



SAP and Siemens **partnership in PLM**

Lars Fossum Business Development PLM, SAP

Espen Leknes Product Owner, SAP

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.

Agenda

SAPSA PLM Focus Group Webinar 23.04.2021

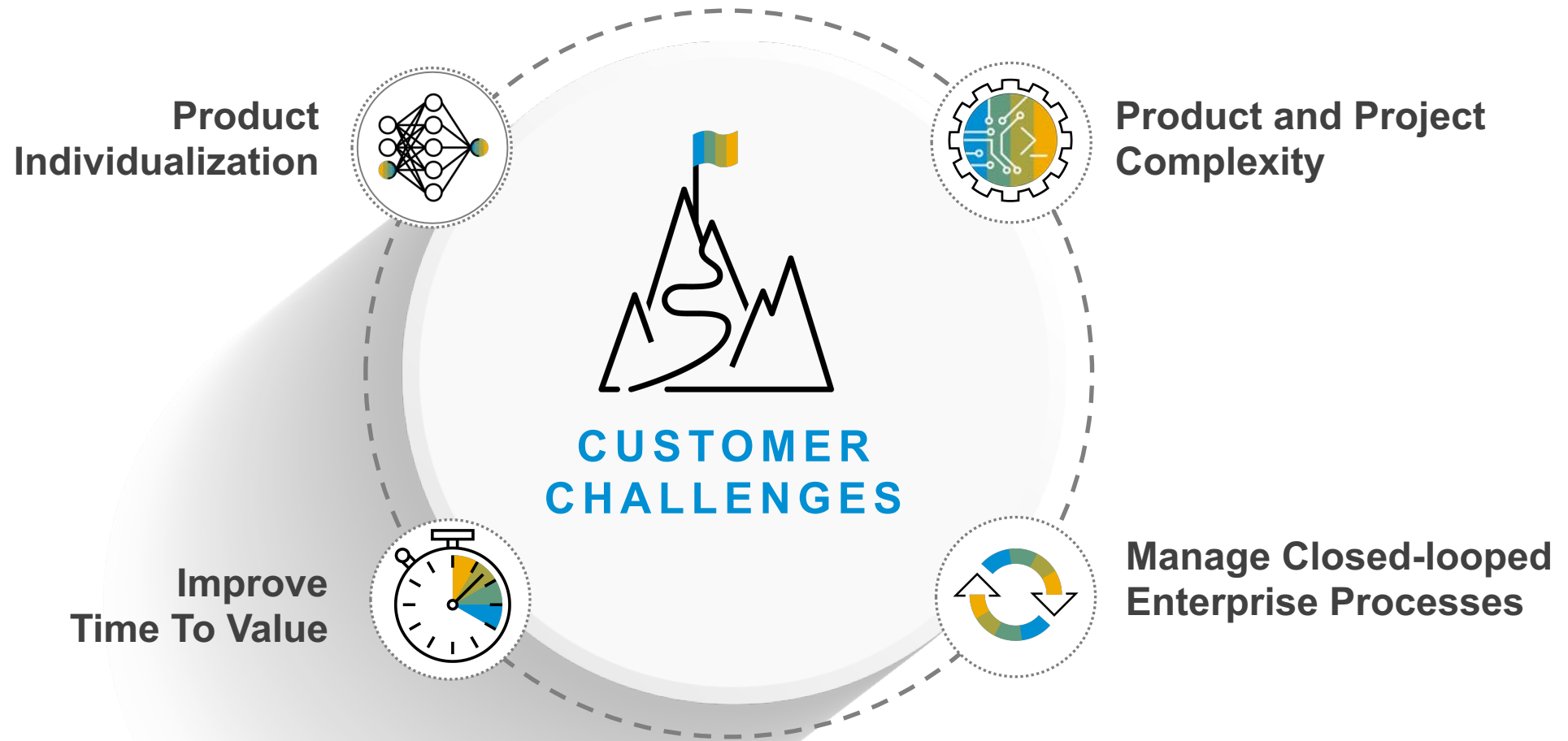
- Industry challenges
- SAP/Siemens partnership in PLM
- SAP Teamcenter and synergy areas
- Teamcenter/SAP integration
- Q&A



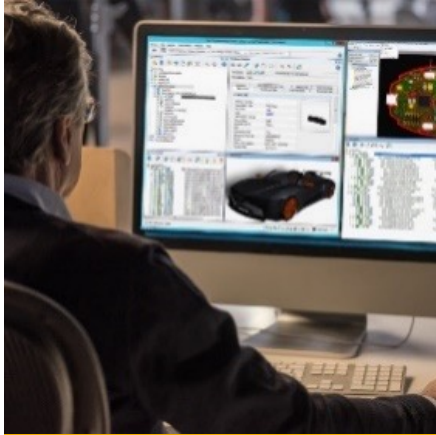
Challenges of the industry



Customer Road To Value – Customer Challenges



Product Development **Execution Challenges**



24%

Frequent Design Changes

How can I decrease the amount of effort and costs put into frequent design changes?



34%

Changing Design Requirements

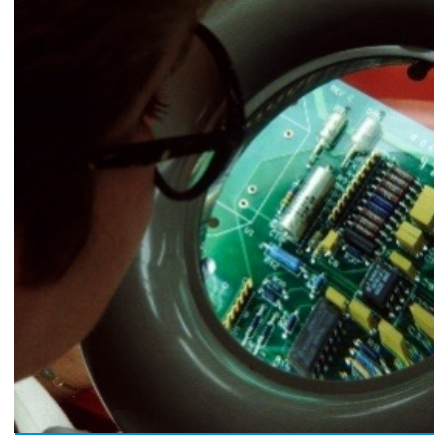
How do I effectively track & manage continuous change in product requirements?



29%

Projects are understaffed

How can I improve my product development collaboration process to do more with less?



25%

Increased Product Complexity

How can I manage product complexity, ensure quality & meet compliance requirements?



19%

Problems/errors are found too late

How can I catch errors early in the game in order to control costs & maximize profits?

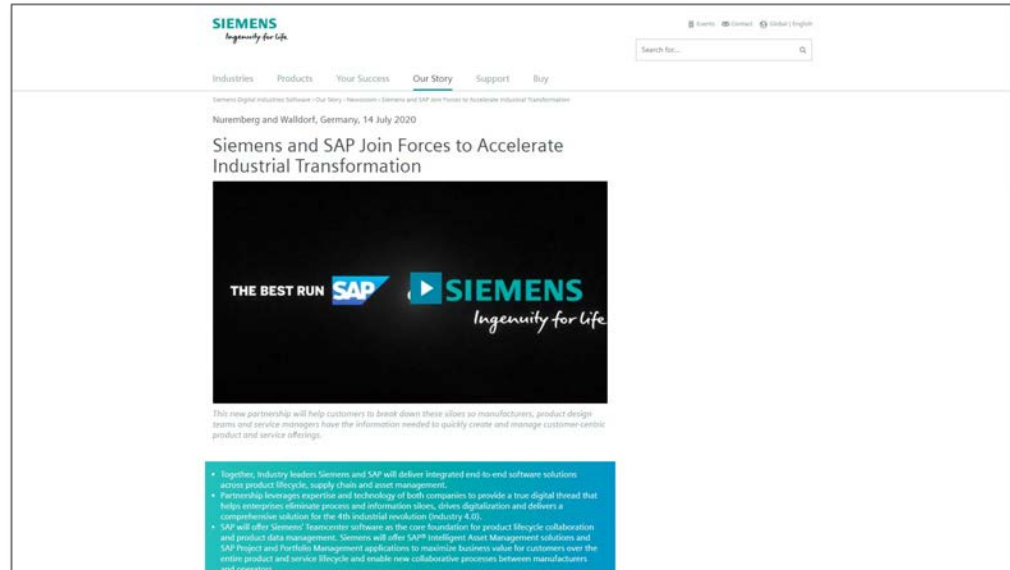
SAP/Siemens Partnership

“Enterprise Wide – Engineering Deep”

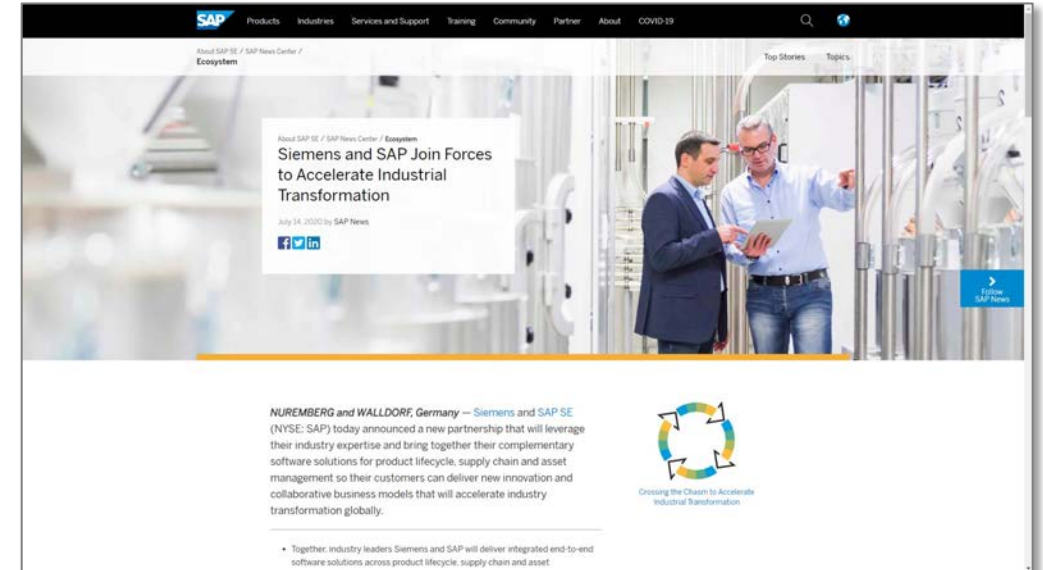


The Partnership Announcement – July 14, 2020

“Through this agreement, both SAP and Siemens will be able to **complement and integrate their respective offerings** in order to offer customers the first truly **integrated and enhanced solutions** for **product lifecycle management (PLM), supply chain, service and asset management**.



<https://www.plm.automation.siemens.com/global/en/our-story/newsroom/siemens-sap-accelerate-industrial-transformation/82667>



<https://news.sap.com/2020/07/siemens-and-sap-accelerate-industrial-transformation/>

The best of **both** worlds

SAP

The world leader in enterprise application software and end-to-end supply chain solutions.

SIEMENS

The leader in product lifecycle software, industrial automation and digitalization.

- Dramatically improve time to value
- Design products with real-time supply chain
- Create a sustainable product development process
- Create a single digital thread

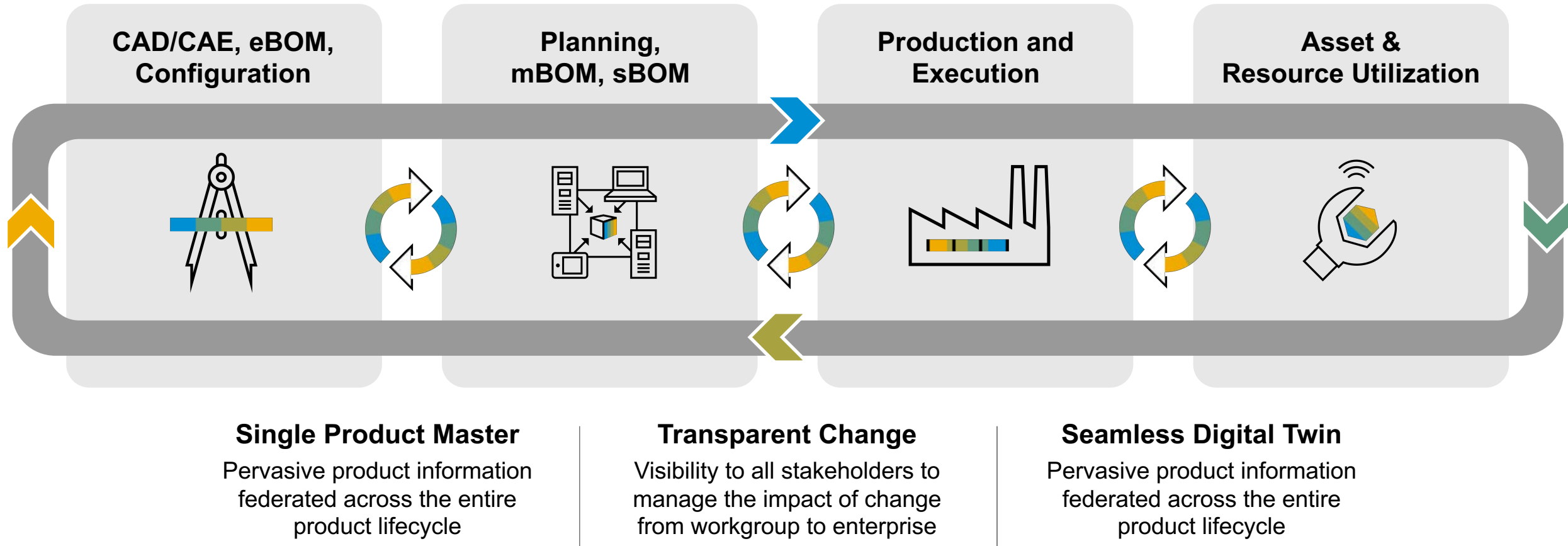
How the Partnership will Work

- SAP to resell Siemens Teamcenter software as its core platform for product data management
- Siemens to resell SAP Intelligent Asset Management and SAP Project and Portfolio Management
- SAP and Siemens will provide an integrated digital thread across the product lifecycle for their customers
- SAP and Siemens remain committed to supporting existing installed base customers throughout their lifecycle



The Digital Thread that ties everything together!

From product to asset lifecycle management



SAP Teamcenter by Siemens

SAP will now offer Siemens Teamcenter as part of the SAP portfolio



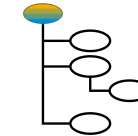
SAP Teamcenter by Siemens is a modern, adaptable product lifecycle management (PLM) system that connects people and processes, across functional silos, with a digital thread for innovation.



Vault



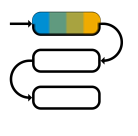
Design



BOMs



Documents



Process



Requirements



Systems
Engineering



Supplier

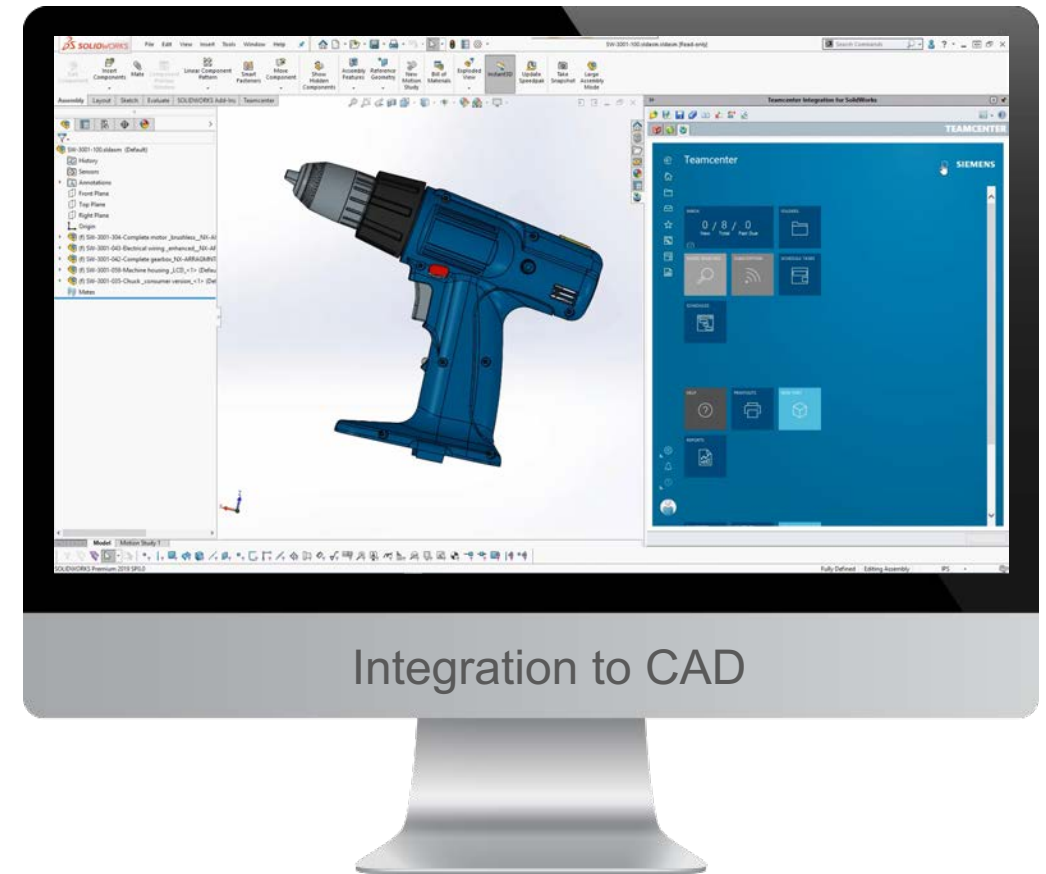
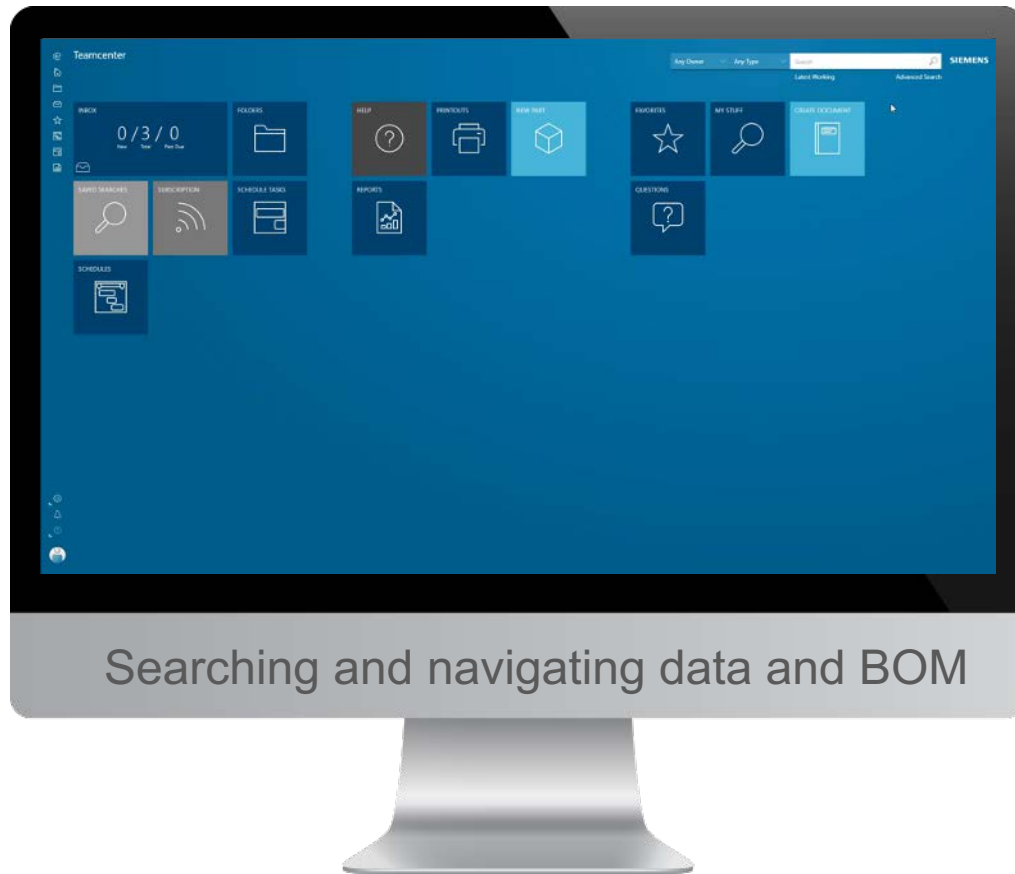


Manufacturing



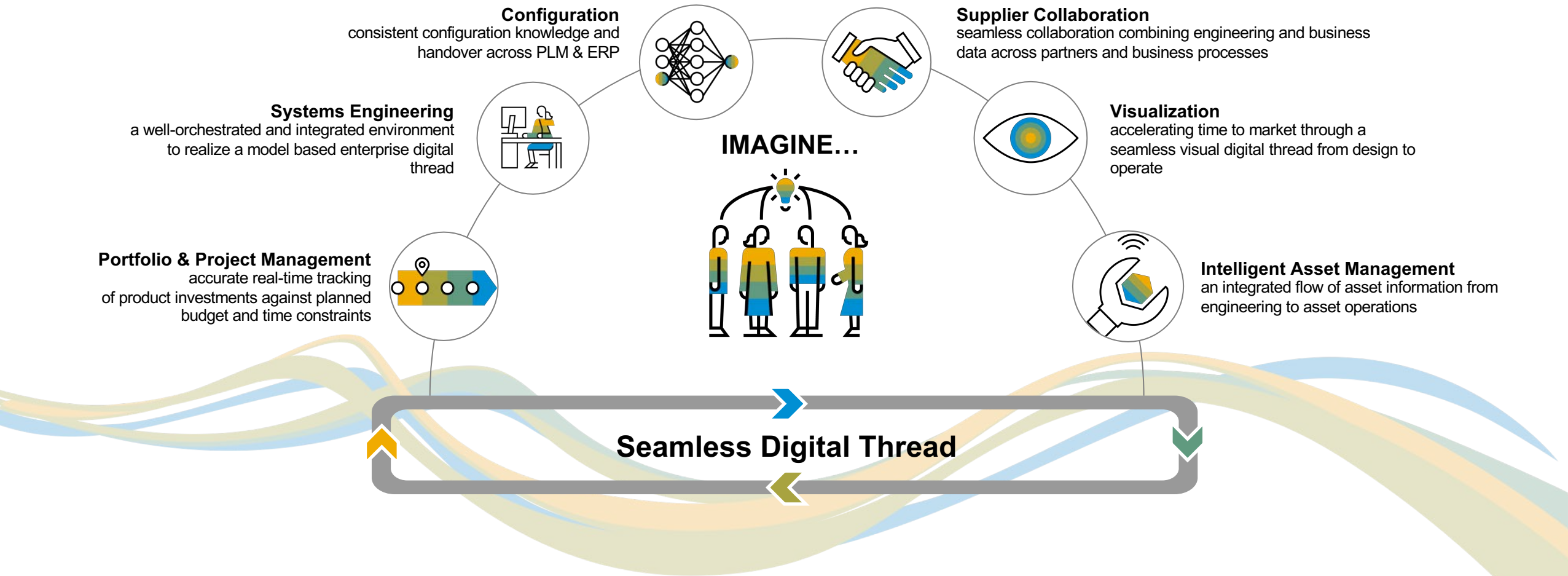
Service

SAP Teamcenter by Siemens



Siemens & SAP: Creating End-to-End Process Threads

Partnership and Synergistic Areas



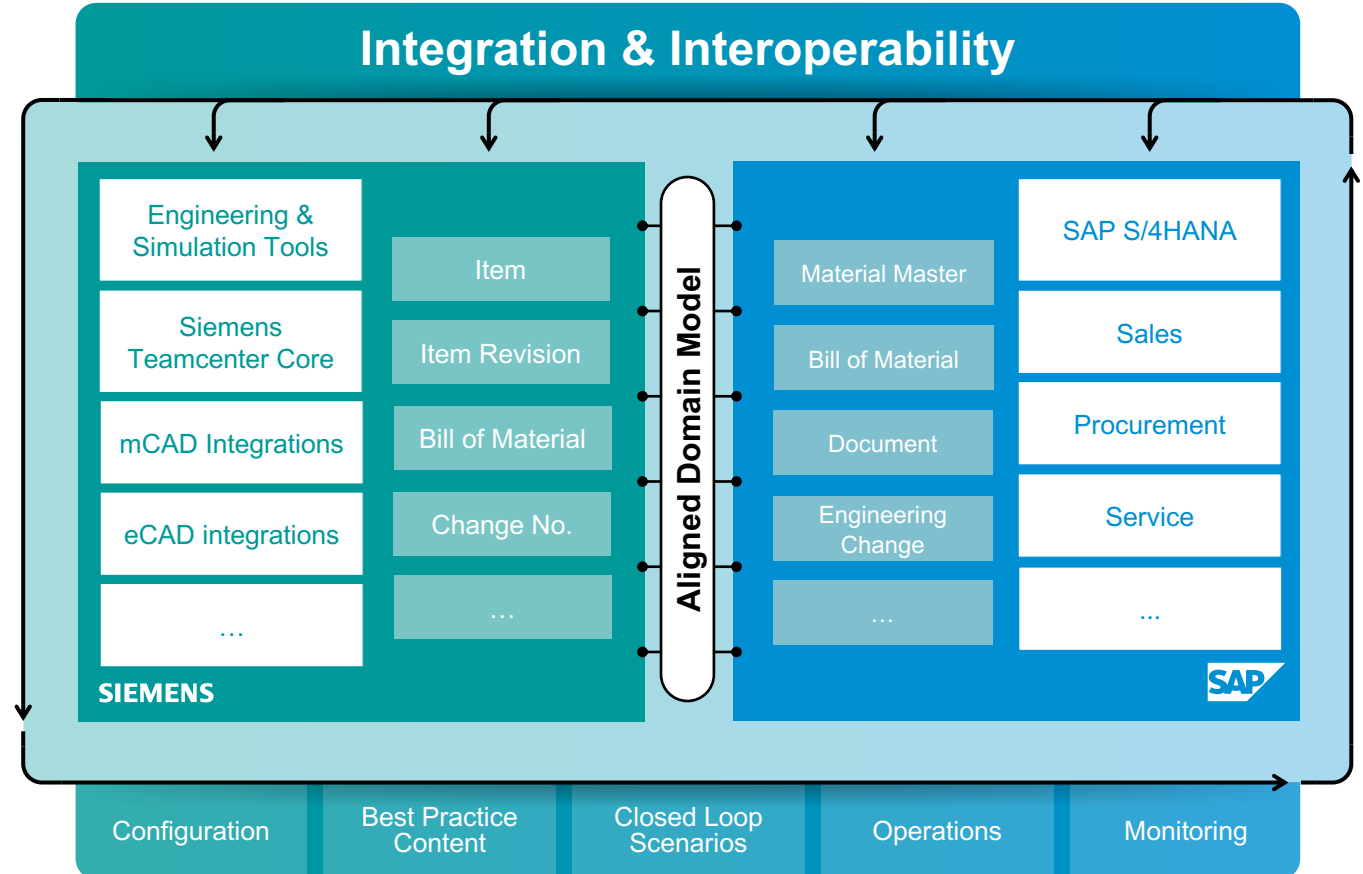
Teamcenter/SAP integration



The Foundation of our Vision: Best in class **Integration and Interoperability**

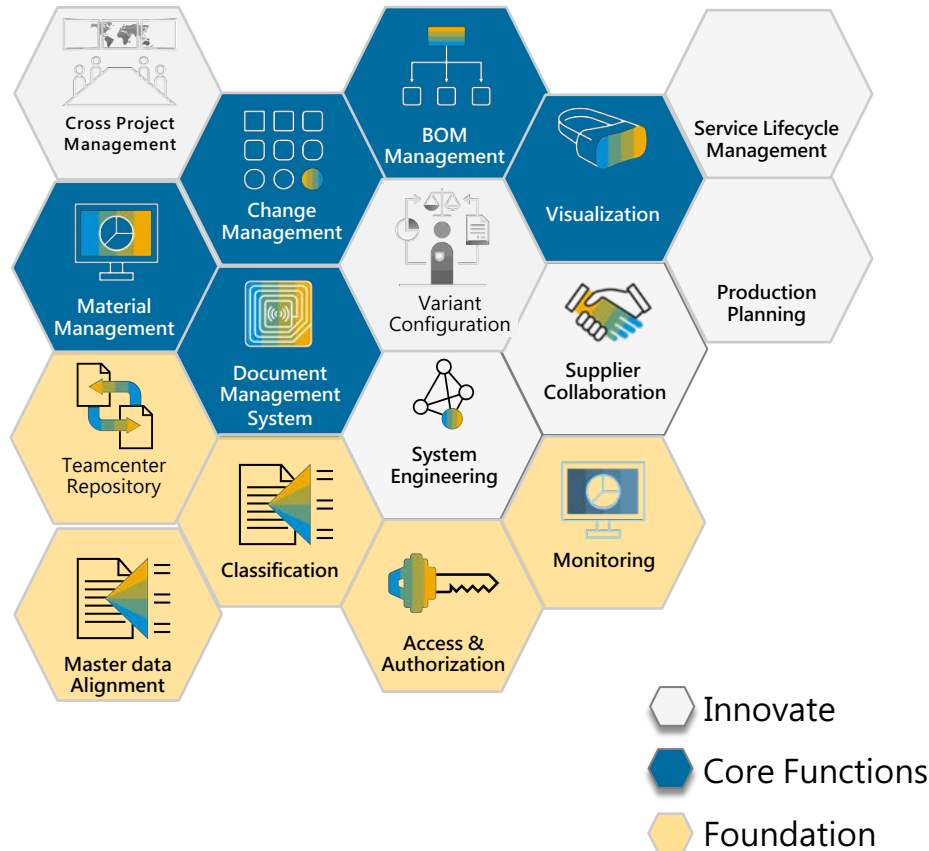
One joint integration solution which:

- Builds on SAP and Siemens know how
- Aligns on a common Domain Model
- Comes with proven integrations
- Provides access to data across solutions
- Supports seamless setup and operation
- Offers existing customers a path
- Supports on-premise, hybrid and cloud



Potential Scenarios Next Generation **integration**

Lab Preview



Focus of integration

- The integration enables a seamless exchange of product relevant data to enable a bidirectional process integration.
- The goal of the initial release is to build a solid and reliable foundation for further and extended processes
- Subsequent releases will extend the E2E process coverage for specific industry and business processes like CTO or ETO

Method

- Start with the basic business entities which are required for all industries and business processes
- Establish a master data alignment (e.g. in the area of Unit of measure, Basic material libraries, material revisions) to ease the implementation effort.
- Build a solid foundation for operating, maintaining and configuring cross E2E processes to be able to monitor, control and trace all system interactions.

Challenges for our Integration

Flexibility of the TC Data Model

TC Data Model - Flexibility

- **TC Data Model** is **flexible** regards to object relations and attributes
- TC Data Model is pretty **generic**, without a clear defined Business Semantics
- TC delivered about 120 Object Types over the years with variations

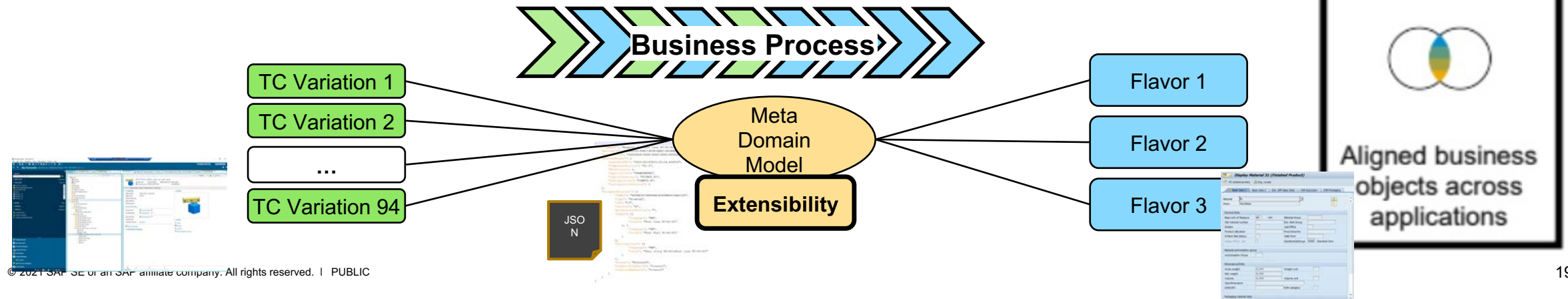
TC Data Model – Customer Situation

- TC Customers and Partners used different approaches to solve business problems
- TC Customers adjusted their object relations and properties
- TC Customers installations are different with high deviations

➔ Biggest Challenge for Integration

SAP Data Model

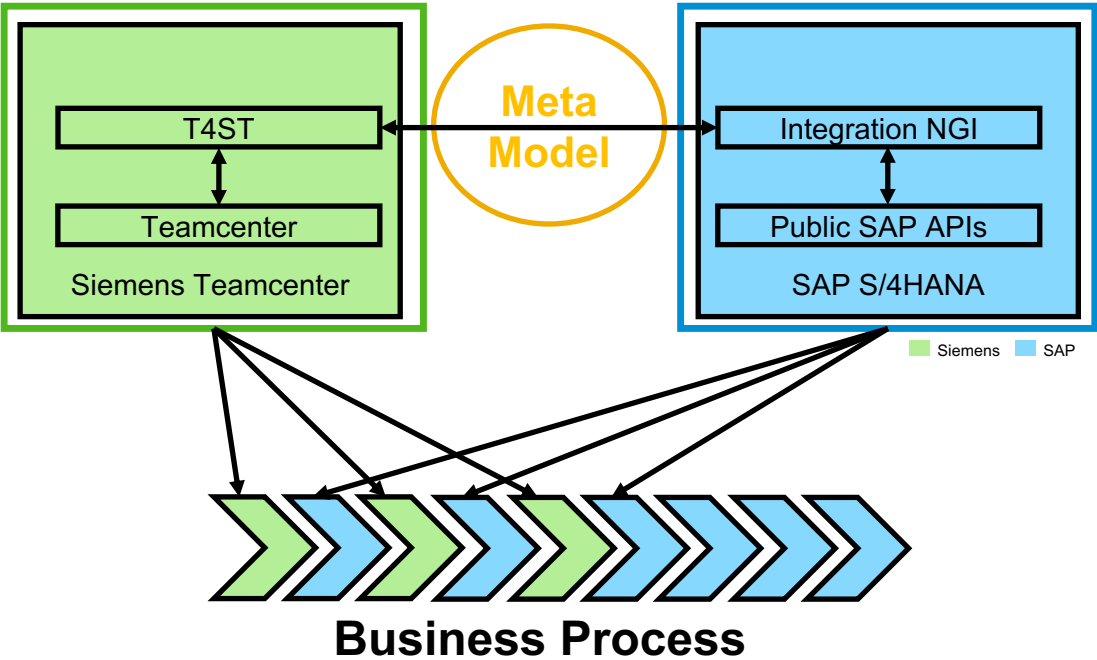
- The business process defines the **data flow** and the **relevant** master data entities
- The business process may deviate from customer to customer
- **SAP Master data itself** is **agnostic** from the process delivering this data
 - Enable down stream SAP processes, which requires a high standardization of the data
 - There are a few flavors on the master data (e.g. validity), but semantically defined for the processes



Siemens Teamcenter Integration

Focus on S/4HANA On-Premise Integration

Teamcenter Engineering & CAD Domain	S/4HANA Master Data Entities	Semantic Integration approach Aligned Domain / Meta Model
--	---------------------------------	--



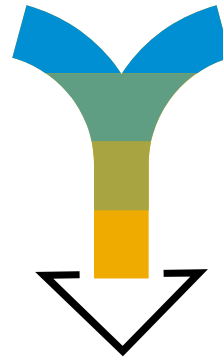
Guiding principles for the Integration

- We start from the various **Business Processes**
 - Identify user roles and business entities
 - Bi-Directional Process and Data Flow
- One **aligned Meta Model** for a semantic integration
 - More than 30 Business Object Types with dependencies & hierarchies
- Integration is based on **public Released APIs**
 - Synchronous API for UI
 - Asynchronous Data Integration (Messages)
- Focus on **digital thread**
 - ➔ Traceability & Linking entities across system boundaries

Domain model

History of highly coupled systems – dependent on **specific components** on other side.

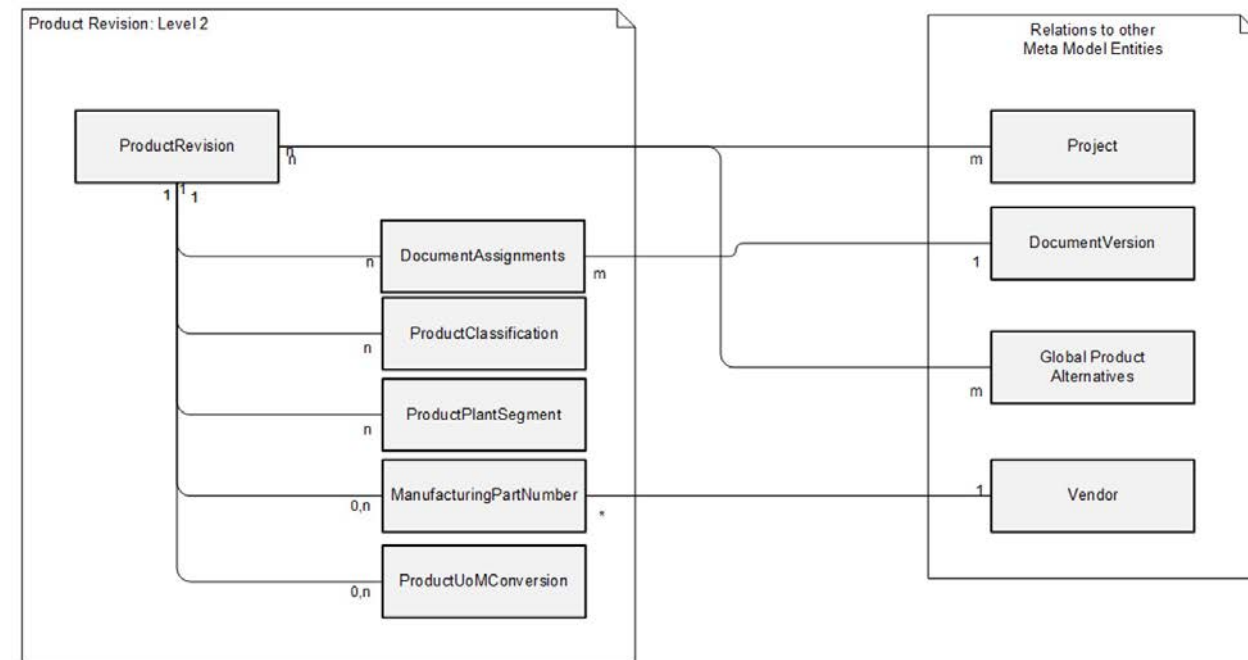
Current integrations developed with a specific system point of view – **making changes and upgrades harder**
Creating **unnecessary dependencies** between systems



Create an abstraction layer between the systems –
with **agreed interfaces and business logic** for how to
exchange information
Prescriptive processes and implementation for
reduced cost and risk

Domain model

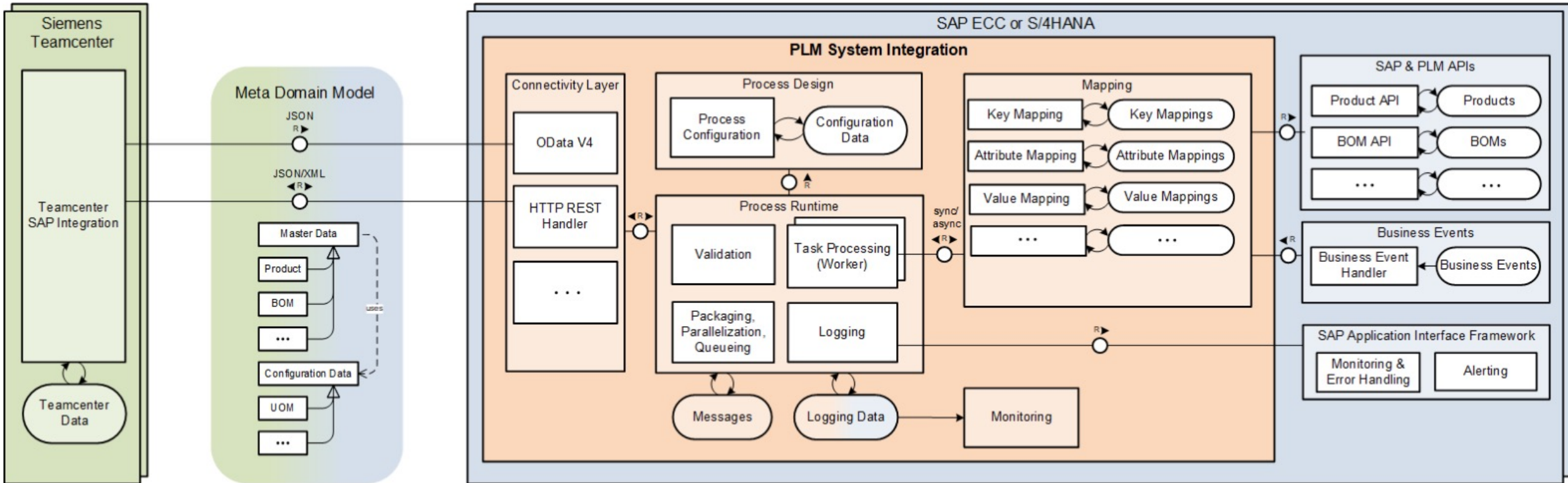
- Well defined entity model
- Supports internal variation – examples
 - with and without CAD-part separation Siemens
 - Change master and change record SAP
 - Defined keys and object identifiers



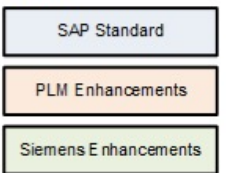
```
"productVersions": [
{
  "PLMId": "007475893634828473947",
  "type": "semi-finished Part",
  "id": "",
  "version": "A",
  "predecessorVersion": "",
  "basedOnProductId": "",
  "basedOnProductVersion": "",
  "names": [
    {
      "language": "DE",
      "value": "Lenker"
    },
    {
      "language": "FR",
      "value": "Guidon"
    },
    {
      "language": "EN",
      "value": "Handlebar"
    }
  ]
},
{
  "descriptions": [
```

NGI Architecture

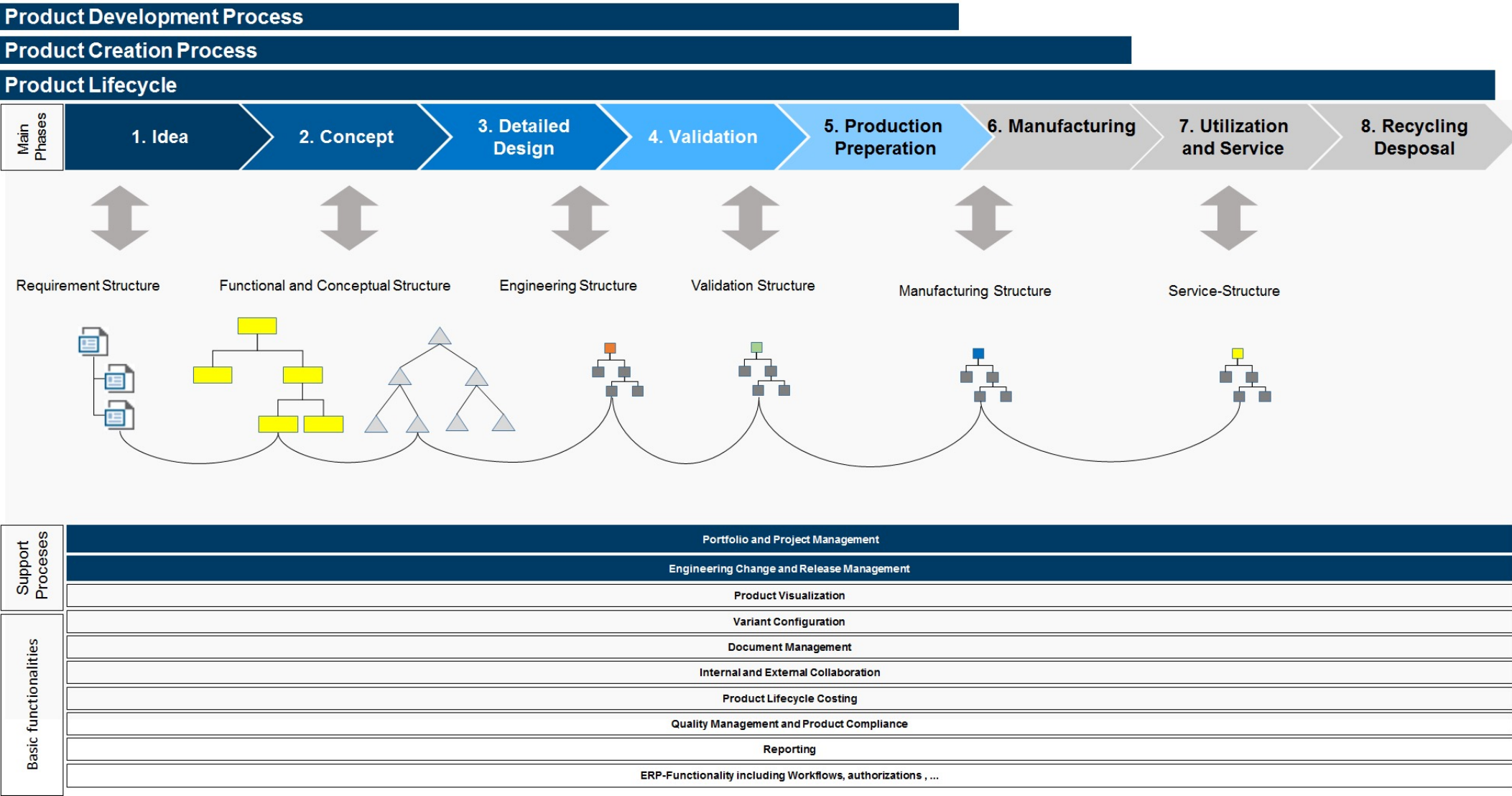
Lab Preview



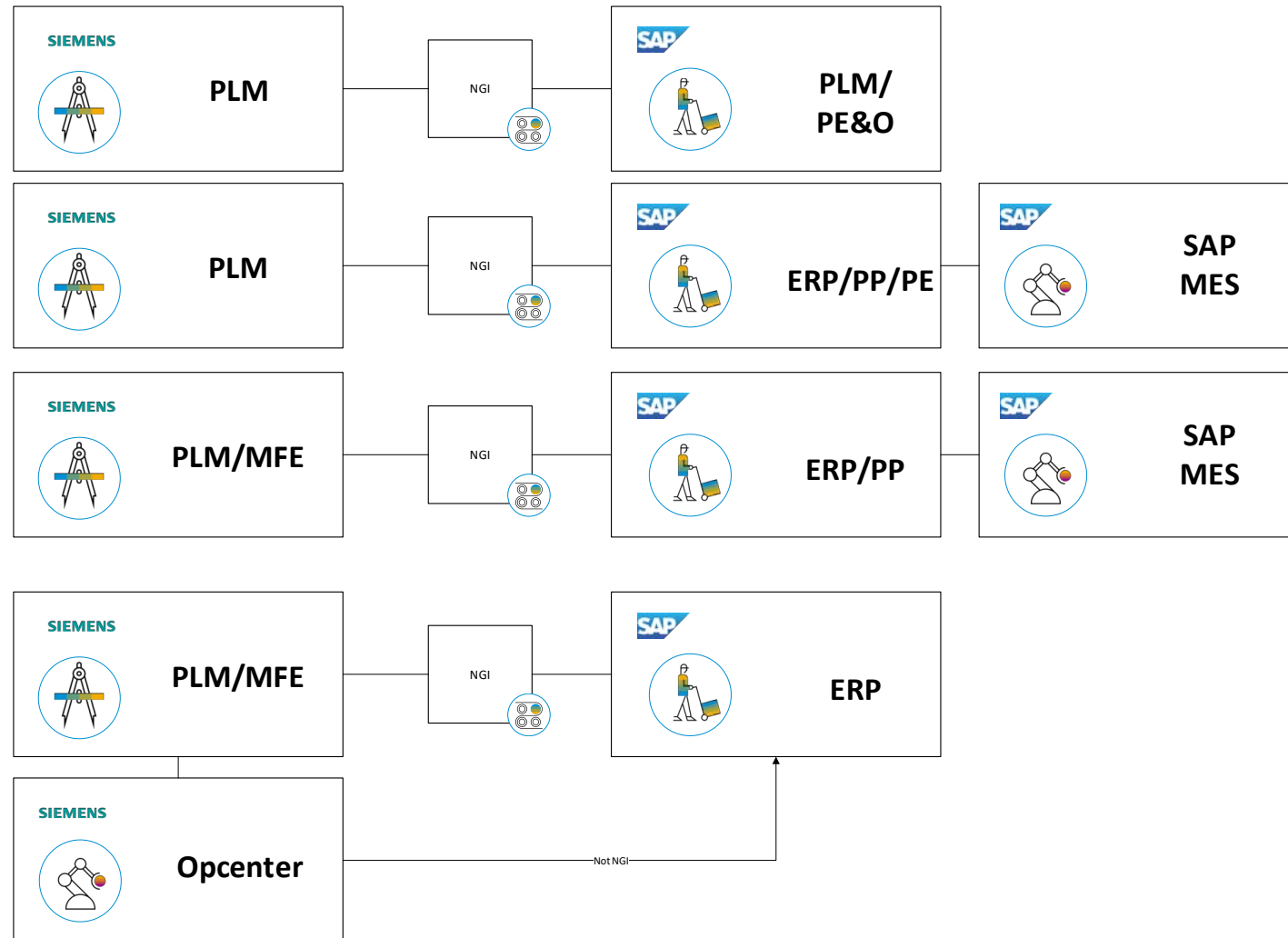
Legend



End to End process

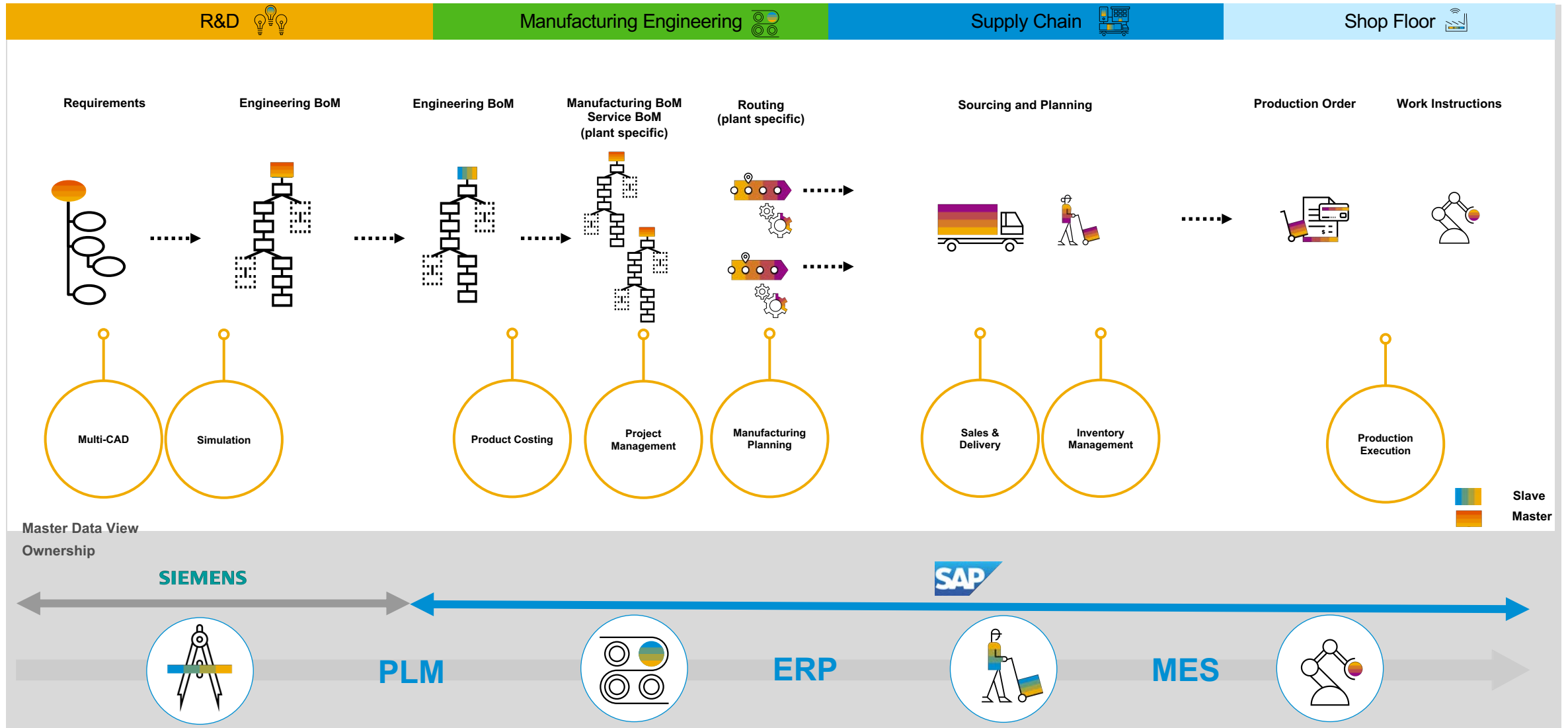


High-Level Solution architecture scenarios



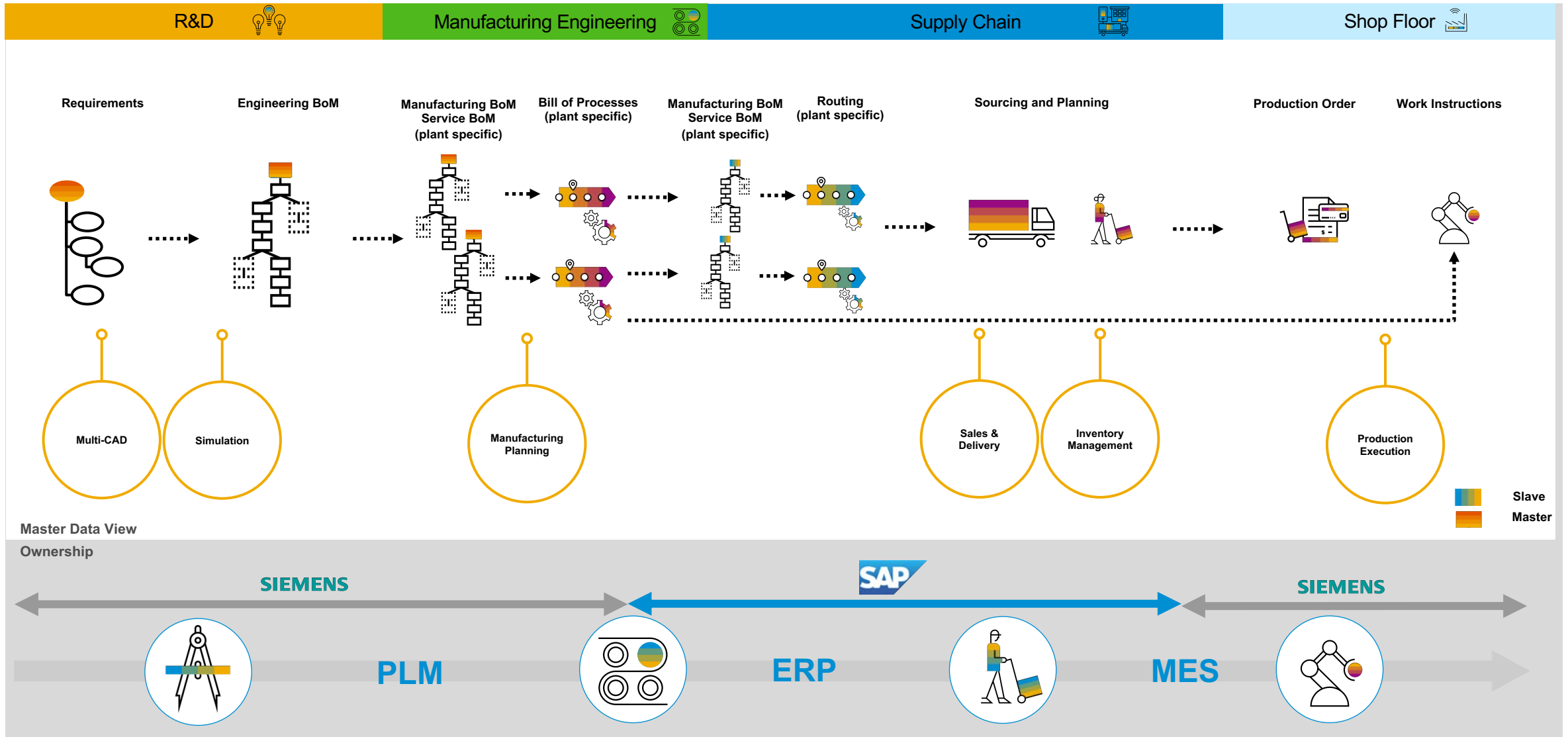
Make to Stock – ERP Focus

E2E industry value chain with intelligent industry scenarios embedded

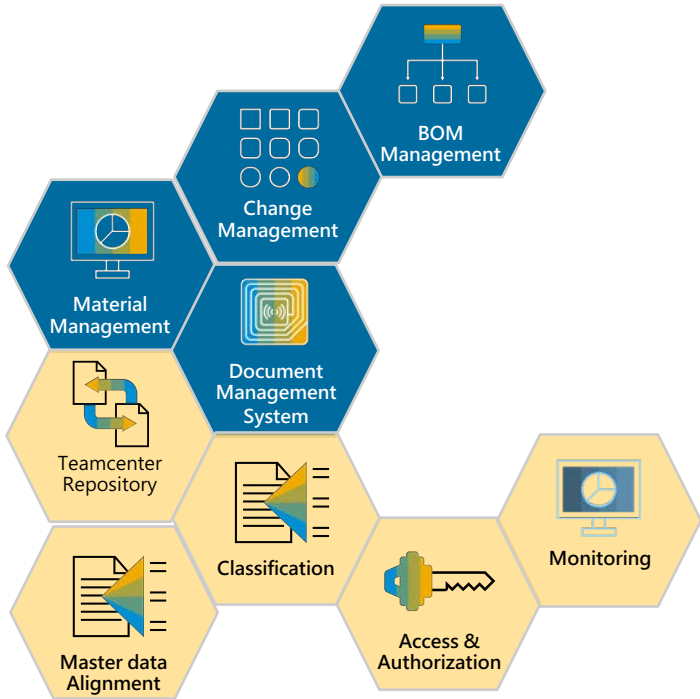


Make to Stock – PLM Focus

E2E industry value chain with intelligent industry scenarios embedded

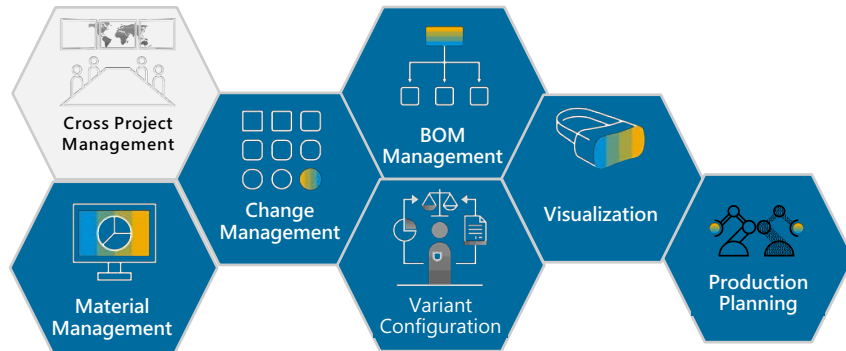


Q4 2021: Delivers Product Development to SAP integration



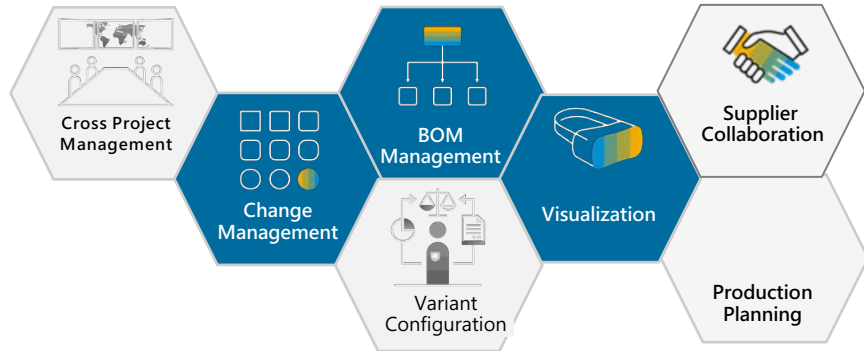
- Integration foundation (joint domain model, federation/linkage, traceability)
- Creation of Material Masters in SAP based on business semantics
- Transfer of Classification information to SAP
- Creation of Document Info Records in SAP
- Transfer of Bill of Materials to SAP
- Teamcenter triggered Engineering Change

Q2 2022: Expands scope and closes the loop between Product Development and SAP



- Creation of Plant specific and configurable Material Masters and Bill of Materials
- SAP triggered engineering and manufacturing change
- Transfer of variant definition for Variant Configuration
- Provisioning of manufacturing relevant information data along the business process
- Transfer of classic SAP Routings
- Enablement of cross system Portfolio and Project Management

Q4 2022: Bi-directional system interoperability and advanced integration scenarios



- Maintenance of order specific Bill of Materials in SAP
- Exchange of product models for Variant Configuration and engineering constraint rules
- Enablement of streamlined Engineer to Order scenarios
- Exchange of Supplier information based on Vendor information
- Enablement of cross system traceability for workflows
- Enablement of cross system impact analysis

Summary



Value of Siemens/SAP partnership

Increasing product complexity requires a seamless digital thread

Best of both worlds

- Together, Siemens and SAP will deliver integrated end-to-end software solutions across product lifecycle, supply chain and asset management.

Break down the silos

- Improve collaboration between engineering and business so everyone has the information needed to quickly create and manage high quality product and service offerings

True digital thread

- Provide people across the business with real-time access to product and business information

Digital twin

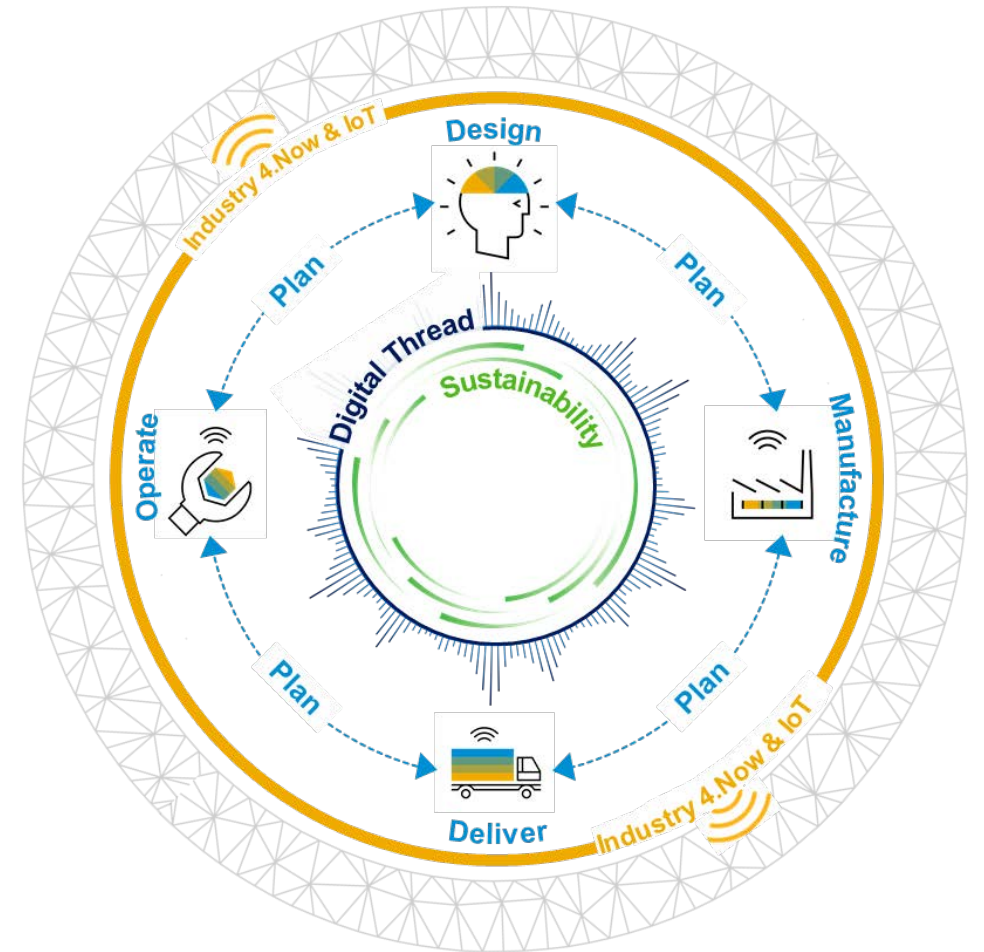
- Integrate all virtual product data with business information, feedback and performance data over the entire lifecycle to establish the digital twin

Industry 4.0 Now

- Drives digitalization and delivers a comprehensive foundation for Industry 4.0

Time to Value

- Increase productivity, while reducing development time and cost



Q&A



Thank you

Contact information:

Lars Fossum

Global CoE, Teamcenter

+47 92 25 62 15

lars.fossum@sap.com

Espen Leknes

Product Owner

+47 92 86 88 58

espen.leknes@sap.com