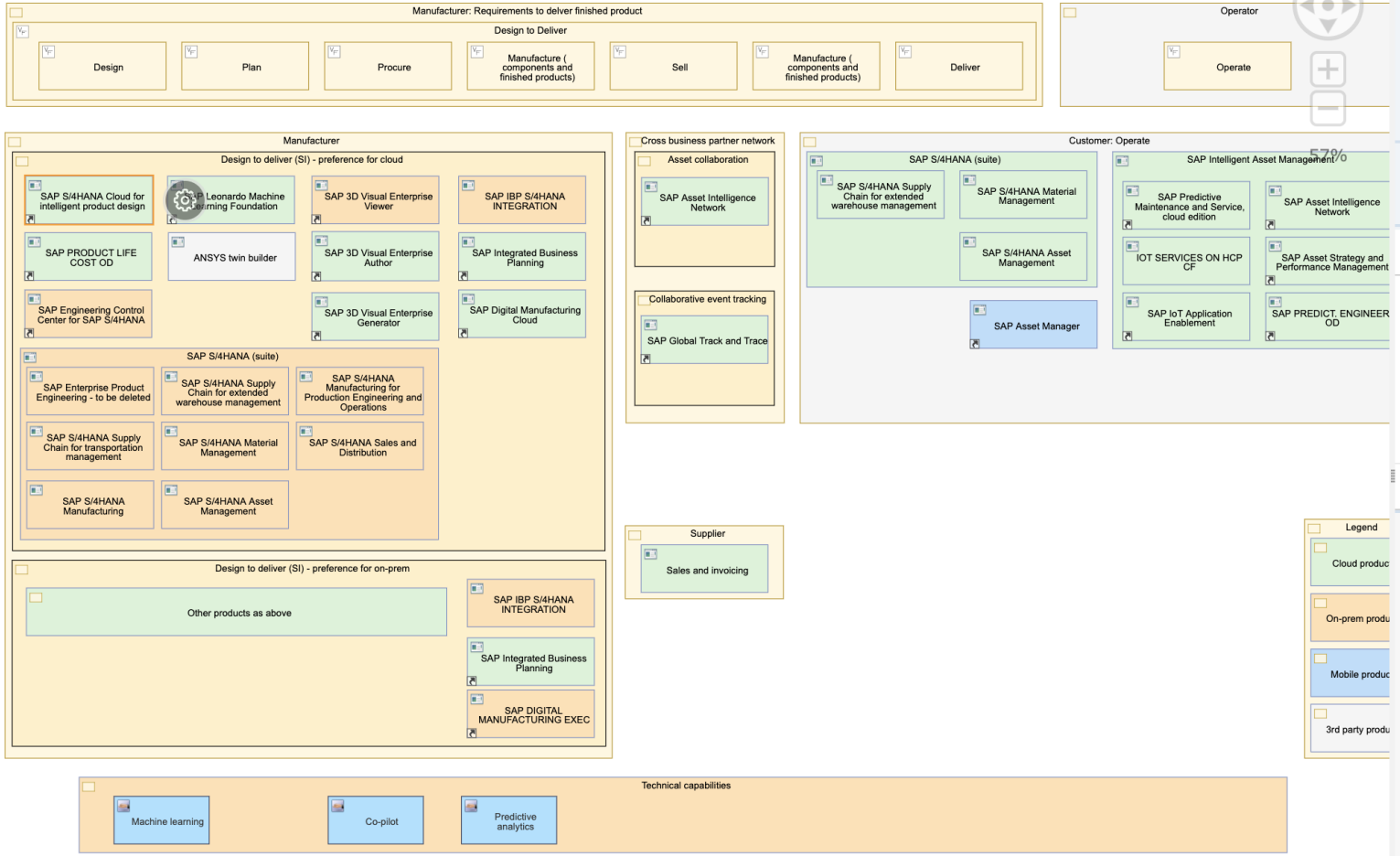
- Reference Architecture
- Core Integration
- Application Lifecycle Management
- Security & Identity Management
- Experience
- Analytics

Home
Repository Explorer
Diagram Viewer
Impact Analysis
Activities

D2O solution implementati...

Design to Operate - business scenario

Edit



SAP S/4HANA Cloud for intelligent product design

Software Product (Shortcut)

Referenced Object:

Info | ? Children | ? Dependencies | ? Diagrams

General

Name: SAP S/4HANA Cloud for intelligent product design

Code: 73554900100800000833

Type: Software Package

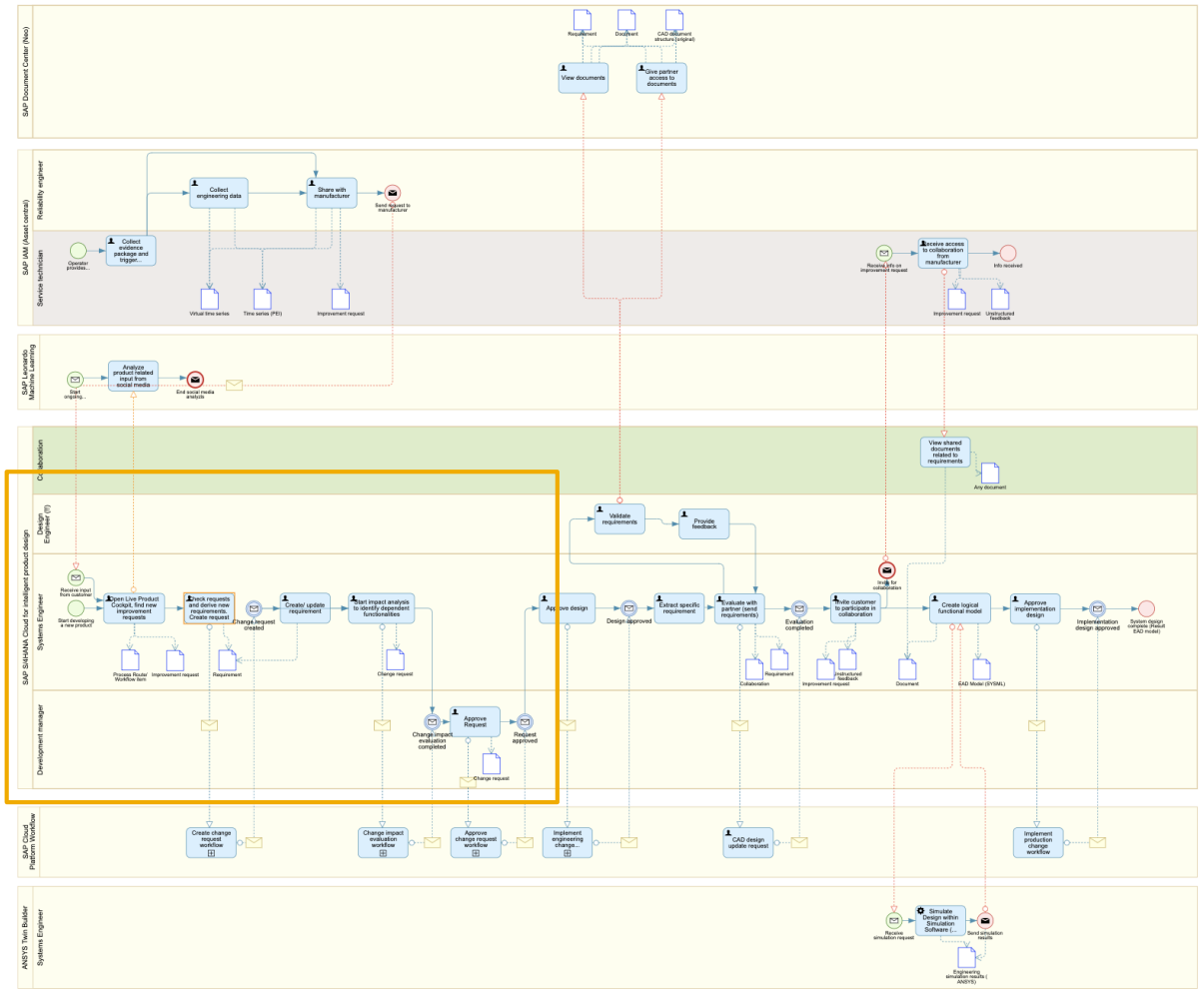
Version Info

Home
Repository Explorer
Diagram Viewer
Impact Analysis
Activities

DES1: Develop requirement...

Design to Operate BPMN (exe) (BPM...

Edit



33%

Check requests and derive new requirements. Create request

Task

Info	0 Children	3 Dependencies	0 Diagrams

General

Name: Check requests and derive new requirements. Create request

Reusable Process: ☐

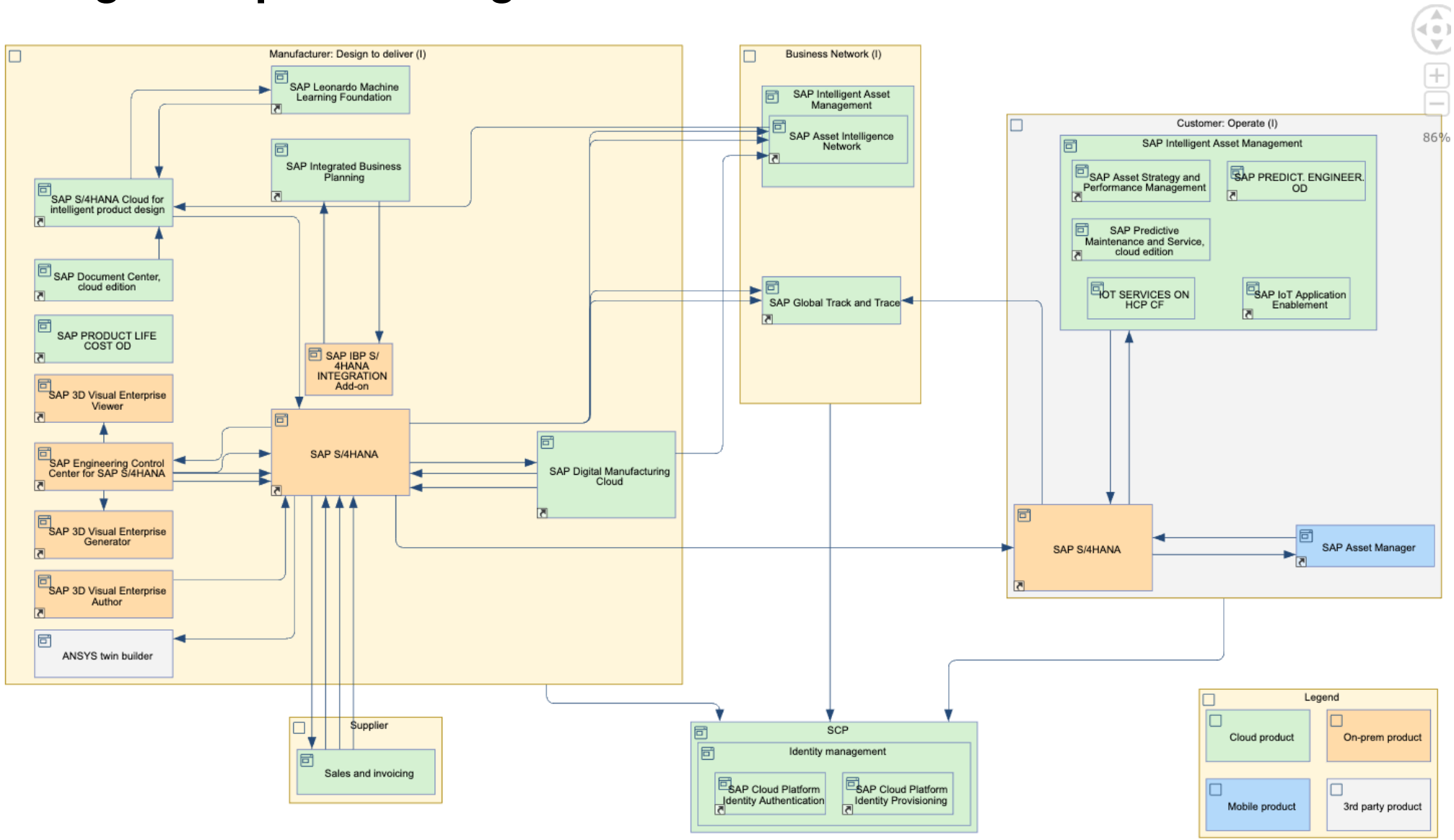
Start quantity: 1

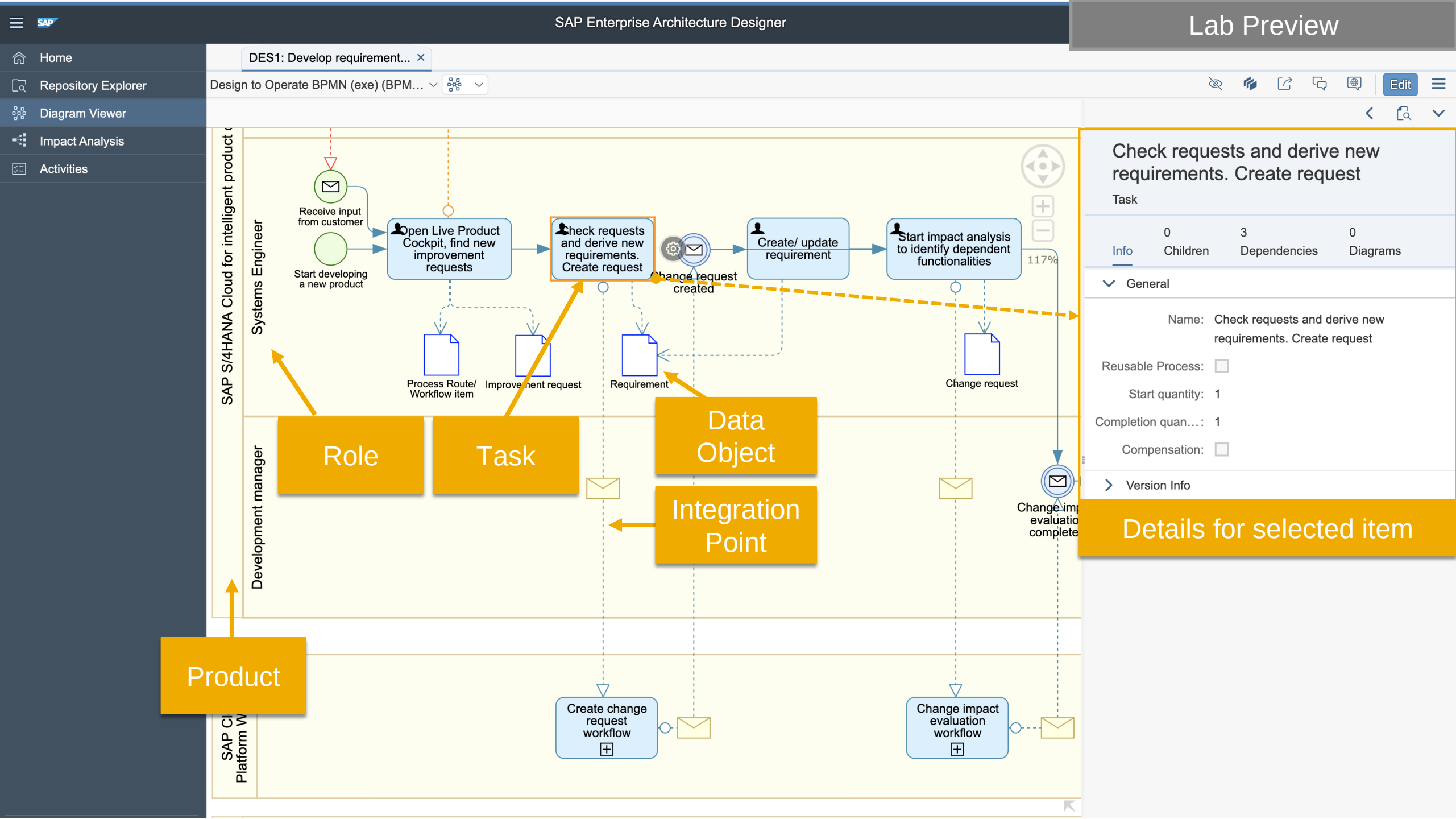
Completion quan...: 1

Compensation: ☐

Version Info

Design to Operate Integration Overview




SAP Enterprise Architecture Designer
Lab Preview
Home
Repository Explorer
Diagram Viewer
Impact Analysis
Activities
DES1: Develop requirement...
Design to Operate BPMN (exe) (BPM...
Edit
SAP S/4HANA Cloud for intelligent product
Systems Engineer
Development manager
Receive input from customer
Start developing a new product
Open Live Product Cockpit, find new improvement requests
Check requests and derive new requirements. Create request
Change request created
Create/ update requirement
Start impact analysis to identify dependent functionalities
117%
Process Route/ Workflow item
Improvement request
Requirement
Change request
Change impl evaluatio complete
Create change request workflow
Change impact evaluation workflow
Role
Task
Data Object
Integration Point
Product
Check requests and derive new requirements. Create request
Task
Info
0 Children
3 Dependencies
0 Diagrams
General
Name: Check requests and derive new requirements. Create request
Reusable Process:
Start quantity: 1
Completion quan...: 1
Compensation:
Version Info
Details for selected item

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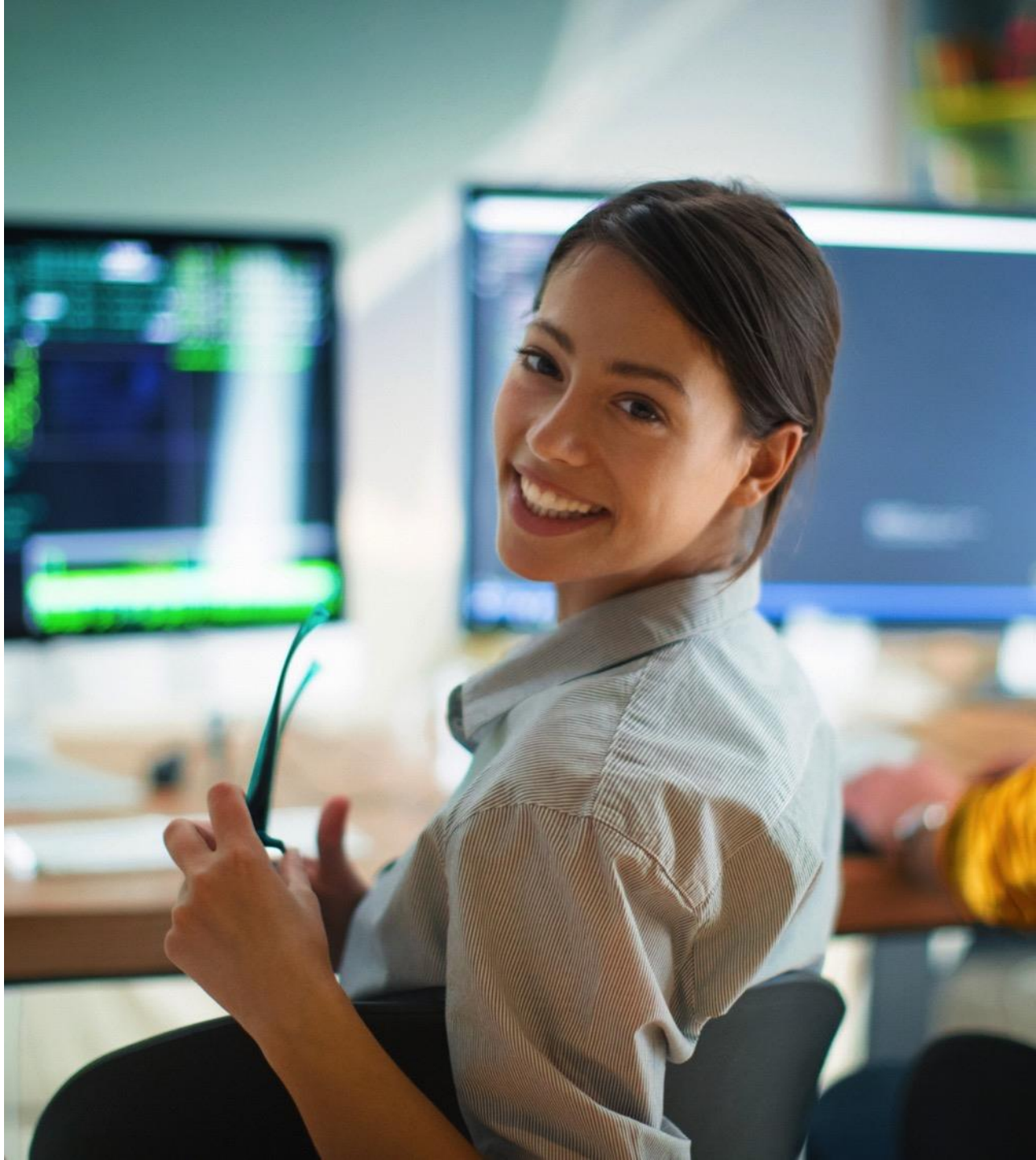
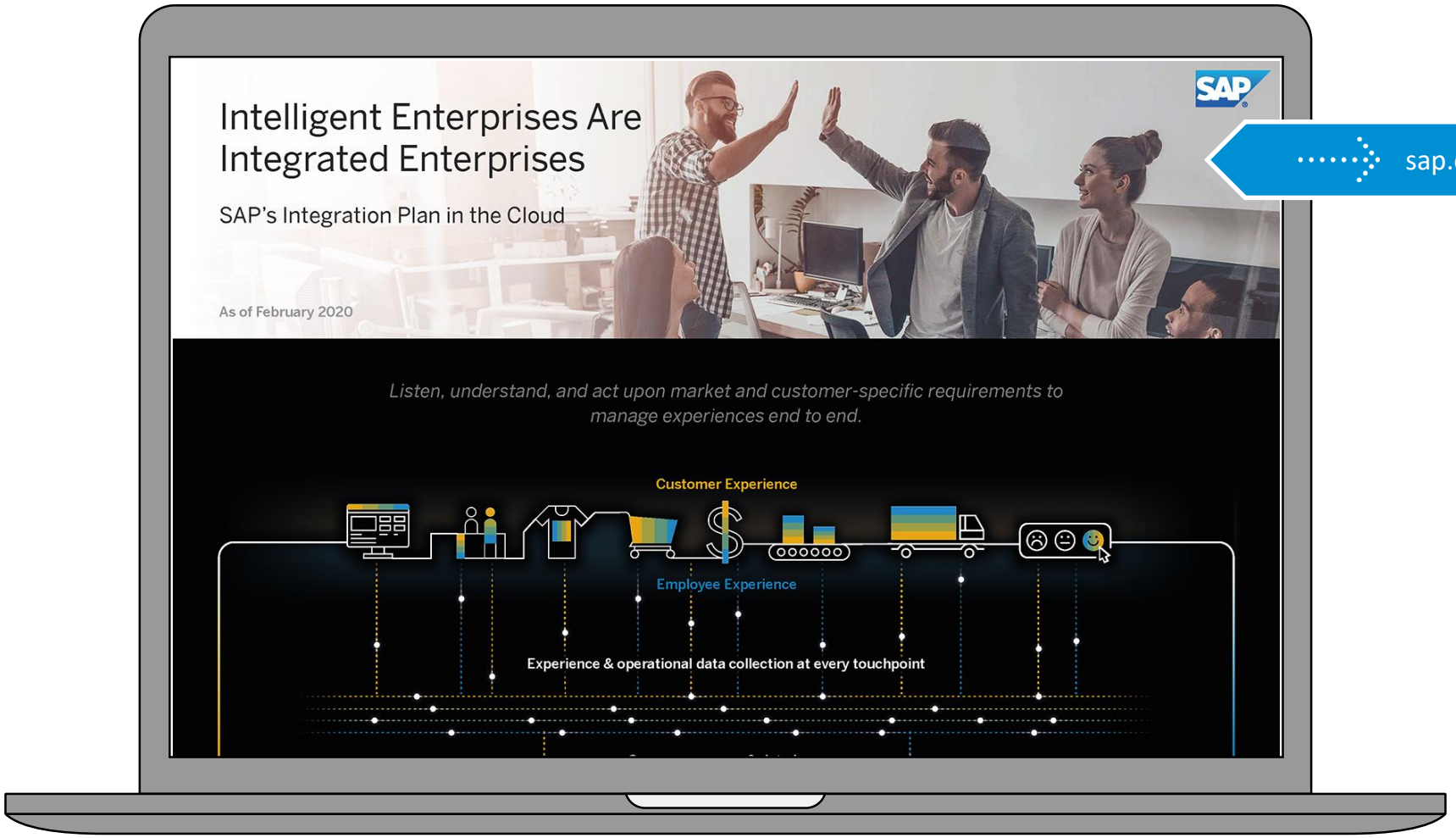
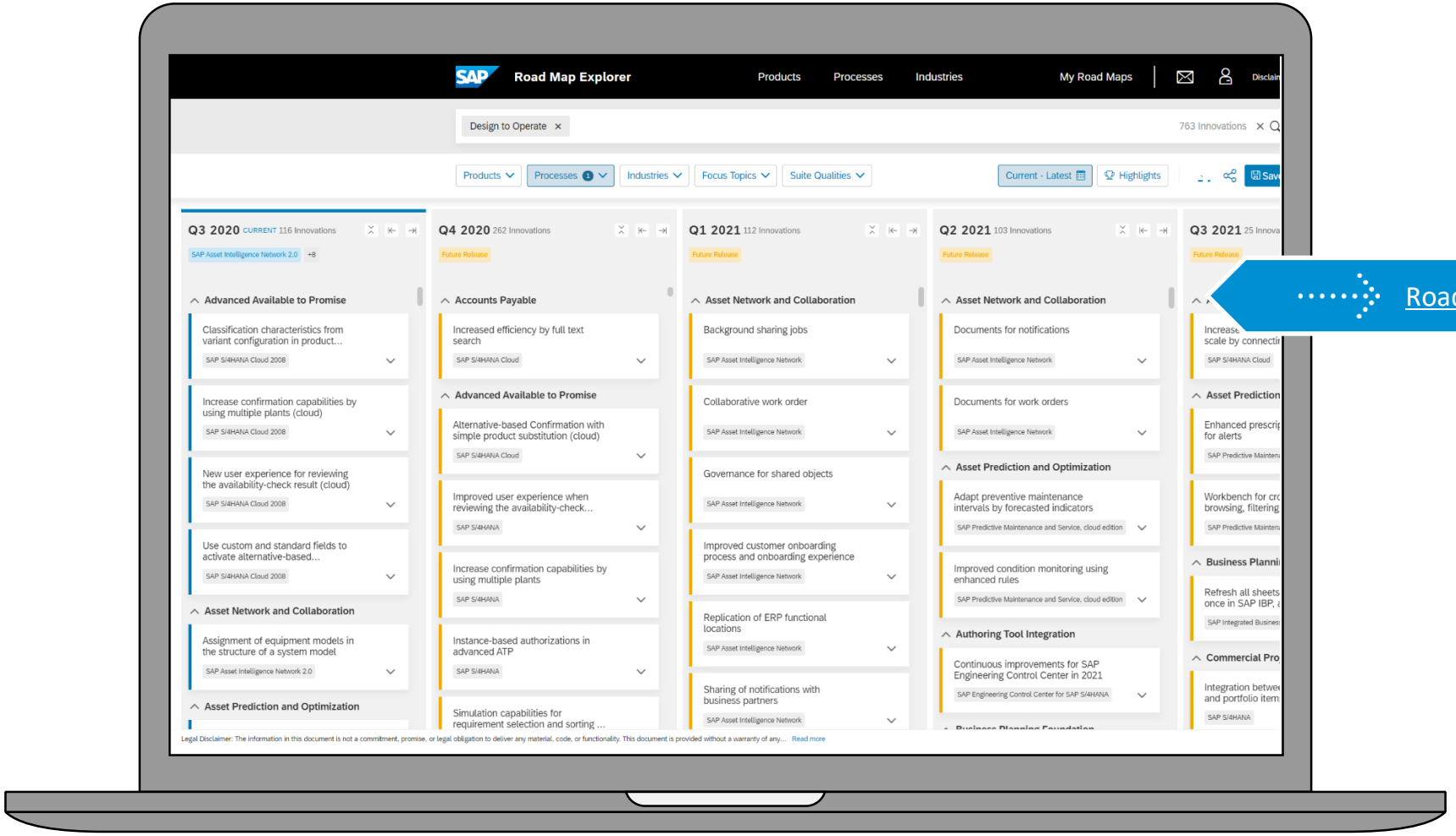


Integration Strategy Paper



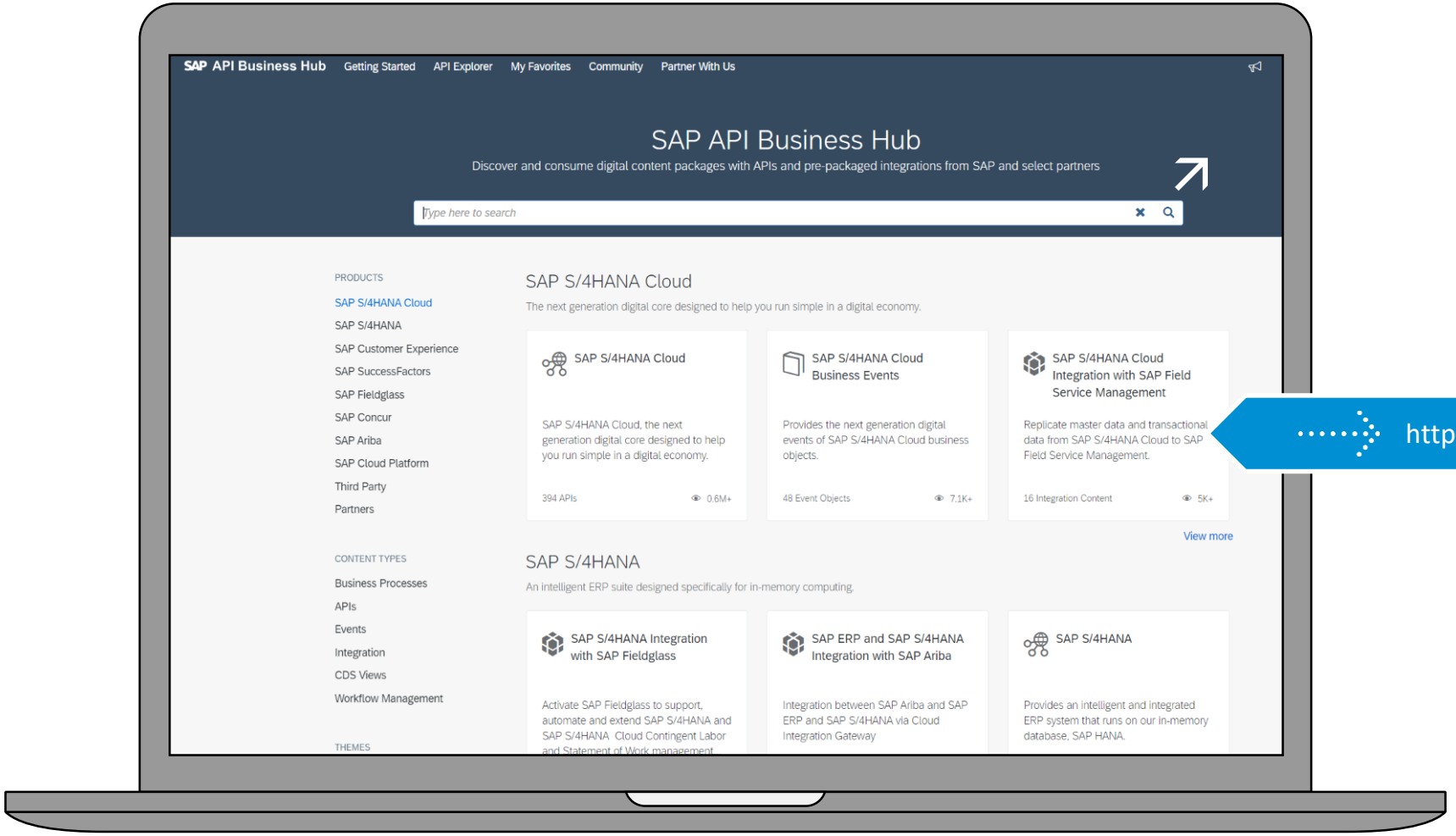
sap.com/cloud-integration

Design to Operate Roadmap

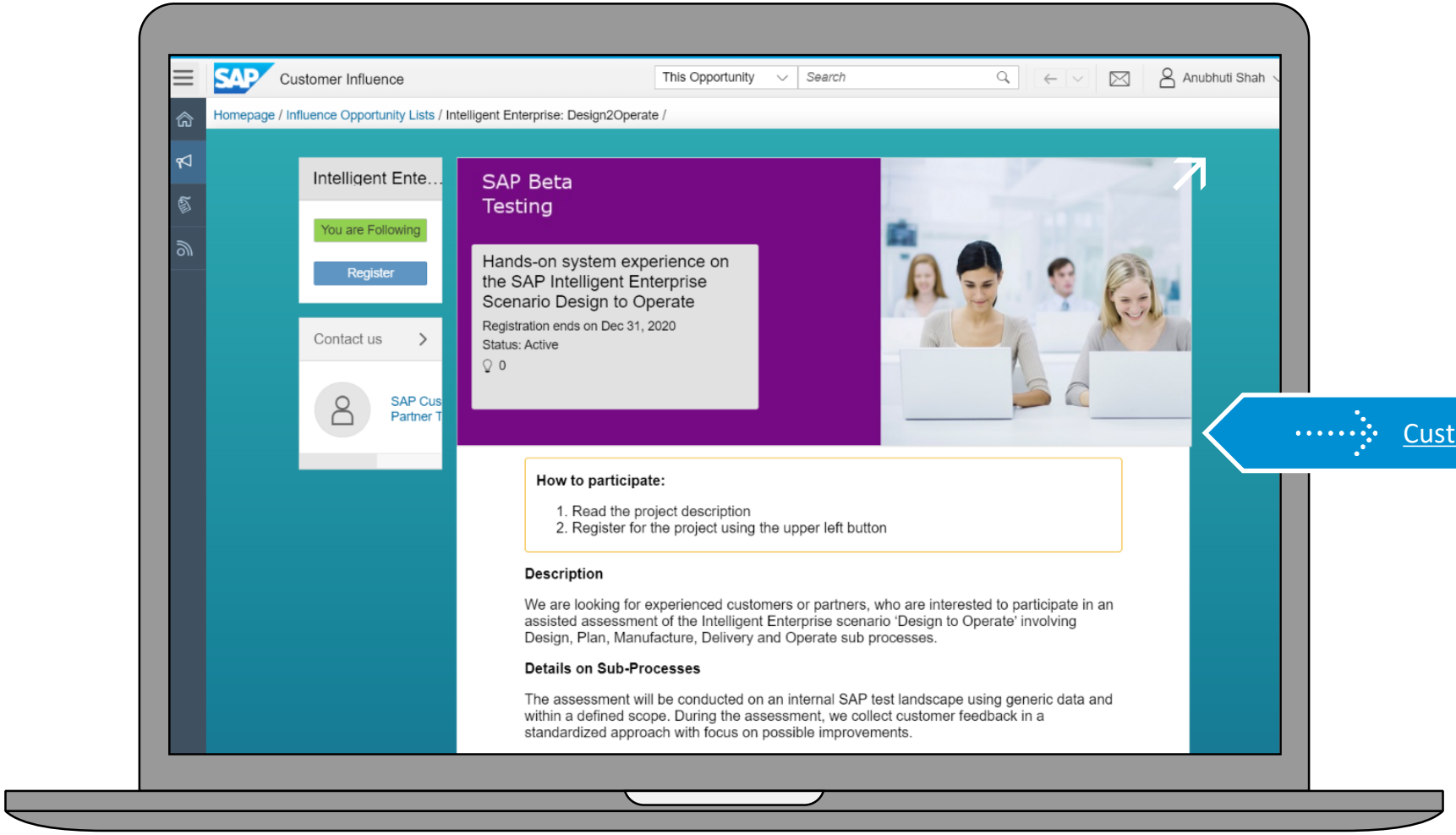


Roadmap

End-to-End Process Blueprints



Experience and Influence: Your feedback is welcome



Customer Influence Platform

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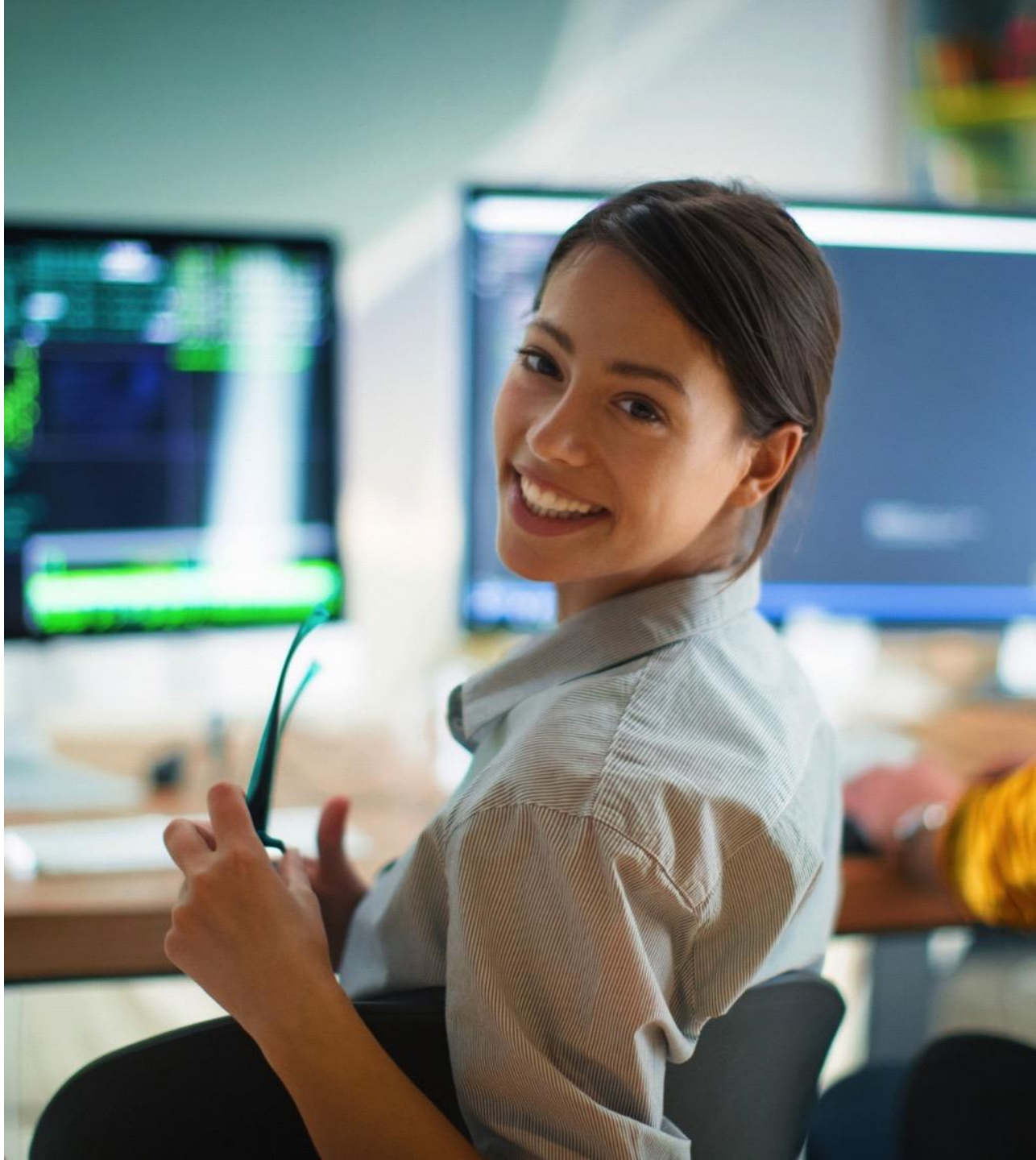
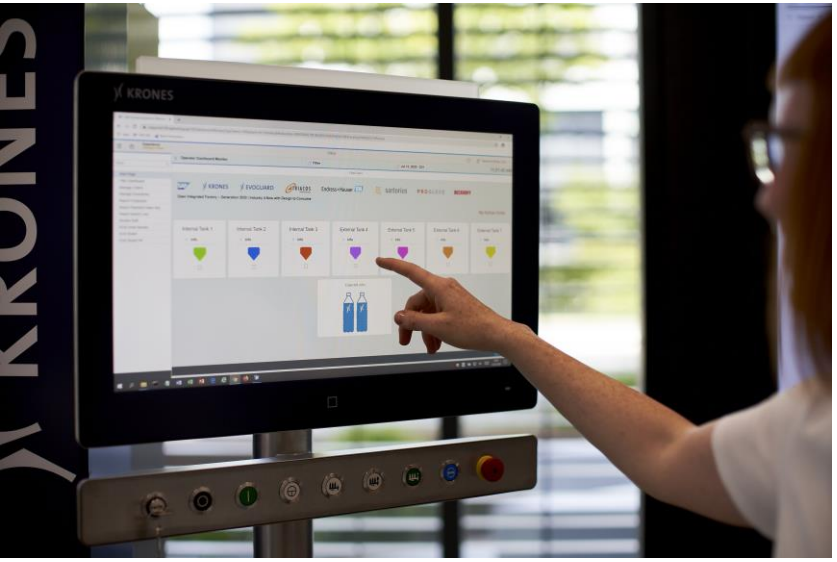


D2C and D2O Showcase
Live in Walldorf and Virtual Discovery Experience

D2O Showcase
Production Assembly

Industry 4.Now Design to Consume impressions



D2O from Discrete Industries to Process Industries

The life cycle of a valve for batch production

DISCRETE ASSEMBLY

Design and operate a discrete unit to produce and mix syrups

double seated valve

Design product and assemble it

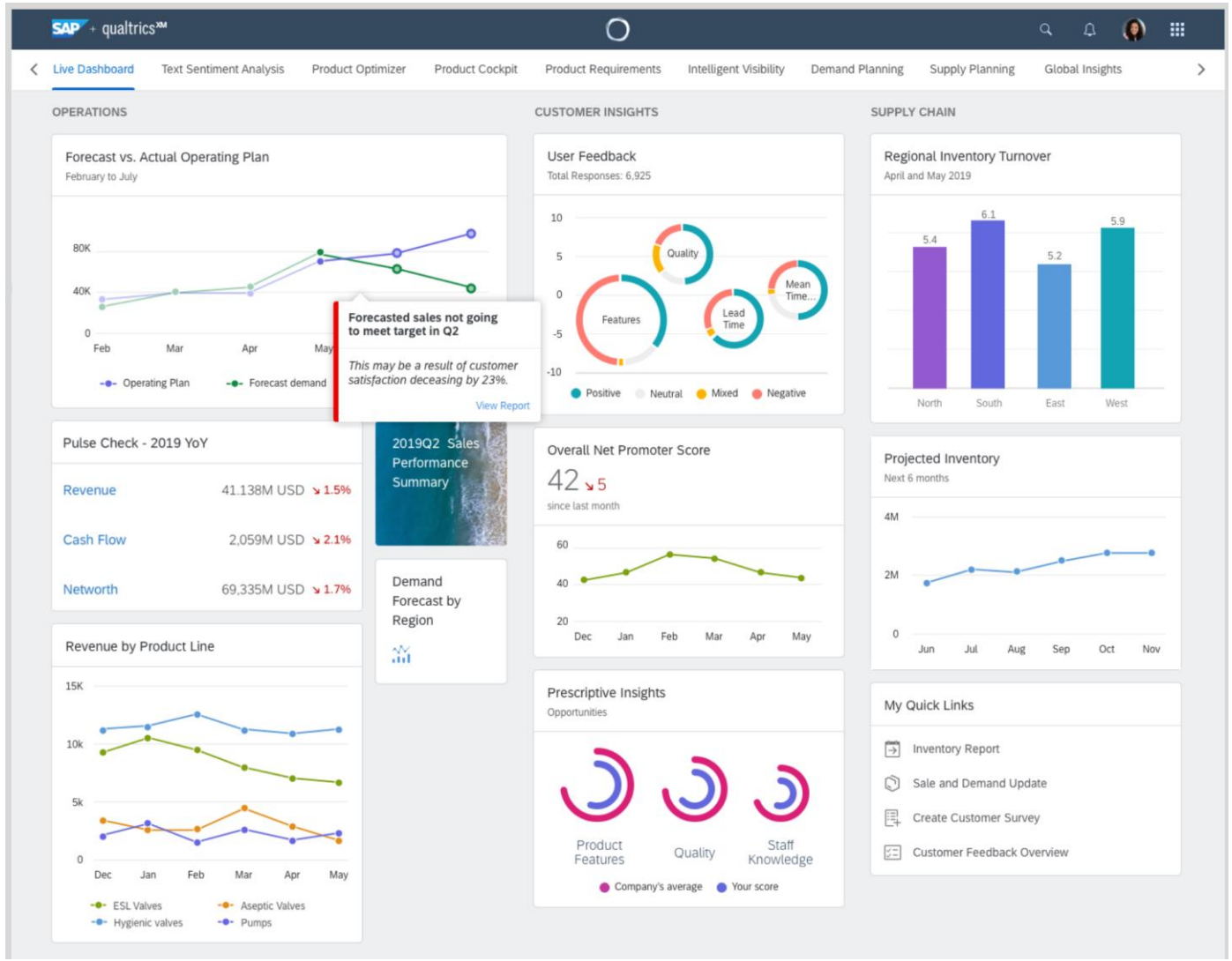
BATCH PRODUCTION

Develop a recipe for a concentrate. produce, mix and pack the product.

Liquid concentrate

Develop recipe and produce batch

Design to Operate Vision Demo



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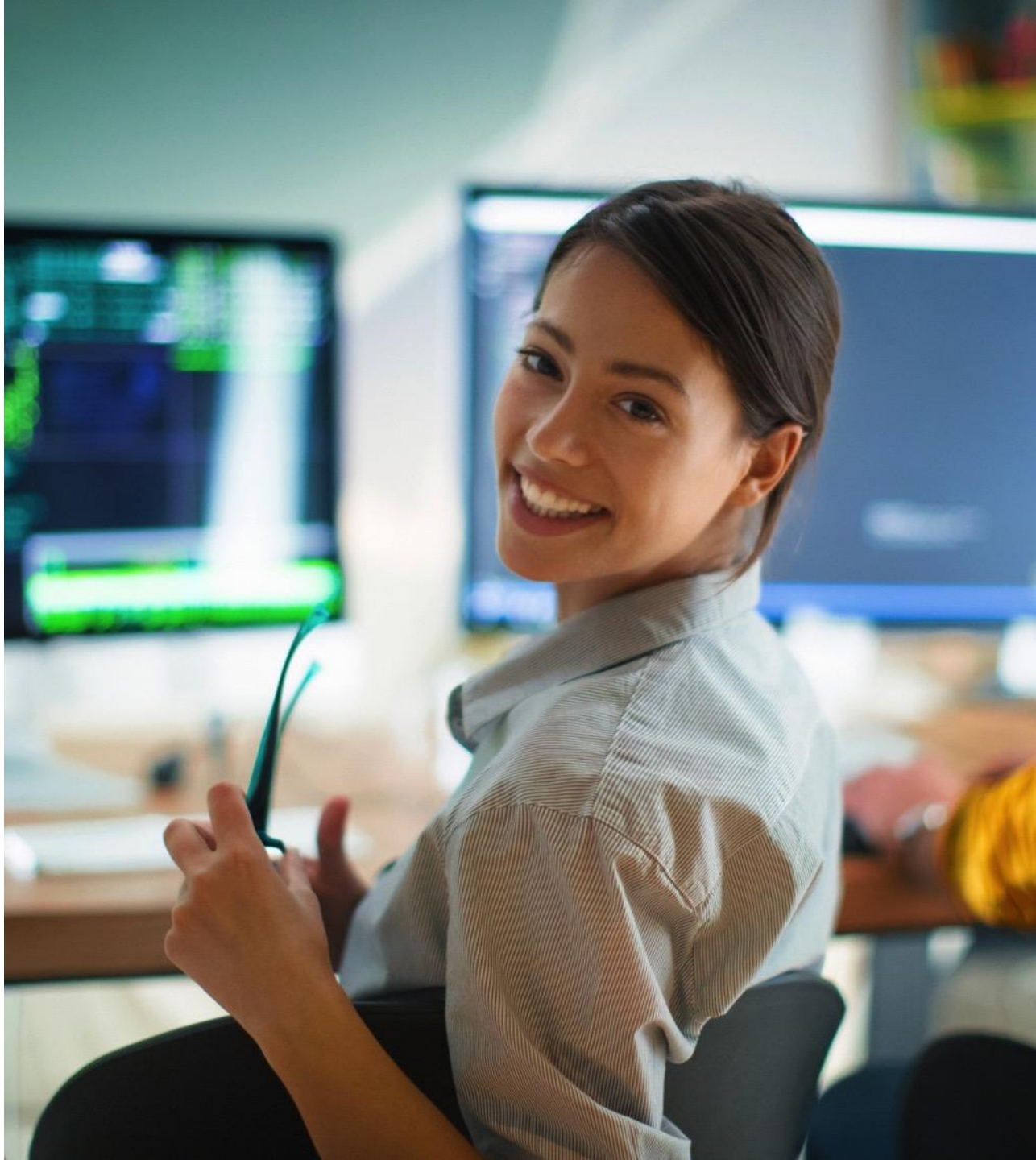
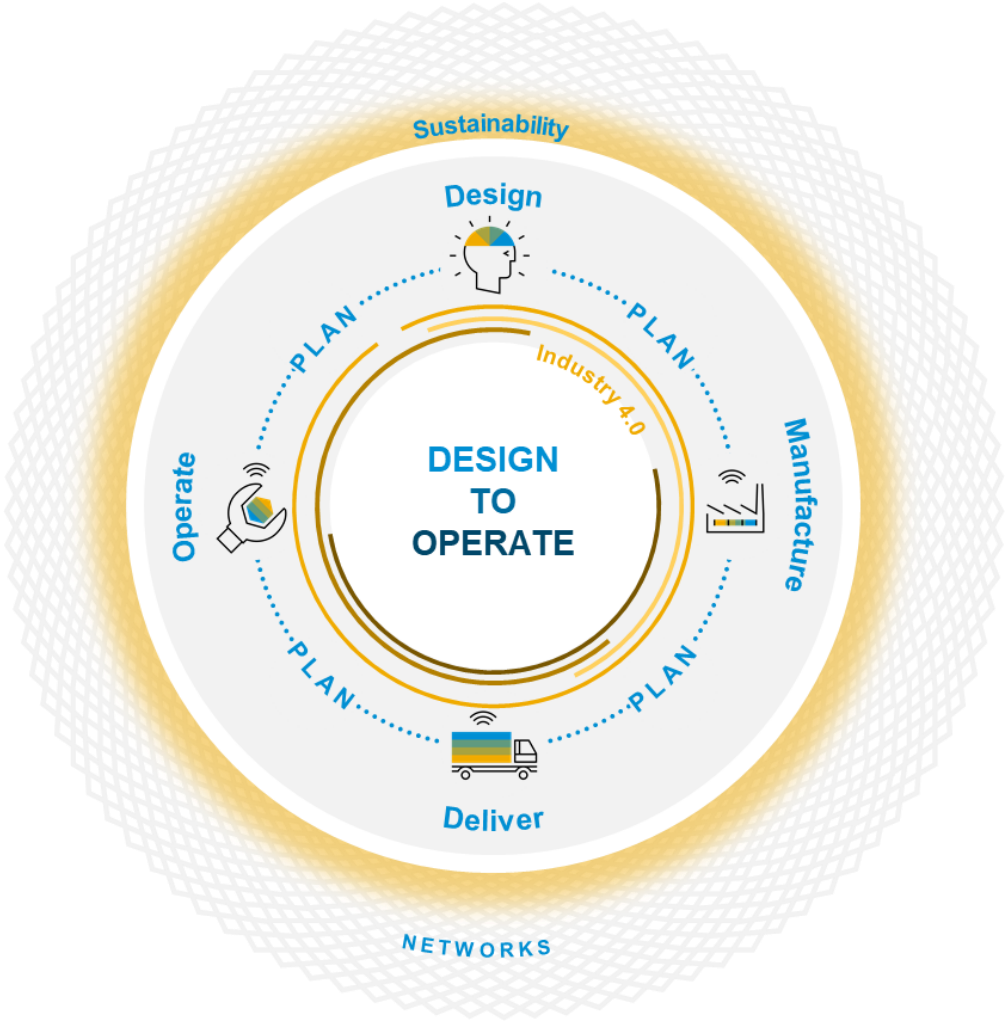


Design to Operate – Building a Resilient Supply Chain
Key Take Aways

- Design to Operate represents key business processes, supported by the portfolio of SAP Digital Supply Chain
- Integrated supply chain solutions are key to realizing strategic goals of greater customer centricity, Industry 4.0, visibility through networks and sustainability



Design to Operate
5 key differentiators:

1. Intelligence built into business processes
2. Seamless Integration and UX
3. Digital Thread
4. Combine X and O data for optimal experience
5. Harmonized master data

Thank you.

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SAP Digital Supply Chain
anubhuti.shah@sap.com

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