SAP Digital Supply Chain
Desires, Delivered in the Experience Economy

Franz Hero, SAP

PUBLIC

Disclaimer

The information in this presentation is confidential and proprietary to SAP and may not be disclosed without the permission of SAP. Except for your obligation to protect confidential information, this presentation is not subject to your license agreement or any other service or subscription agreement with SAP. SAP has no obligation to pursue any course of business outlined in this presentation or any related document, or to develop or release any functionality mentioned therein.

This presentation, or any related document and SAP's strategy and possible future developments, products and or platforms directions and functionality are all subject to change and may be changed by SAP at any time for any reason without notice. The information in this presentation is not a commitment, promise or legal obligation to deliver any material, code or functionality. This presentation is provided without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. This presentation is for informational purposes and may not be incorporated into a contract. SAP assumes no responsibility for errors or omissions in this presentation, except if such damages were caused by SAP's intentional or gross negligence.

All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.

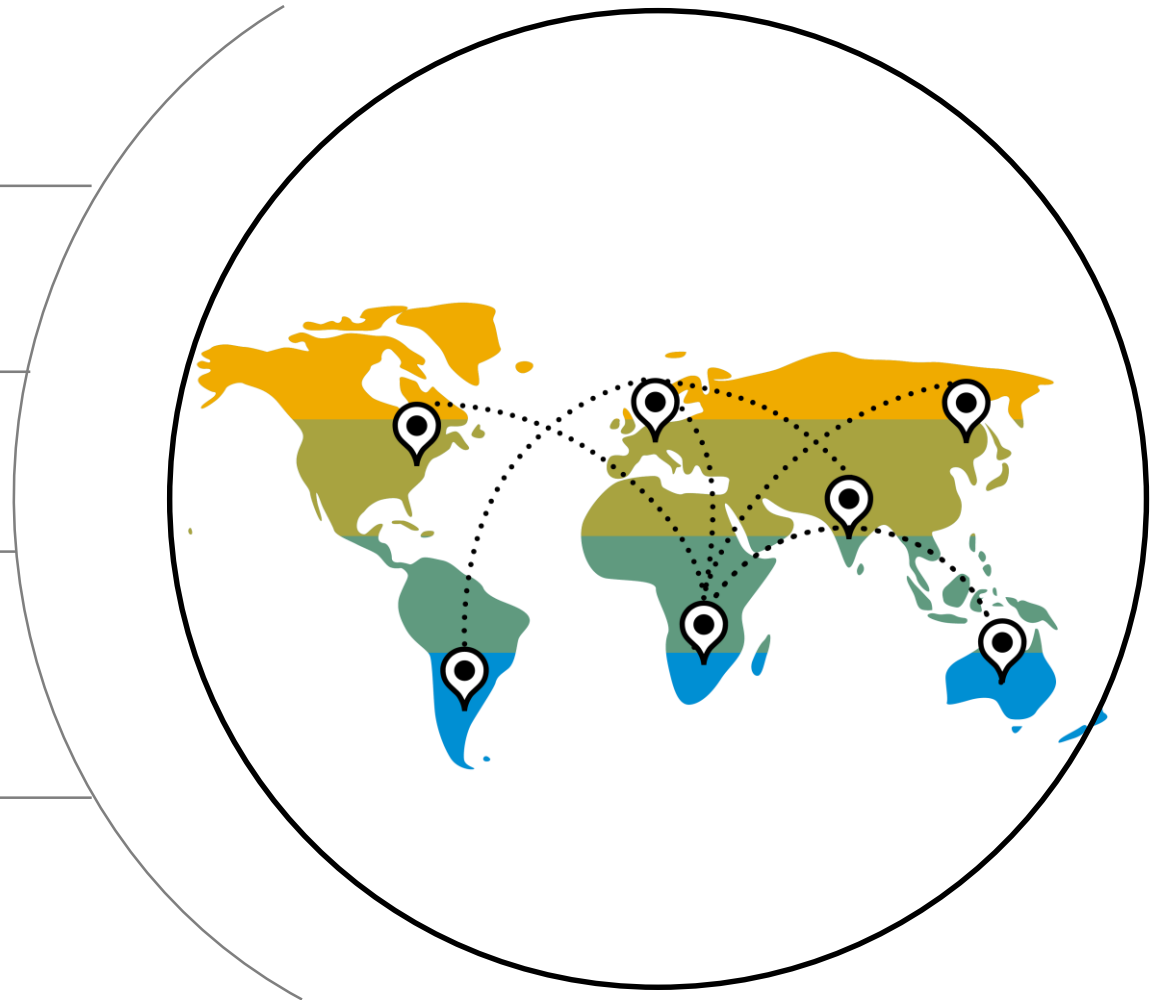# The Impact of Global Disruption

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

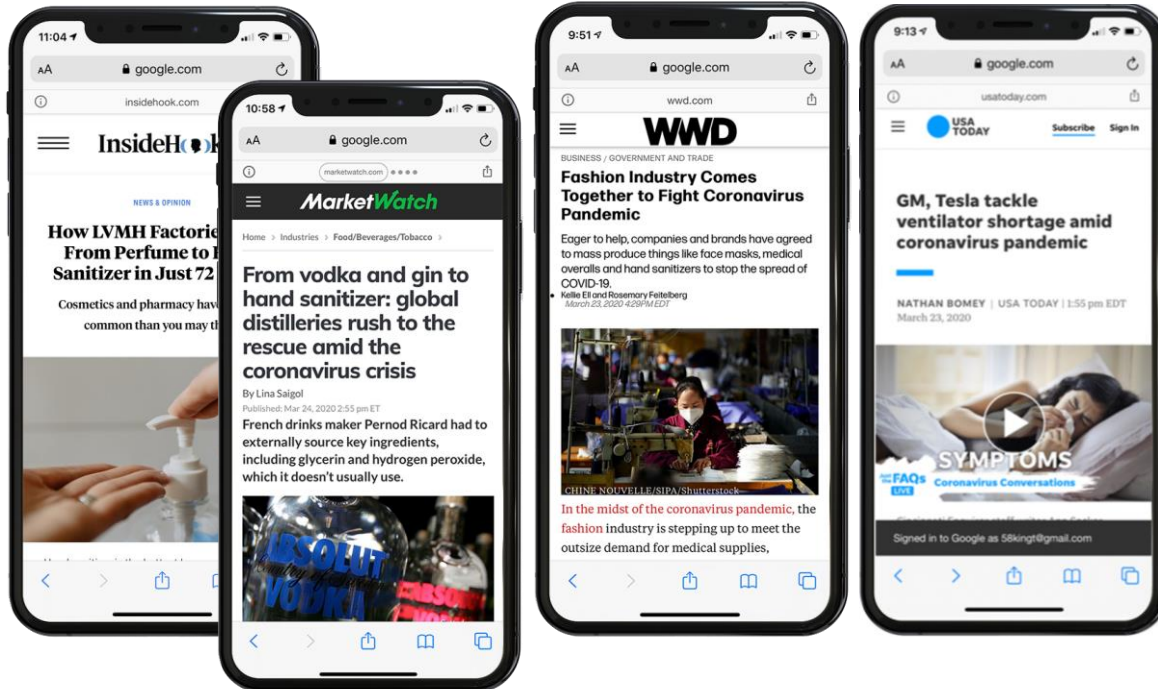**Oversteering –** Intensifies the bullwhip effect
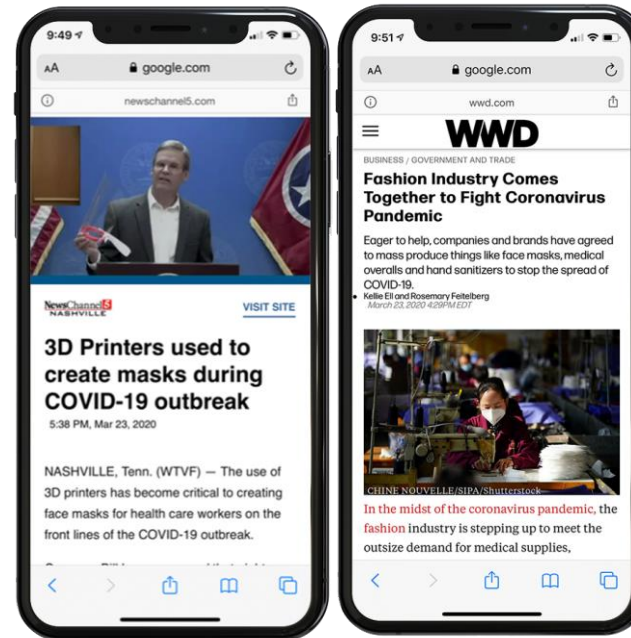
Managing a Resilient Supply Chain
Leading by example

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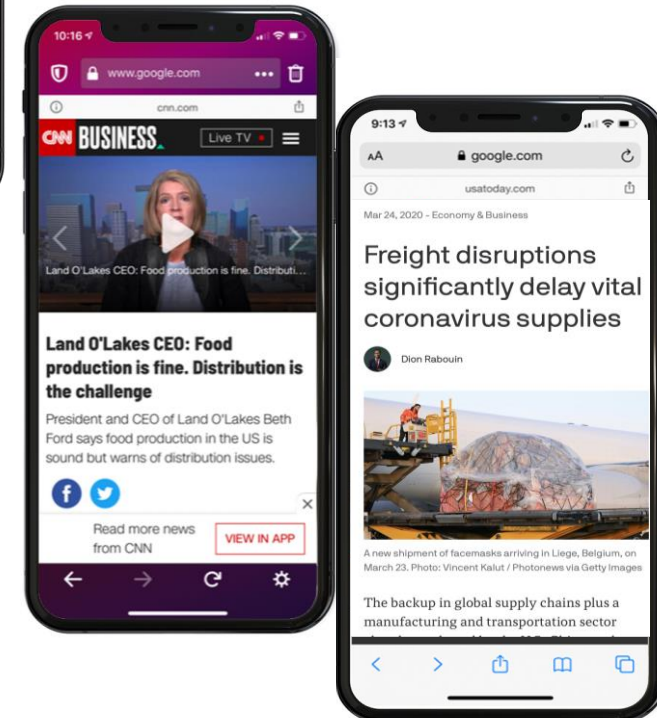Desperate need of hand sanitizers, masks, supplies, and ventilators

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.

Delivery experience

Product experience

Order experience

Service experience

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
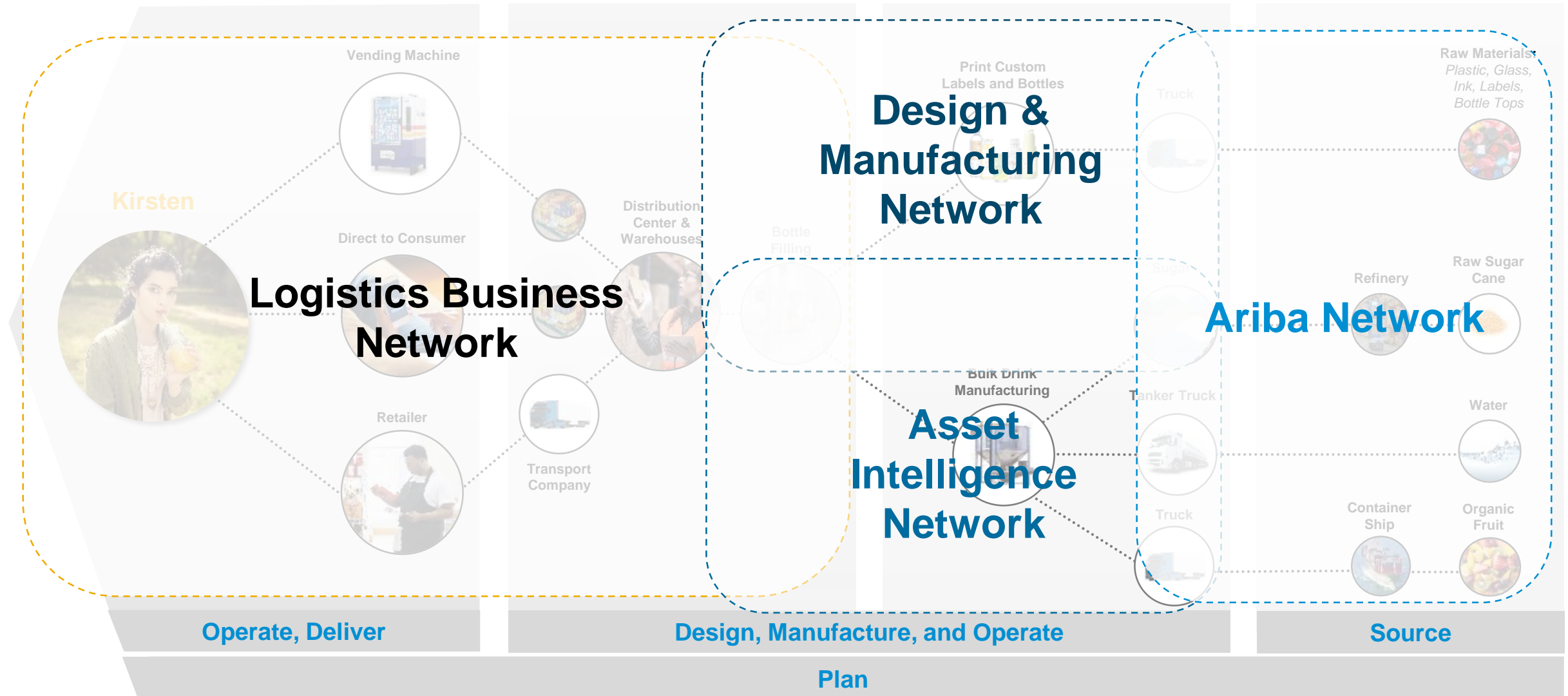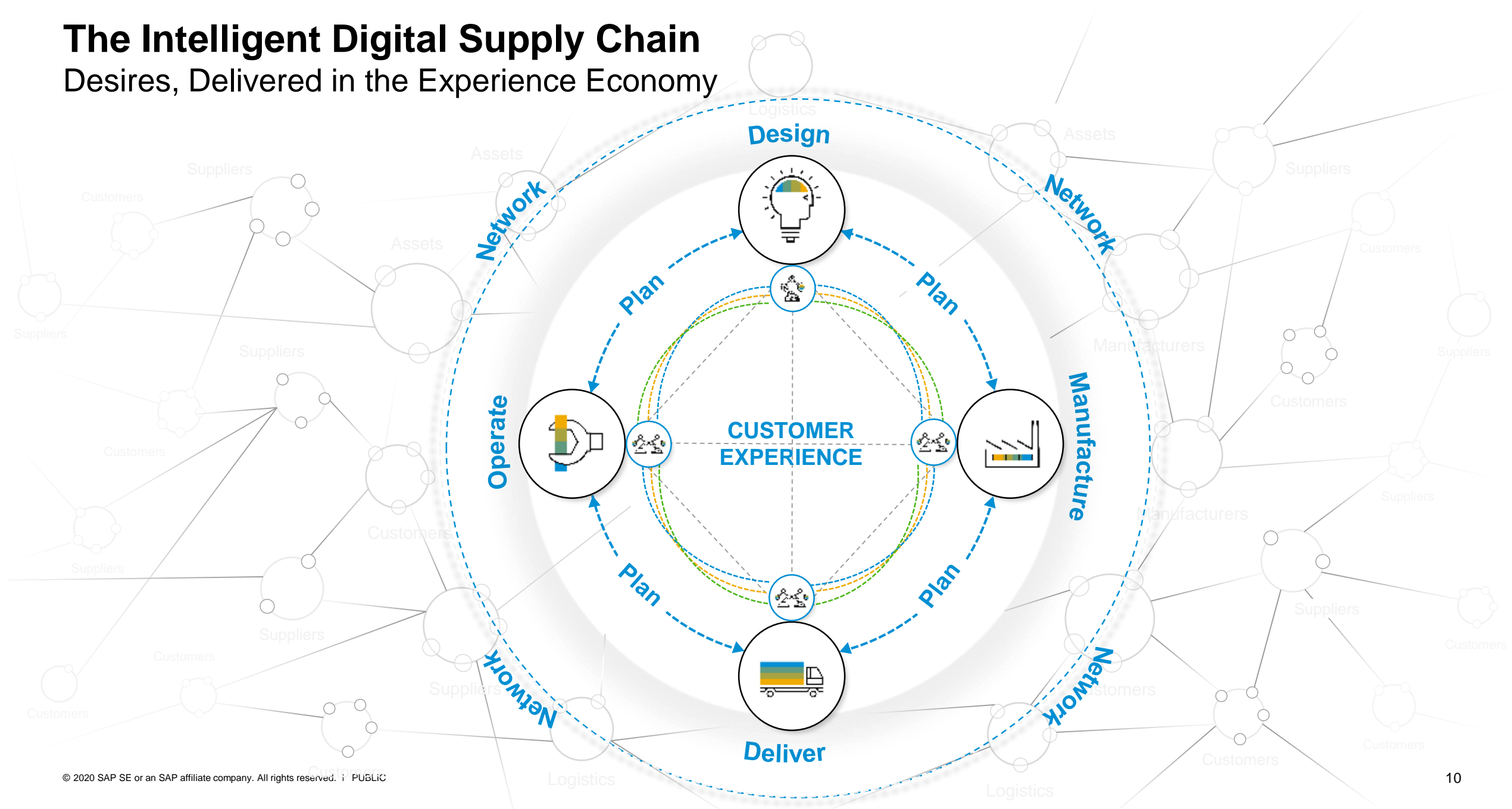
Top Floor Wants the Connected Supply Chain but

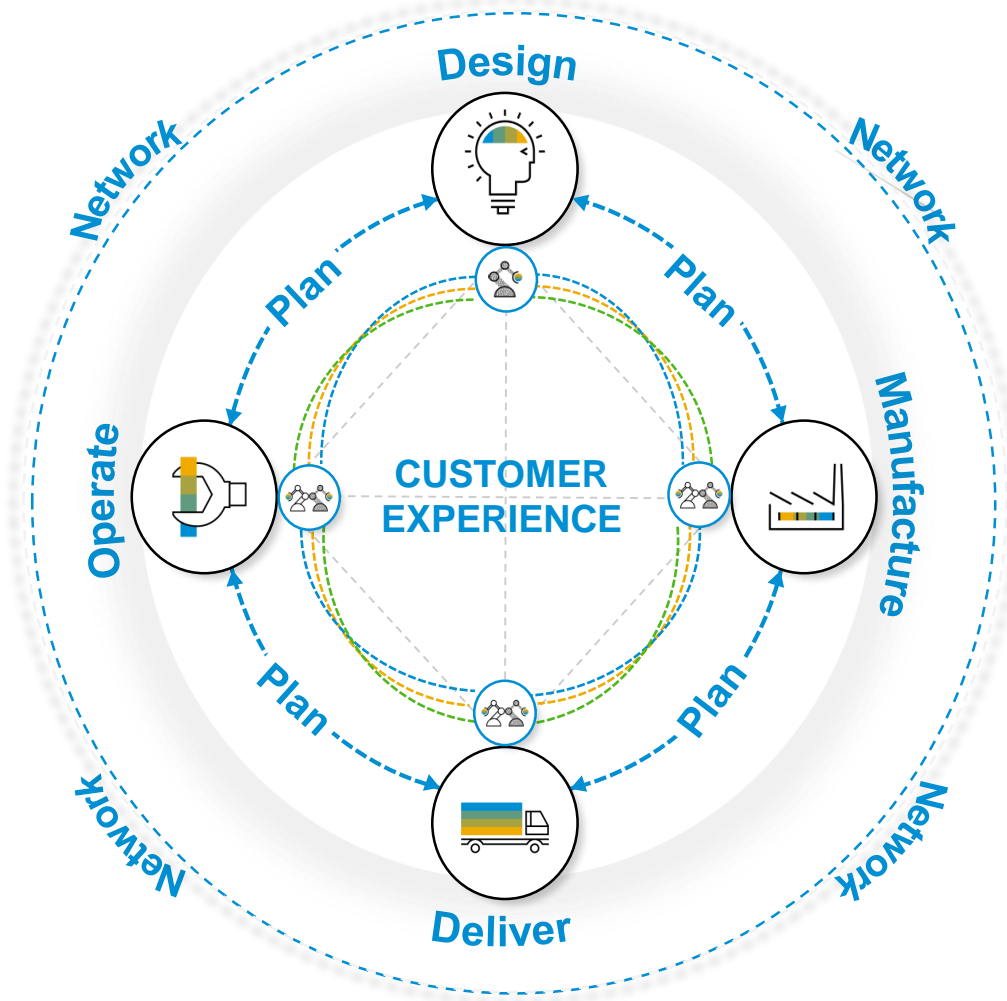... continues to organize in departmental silos
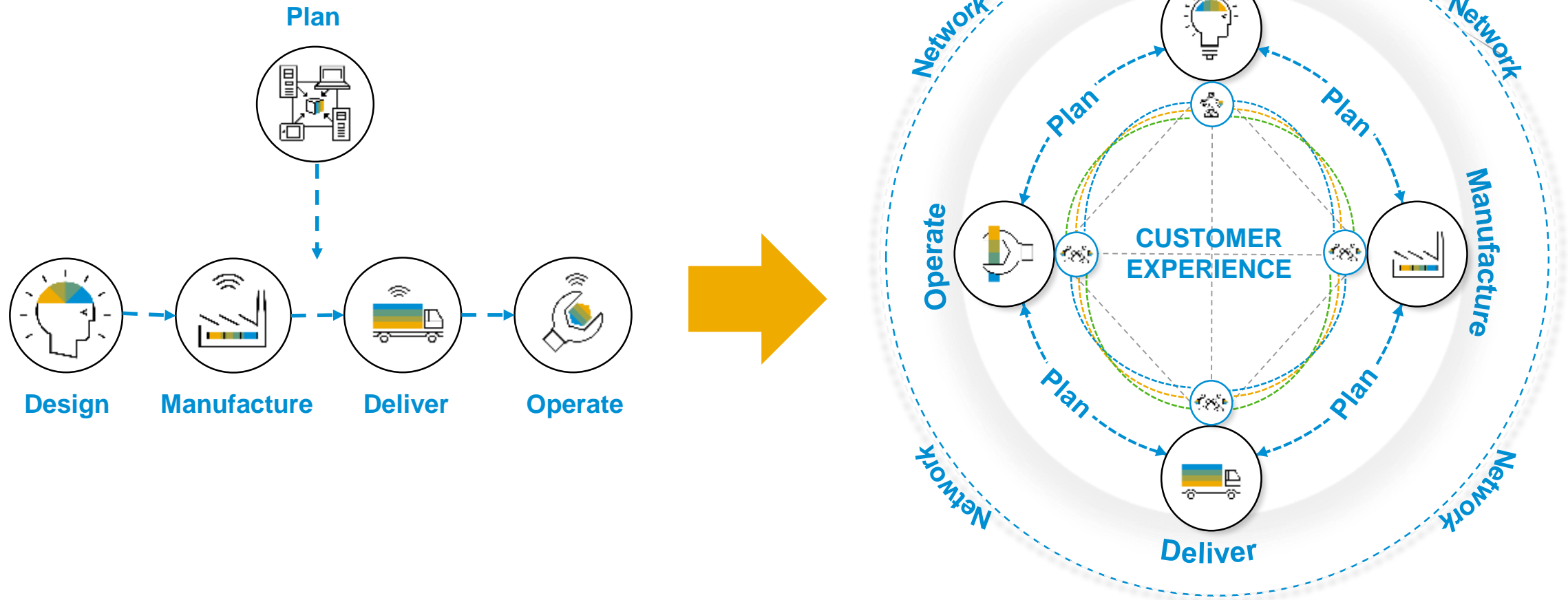
The Intelligent Digital Supply Chain
Desires, Delivered in the Experience Economy

Design

Plan

Plan

Network

Network

Network

Network

Operate

Manufacture

CUSTOMER
EXPERIENCE

Plan

Plan

Deliver

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
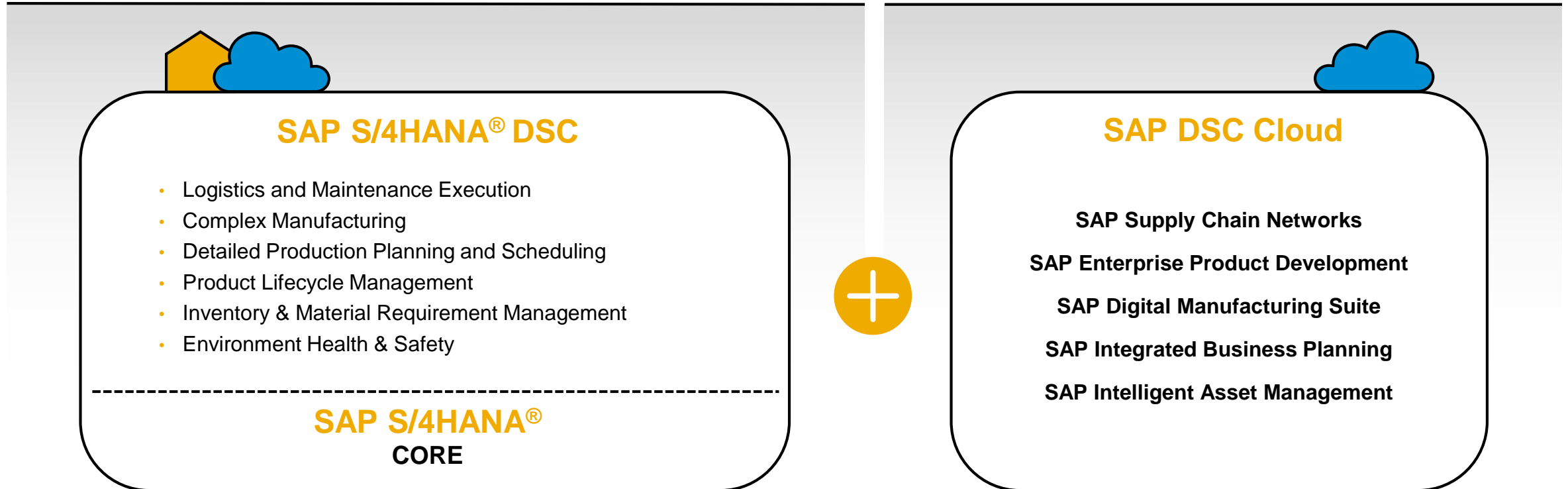- Increase utilization of warehouse and transportation

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 S/4HANA®
CORE

+

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
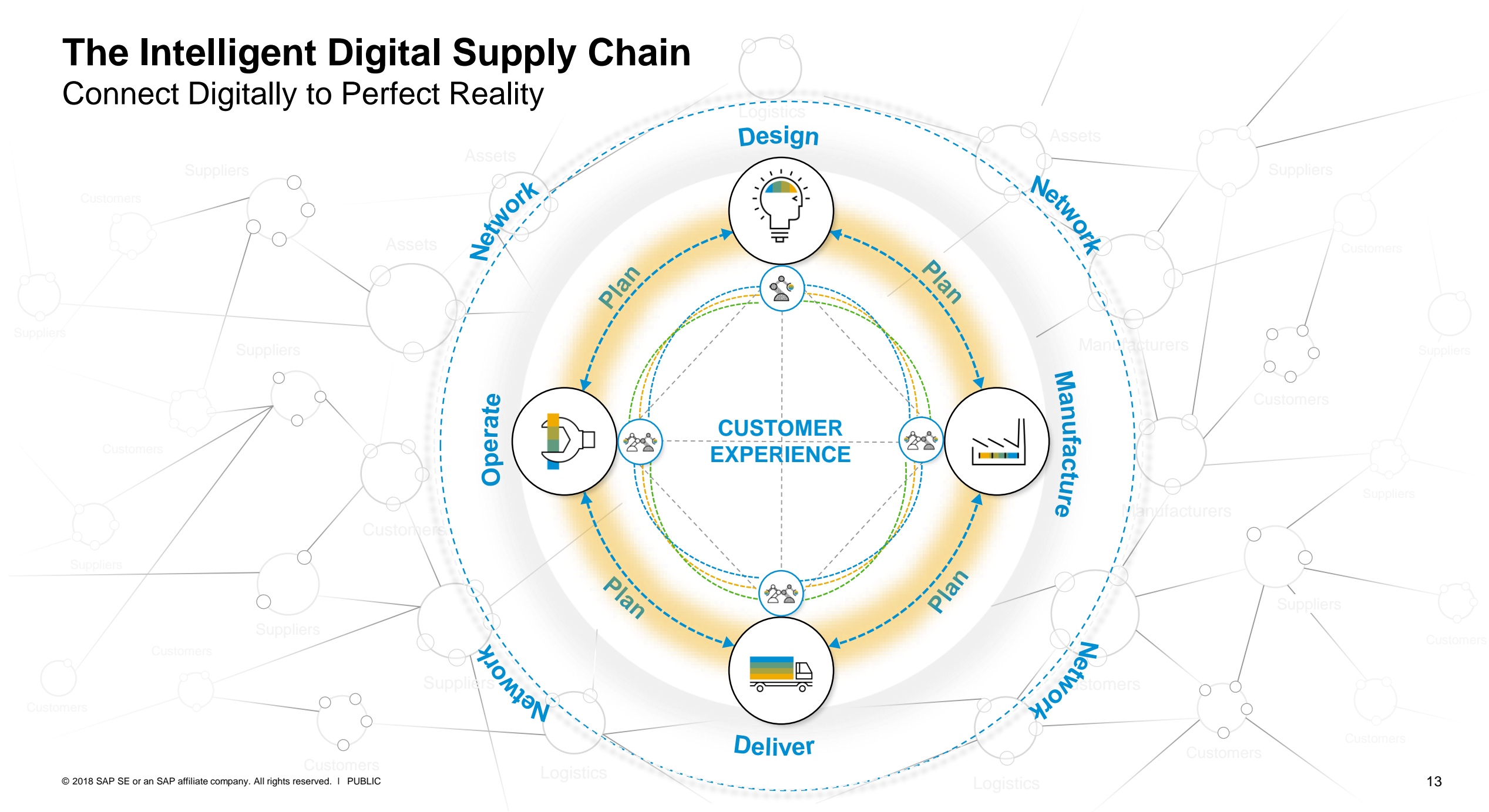
The **Evolution** of Planning

Current State

Integrated demand, supply & production planning

Demand driven

Interactive problem-solving

Mass customization & postponement
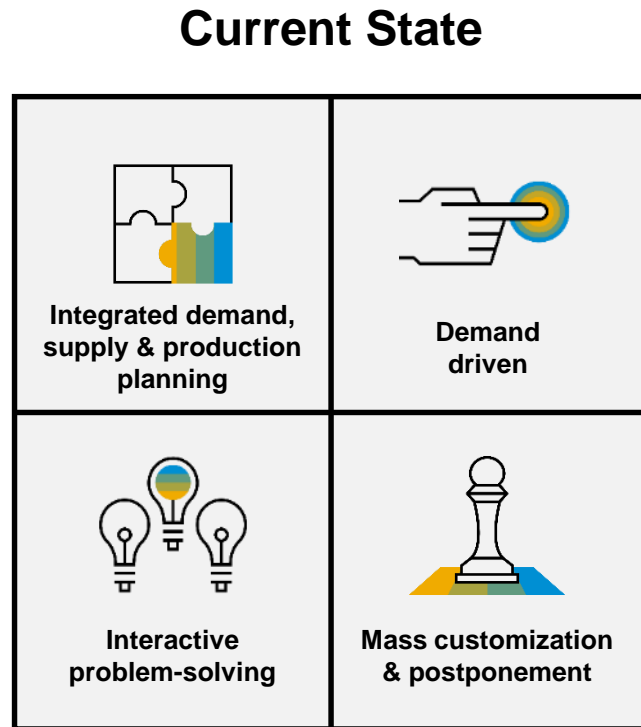
Efficiency

New Paradigm

Value-chain oriented

Segmented Supply Chains

Automated touchless planning

Continuous and Real-time Planning

Individualized customer experience

Multi-enterprise collaboration

Experience

14
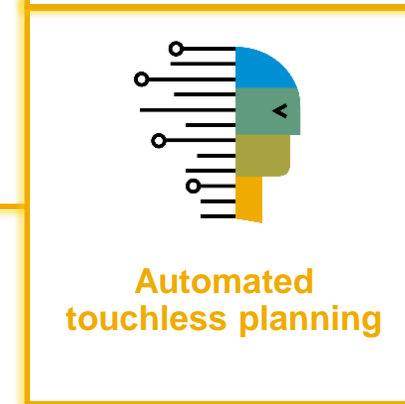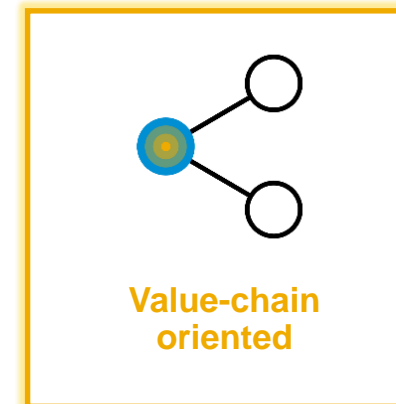
Synchronized Planning – **BRAIN** of Design2Operate

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
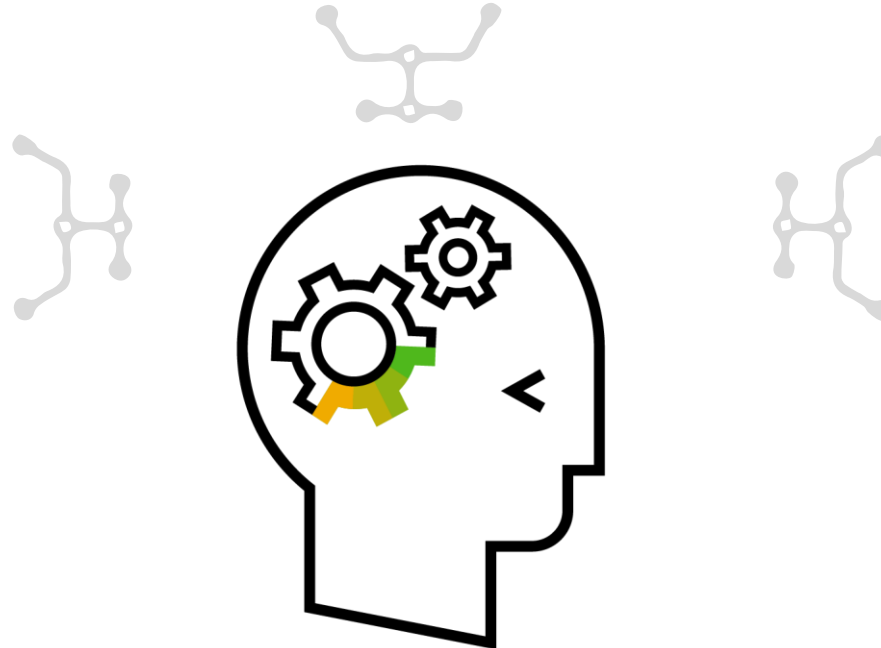
SAP Integrated Business Planning Response & Supply

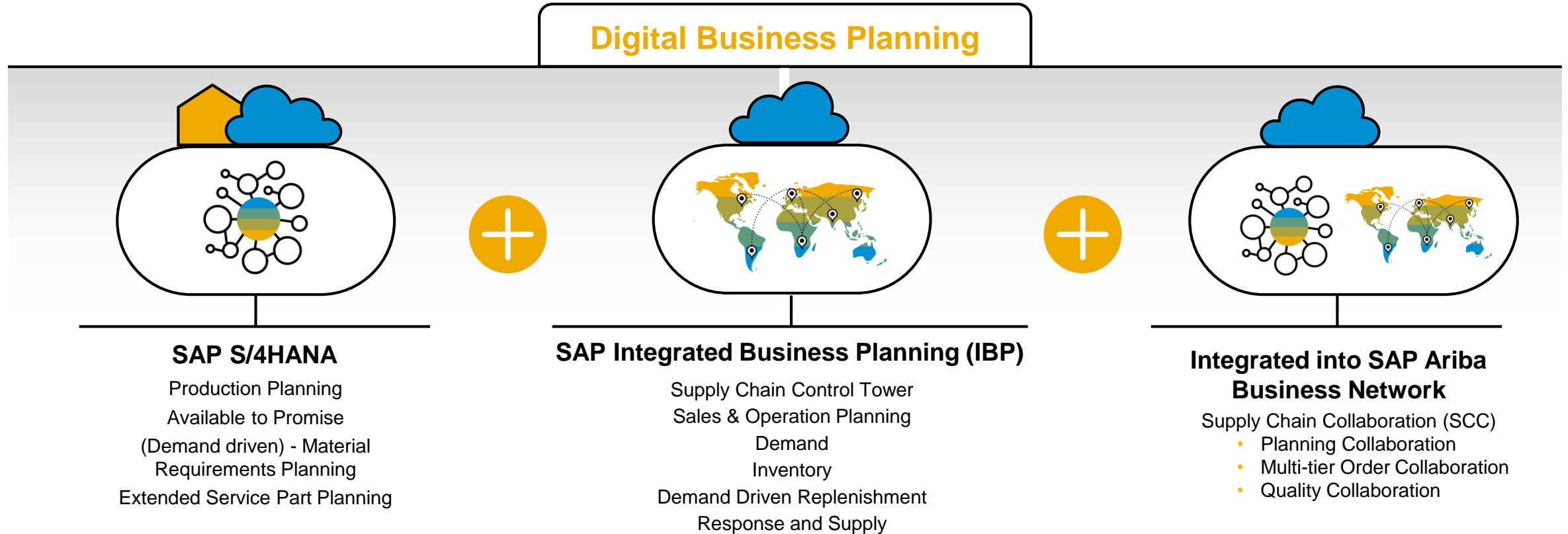# SAP Digital Supply Chain Solutions for Plan

Connect strategic and operational planning with real-time visibility and execution

Digital Business Planning

SAP S/4HANA

Production Planning

Available to Promise

(Demand driven) - Material
Requirements Planning

Extended Service Part Planning

SAP Integrated Business Planning (IBP)

Supply Chain Control Tower

Sales & Operation Planning

Demand

Inventory

Demand Driven Replenishment

Response and Supply

Integrated into SAP Ariba Business Network

Supply Chain Collaboration (SCC)
- Planning Collaboration
- Multi-tier Order Collaboration
- Quality Collaboration

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

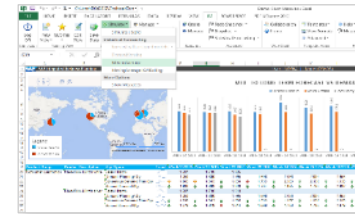**Real-time insight and monitoring on aggregated and detailed level**

Flexible and extensible data model and pre-built business model templates

Integrated business alignment for entire value chain
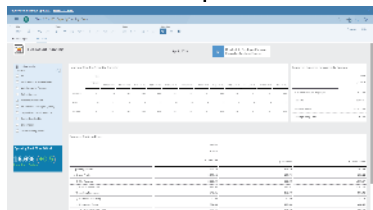
Real-time planning and simulation capabilities

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

APO Transformation Strategy
Product Direction

SAP Integrated Business Planning

Network-Centric Planning
Innovative & Rearchitectured
Supply Chain Planning Processes

SAP Advanced Planning & Optimization (APO)

SAP S/4HANA

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

☁ = Cloud   ⌂ = On Premise

APO Transformation Strategy
Product Direction

Ariba

Supply Chain Control Tower

Sales & Operations Planning

| Demand | Inventory | **Response & Supply** |

SAP Integrated Business Planning

Network-Centric Planning
Innovative & Rearchitectured
Supply Chain Planning Processes

Tight Process Integration

Synchronized Planning

&

Near real-time Integration

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

SAP S/4HANA

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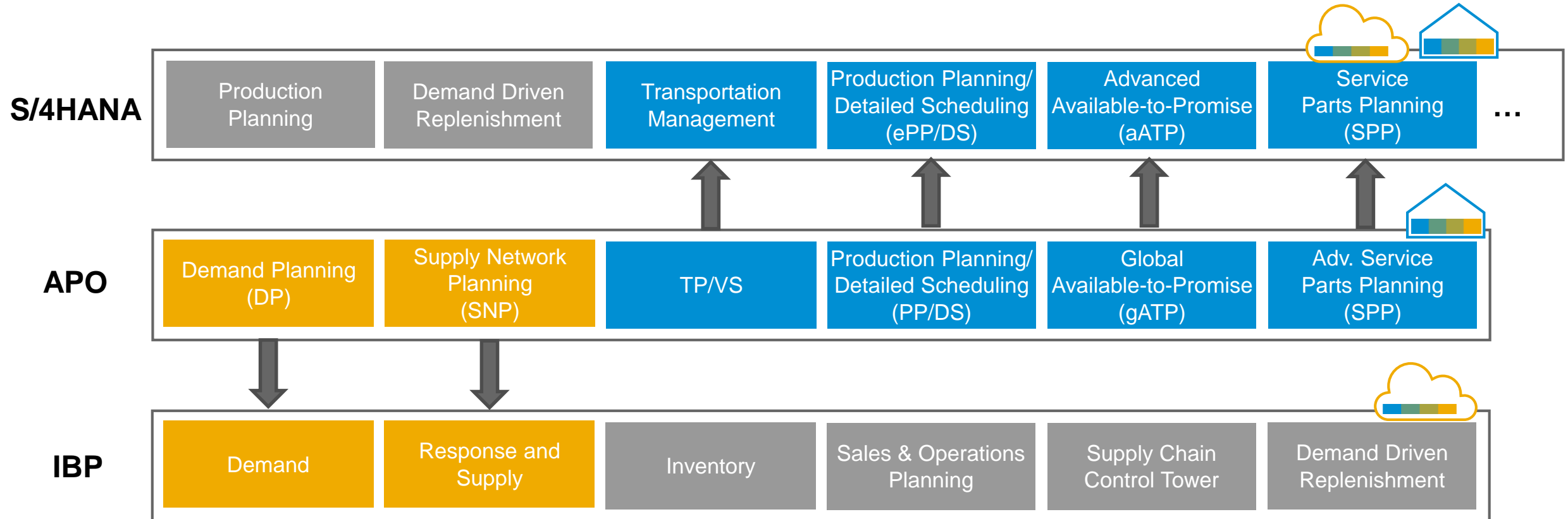Unified Manufacturing Processes
Plan to Produce in ONE System

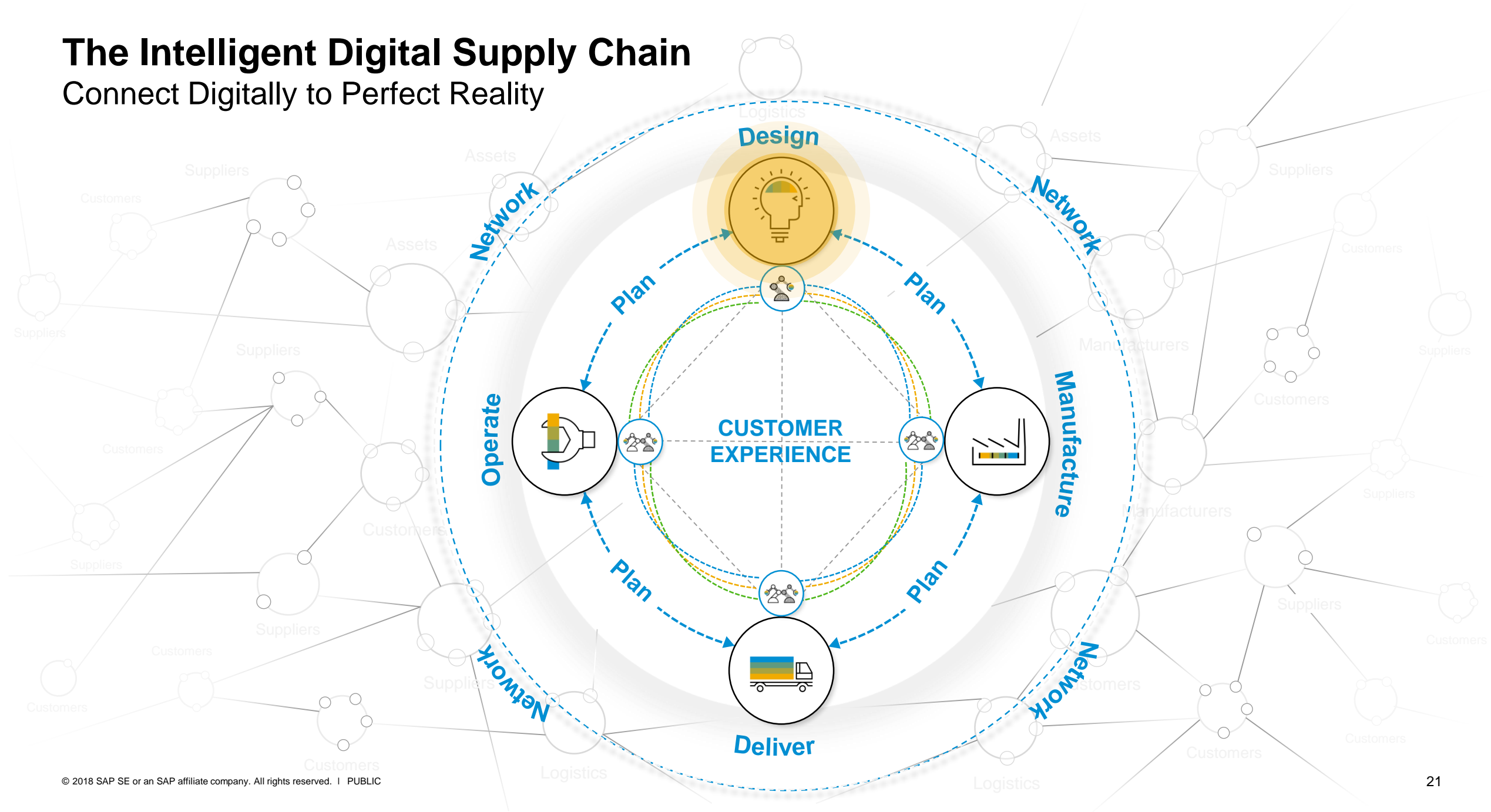= Cloud   = On Premise

APO Transformation Strategy

Product Direction

The Intelligent Digital Supply Chain
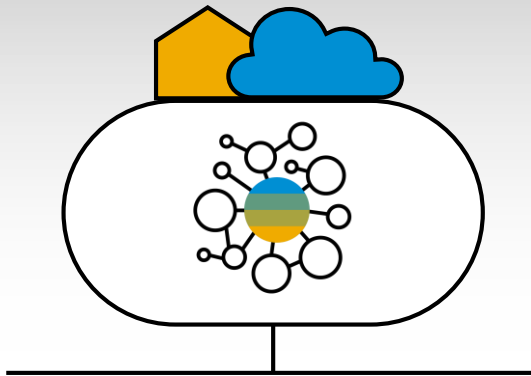Connect Digitally to Perfect Reality

21

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
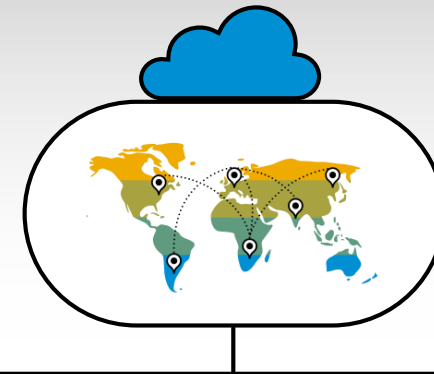
SAP Enterprise Product Development

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   22

The digital thread that ties Design2Operate together

The holy grail of product and asset lifecycle management is born.
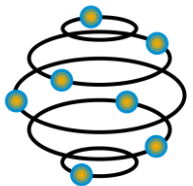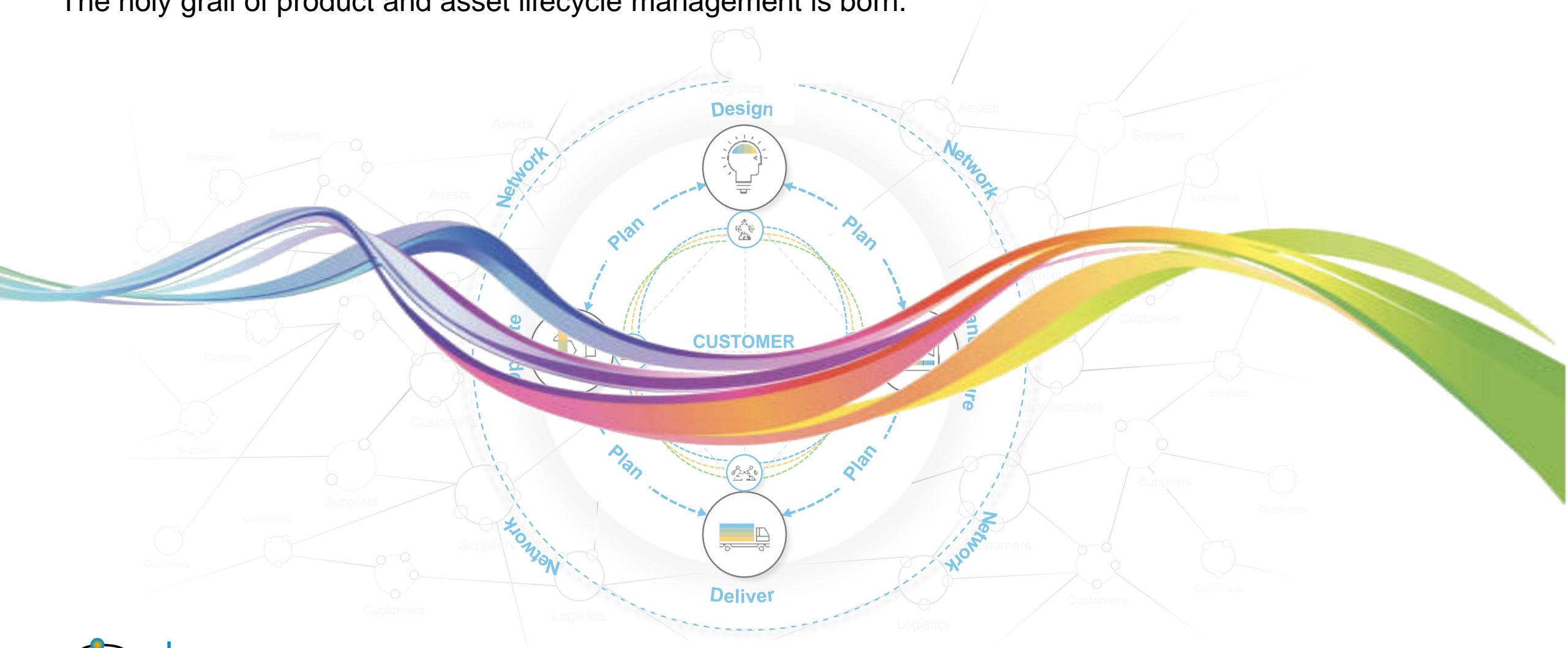
It's been the dream of every manufacturer, product design team and service lifecycle manager, to have a single digital thread that integrates all the real-time information, feedback, performance and data on a product from cradle to grave. Now every downstream team will have in-the-moment access to what every other group is doing. Processes will go from reactive to predictive.

Product and Asset Lifecycle Management
Big picture for Digital Thread

Systems Engineering

Requirement Model

Functional Model

Logical Model

Authoring-Tools

Software Electronics Mechanics

Team Data Management

Folder, Document, Material & BoD/E-BoM

Engineering Structure

Configurable Product Structure

Manufacturing, Procurement & Supply Chain

Plant 001

Plant 002

Service & Maintain

Real Time Strategy & Planning

Location Model   System Model   Risk & Criticality

Statistical Model   Sensor & Diagnostics   Physics Model

As Designed   As Built   As Installed / As Maintained
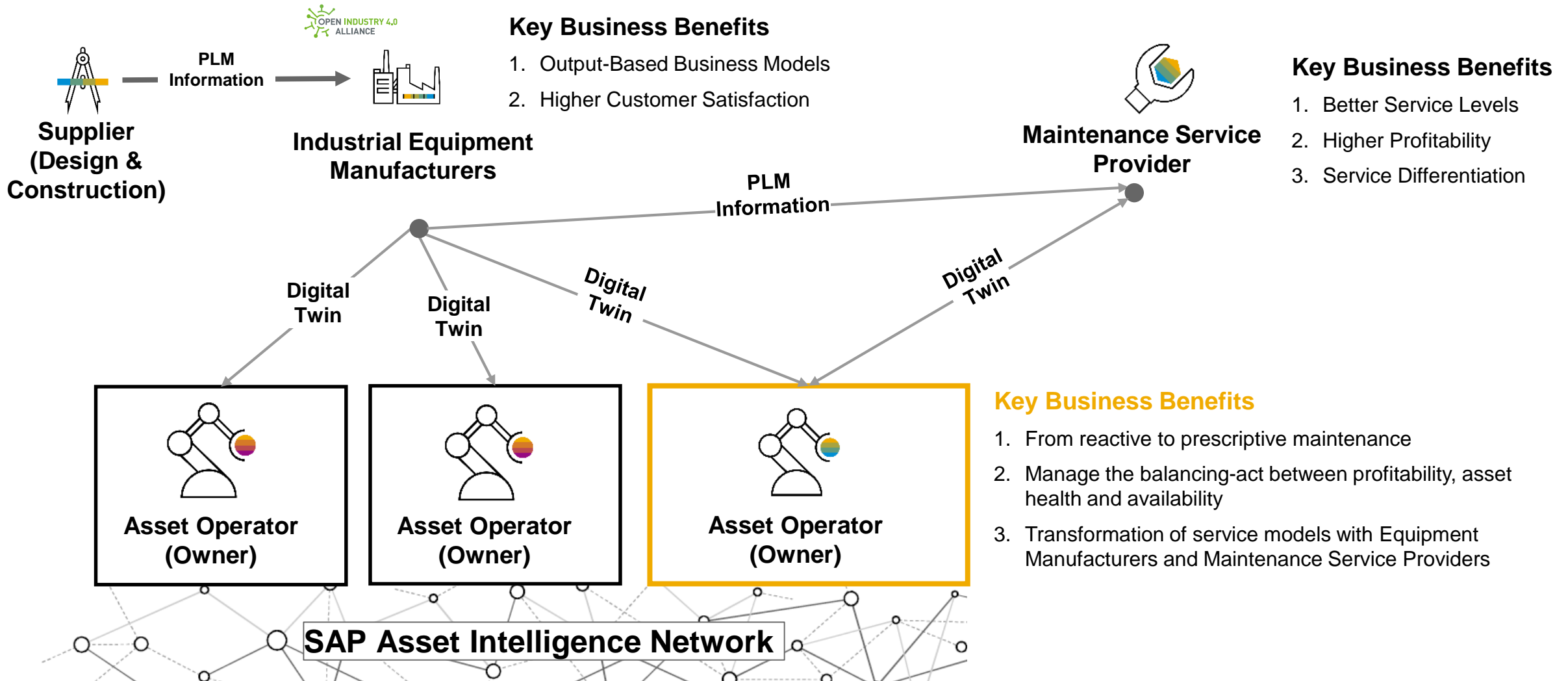
As Allowed

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

OPEN INDUSTRY 4.0 ALLIANCE

PLM Information

Supplier (Design & Construction)

Industrial Equipment Manufacturers

Key Business Benefits

1. Output-Based Business Models
2. Higher Customer Satisfaction

Maintenance Service Provider

Key Business Benefits

1. Better Service Levels
2. Higher Profitability
3. Service Differentiation

PLM Information

Digital Twin

Digital Twin

Digital Twin

Digital Twin

Asset Operator (Owner)

Asset Operator (Owner)

Asset Operator (Owner)

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
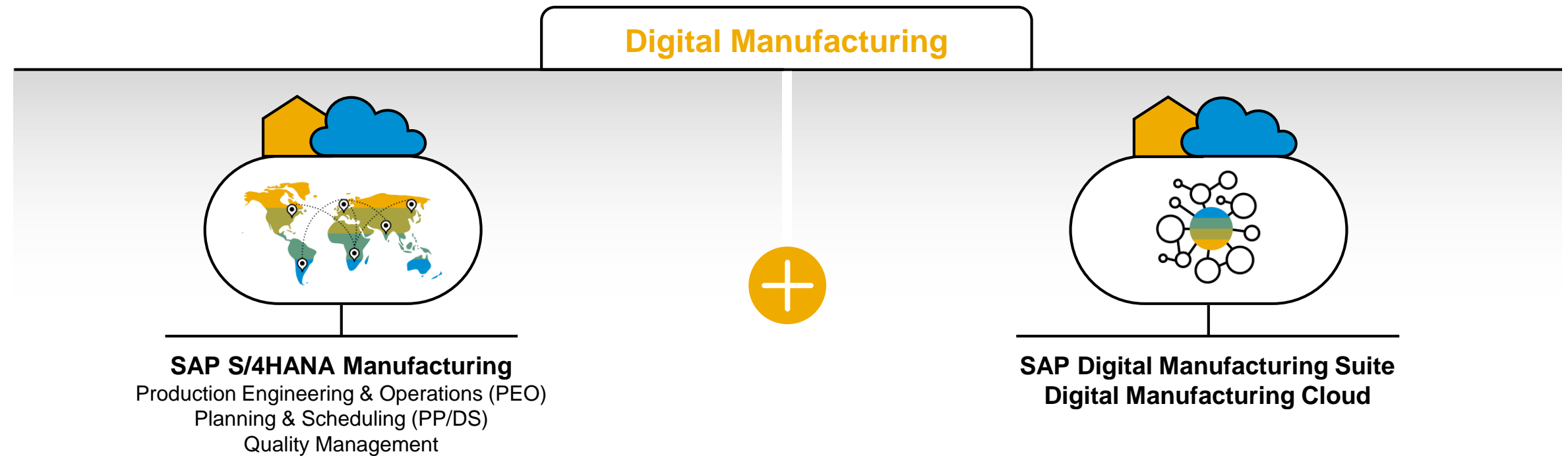
SAP Asset Intelligence Network

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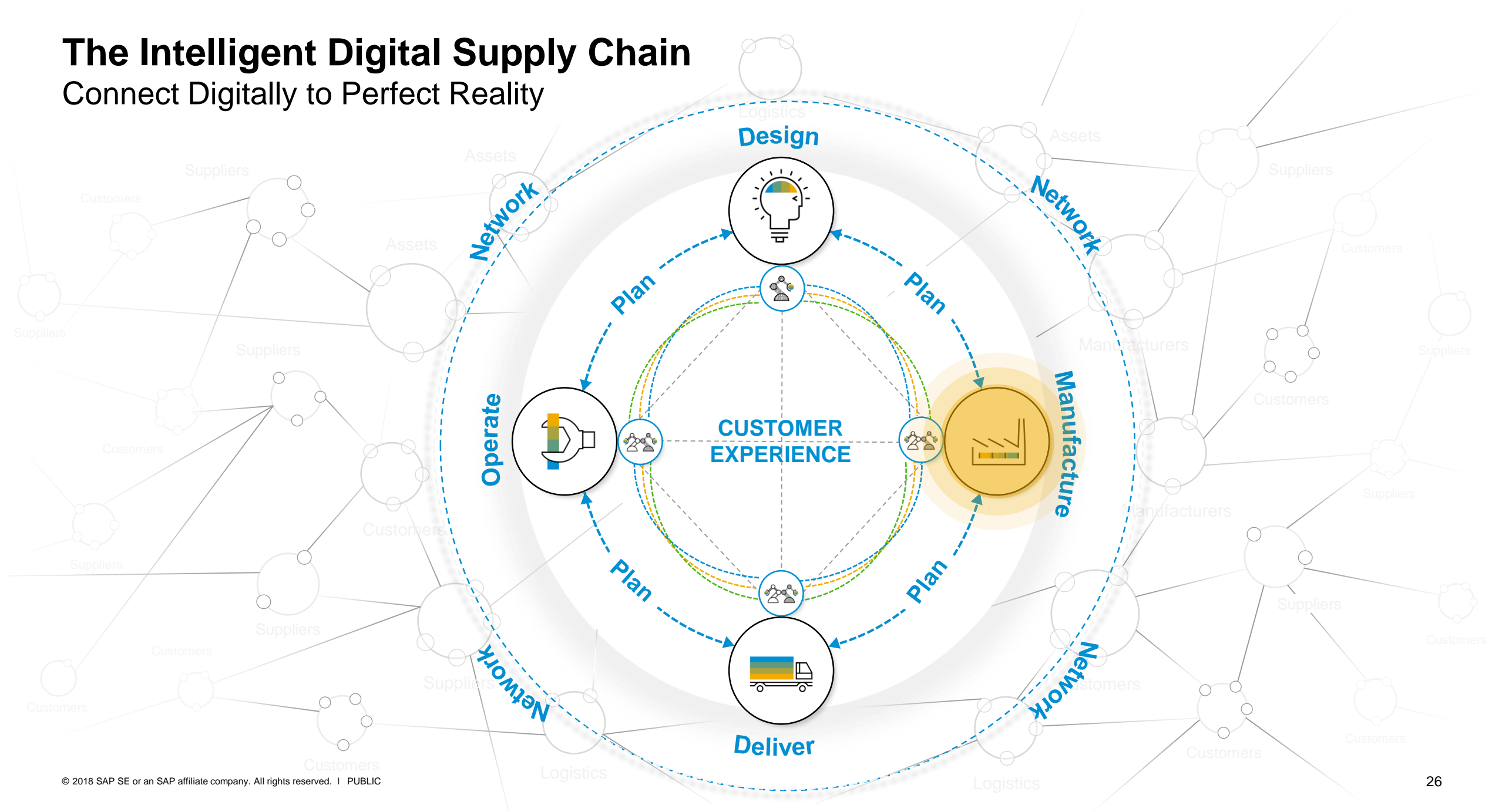
SAP Digital Supply Chain Solutions for Manufacture

Digitally orchestrate manufacturing operations, resulting in better customer service levels, higher margins, lower Cost-of-Goods Sold, and higher return on assets

Digital Manufacturing

SAP S/4HANA Manufacturing
Production Engineering & Operations (PEO)
Planning & Scheduling (PP/DS)
Quality Management

SAP Digital Manufacturing Suite
Digital Manufacturing Cloud

Intelligent Visibility Across the Business

Machine to Machine Automation

Complete E2E Supply Chain Integration

Predictive Service & Maintenance

Flawless Supplier Collaboration

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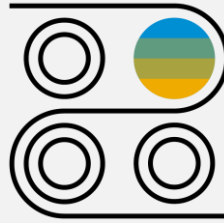
1
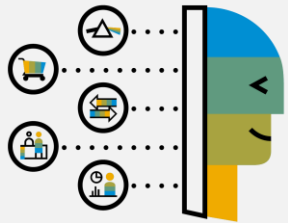
Center on Customers
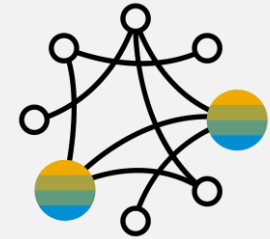so their input and preferences
are the source of all you do

2

Reinvent Production
using intelligent assets and
processes that dynamically adapt
to production priorities and
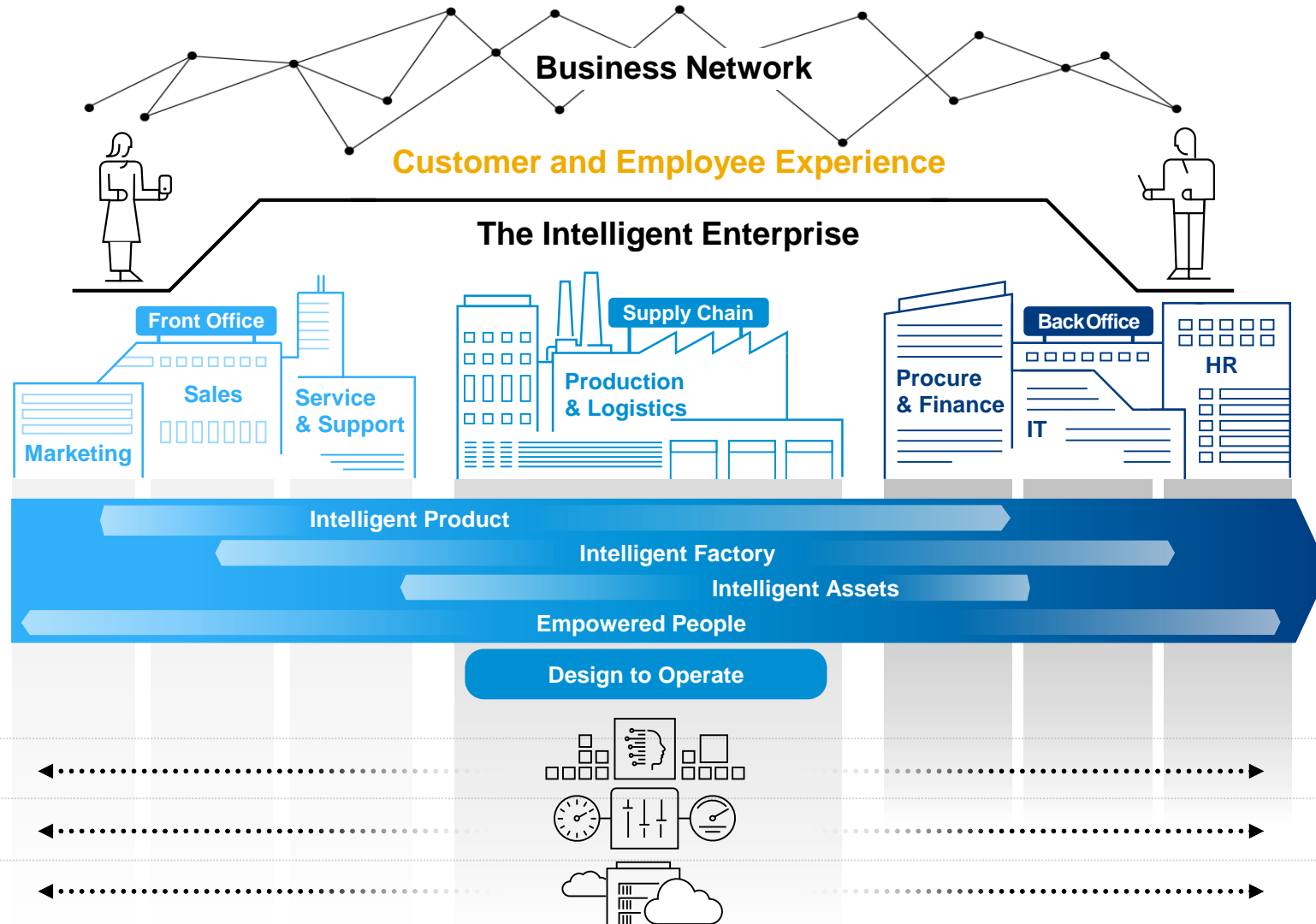deliver customization at scale
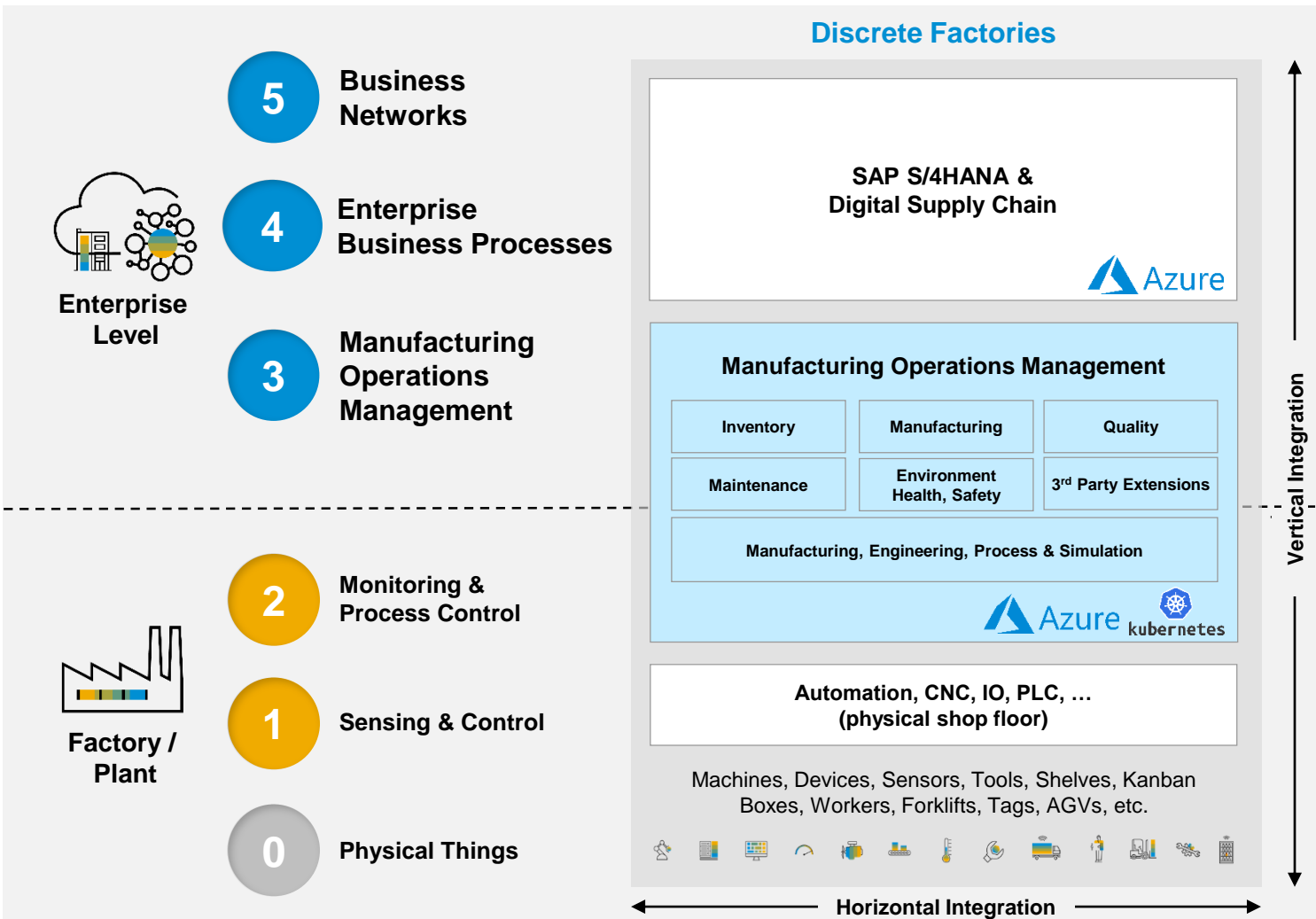
3

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

Business Network

Customer and Employee Experience

The Intelligent Enterprise

Front Office
- Marketing
- Sales
- Service & Support

Supply Chain
- Production & Logistics

Back Office
- Procure & Finance
- IT
- HR

Industry 4.0 by SAP

- Intelligent Product
- Intelligent Factory
- Intelligent Assets
- Empowered People

Design to Operate

Artificial Intelligence

Data Driven Processing

IT/OT Integration

Intelligent Factory Target Solution Blueprint

Discrete Factories

**SAP S/4HANA &
Digital Supply Chain**

Azure

Manufacturing Operations Management

Inventory	Manufacturing	Quality
Maintenance	Environment Health, Safety	3rd Party Extensions

Manufacturing, Engineering, Process & Simulation

Azure   kubernetes

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

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

Vertical Integration

Horizontal Integration

**Enterprise
Level**

5	Business Networks
4	Enterprise Business Processes
3	Manufacturing Operations Management

**Factory /
Plant**

| 2 | Monitoring & Process Control |
| 1 | Sensing & Control |
| 0 | Physical Things |

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**
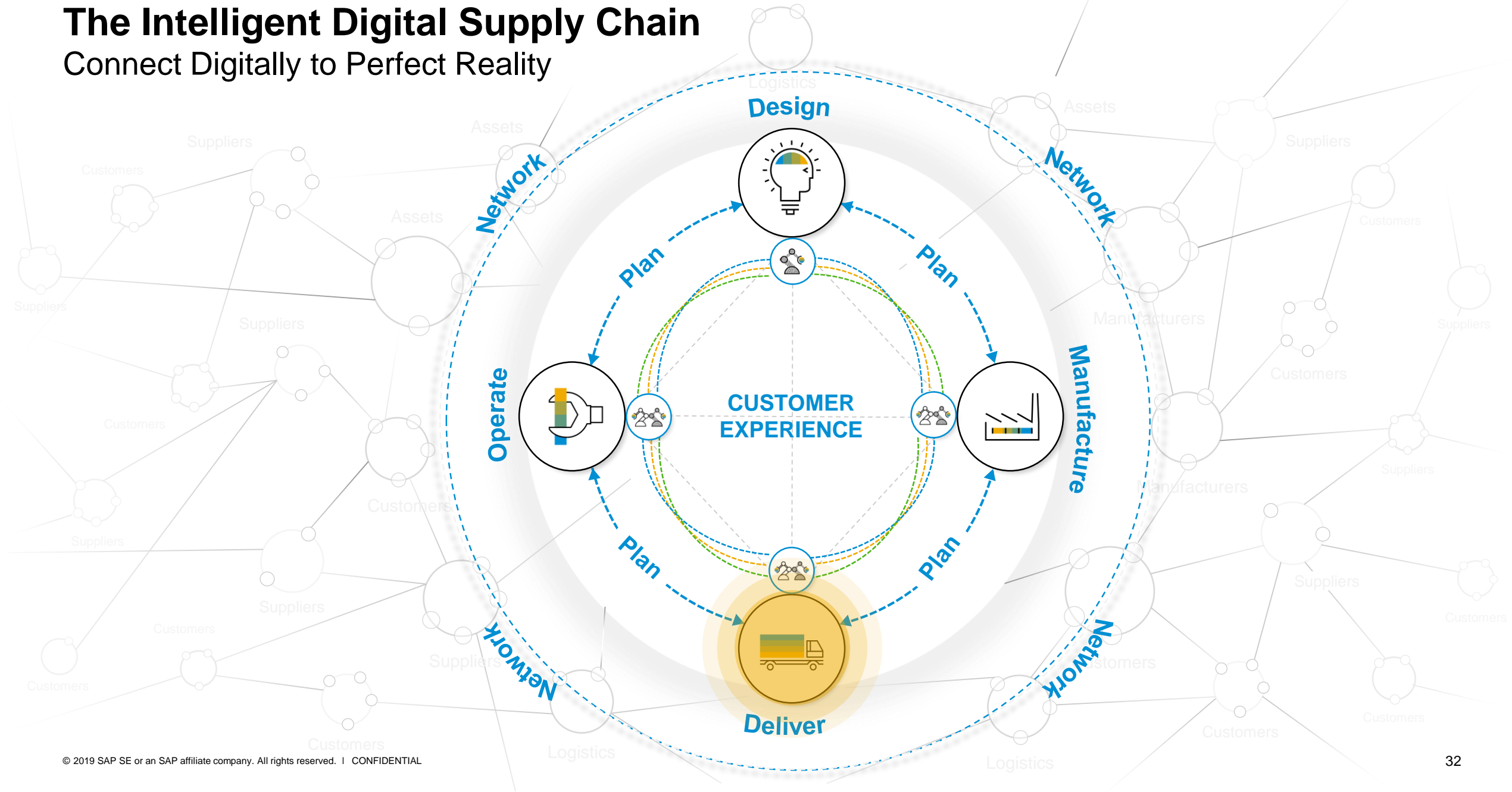
Evolving from Classic PP to S/4HANA Production Engineering & Operations

Seamless information flow from Design-to-Manufacturing Execution
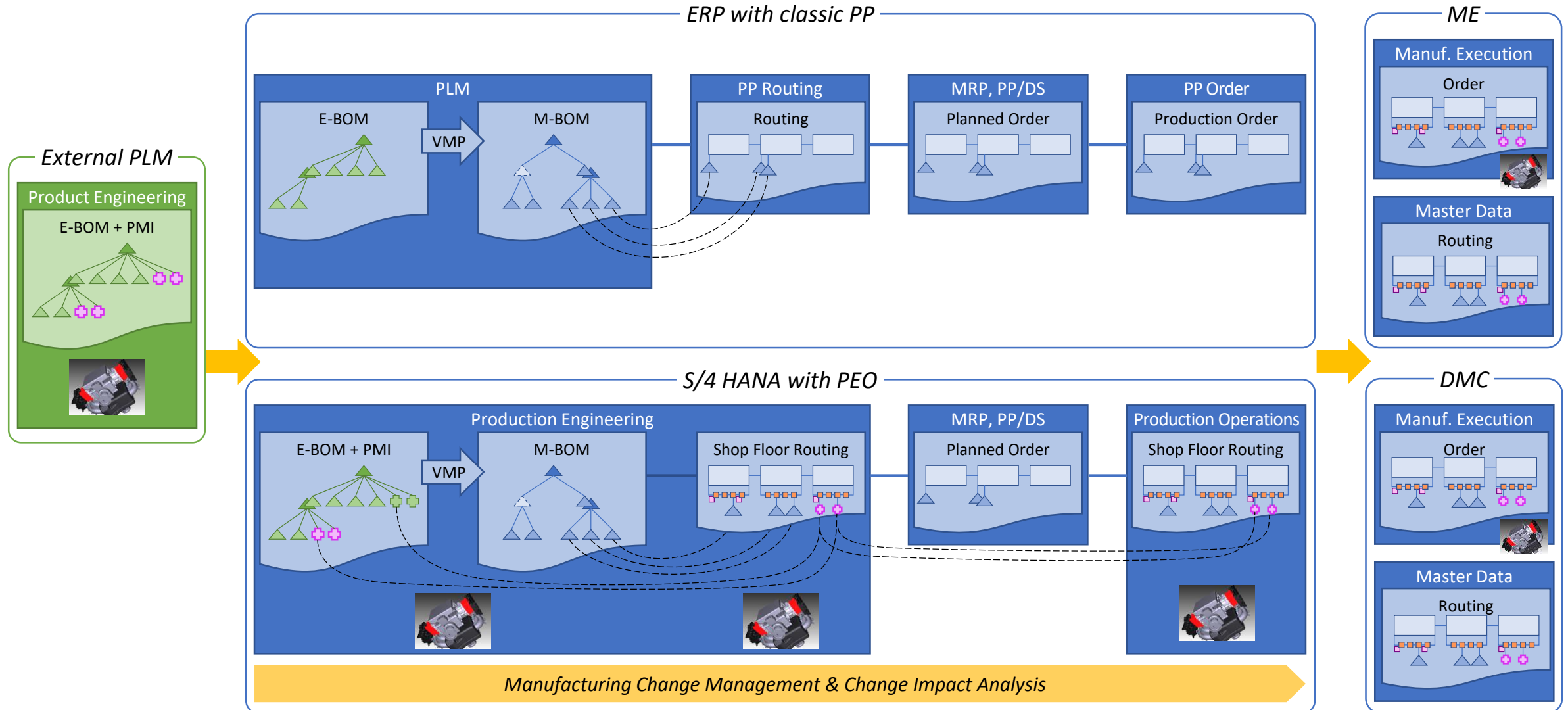
Note: Integration from PEO to DMC and ME is planned for 2020

The Intelligent Digital Supply Chain
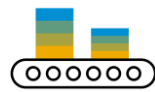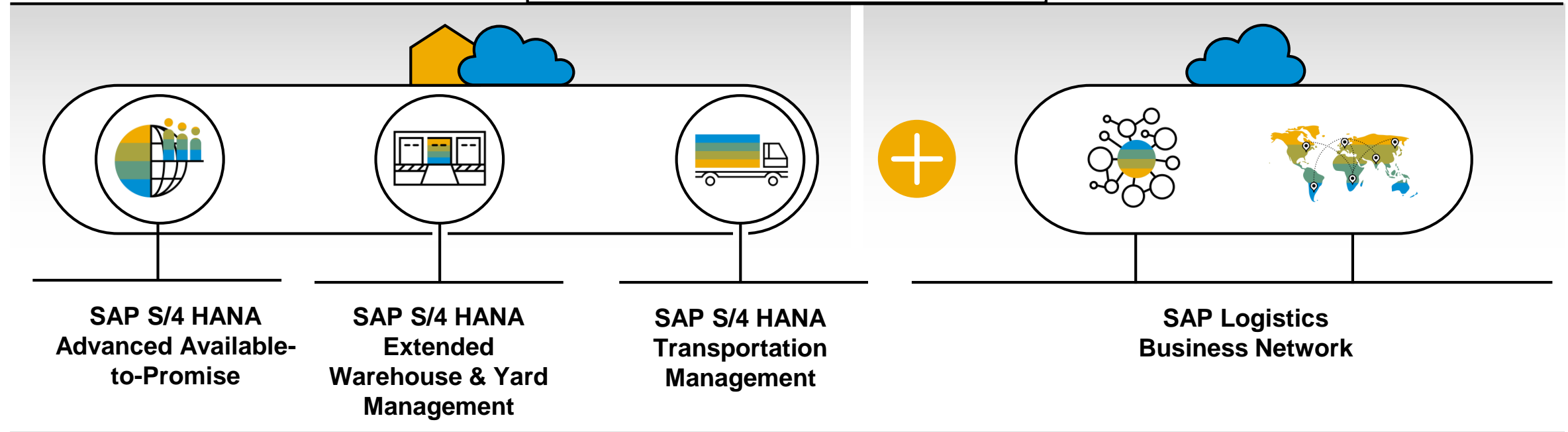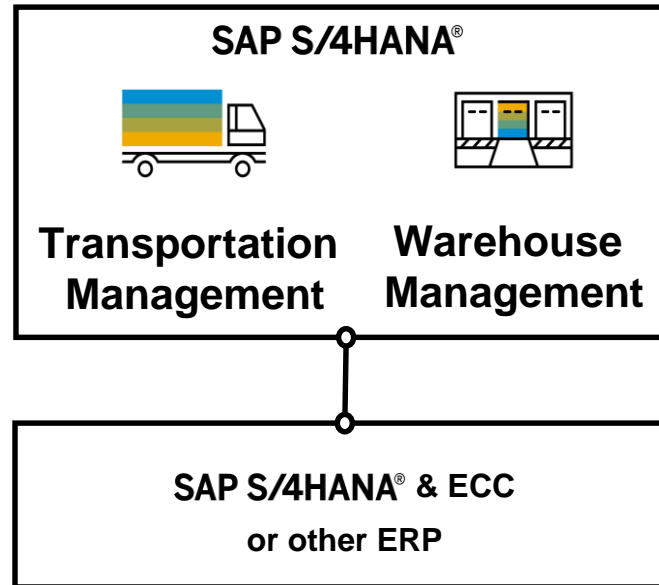Connect Digitally to Perfect Reality

SAP Digital Supply Chain Solutions for Deliver

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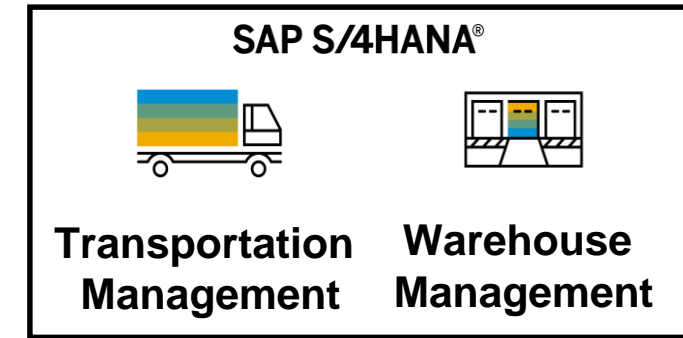
Digital Logistics Real-time Data

SAP S/4 HANA Advanced Available-to-Promise

SAP S/4 HANA Extended Warehouse & Yard Management

SAP S/4 HANA Transportation Management

SAP Logistics Business Network

SAP® Cloud Platform

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**

Business

Transportation	Global, multi-modal		Global, multi-modal, ERP-LE-TRA Customers
Warehouse	High Volumes, Automation		Low to medium complexity, ERP-LE-WM Customers

---

IT

Easier consumption of innovation
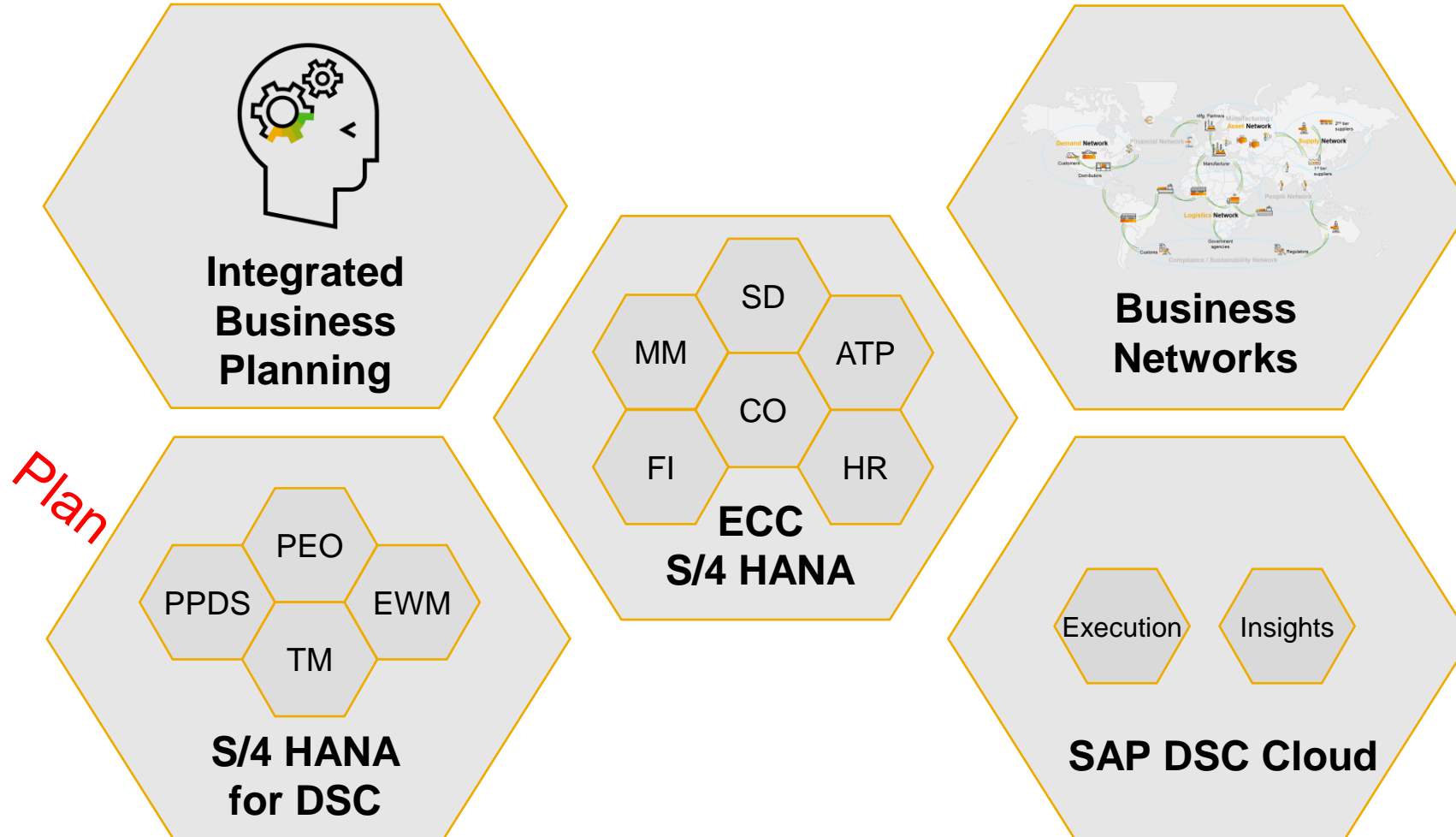
Independent of core feature changes
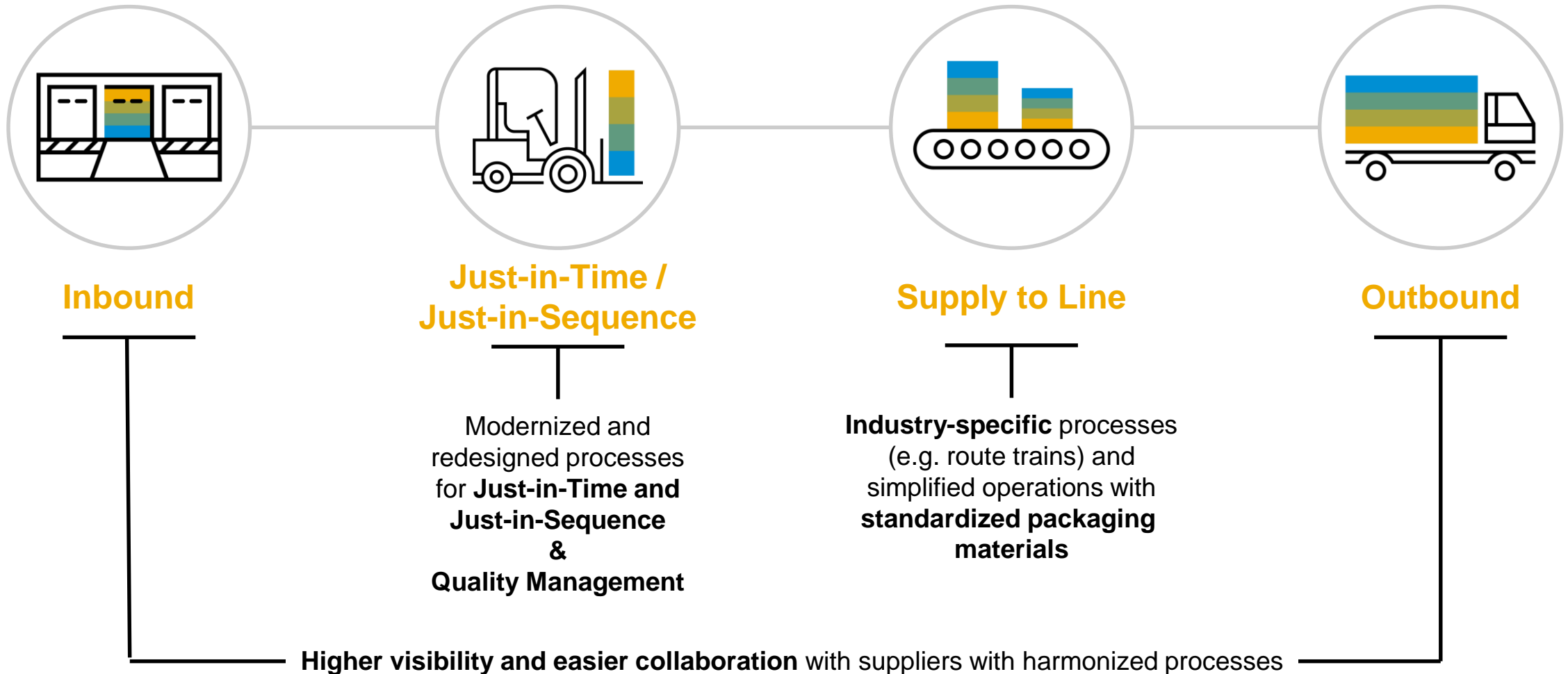
Lower TCO compared to Standalone

Tightly connected with one master data set

S/4HANA for DSC Standalone

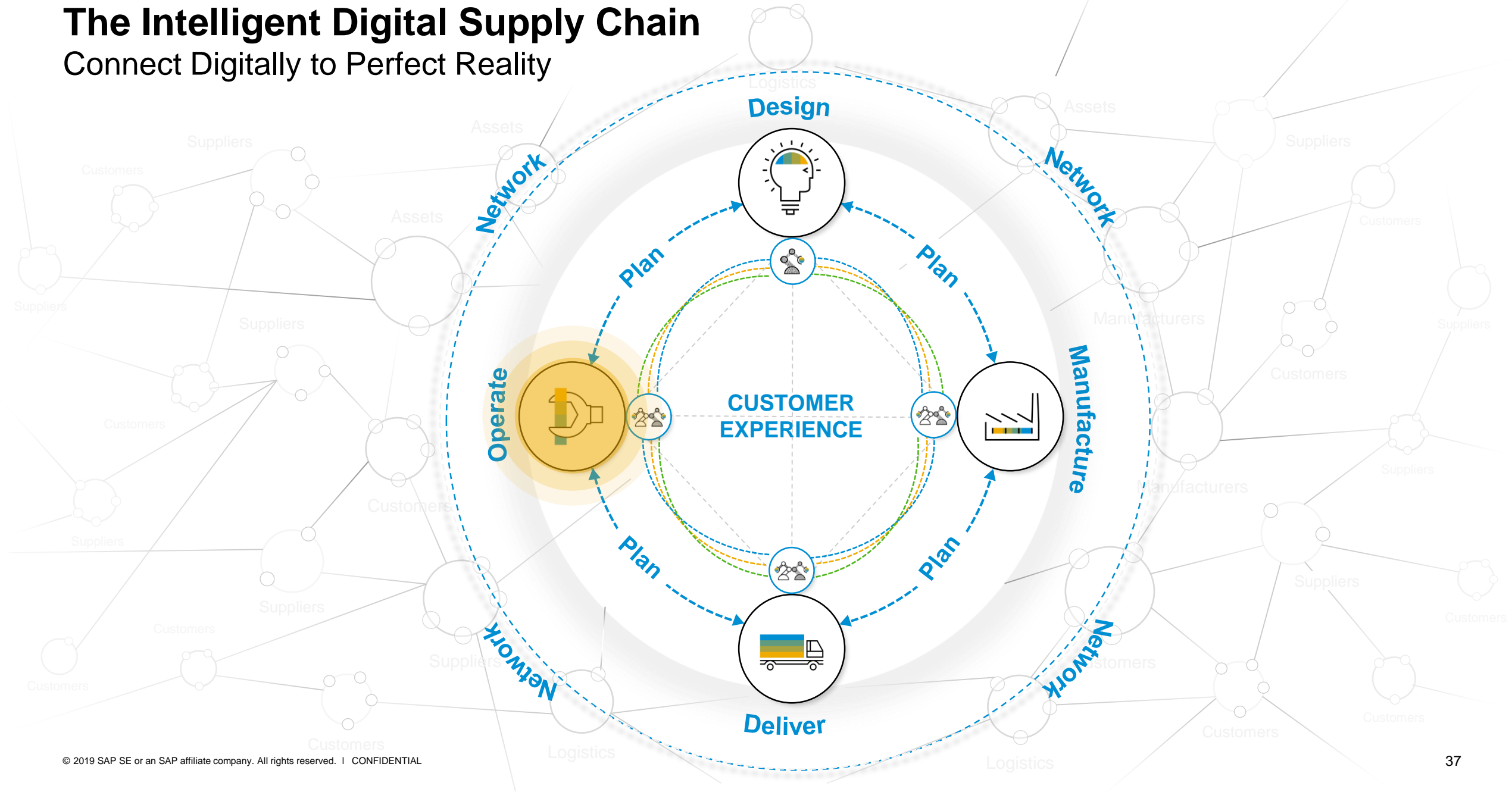Accelerate **Flexibility and Speed** in implementation with S/4 HANA DSC Edition

Integrated Business Planning

Plan

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

ECC S/4 HANA
- SD
- MM
- ATP
- CO
- FI
- HR

Business Networks

SAP DSC Cloud
- Execution
- Insights

Order to Delivery with SAP S/4HANA Digital Supply Chain

Inbound

**Just-in-Time /
Just-in-Sequence**

Supply to Line

Outbound

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

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

Higher visibility and easier collaboration with suppliers with harmonized processes

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
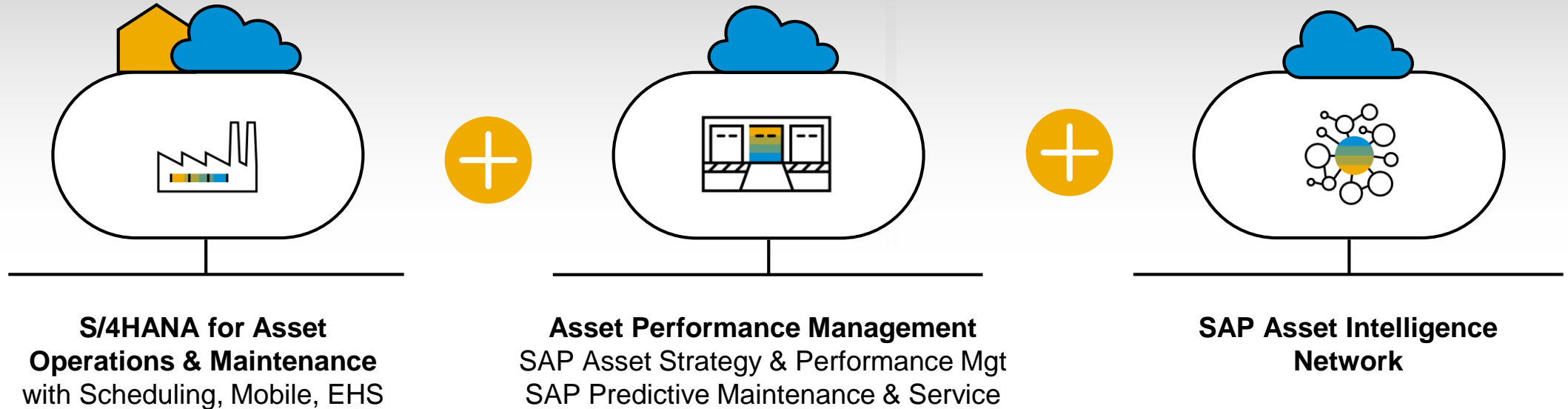
Manage NEW Business Models

From…		To…
Selling equipment	→	**Pay per use** / equipment as a Service
Untrusted asset information	→	**Collaborative** Single source of truth
Limited analytical capabilities	→	**Real time analytics** with simulation
Reactive maintenance	→	**Prescriptive** maintenance

The Intelligent Digital Supply Chain
Connect Digitally to Perfect Reality

Design

Network

Network

Plan

Plan

Manufacture

Operate

CUSTOMER
EXPERIENCE

Plan

Plan

Network

Network

Deliver
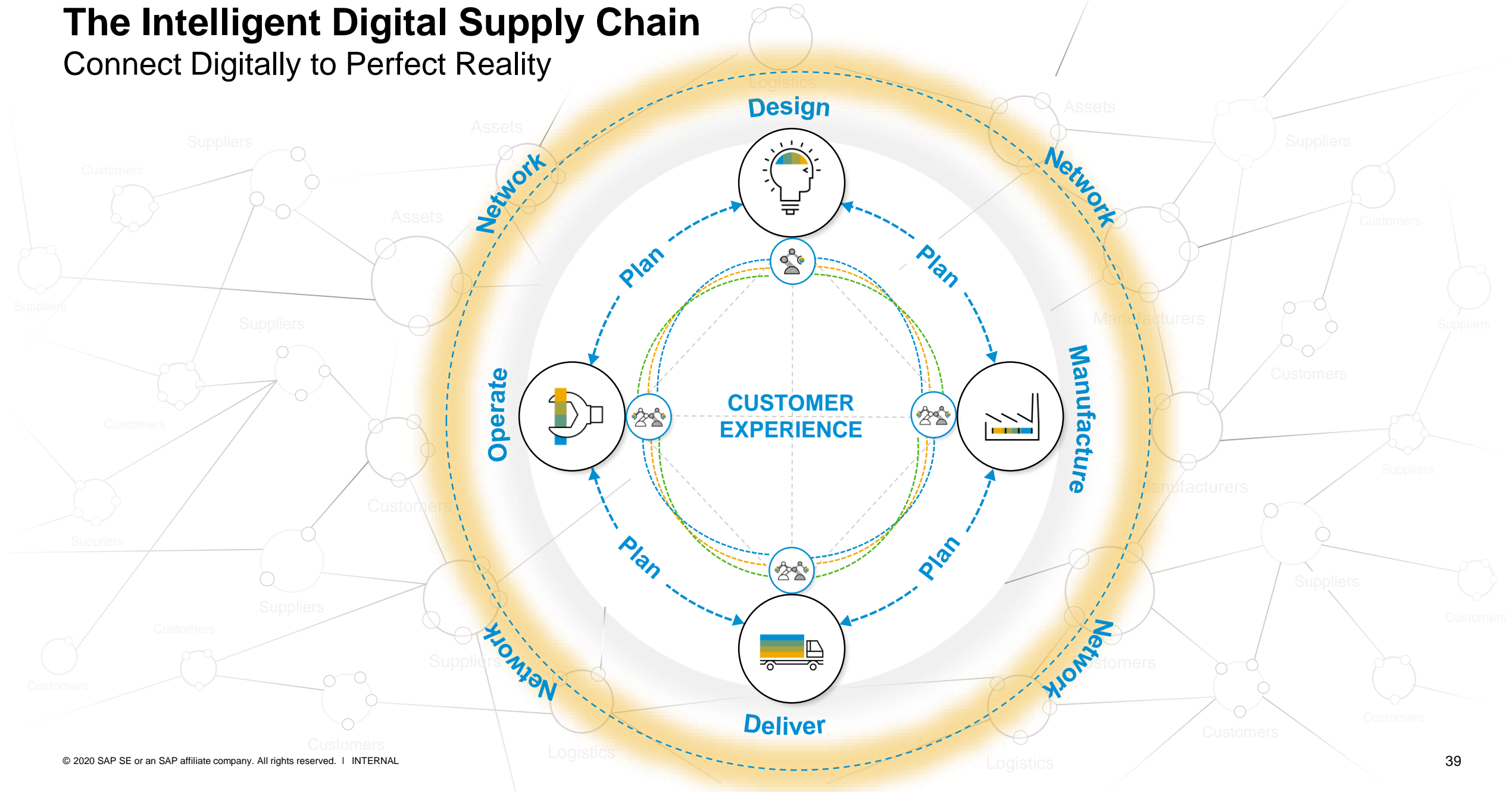
Global economy has evolved into a network economy

Demand Network
Customers
Distributors

Financial Network

Mfg. Partners
Manufacturing / Asset Network
Manufacturer

Supply Network
2nd tier suppliers
1st tier suppliers

People Network

Logistics Network

Government agencies
Customs
Regulators
Compliance / Sustainability Network
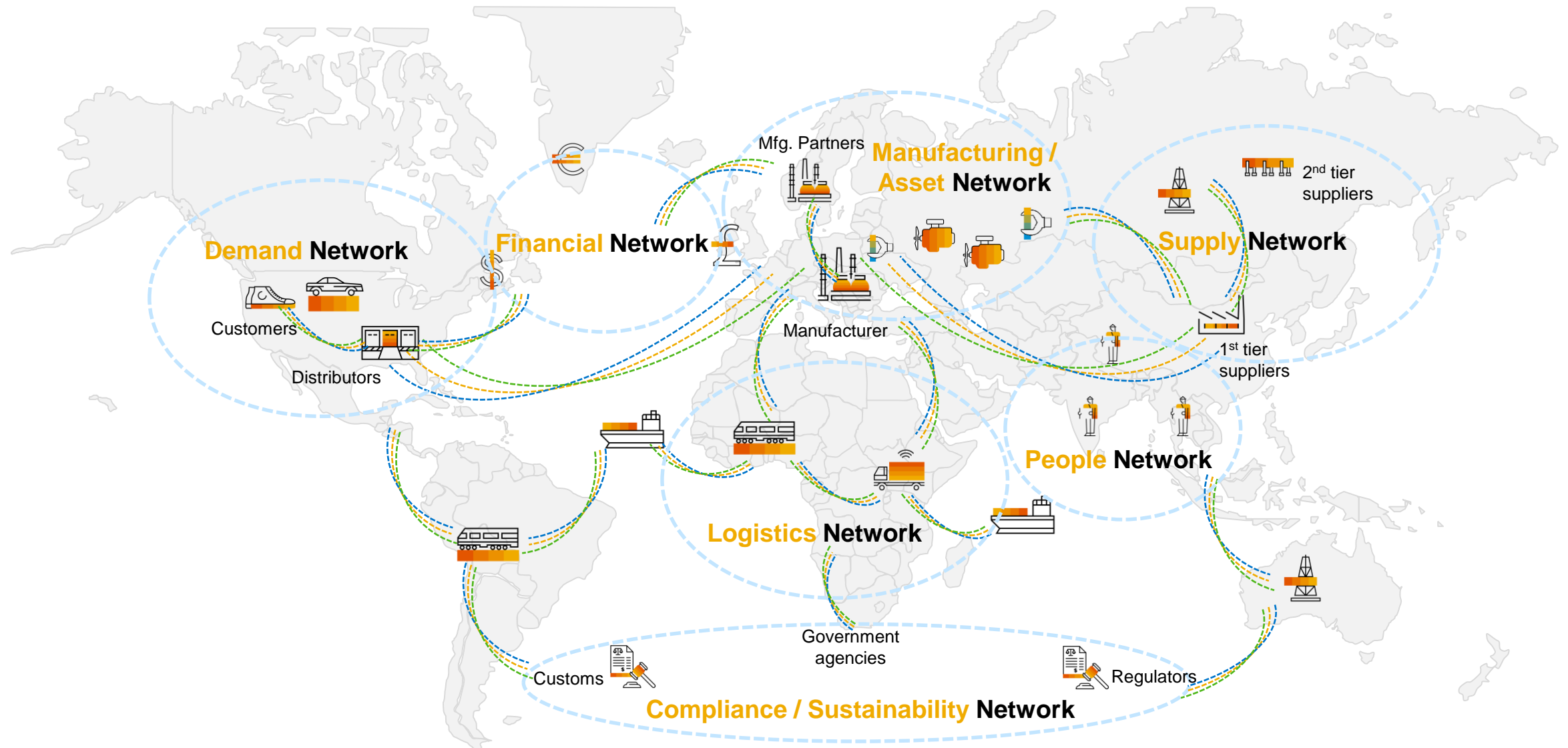
Vision: Evolve into "one" Digital Supply Chain Network

- 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
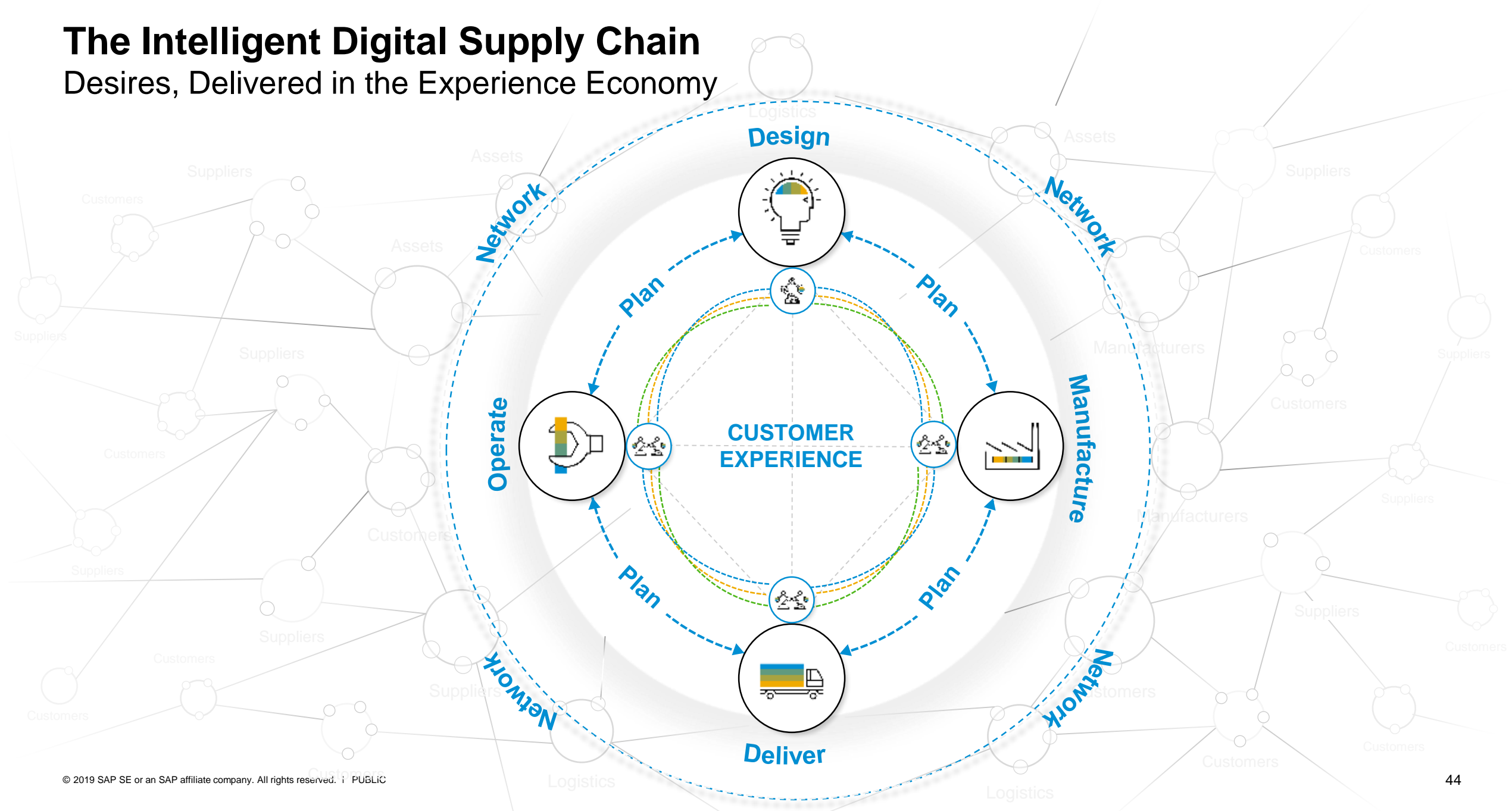

Design & Manufacturing Network

+

Ariba Network

+

Logistics Business Network

+

Asset Intelligence Network

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

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…

2 **Asset Intelligence Network**

- Asset Collaboration
- Visibility

3 **Design & Manufacturing Network**

- Design and MFG Collaboration
- Visibility

The Intelligent Digital Supply Chain
Desires, Delivered in the Experience Economy

Design

Network

Network

Manufacture

Operate

CUSTOMER
EXPERIENCE

Plan

Plan

Plan

Plan

Network

Network

Deliver

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.

Contact Information:

Franz Hero
Head of SAP Digital Supply Chain Development
SAP SE
franz.hero@sap.com

Treten Sie meinem Netzwerk bei:

Follow us

THE BEST RUN **SAP**

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

SAP Cloud Platform

1 Securely **connect and manage** Devices

Store and forward streams of device data

4 **SAP Applications**
Enhance and optimize business processes

2 **Process and analyze** data

3 **Persist and manage** business and device data
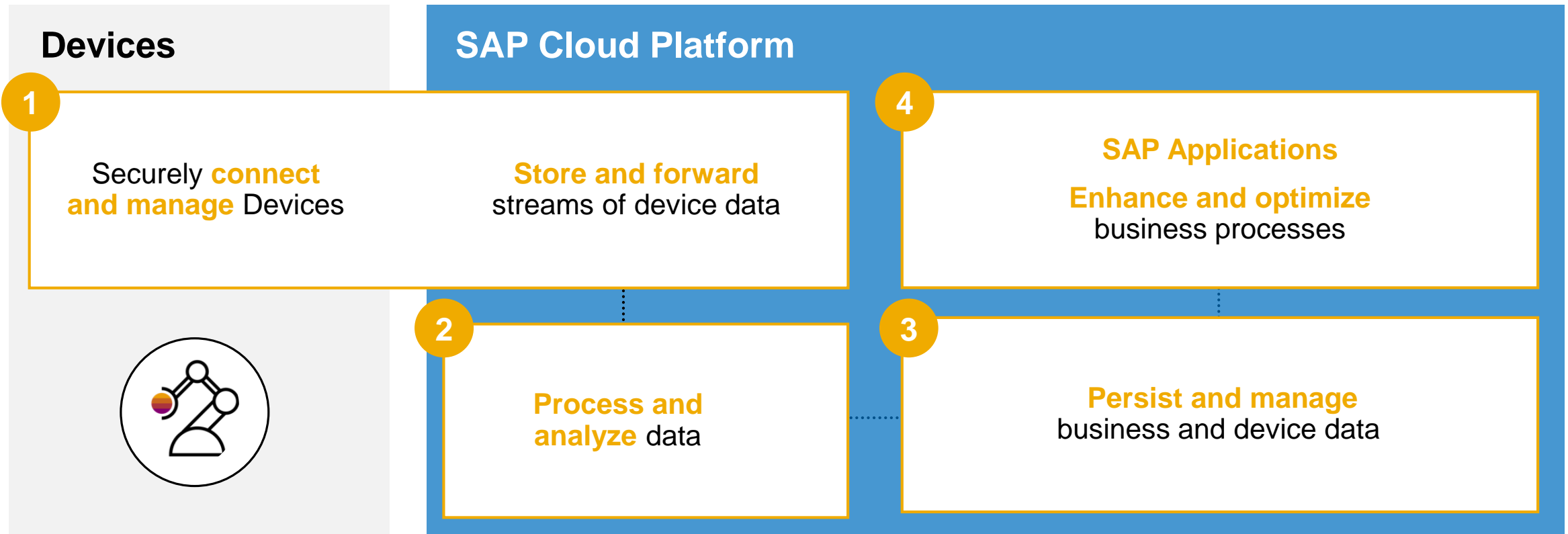
Why SAP?

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
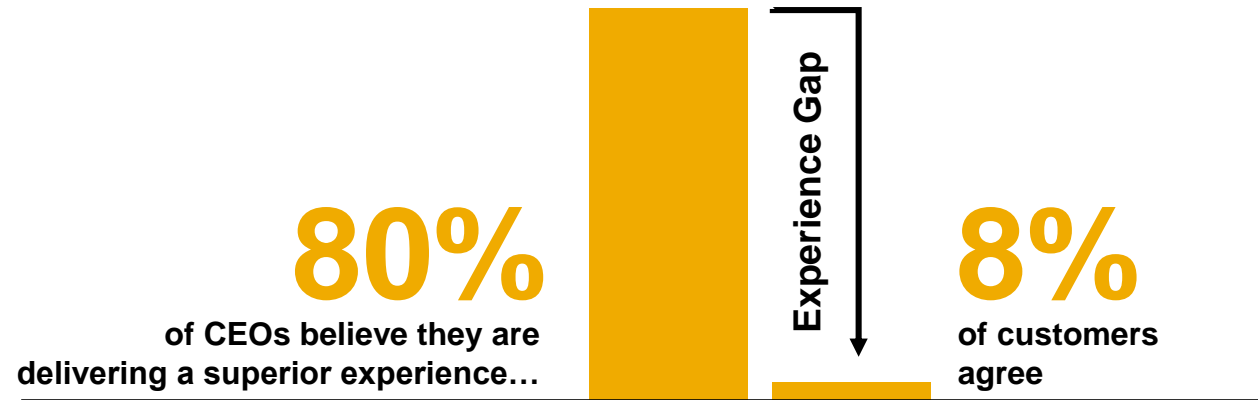Delivering Innovative Medicines to Patients Worldwide On Time

Syngenta
Improving customer satisfaction and loyalty while keeping crops healthy

Why **Experience** Matters

80%
of CEOs believe they are delivering a superior experience…

Experience Gap

8%
of customers agree

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**.

Sources: 1. Accenture, 2. Dimensional research, 3. Gallup, 4. Bain

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.
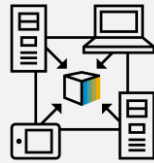
Unmatched Supply Chain Expertise

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 enhanced 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.