Design to Operate:
Connect Digitally to Perfect Reality

iENT100

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Speakers

Las Vegas
September 24–27, 2019

Sandy Markin

Barcelona
October 8-10, 2019

Harald Müller

Bangalore
November 13-15, 2019

Harald Müller
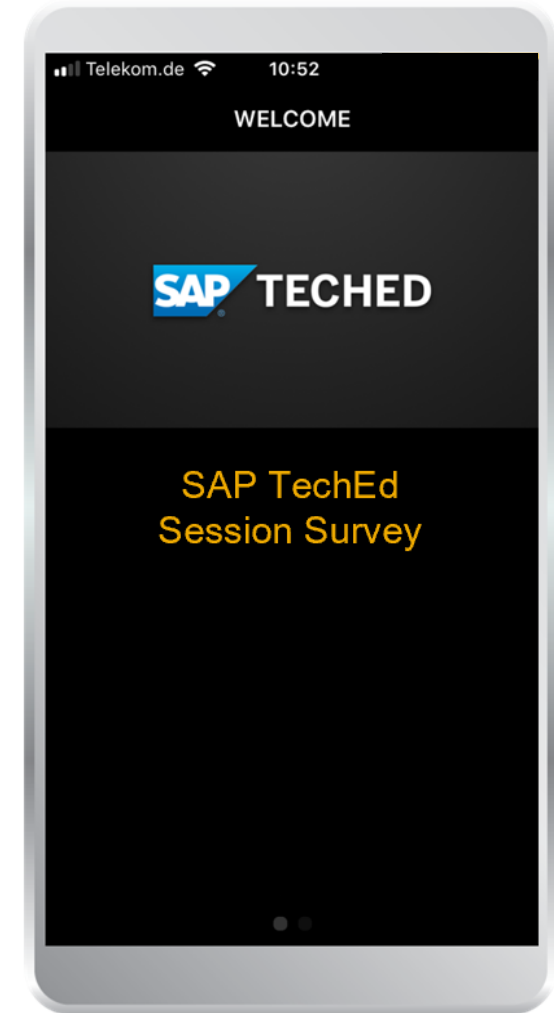
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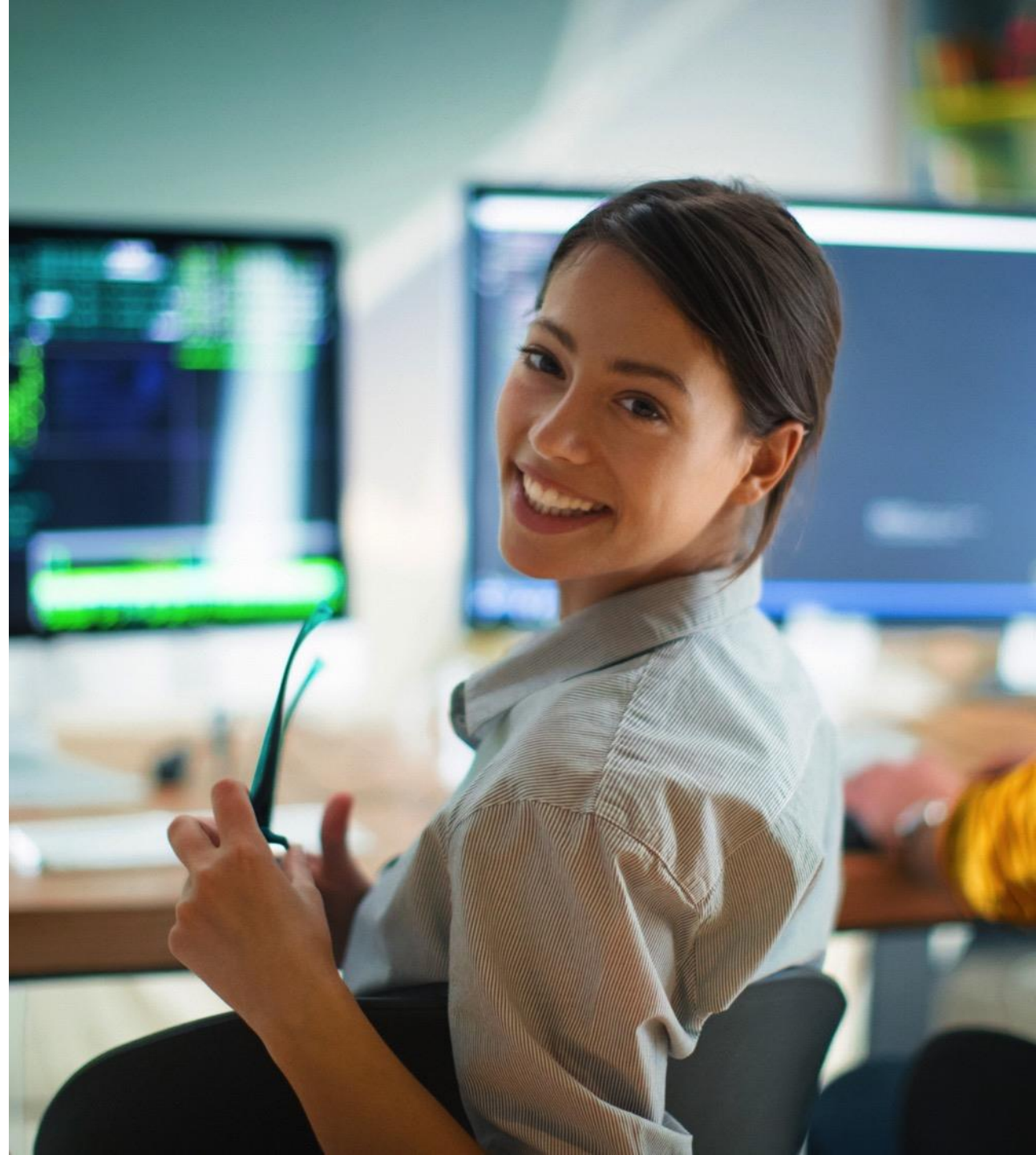
Agenda
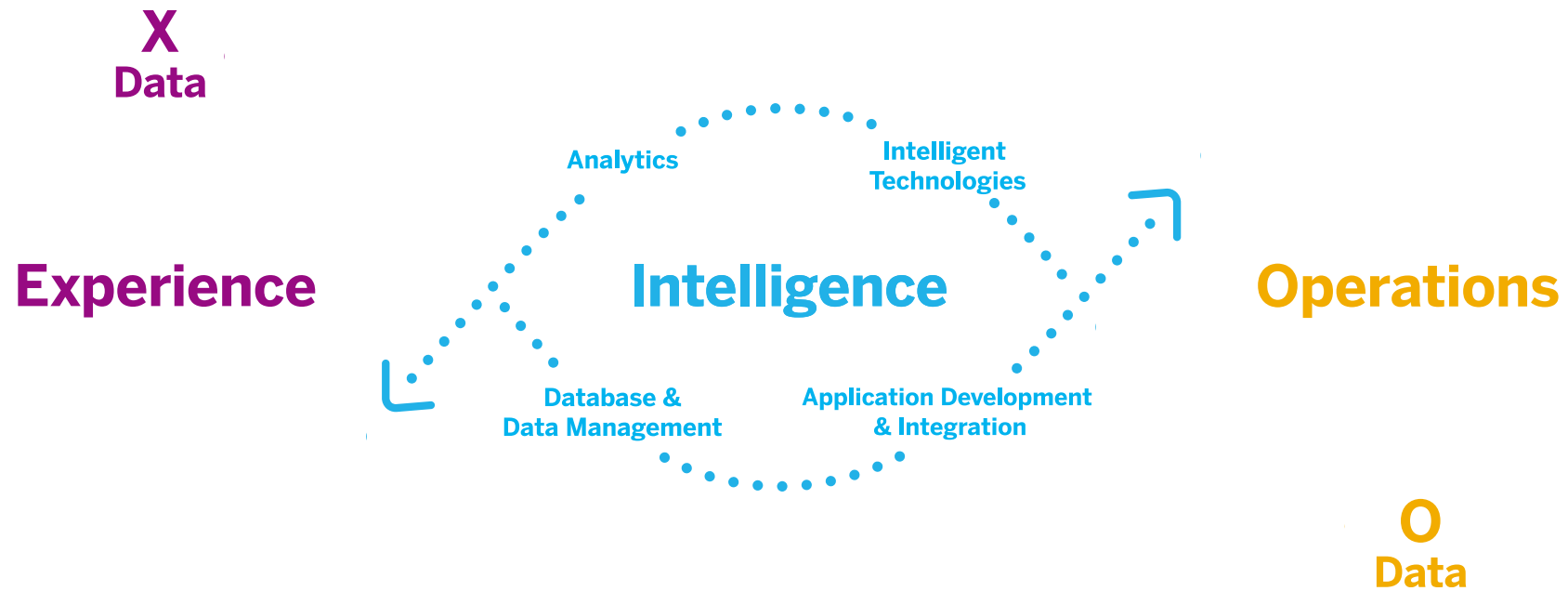
Intelligent Enterprise Framework

Design to Operate
- Overview
- Technology Highlights

Key Take Aways

Q&A

Intelligent Enterprise

X
Data

Analytics

Intelligent
Technologies

Experience

Intelligence

Operations

Database &
Data Management

Application Development
& Integration

O
Data
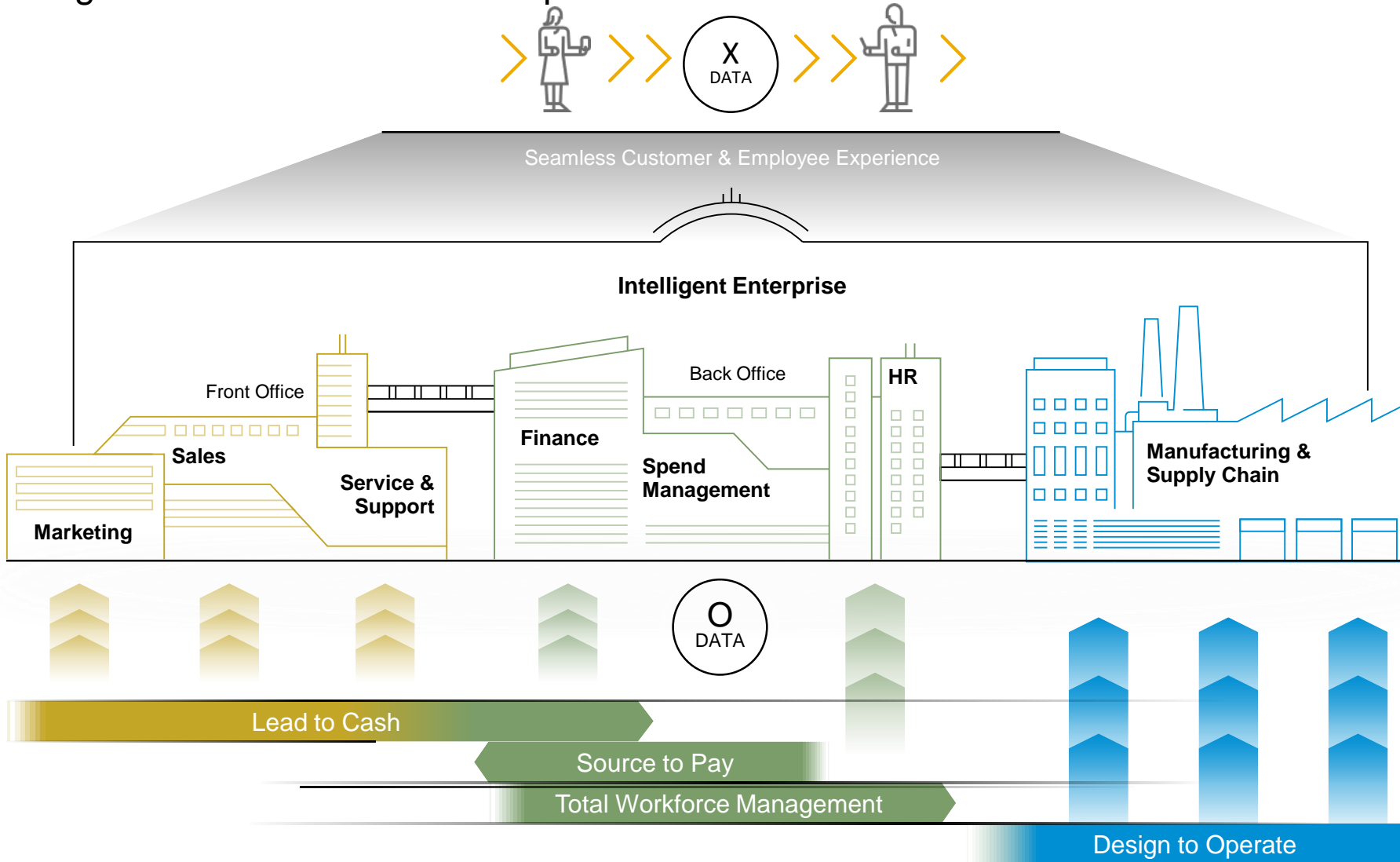
The Intelligent Enterprise

Integrated end-to-end business processes for the entire value chain

- Complete E2E processes across the entire value chain

- Focused execution along four key E2E processes

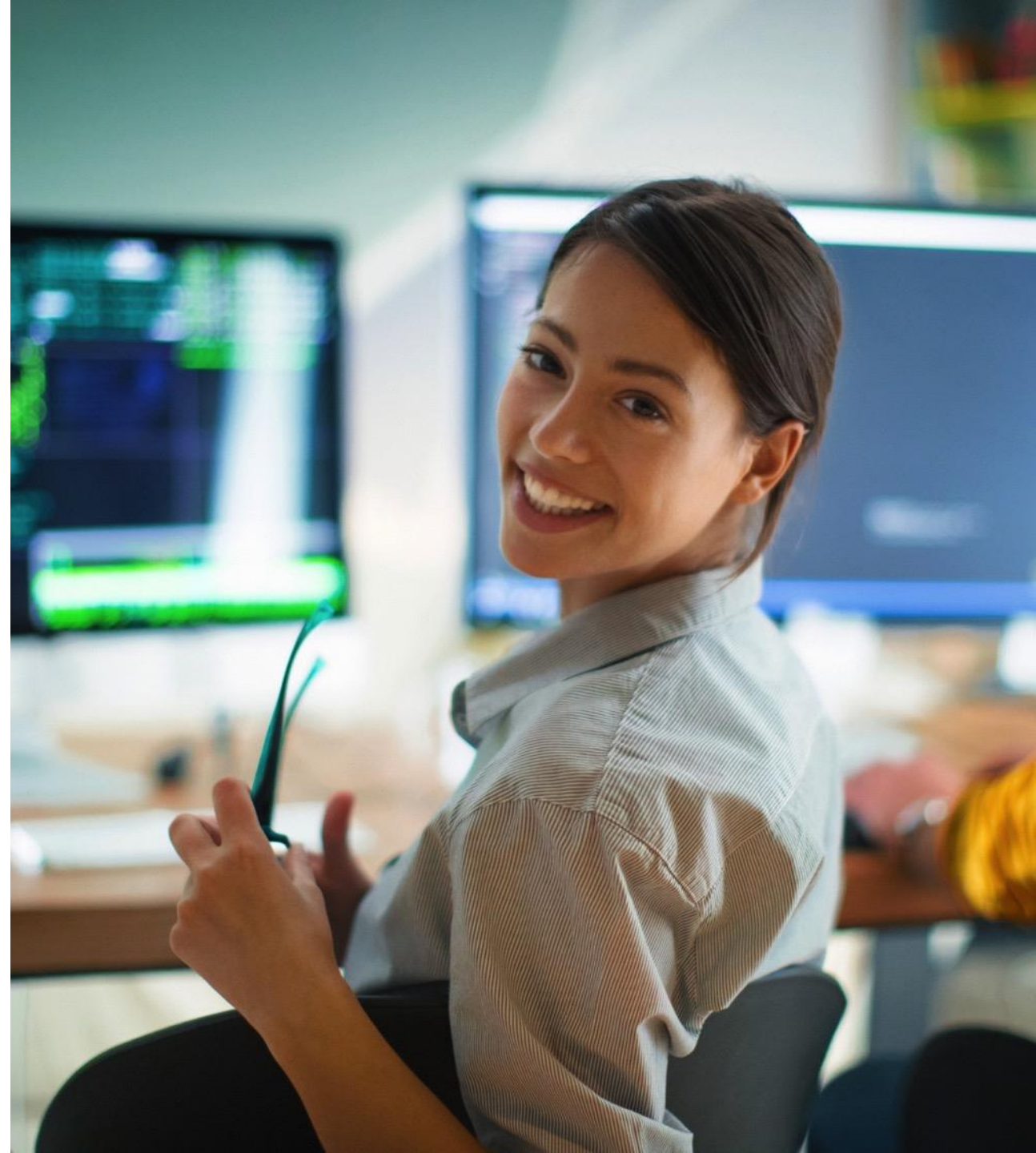- Seamless experience based on standardized technologies

Agenda

Intelligent Enterprise Framework

Design to Operate
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Key Take Aways

Q&A

Design to Operate
SAP's Digital Supply Chain in the Intelligent Enterprise

Design to Operate

SAP's supply chain solutions connect your entire supply chain, so you can deliver at your best, today, while you adapt and continuously improve to reshape how you deliver tomorrow.

You get total visibility as products are designed, delivered and deployed by connecting your business processes with real-time data from assets, equipment, customers and suppliers.
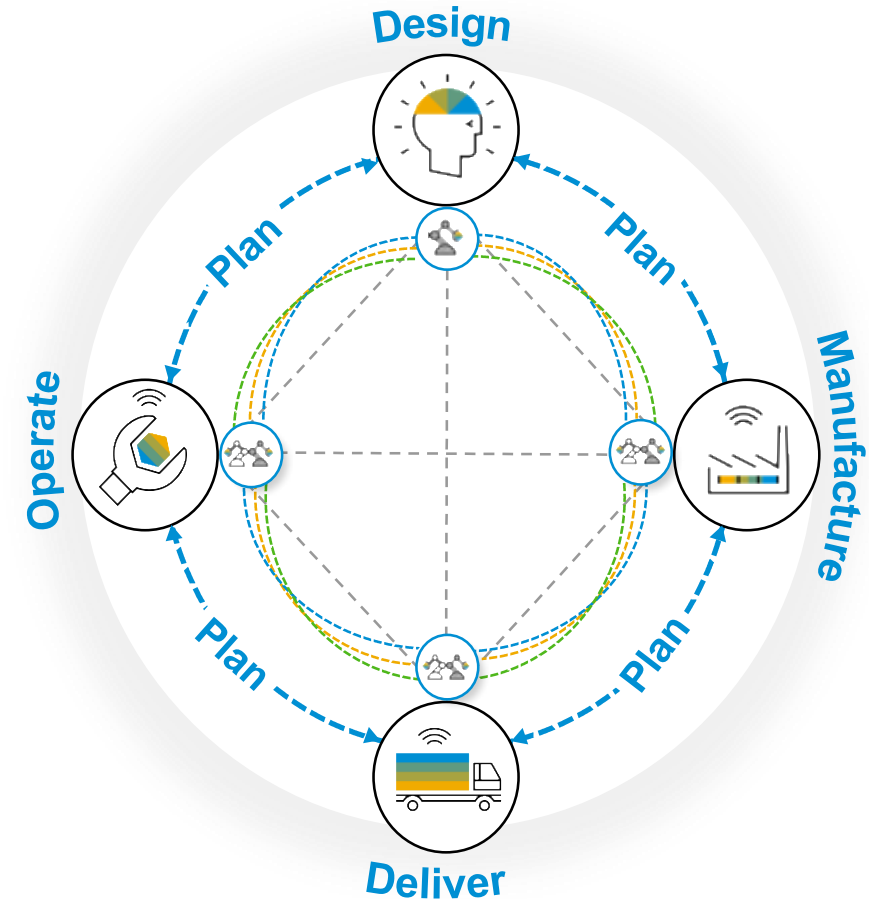
Design to Operate: End to end business process flow

Design

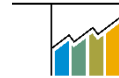Receive customer feedback – define **requirements** and **system concept** for new/changed product.

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.
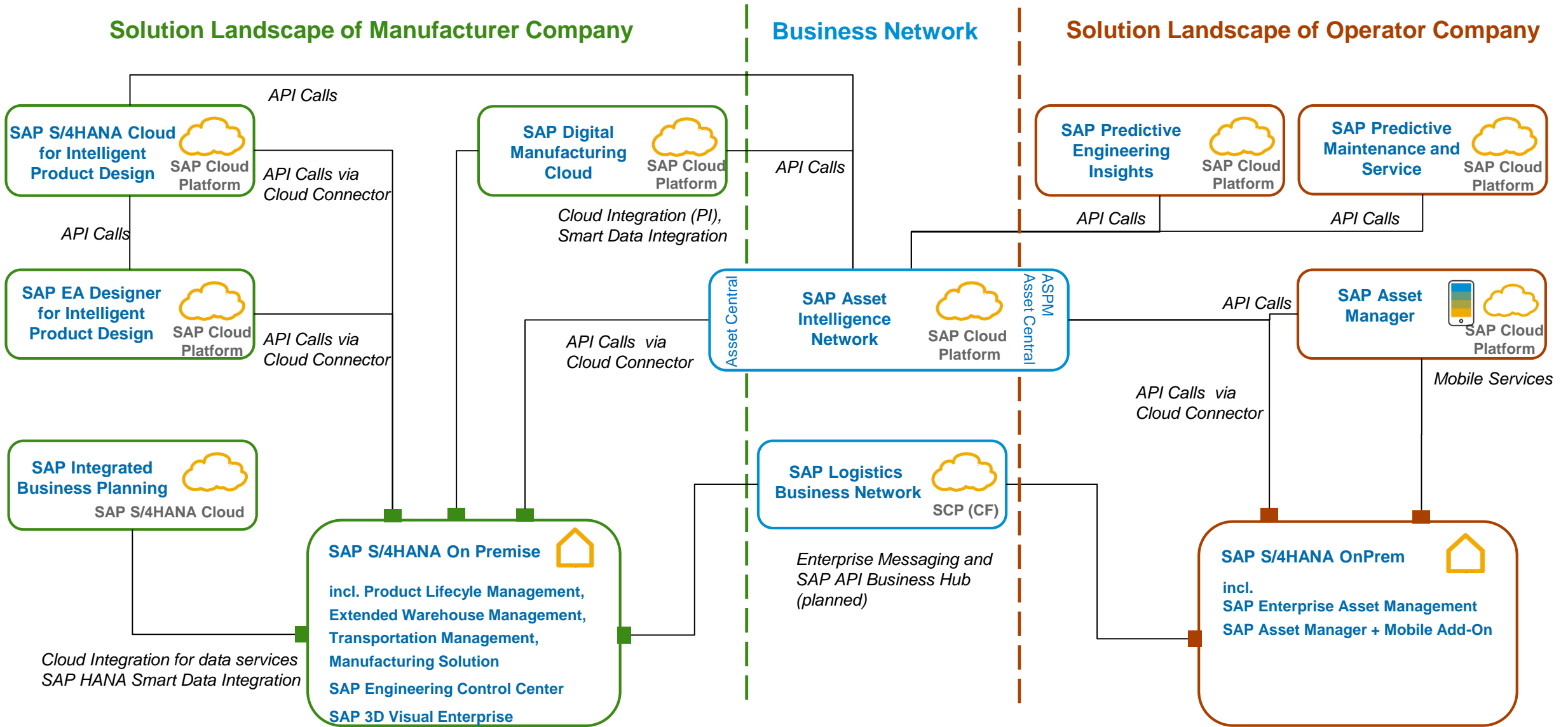
Plan asset mainte-nance.

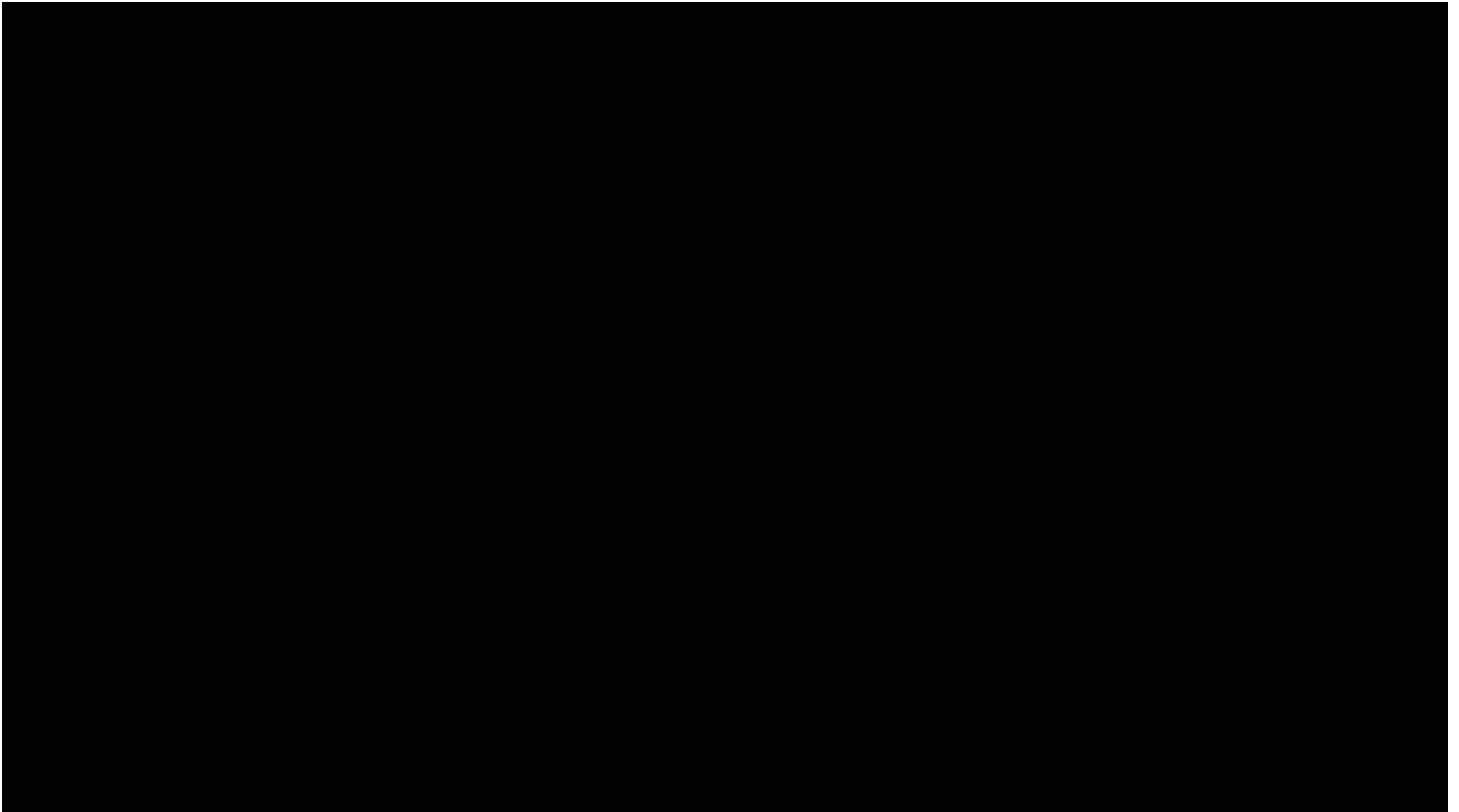Perform inspection, **maintenance,** and repair.

Request **product improvement**.

Decommission asset.

Design to Operate: Landscape topology & integration

Solution Landscape of Manufacturer Company

Business Network

Solution Landscape of Operator Company

API Calls

SAP S/4HANA Cloud for Intelligent Product Design — SAP Cloud Platform

API Calls via Cloud Connector

SAP Digital Manufacturing Cloud — SAP Cloud Platform

API Calls

SAP Predictive Engineering Insights — SAP Cloud Platform

SAP Predictive Maintenance and Service — SAP Cloud Platform

API Calls

Cloud Integration (PI), Smart Data Integration

API Calls

API Calls

SAP EA Designer for Intelligent Product Design — SAP Cloud Platform

API Calls via Cloud Connector

Asset Central

SAP Asset Intelligence Network — SAP Cloud Platform

ASPM Asset Central

API Calls

SAP Asset Manager — SAP Cloud Platform

Mobile Services

API Calls via Cloud Connector

API Calls via Cloud Connector

SAP Integrated Business Planning — SAP S/4HANA Cloud

SAP Logistics Business Network — SCP (CF)

SAP S/4HANA On Premise

incl. Product Lifecyle Management, Extended Warehouse Management, Transportation Management, Manufacturing Solution

SAP Engineering Control Center

SAP 3D Visual Enterprise

Enterprise Messaging and SAP API Business Hub (planned)

SAP S/4HANA OnPrem

incl.
SAP Enterprise Asset Management
SAP Asset Manager + Mobile Add-On

Cloud Integration for data services
SAP HANA Smart Data Integration

⌁ SAP Cloud Landscape with customer tenant
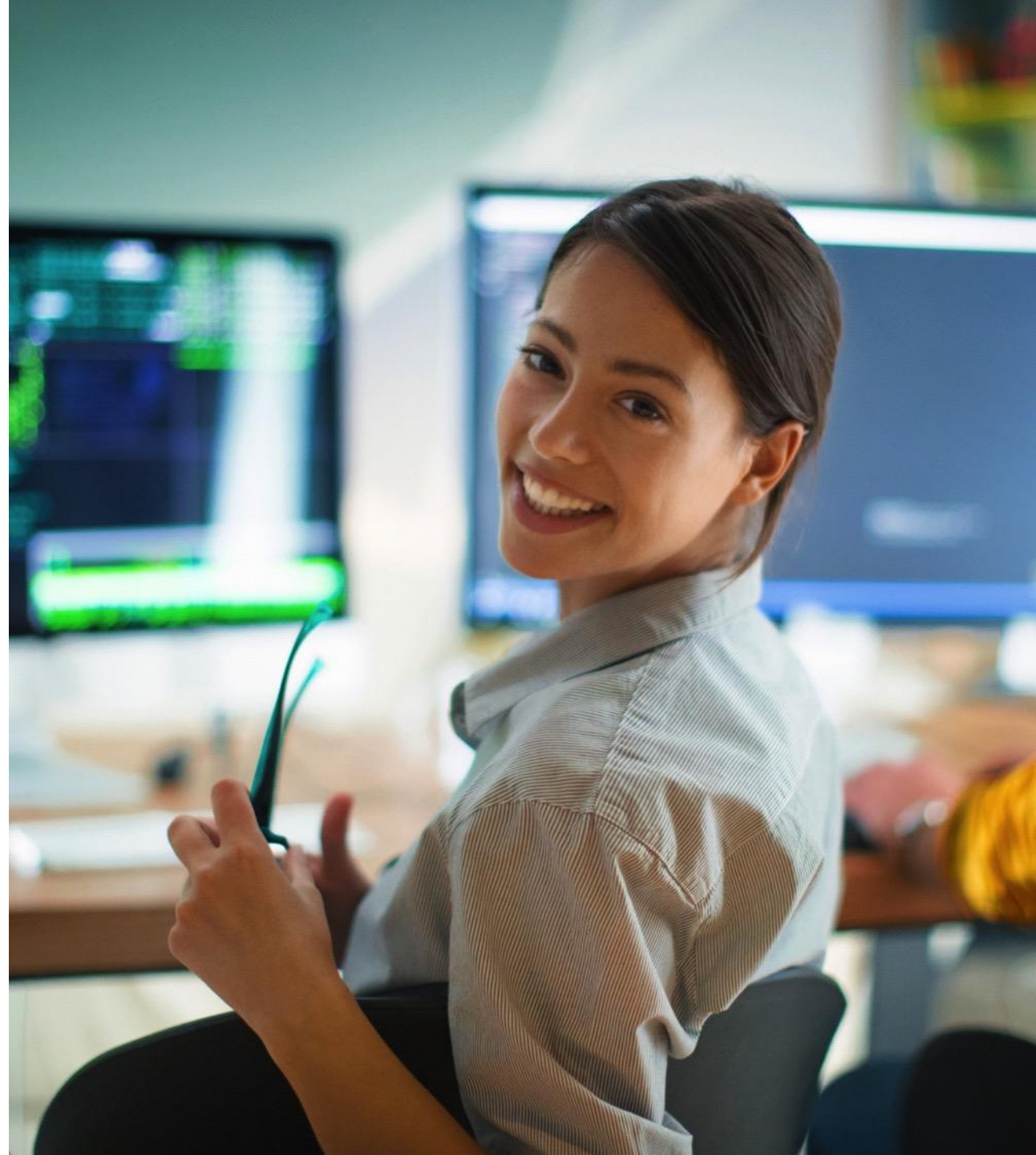
⌂ Customer OnPrem Landscape

Agenda

Intelligent Enterprise Framework

Design to Operate
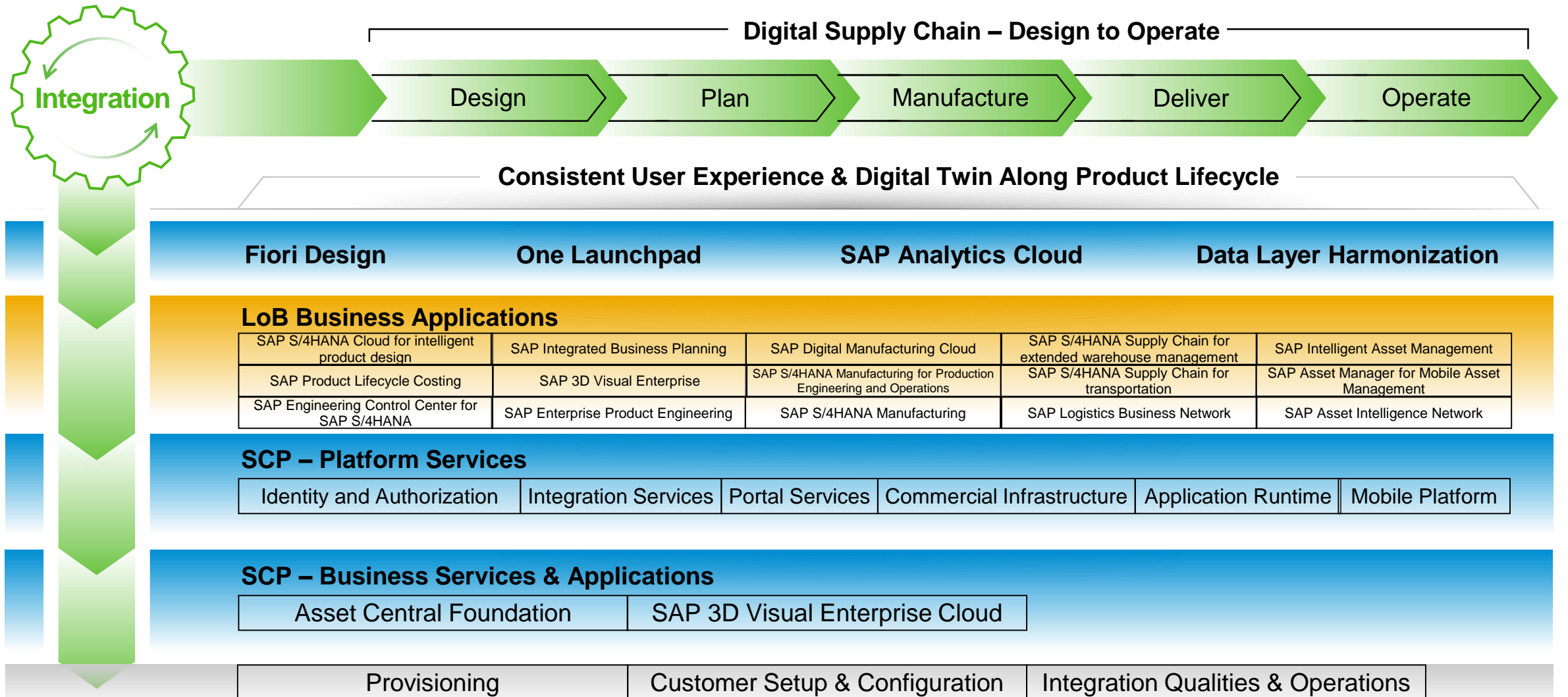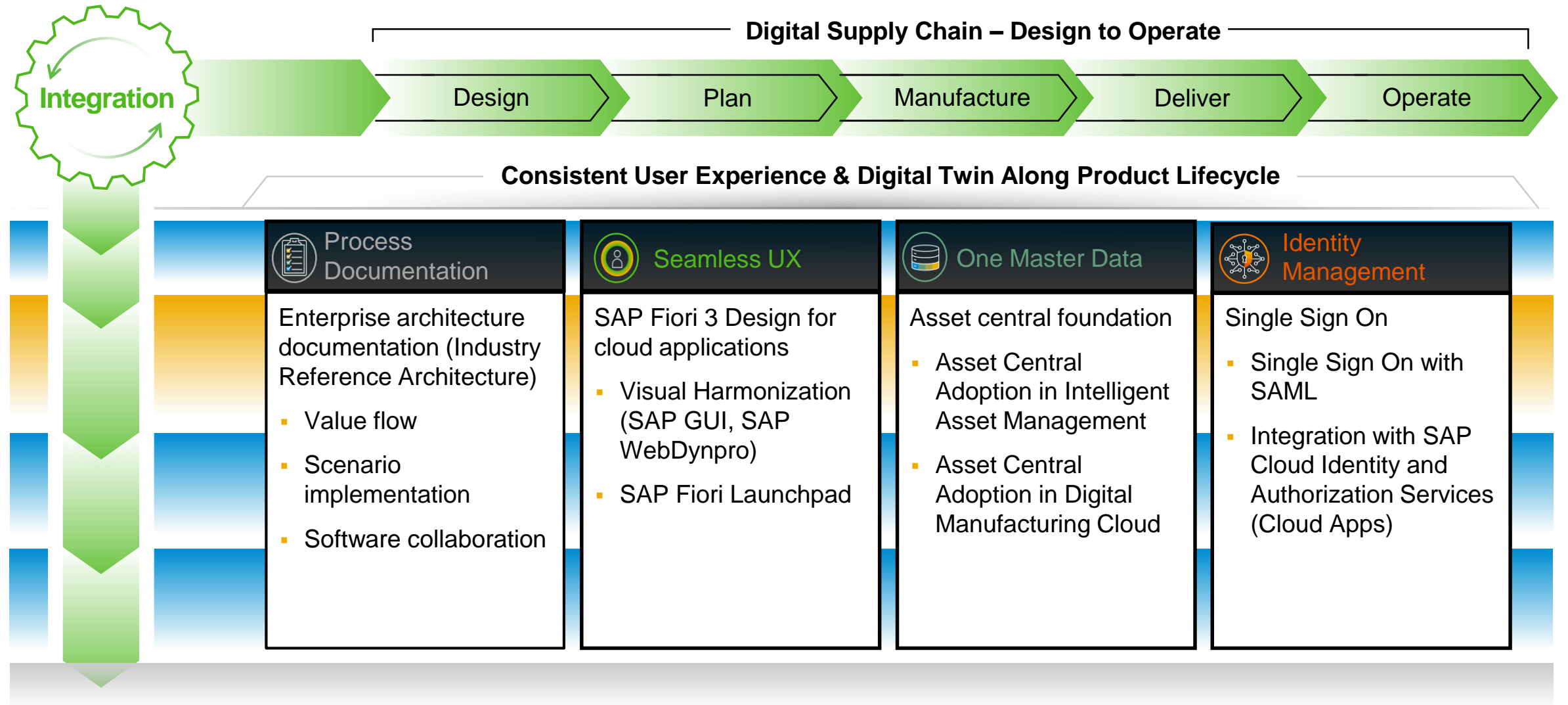- Overview
- Technology Highlights

Key Take Aways

Q&A

From integration to integrated business processes

Illustrative high-level view for Design to Operate

Integration

Digital Supply Chain – Design to Operate

Design → Plan → Manufacture → Deliver → Operate

Consistent User Experience & Digital Twin Along Product Lifecycle

Fiori Design	One Launchpad	SAP Analytics Cloud	Data Layer Harmonization

LoB Business Applications

SAP S/4HANA Cloud for intelligent product design	SAP Integrated Business Planning	SAP Digital Manufacturing Cloud	SAP S/4HANA Supply Chain for extended warehouse management	SAP Intelligent Asset Management
SAP Product Lifecycle Costing	SAP 3D Visual Enterprise	SAP S/4HANA Manufacturing for Production Engineering and Operations	SAP S/4HANA Supply Chain for transportation	SAP Asset Manager for Mobile Asset Management
SAP Engineering Control Center for SAP S/4HANA	SAP Enterprise Product Engineering	SAP S/4HANA Manufacturing	SAP Logistics Business Network	SAP Asset Intelligence Network

SCP – Platform Services

Identity and Authorization	Integration Services	Portal Services	Commercial Infrastructure	Application Runtime	Mobile Platform

SCP – Business Services & Applications

Asset Central Foundation	SAP 3D Visual Enterprise Cloud

Provisioning	Customer Setup & Configuration	Integration Qualities & Operations

From integration to integrated business processes

Illustrative high-level view for Design to Operate

Integration

Digital Supply Chain – Design to Operate

| Design | Plan | Manufacture | Deliver | Operate |

Consistent User Experience & Digital Twin Along Product Lifecycle

Process Documentation	Seamless UX	One Master Data	Identity Management
Enterprise architecture documentation (Industry Reference Architecture)	SAP Fiori 3 Design for cloud applications	Asset central foundation	Single Sign On
▪ Value flow	▪ Visual Harmonization (SAP GUI, SAP WebDynpro)	▪ Asset Central Adoption in Intelligent Asset Management	▪ Single Sign On with SAML
▪ Scenario implementation	▪ SAP Fiori Launchpad	▪ Asset Central Adoption in Digital Manufacturing Cloud	▪ Integration with SAP Cloud Identity and Authorization Services (Cloud Apps)
▪ Software collaboration			

Design to Operate: Technology highlights
Process documentation: EA Models (in preparation)

Challenge

No clear understanding of which solutions are required to become an Intelligent Enterprise.

Limited visibility on target state of enterprise architecture and roadmaps.

Solution

Reference architectures enable you to:

- Explore how E2E scenarios decompose into applications, modules, business services, technologies and integrations.

- Map out the roadmap to adopt the solution and transition from current solution landscape to target.

- Implement E2E scenarios which are connected with runtime artifacts

Value Flow
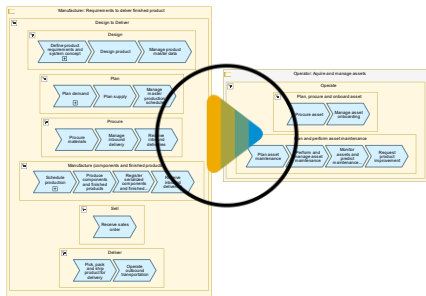
Scenario Implementation
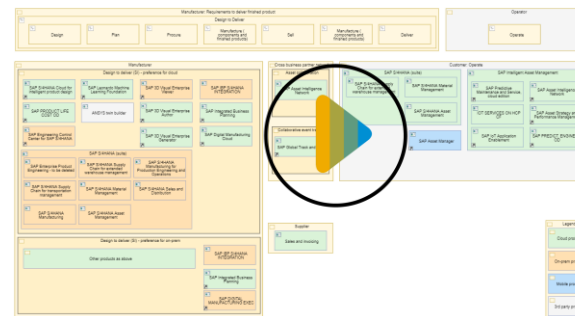
Software Collaboration

Reference Architecture

Example: SAP delivered models at SAP API Business Hub
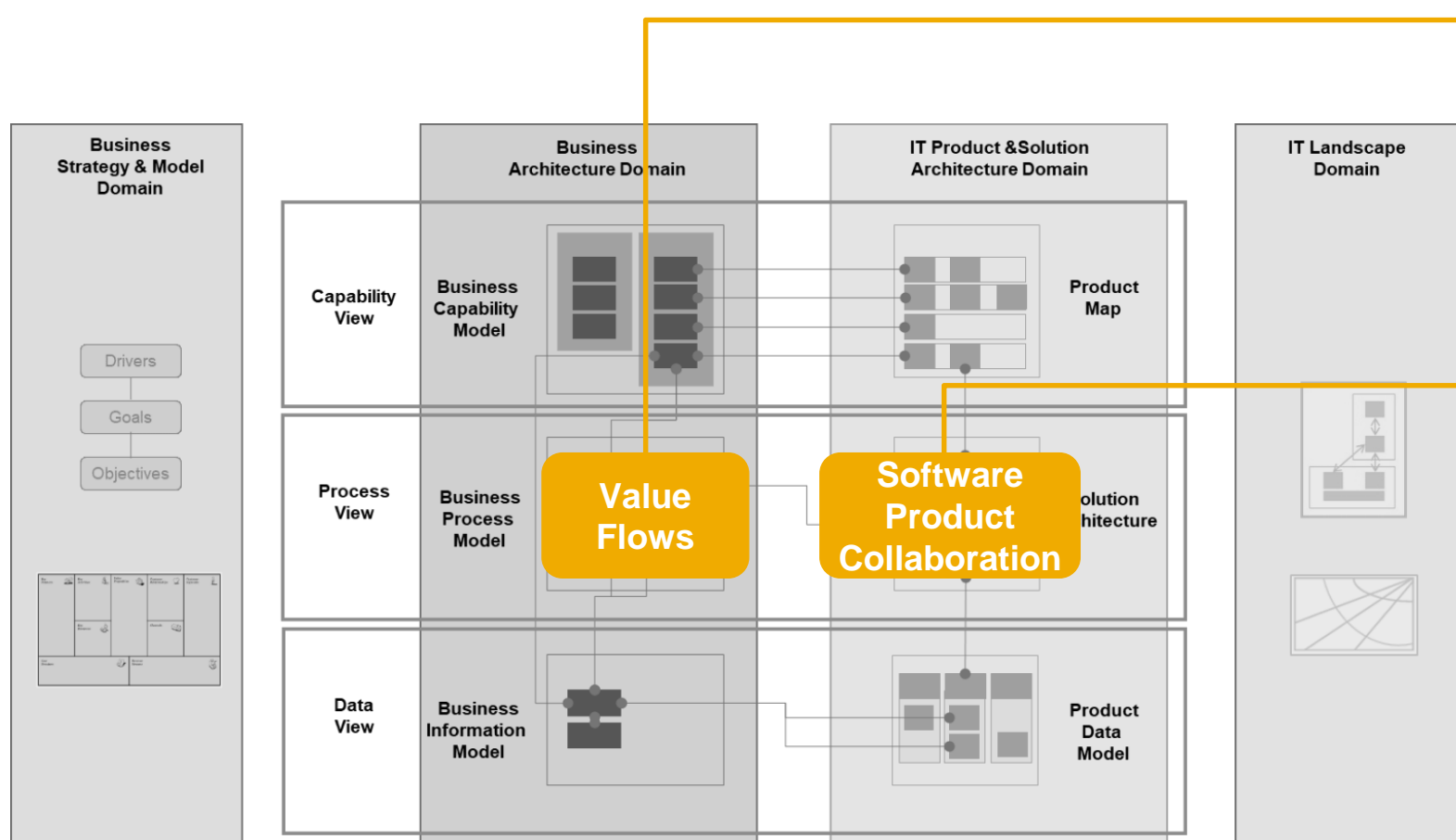
- Simple visualization how value is regularly created in an enterprise
- Agreement on scope definition and common language (from a pure business perspective)

- Describe how the software products collaborate with each other to support a value flow
- To define and evaluate the integration, to locate gaps and requirements
- Link to run-time relevant artifacts like APIs, Integration Flows …

Design to Operate: Technology highlights
Seamless user experience (UX)

UX harmonization
along End-to-end processes

SAP UX methodology

Harmonized roles, UX design process

SAP Fiori Launchpad

Local Launchpad Platform in ABAP and SAP Cloud Platform

SAP Fiori design (Cloud first) & visual harmonization

Visual harmonization: SAP GUI + SAP Web Dynpro

Design to Operate: Technology highlights
Seamless UX: UX Methodology
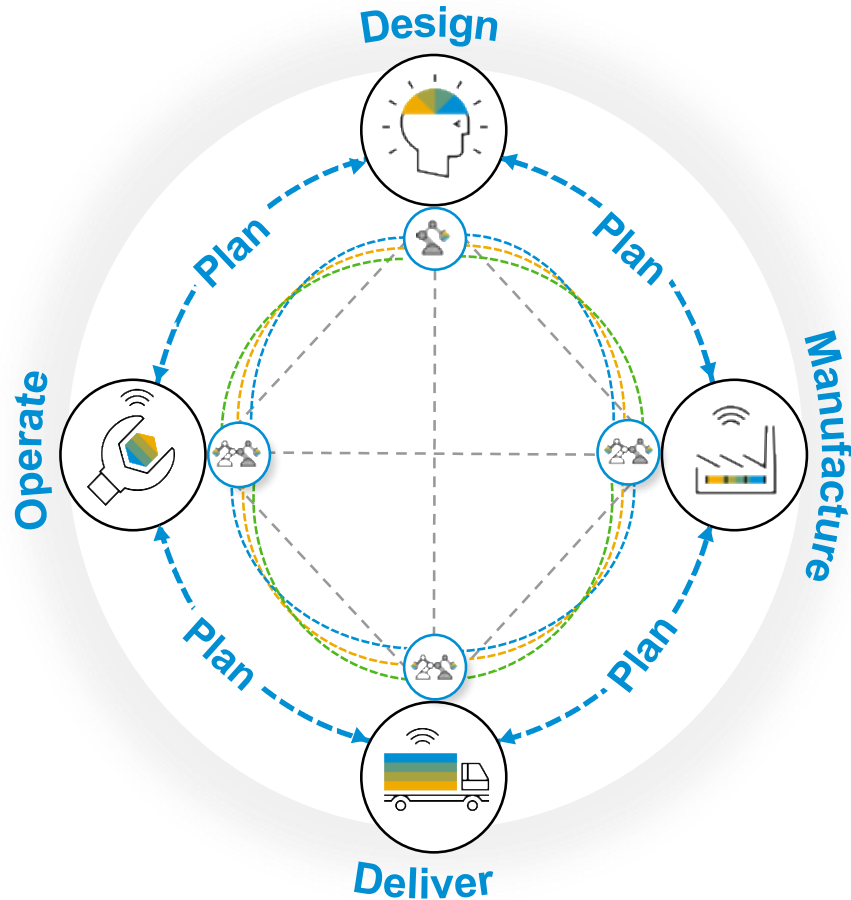
Harmonized Roles with Personas

Design Process
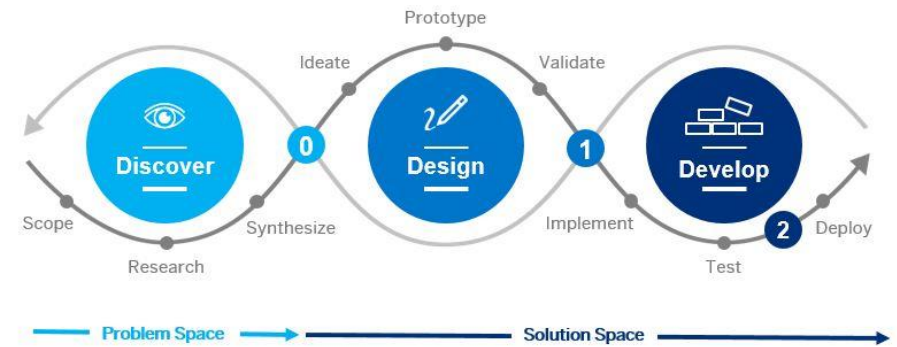
Design to Operate: Seamless User Experience
Design: SAP Intelligent Product Design
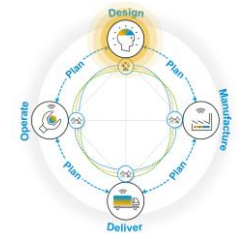
Design

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.

Persona: Product Manager

BUSINESS ROLE ID:
RO111

BUSINESS ROLE NAME:
PRODUCT MANAGER

DEVELOPMENT AREA:
DESIGN

COMPETENCIES

Casual User	———O———	Power User
Proactive	———O———	Reactive
Team Worker	———O———	Lone Fighter
Global Focus	———O———	Local Focus
Innovative	———O———	Conservative

"I would like to create the next game changing product or product upgrade which shall disrupt the market and increase our revenue and market share . However I still have to keep budget constraints in mind and be in line with our existing product offerings so that I don't cannibalize market share."

Seamless UX: Fiori Launch Pad
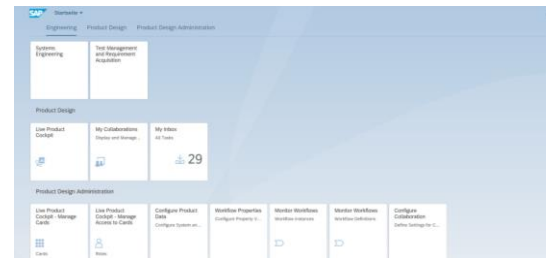
Seamless UX: Fiori Design
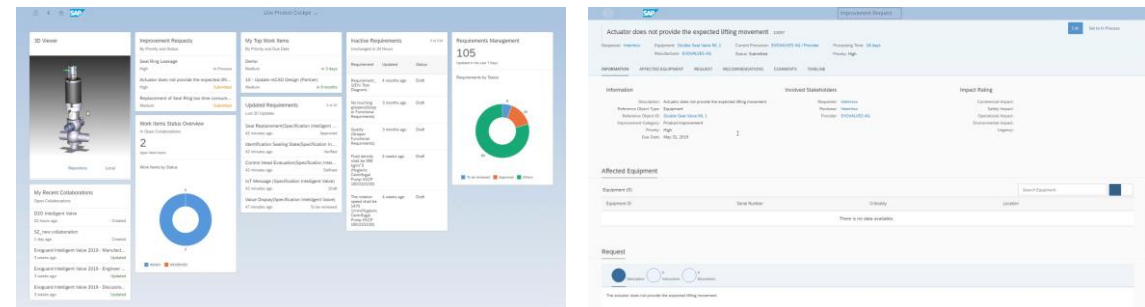
Seamless UX: Cross Product Navigation

SAP Intelligent Product Design	→	SAP S/4HANA R&D Engineering

Design to Operate: Seamless User Experience
Plan: SAP Integrated Business Planning
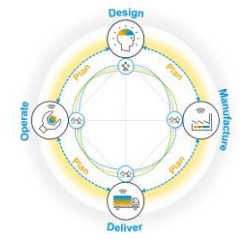
Plan

Plan **demand** for new and changed products.

Plan **supply** for new and changed products.

Analyze plans and collaborate with suppliers.

Persona: Supply Chain Planner

BUSINESS ROLE ID:
R0054G

BUSINESS ROLE NAME:
DEMAND PLANNER
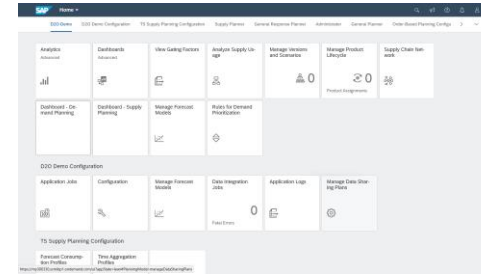
DEVELOPMENT AREA:
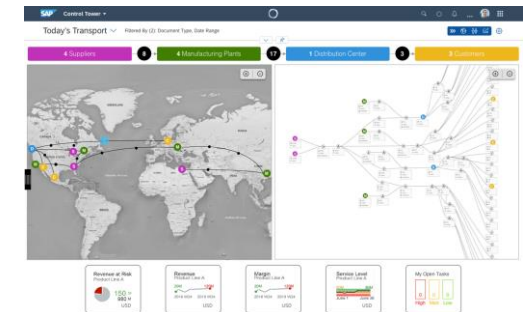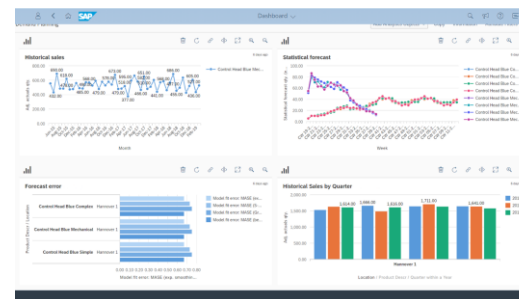**DSC / SUPPLY CHAIN PLANNING - IBP**

COMPETENCIES

Power User		Casual User
Proactive		Reactive
Team Worker		Lone Fighter
Global Focus		Local Focus
Innovative		Conservative

"I need real-time information about new products to ensure a more accurate forecast and excellent customer service."

Seamless UX: Fiori Launch Pad

Seamless UX: Fiori Design

Intelligence built into the Business Process

State-of-the-art business processes
Leverage SAP solutions to enable new end-to-end business processes, new business models and new revenue streams

Synchronized planning processes
Break down planning silos through connected and integrated planning processes

Leverage end-to-end visibility
End-to-end visibility on strategic, tactical and operational level and across siloed or external data

Faster planning cycles
React faster to changes in the business through complete integration
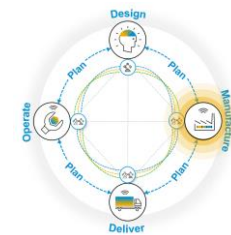
Design to Operate: Seamless User Experience
Manufacture: SAP Digital Manufacturing Cloud

Manufacture

Schedule production.

Produce subassemblies and track progress.

Receive subassemblies into warehouse.

Persona: Production Supervisor

BUSINESS ROLE ID:
RO115

BUSINESS ROLE NAME:
PRODUCTION SUPERVISOR
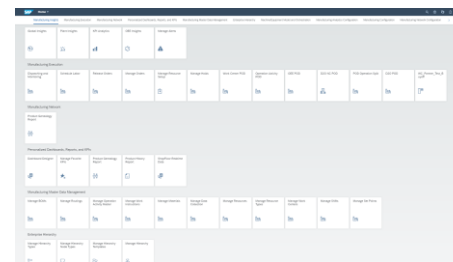
DEVELOPMENT AREA:
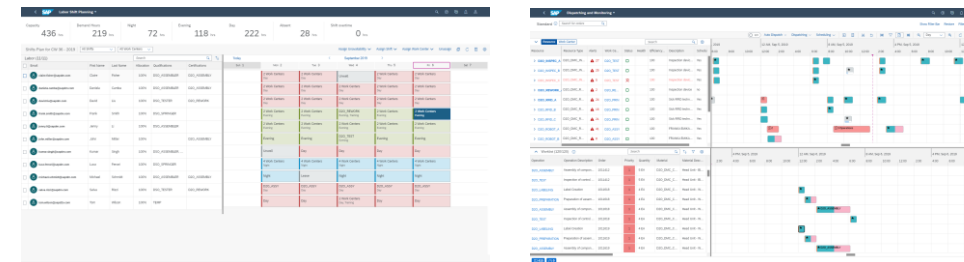**DIGITAL MANUFACTURING**

COMPETENCIES

Power User	──○──	Casual User
Proactive	──○──	Reactive
Team Worker	──○──	Lone Fighter
Global Focus	──○──	Local Focus
Innovative	──○──	Conservative

"I would like to spend less time interacting with the system because I would like to focus on actual production"
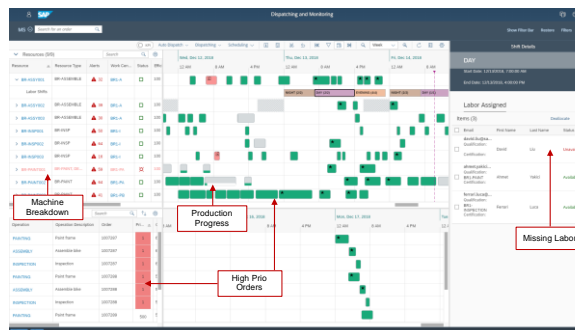
Seamless UX: Fiori Launch Pad

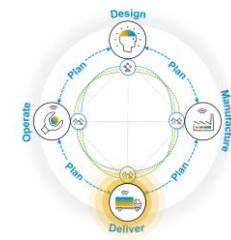### Seamless UX: Fiori Design

Intelligence and Analytics

Machine Breakdown

Production Progress

High Prio Orders

Missing Labor

Visibility
- Labor Data
- Production Data
- Machine Status
- Maintenance Schedule

Intelligence
- Scheduling using Heuristics

27

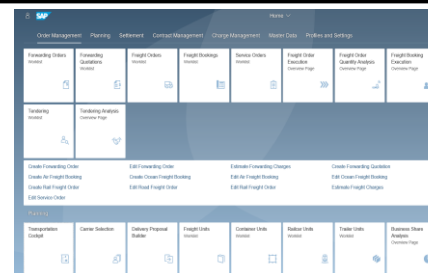# Design to Operate: Seamless User Experience
Deliver: SAP S/4HANA Supply Chain for transportation management

Deliver

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

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

Persona: Transportation Planner

BUSINESS ROLE ID:
R0165Q

BUSINESS ROLE NAME:
TRANSPORTATION PLANNER

DEVELOPMENT AREA:
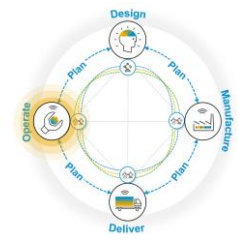**DSC / SUPPLY CHAIN EXECUTION - TM**

"Good Plan. Less Stress!"

COMPETENCIES

Power User	●———	Casual User
Proactive	——●——	Reactive
Team Worker	——●——	Lone Fighter
Global Focus	———●—	Local Focus
Innovative	———●—	Conservative
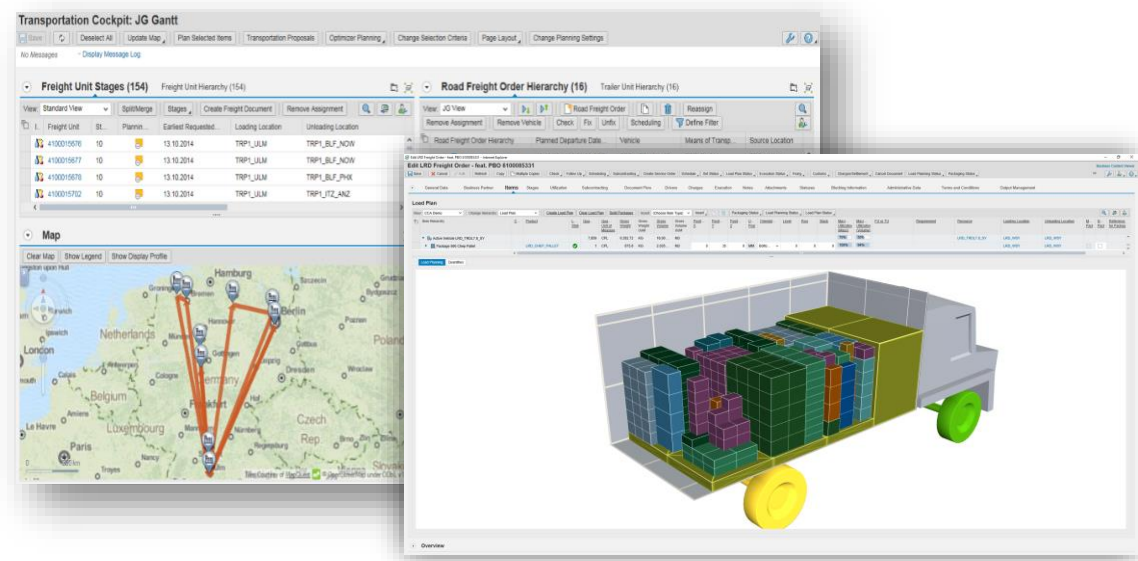
Design to Operate: Seamless User Experience
Operate: SAP Asset Manager

| Operate | Seamless UX: Fiori on iOS |

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

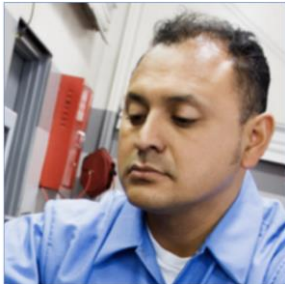**Monitor** assets with IoT data, perform analysis, **predict** asset failure.
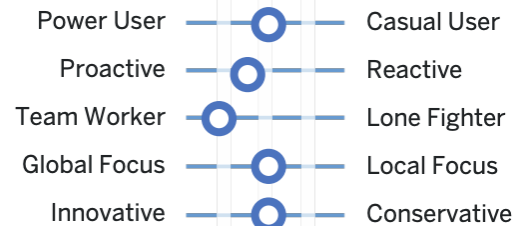
...

Persona: Maintenance Worker

BUSINESS ROLE ID:
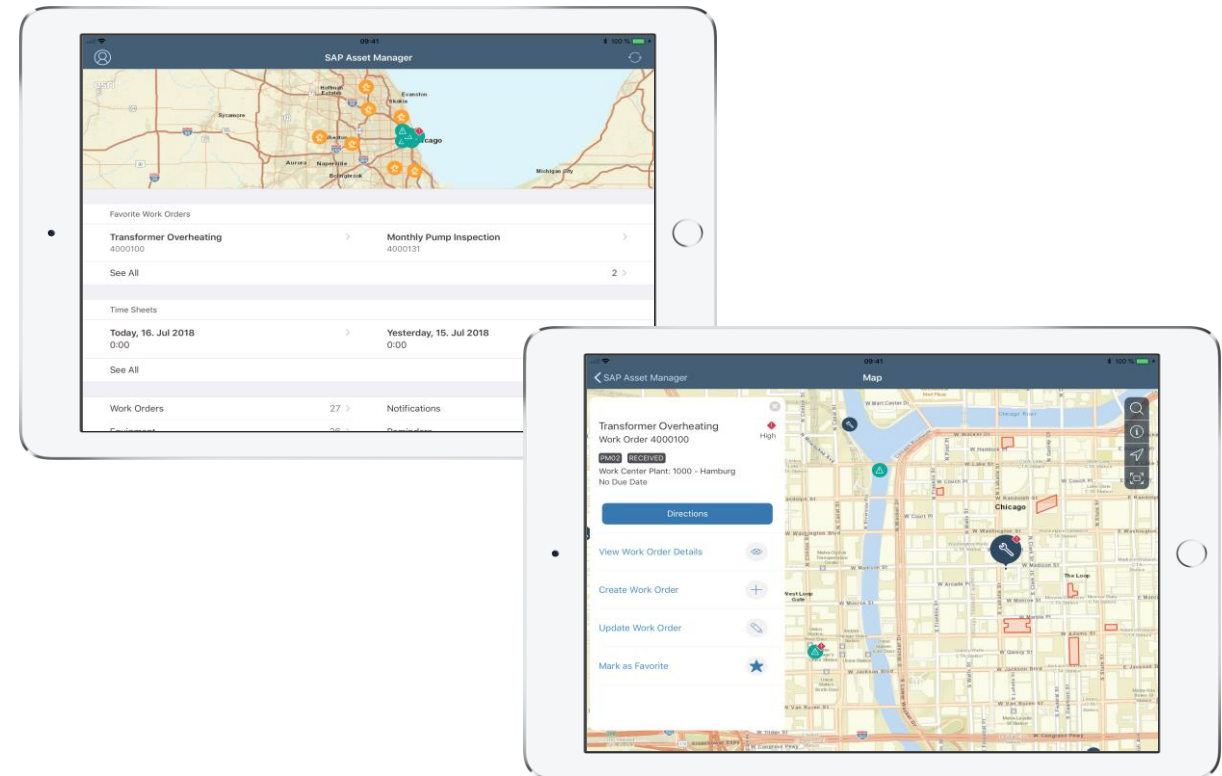**R0090**

BUSINESS ROLE NAME:
MAINTENANCE TECHNICIAN

DEVELOPMENT AREA:
DIIGTAL CONNECTED ASSETS / PEI

COMPETENCIES

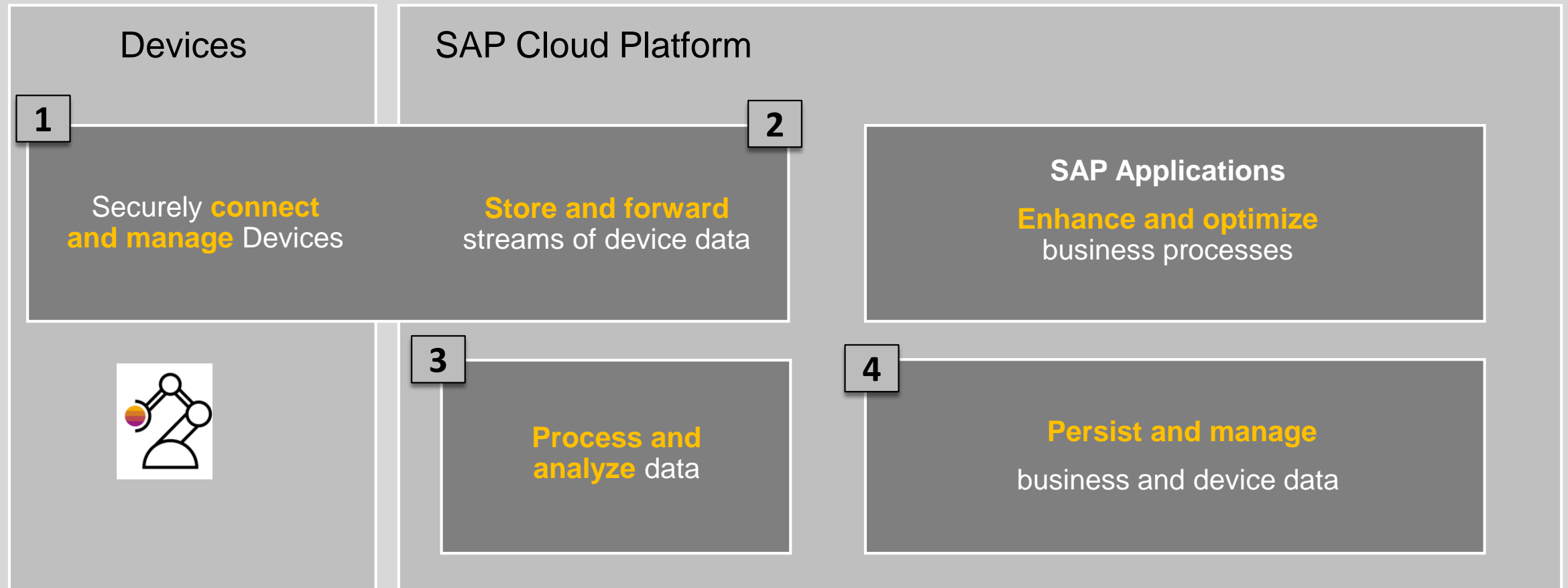| Power User | ——◯—— | Casual User |
Proactive	—◯———	Reactive
Team Worker	◯————	Lone Fighter
Global Focus	——◯——	Local Focus
Innovative	——◯——	Conservative

"If I have to work with software, then give me only the information I need, don't bother me with all the details."
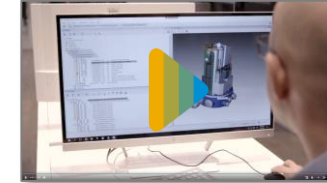
Design to Operate: Technology highlights
Common Architecture and foundation

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

2

SAP Applications

Enhance and optimize business processes

3

Process and analyze data

4

Persist and manage business and device data

2019 Design to Operate: Showcase videos!

Design

Plan

Plan

Manufacture

Operate

Plan

Plan

Deliver
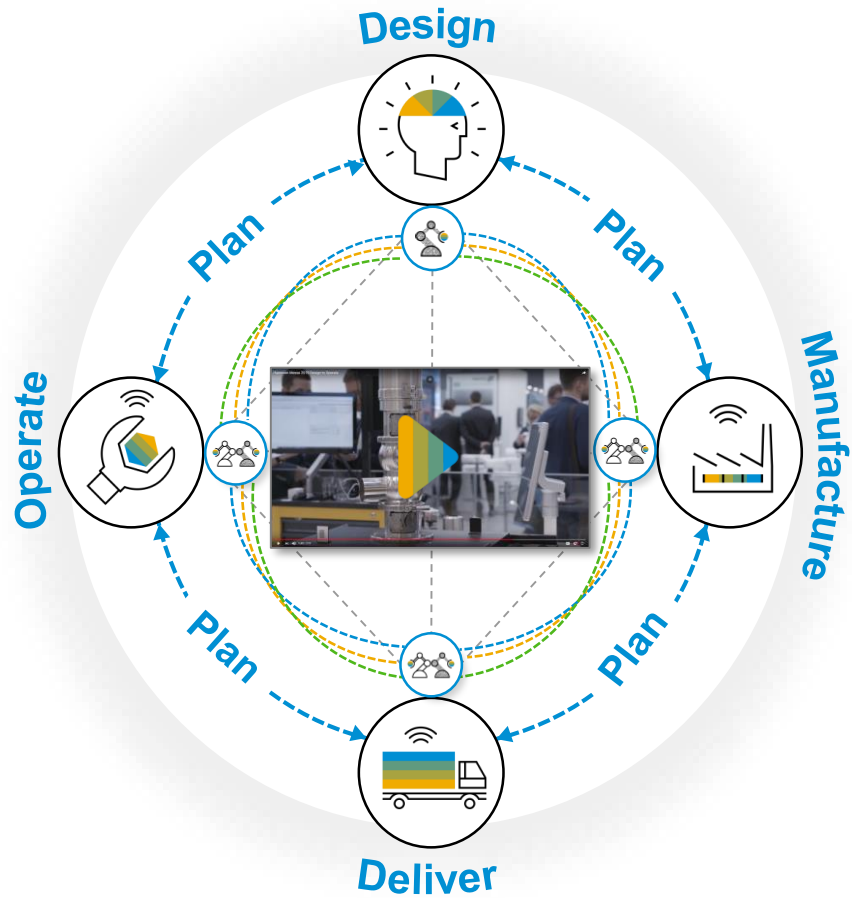
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https://youtu.be/nrRmYmHPE8g

https://youtu.be/gnpQ-k24XYM

https://youtu.be/-xuqFgs_pGA
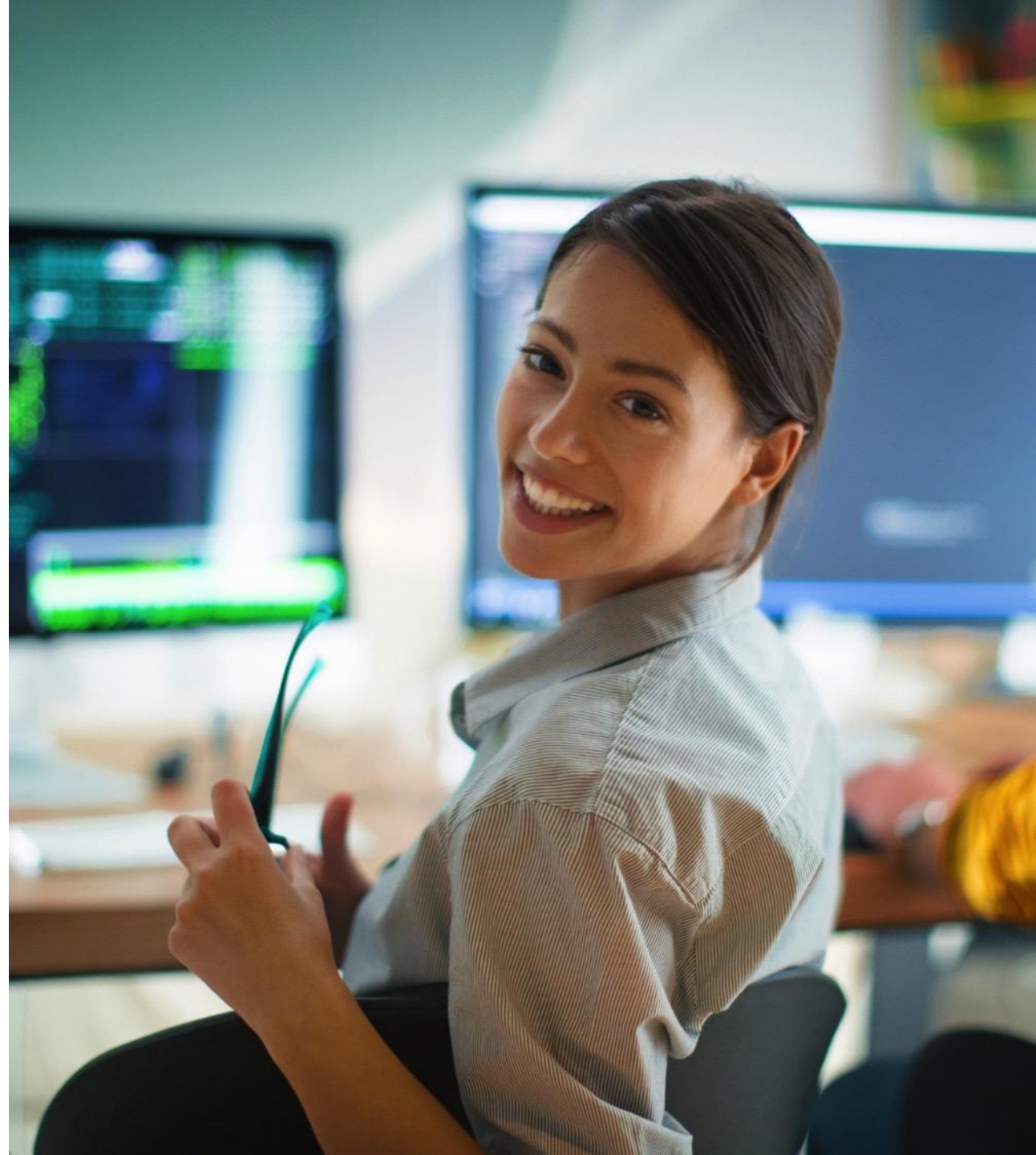
https://youtu.be/HSc4YJyA1BA

Agenda

Intelligent Enterprise Framework

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- Technology Highlights

Key Take Aways

Q&A

Design to Operate in the Intelligent Enterprise
Key Differentiators

X
Data

Analytics

Intelligent
Technologies

Experience

Intelligence

Operations

Database &
Data Management

Application Development
& Integration

O
Data

Design to Operate
4 key differentiators:

1. **Intelligence built into business processes**

2. **Seamless Integration**

3. **Digital Twin along value chain**

4. **Asset Central for all of IES**

Build the Intelligent Enterprise – Design to Operate Roadmap Excerpt

Functional Enhancements
- Model publication and firmware announcements from SAP PLM to SAP Asset Intelligence Network
- Closed-loop engineering: SAP Asset Intelligence Network improvement requests displayed in manufacturer's live product cockpit as input for product requirements and systems engineering

One Master Data
Asset Central in Asset Intelligence Network

Functional Enhancements
Support of hybrid scenarios for combined cloud and on-premise operations: Digital Manufacturing Cloud for Insights and Resource Orchestration with Manufacturing Execution on-premise. Also Equipment Health status and Visualization of maintenance orders in Digital Manufacturing Cloud

One Master Data
- Asset Central adoption Intelligent Asset Management
- Asset Central adoption in Digital Manufacturing Cloud
- Improved asset traceability due to basic baselining capabilities

Process Documentation
Process documentation following Industry Reference Architecture in Enterprise Architecture Designer
- Data Flow Diagrams

Functional Enhancements
- Enhanced integration of SAP Transportation Management, SAP Extended Warehouse Management, and SAP Logistics Business Network
- Improved asset management for maintenance of shop floor through enhanced integration of SAP Intelligent Asset Management and SAP Digital Manufacturing Cloud

One Master Data
- Asset Central Foundation as Business Reuse Service
- Incremental Asset Central Adoption in Design to Operate and Intelligent Enterprise

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TODAY	2019	2020	2021

Seamless UX
- Fiori in Intelligent Asset Management (Cloud Apps)
- Fiori in Intelligent Product Design
- SAP Enable Now / Web Assistant with Application Context Help (Cloud Apps)*

Intelligence & Analytics
- SAP Integrated Business Planning: SAP Analytics Cloud for Cross Analytics
- SAP Integrated Business Planning: ML in Demand Planning
- Usage of ANSYS digital twin models for asset health prediction and optimization in SAP Predictive Engineering Insights

Integration Excellence
- SSO with SAML
- Integration with SAP Cloud Platform Identity Authentication Service (Cloud Apps)

Seamless UX
- Fiori for Cloud Apps
- Adoption of Fiori 3 features
- SAP Enable Now / Web Assistant with Guided Tours for Pilot Applications (Cloud Apps)*

Intelligence & Analytics
- SAP Digital Manufacturing Cloud: Intelligent Order Dispatching using Heuristics
- Extensibility through custom analysis tools and machine-learning algorithms in SAP Predictive Maintenance & Services

Integration Excellence
- Automated Provisioning Intelligent Asset Management, Digital Manufacturing Cloud, Intelligent Product Design (Cloud Apps), Integrated Business Planning

Seamless UX
Enhanced Fiori 3 Adoption (e.g. Cards)

Intelligence & Analytics
- Common Data Layer for Digital Manufacturing Cloud and Intelligent Asset Management
- SAP Analytics Cloud for Cross Application Analytics on Common Data Layer*

Integration Excellence
One Launch Pad using Central Fiori Launch Pad

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- Roadmap

Key Take Aways

Q&A

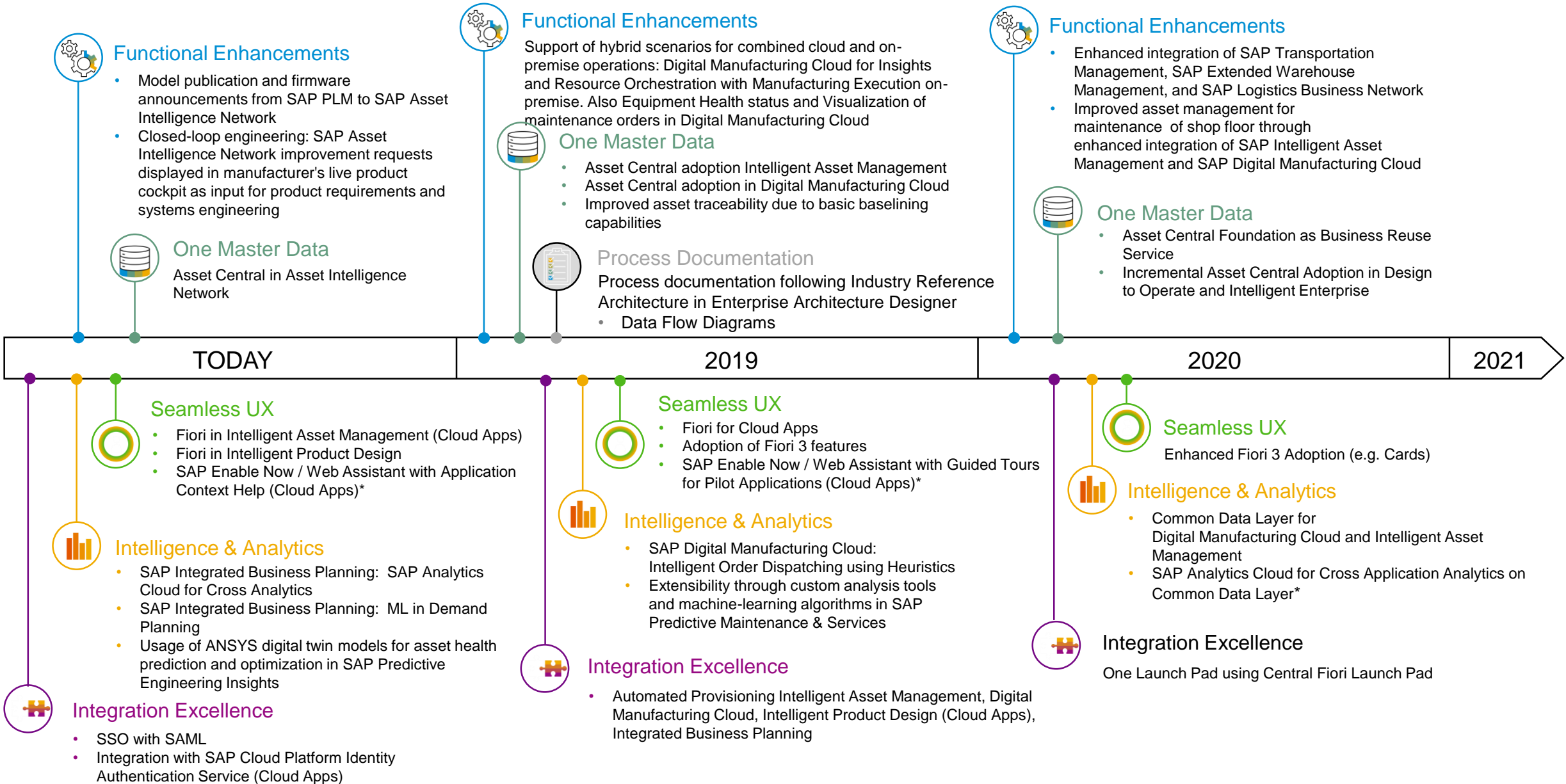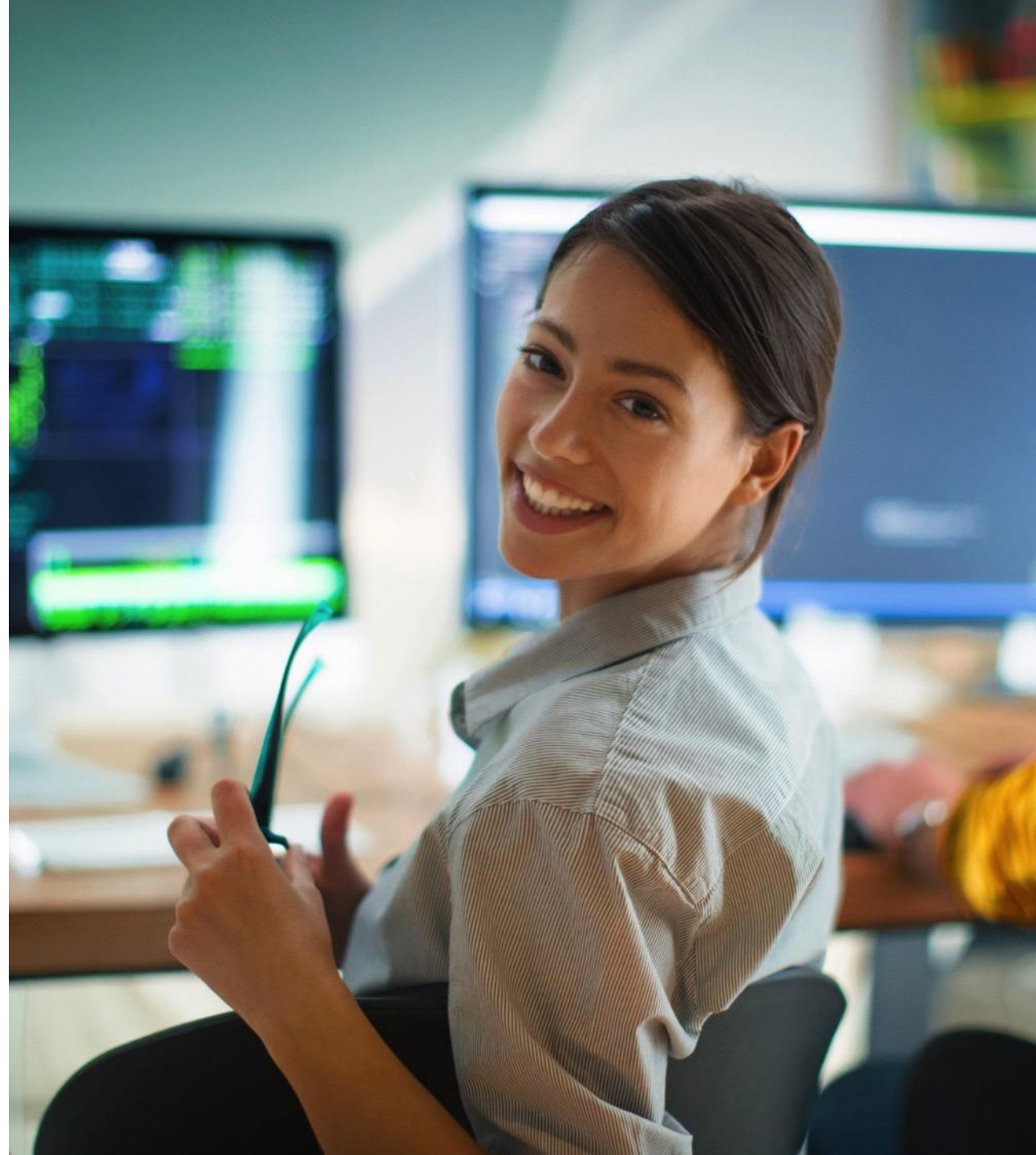# Continue your SAP TechEd 2019 Learning Experience

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Thanks for attending this session.

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