

# Design-Driven Enterprise From Configuration to Manufacturing

Variant-rich MTS or CTO

Gear 7-38 12.75

s/n 3941501

MT-450919

Teet

Advanced  
Motor 30051  
Prototype Phase

Torque

01.04.2022

THE BEST RUN



## Our model company

**Conveyor Solutions AG** is a manufacturer of

- components
- equipments
- systems

for sorting and transporting of luggage or packages.

They

- configure to customers needs (CTO/MTS),
- design customer specific solutions (ETO, CTO+),
- manufacture in large quantities.





# Conveyor's Challenge

Senior management would like to

- Become more **customer centric** and **agile**
- Reduce **cost** and **workload**

So, they engage an external consulting company to propose **a new approach**.



# Design-Driven Enterprise

AGIL.EFFICIENT.CUSTOMER-CENTRIC

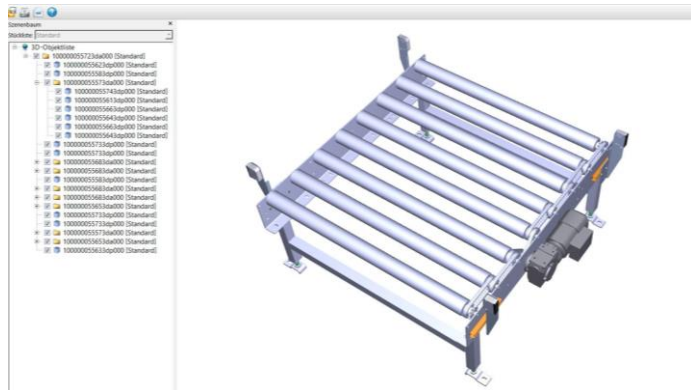
- **Increase the level of automation** in the process flow from engineering into sales, production, service with **model once configure anywhere.**
- Use a **smart product structure** as **single central solution** to achieve **high level of consistency, automation and accuracy** across all departments.
- Improve the leverage of their existing investment in the **SAP core. Reduce complexity** of applications outside of the core.



# Relationship between CAD, Classic BOM and Product Structure

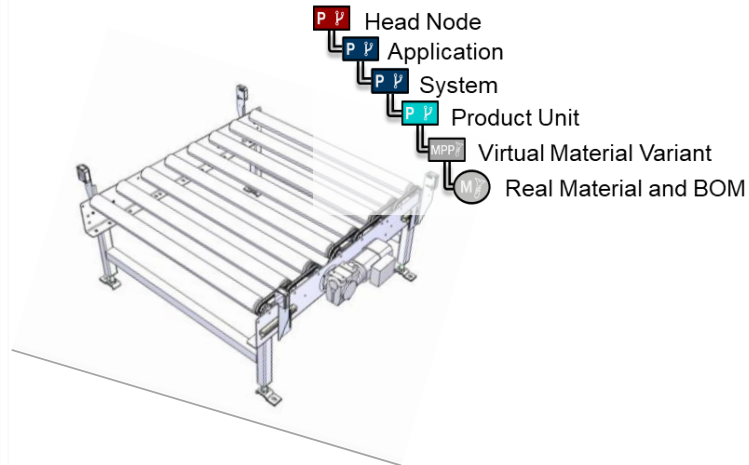
Why can't I use the CAD or Classic BOM instead?

## CAD Structure



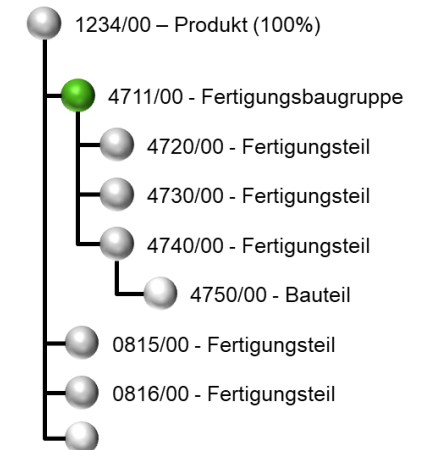
The **CAD Structure** describes the geometrical relationships between the BOM elements. The **variance** therefore is **implicitly described**.

## Product Structure



The **Product Structure** models variance structurally and thus it is **able to incorporate variance information directly** and link it to CAD documents.

## Classic BOM



The **Classic BOM models** variance on a material level and therefore **does not scale very well**.

# Model once configure anywhere

Our Vision: Digital Thread 4.0 automates all business processes



## Product Teams...

...feed the product model with new iterations and versions, aligned with customer requirements and compatibility

Feed



Consume

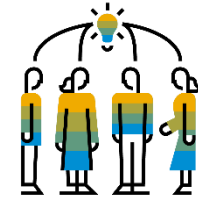


Digital Product Structure

Consume



Feed



## Extended Enterprise...

...consumes product model/information to buy, make, sell/configure, simulate or maintain a product.

*Webinar 1 – Create Portfolio & Product Structure*

*Webinar 1 – Consume in Sales*

**Webinar 2 – Consume in Manufacturing (01.04.2022)**

**Webinar 3 – Consume in Service (08.04.2022)**



# Recap – From Design to Sales: Detailed Process Flow



**Anton**  
Product Manager



**Barbara**  
Systems Engineer



**Carla**  
Engineer



**Daniel**  
Sales Rep



Overview product portfolio

Map product features

Extend product features

Revise product features

Adjust system models

Complete detailed engineering

Handover to sales

Sell via Configure Price Quote



**How will Conveyor work in the future?**





# DESIGN-DRIVEN ENTERPRISE MTS/CTO

## From Configuraton to Manufacturing



**Product**

- Variant Management
- Configuration Management
- Innovation Management
- Requirements Management
- Systems-Engineering
- Product Validation

**Detailed Engineering**

- Material Management
- Component Classification
- eBOM
- 3D-Model

**Internal/external Collaboration**

- Design Collaboration
- Document Collaboration
- Systems Engineering

**in Production**

- Routing Management
- Integration of MTM
- Work Instruction Management
- Change Mgmt and Integration across and within different SAP BOM-types
- BOM Knowledge Management, Conversion and Configuration
- Configuration of Quality Management

**in Service**

- Configuration of services, documents, and serviceBOM

**in Sales**

- Enhancement of configuration with application knowledge

**Modelling**

- Life Cycle Management of Product model
- Management of Variant Configuration with Engineering Knowledge

**Customer Order - Configuration**

Document Collaboration  
Supplier Collaboration (only with Ariba)  
Visual Product Analysis

**Short- to Midterm-Planning and Optimization**

- Order network
- Production Optimization considering product configuration dependent routing capacity, demand, takt times, set up times, man power and tooling while also considering material availability.

**Order Management**

- Generation and Release of production orders

**Assembly**

- Configuration specific work Instruction

**Inline Quality Management**

- Collection of configuration specific quality data during each production step.

**Machine Integration**

- Configuration specific machine control

**Intelligent Asset Management**

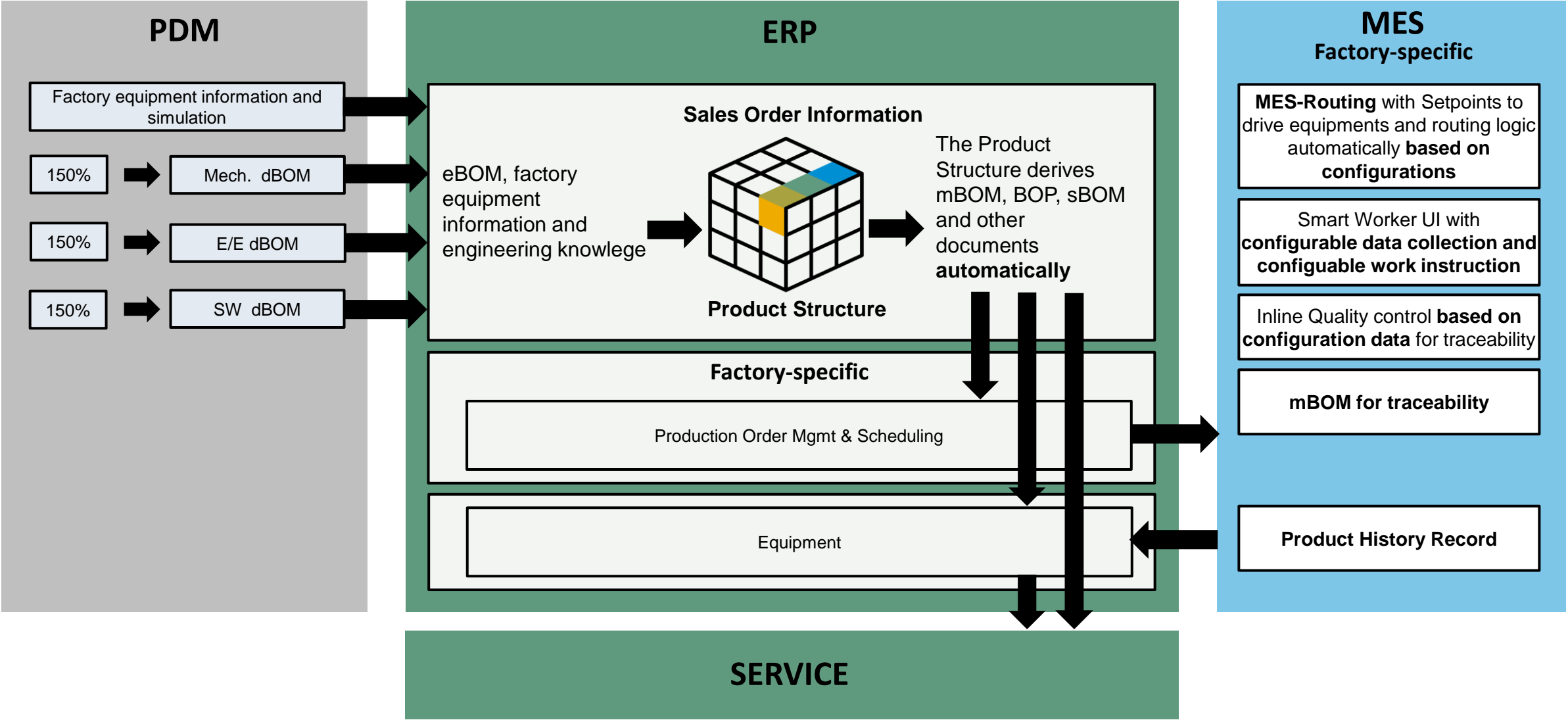
Providing the digital twin to internal and external collaboration partners IOT services

**Service-Management**

- Ticketing
- Service-Order Mgmt.
- Service Order Execution
- Visual Spareparts
- Visual Service-Instructions
- Digital Twin Insight
- Digital Twin Monetization

# Automatically generated Engineering Data for Planning & Execution

## Architecture

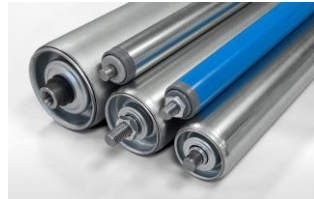


# Handling variants in Make-to-Stock and Configure-to-Order scenarios

Using Material masters or material variants per variant to run MTS.

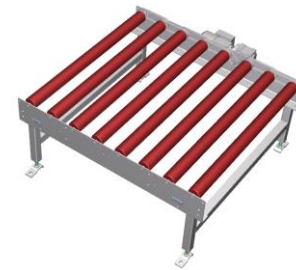


**MTS**  
Make-to-Stock



Design  
Supply Chain  
Manufacturing  
**Sell**  
Aftermarket Service

**CTO**  
Configure-to-Order  
closed



Design  
-----  
**Sell**  
Supply Chain  
Manufacturing  
Aftermarket Service

Configuration in sales order to run CTO.

Optional:

- Create material variants
- Configure in PPG





# Overview of product variants and customizability

**Variant RF17**  
RF17\_EV01



Photoelectric barrier

no

Motor power

240V

Speed

2.00 m/s

Adaptable to customer requests

no

**Variant RF18**  
RF18\_EV01



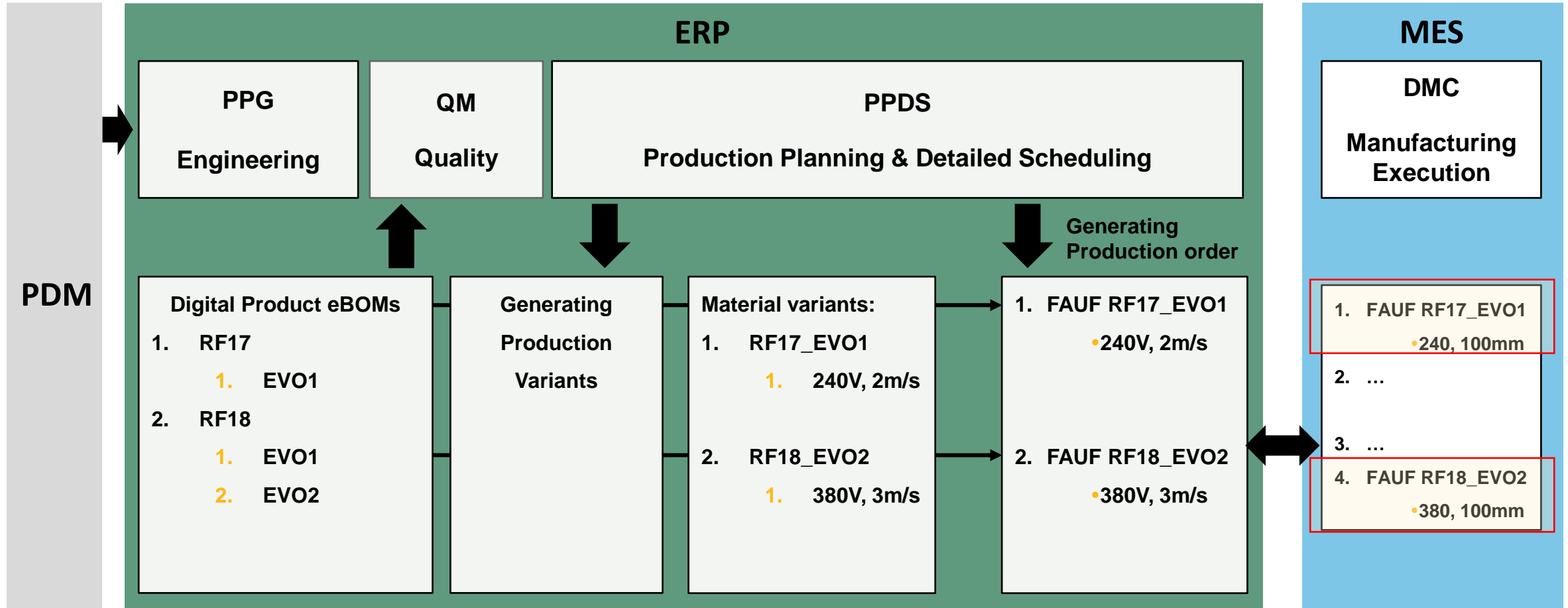
no

380V

3.00 m/s

no

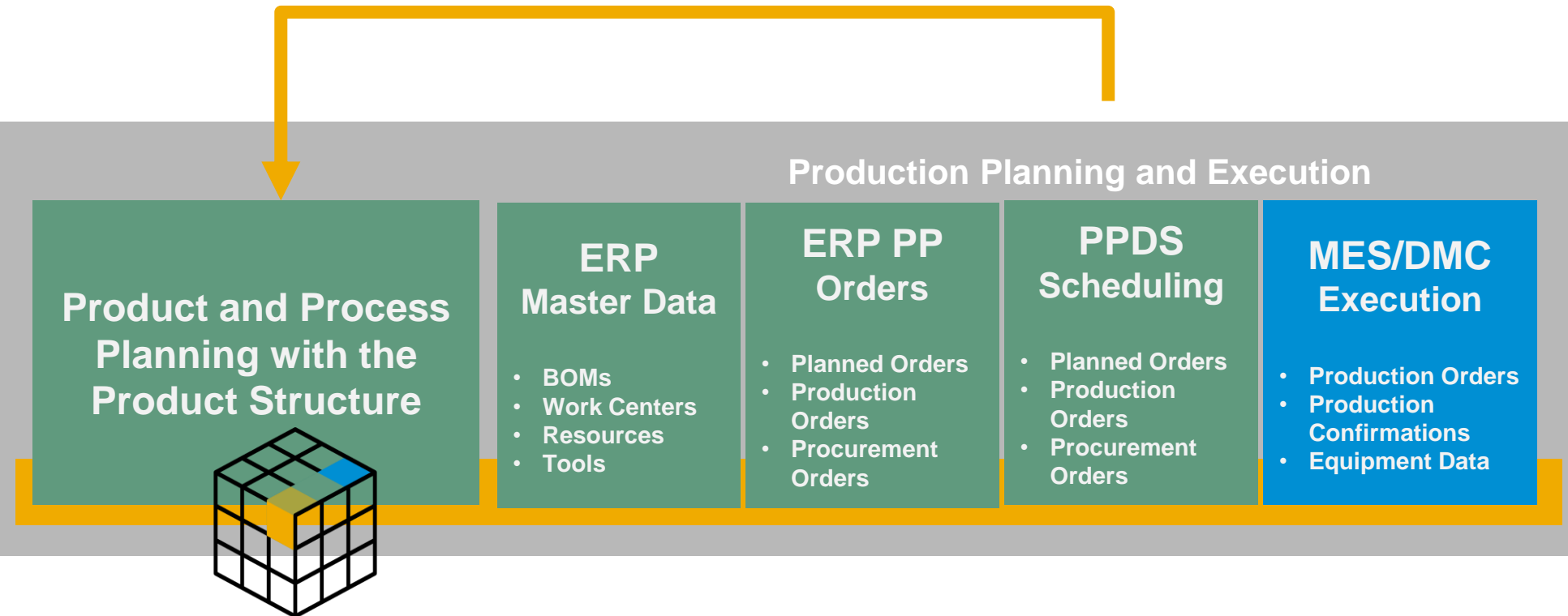
# Overview product variants and production orders



Handover w/ LOIPRO 5  
Production order with all  
manufacturing data

# Validation of Manufacturing Parameter in Product Structure

## Industry 4.0 Feedback-Loop



Validation can be used for many types of data: routings, set up times, tooling, sequences ...

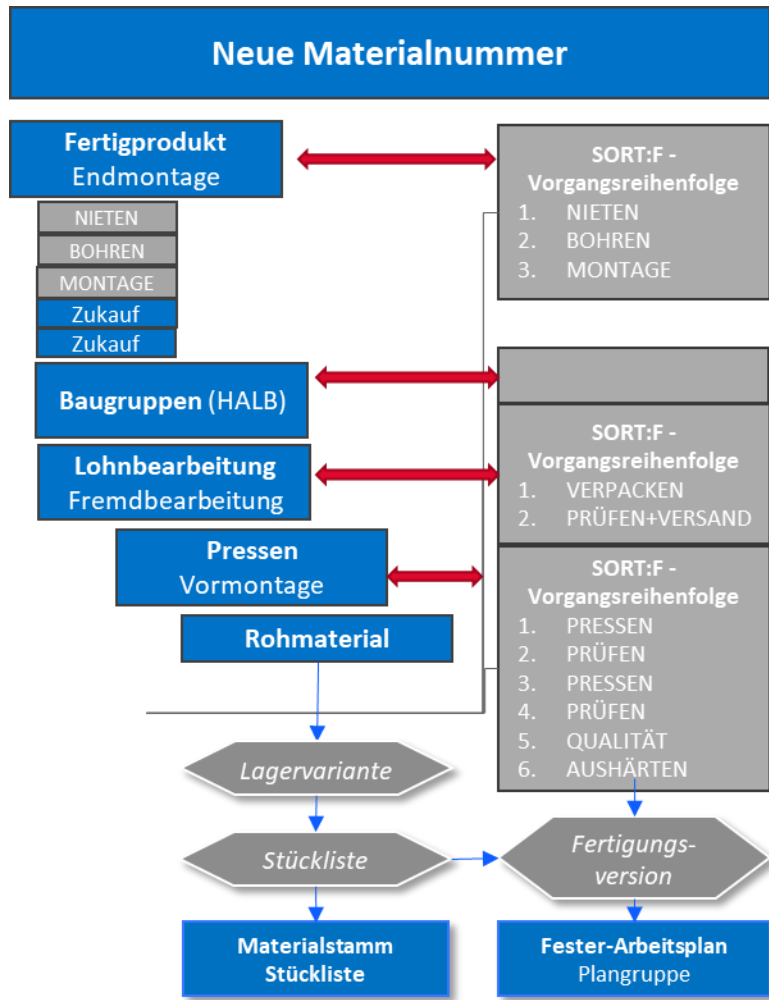
## Use Cases

- Simulation before production
- Monitoring and fine tuning during production
- Product mix scenarios
- Input into 3D simulation tools
- Feedback to PDM system to close the loop with design



# Example: Routing Optimization via PPDS Simulation

Can I generate the routing for optimal capacity for a given product mix?



The SAP screenshots show the following data:

**Product Overview**

Pl.	Product Number	Product Short Description	Locati...	Bun	Target Location	Output Resource	Max. Del...	Total stocks	Requirements	Forecast	Dat Qt...	Chz Or...	Planning Date	Ping Time
✓	A5E49165495	S120 perf. CF V5.2 HF6 (MTS)	1010	PC	1050	WASSEM-PP_1010_001	47	4,000	120,000-		17.09.2020		17:29:11	
	SG223	SEMI223 PD	1010	PC		WDRILING_1010_001	68		5,000,000-		15.07.2020		10:41:19	
	SG225	SEMI225,PD,ExternalProcurement	1010	PC			74		5,000,000-		07.07.2020		11:50:37	
	SHER_MTS_BT...	Sherpa MTS Raw PD,Batch-Fifo,ProcureImpo	1010	PC			3		118,000-		03.08.2020		09:57:59	
	SHER_MTS_Q...	Sherpa MTS Raw PD, QualityManaged	1010	PC			3		118,000-		03.08.2020		09:57:59	
	SL30540FC011...	S120 perf. CF V5.2 HF6 Version 2	1010	PC	1050	WPACK01_1010_001	115		11,020,000- 18,201,...		07.07.2020		11:50:08	

**Detailed Scheduling Planning Board, Planning Version 000**

The screenshot shows a Gantt chart for resource planning. Resources include WSMT-PP (Surface Mount Te...), WTHI-PP (Through Hole Tec...), WCOAT-P (Coating), and WASSEM- (Product Assembly). The chart displays resource usage over time from 25.09.2020 to 27.09.2020.

**Product Chart**

Product	Product Des
A5E49165495	S120 perf. CF

**Product Stock**

Product	Stock
A5E49165495	105.8
SHER_MTS	105.8
SHER_MTS	249.5
SHER_MTS	4.0

**Selected Stock/Requirements Lists**

Light	Valid from date	Material	Plant	MRP Area	Material description
✓		SHER_MTS_BTCL	1010	1010	Sherpa MTS Raw PD,Batch-Fifo,ProcureImpo
✓		SHER_MTS_IPH1	1010	1010	Sherpa MTS Raw PD, QualityManaged
✓		A5E49165495	1050	1050	S120 perf. CF V5.2 HF6 (MTS)

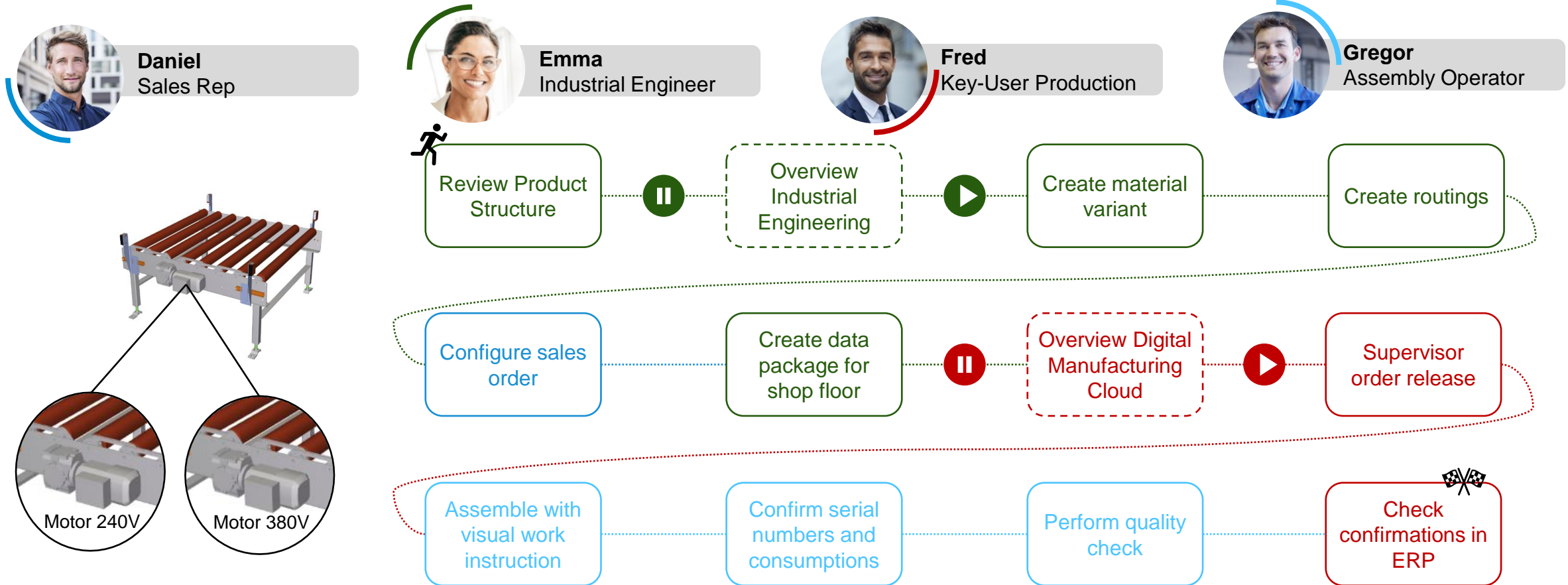
**Days**

The chart shows days on the y-axis (from -20 to 20) and weeks on the x-axis (CW 40 to CW 44). It displays various lines representing different resources and their usage over time.

**How will Conveyor work within SAP in the future?**

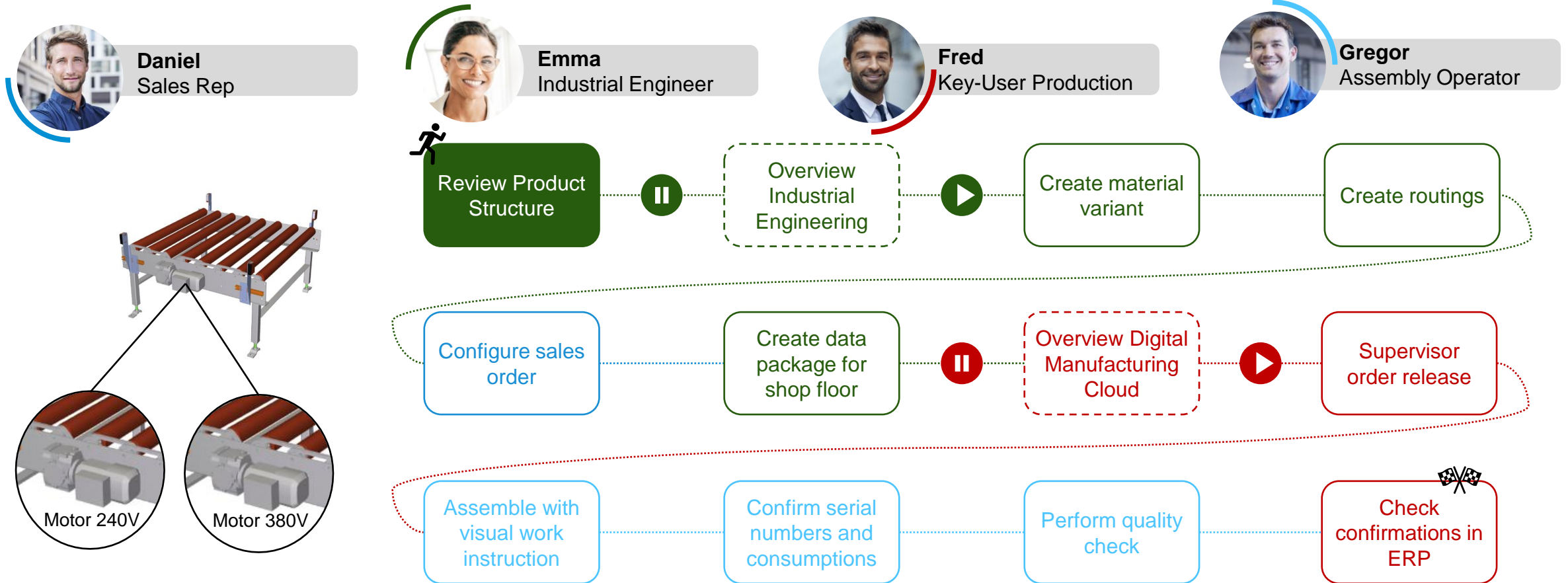


# Process Flow: Industrial Engineering & Execution on the shop floor

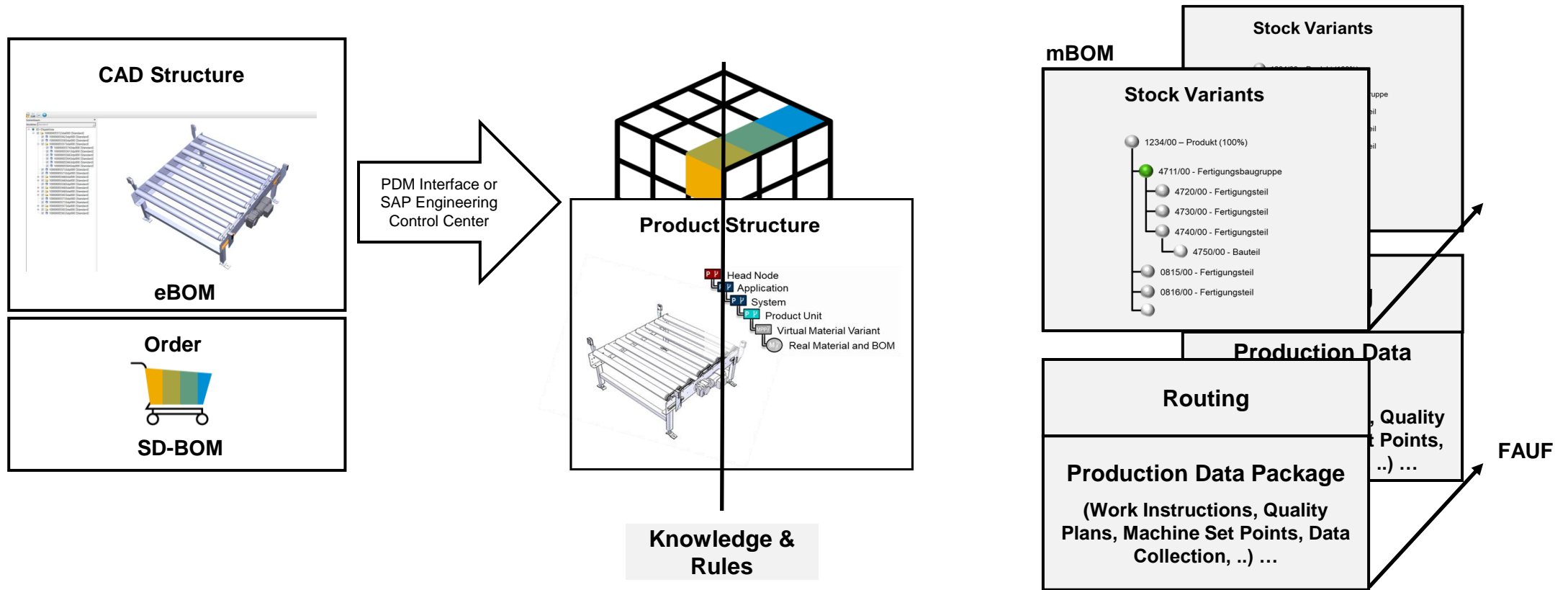




# Process Flow: Industrial Engineering & Execution on the shop floor

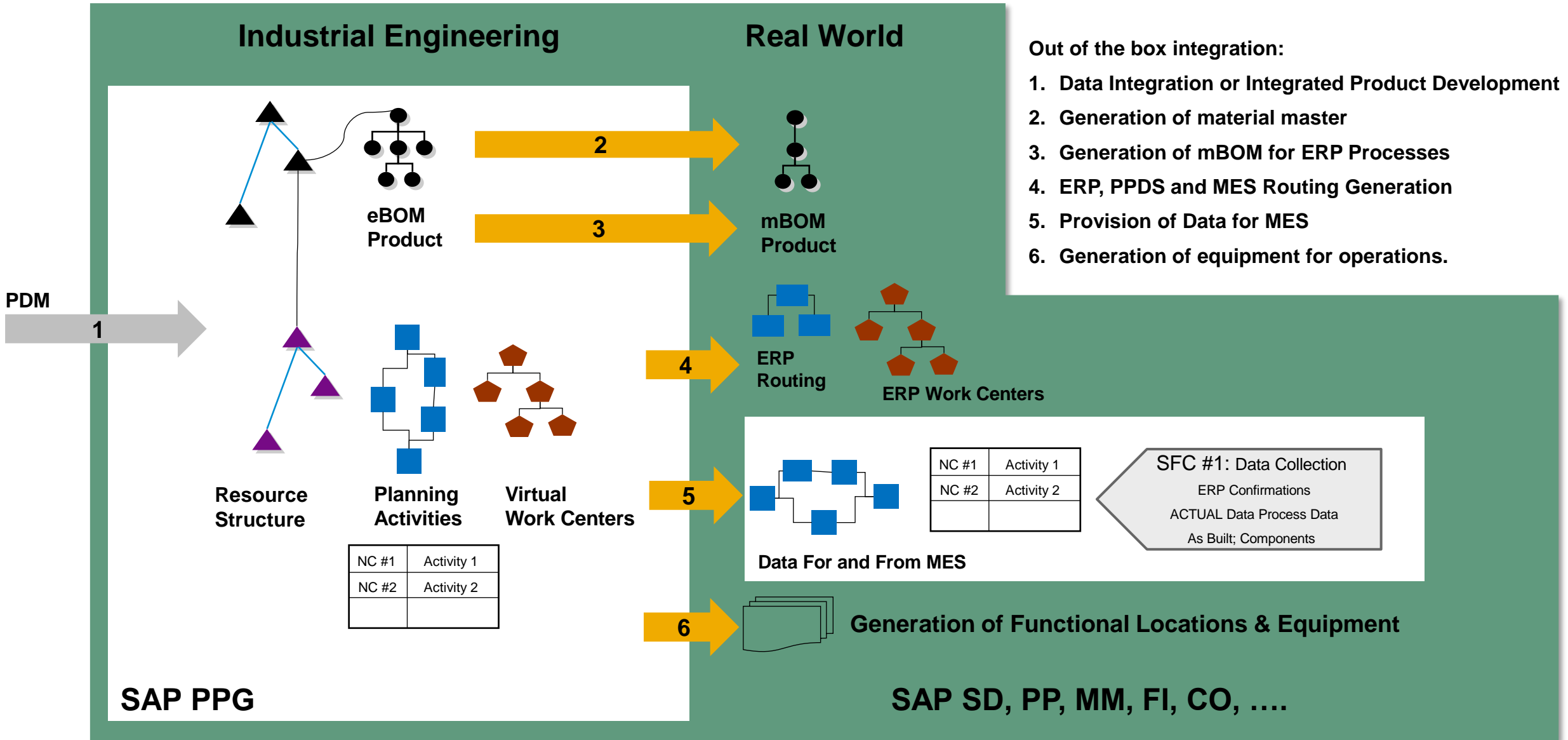


# Review released product structure



- The **CAD Structure** provides the geometrical relationships between the BOM elements and the 3D (SAP VE) viewing data.
- The **Product Structure** contains different views for eBOM & mBOM.
- The **Product Structure** supports the sales configuration (Webinar 1).
- In this webinar the **Product Structure** generates the **Classic BOM models**, routings and other documents/settings for planning and production.

# “Virtual” Industrial Engineering and “Real” ERP World in a single solution





# Review Product Structure

## Business Outcomes

“As an **Engineer**, I want to use the product structure so that downstream processes can be executed automatically.”



**Emma**  
Industrial Engineer

The screenshot displays the SAP product structure interface. On the left, a tree view shows the hierarchy of components for 'FCC EBOM Adelin'. The main area shows a 3D model of a conveyor belt assembly. Below the interface, a diagram illustrates the integration of different BOM types: eBOM (Engineering Bill of Materials) and mBOM (Manufacturing Bill of Materials) are shown in blue and green boxes, respectively. These feed into a 'Digital Product Model' (MBOM Logistic Structure Werk x) in a blue box, which then feeds into 'Mat-BOM, PS-BOM, SD-BOM' in a grey box.

## Process Highlights & Benefits



**Provide integrated Information of** product development disciplines including mechanical, electronic/electrical & software structures into one product definition



**Plan the missing production data** production aids, production documents, working instructions, .....



**Synchronize** product data, structures, access and documents across the extended enterprise

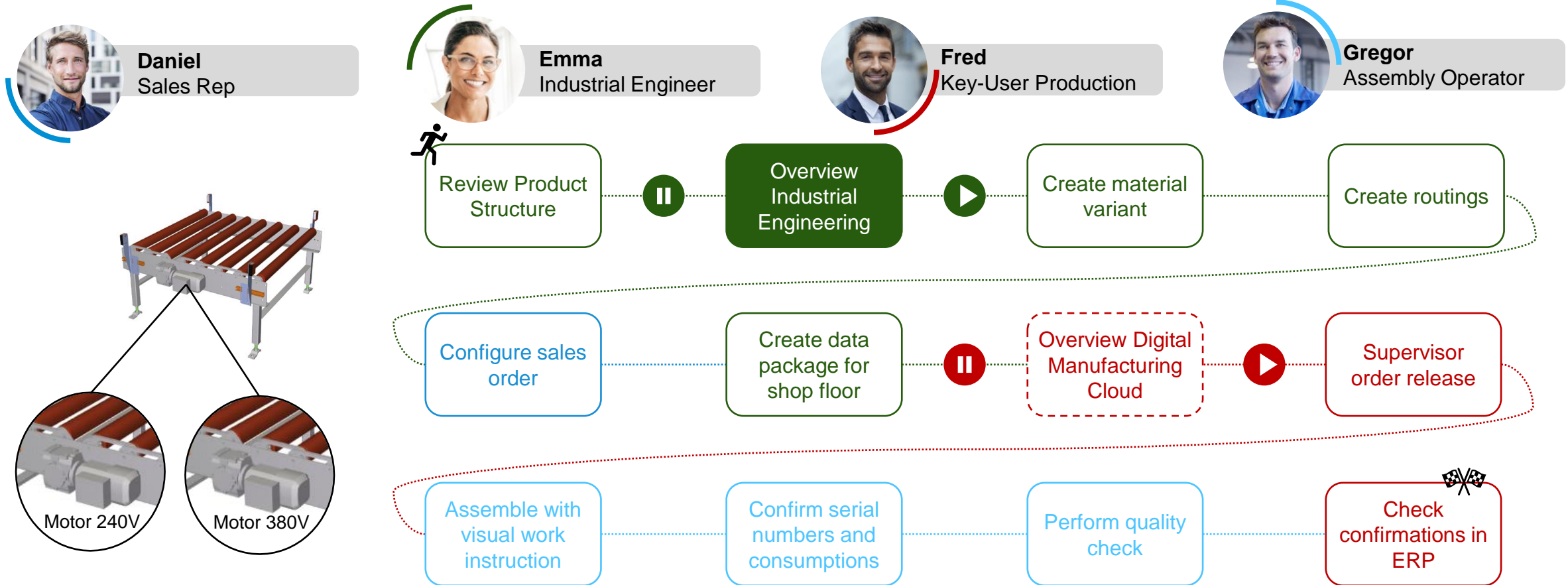


**Provide** digital twin foundation early in production phase

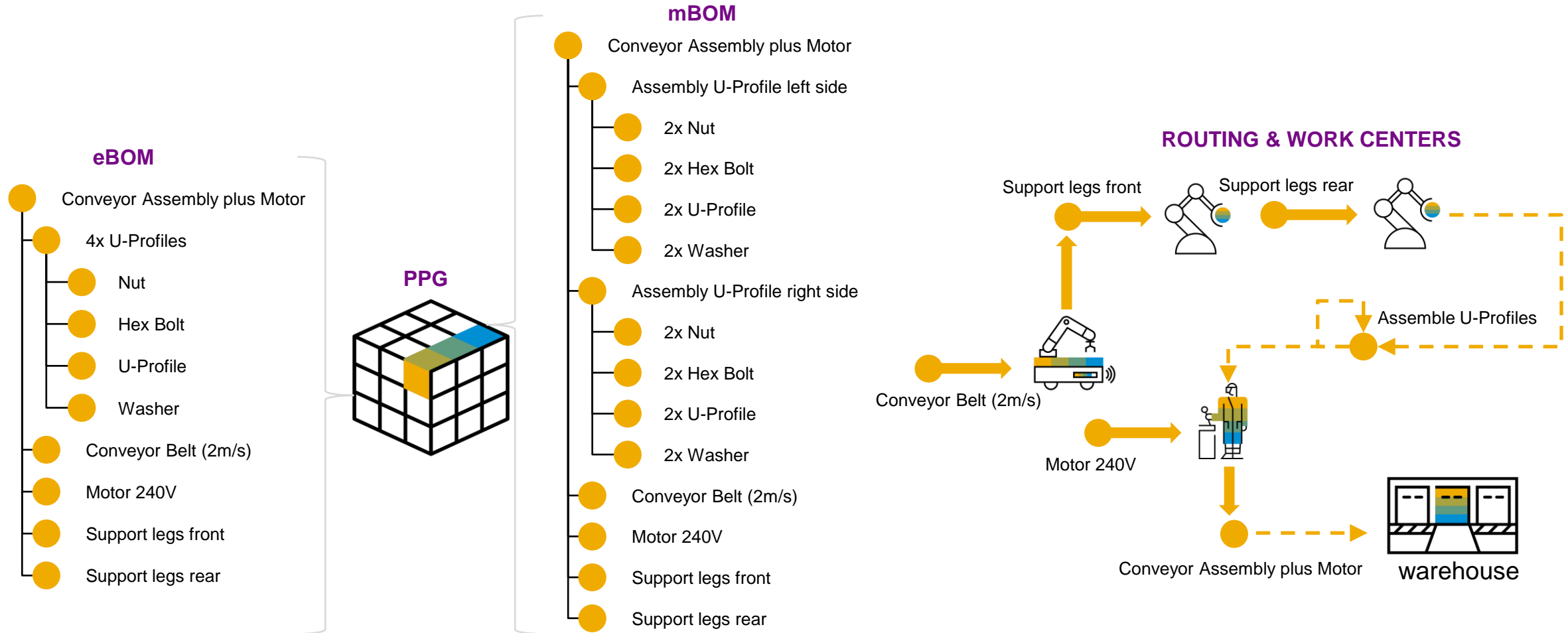


**Better decision-making** due to accurate definition of the product that combines design and business information

# Process Flow: Industrial Engineering & Execution on the Shop floor



# Engineering & Manufacturing View



- All parts of the mBOM are logistically relevant and can be used in SAP (SAP material ID required).
- The sequence is not defined in the mBOM but in the BOP (Bill of Processes).
- A complete mBOM always has a direct plant reference.

# Overview Industrial Engineering

## Business Outcomes

“As an **Industrial Engineer**, I want to complete the product data so that downstream processes can be executed automatically.”



**Emma**  
Industrial Engineer

The screenshot displays the SAP Industrial Engineering (IE) interface. On the left, a tree view shows the product structure for 'KW ANTRIEBSKETTEN'. The main area shows details for a work order (Vorgang) with the following data:

- Werk: 3000 Plant Dasseldorf
- Arbeitsplatz: HA\_M1
- Vorgang: 0010
- SteuSchlüssel: PP01
- Objektid: 0
- Kurztext Vg.: AG1 Endbearbeitung Buchse ohne Flächen
- VgBeschr.: VGO1 Endbearbeitung Buchse
- Basismenge: 1,000
- MengeEh. Vg.: ST
- Zähler: 1
- Nemer: 1
- Erholzeit: 0,000
- Erholzeit Eh.:
- KalkRelevanz:
- Kost.Rech.Kreis:

## Process Highlights & Benefits



**Unify** product development disciplines including mechanical, electronic/electrical & software structures into one product definition



**Manage** detailed mechatronic engineering data on a single platform



**Synchronize** product data, structures, access and documents across the extended enterprise



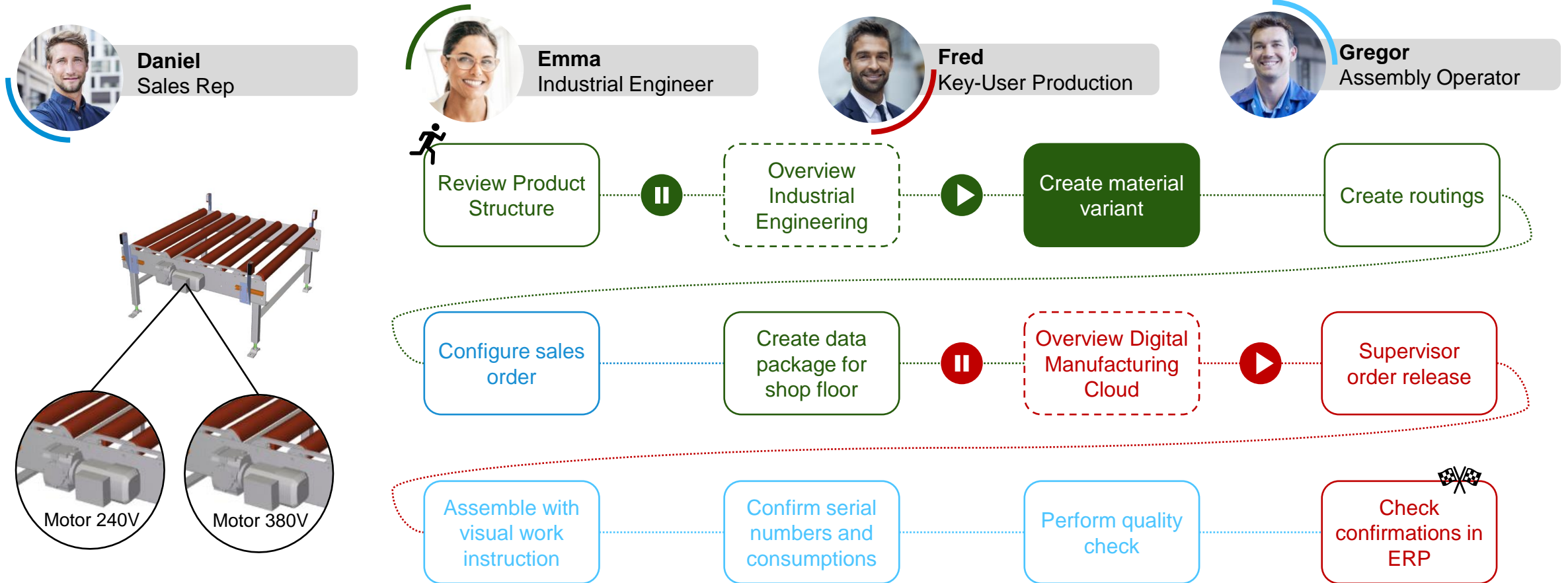
**Provide** digital twin foundation early in design phase



**Better decision-making** due to accurate definition of the product that combines design and business information



# Process Flow: Industrial Engineering & Execution on the shop floor



# Creating material variants

**Variant RF17**  
RF17\_EV01



Photoelectric barrier

no

Motor power

240V

Speed

2.00 m/s

Material number

XXXXX

**Variant RF18**  
RF18\_EV01



no

380V

3.00 m/s

ZZZZZ

In this demo, we will perform a configuration with material variant matching in the sales order (CTO) as well as the creation of material variants in the PPG.

As a result, we receive an invariant assembly with a substructure that can be manufactured.



# Create material variant

## Business Outcomes

“As an **Industrial Engineer**, I also want to be able to configure to enable efficient production with many variants.”



**Emma**  
Industrial Engineer

	Variant RF17 RF17_EV01	Variant RF18 RF18_EV01
Photoelectric barrier	no	no
Motor power	240V	380V
Speed	2.00 m/s	3.00 m/s
Material number	XXXXX	ZZZZZ

## Process Highlights & Benefits



**Generate** the different types of production BOMs and the stock variants



**Generate** routings for each variant or use configurable routings



**Provide** manufacturing data package for MES per variant

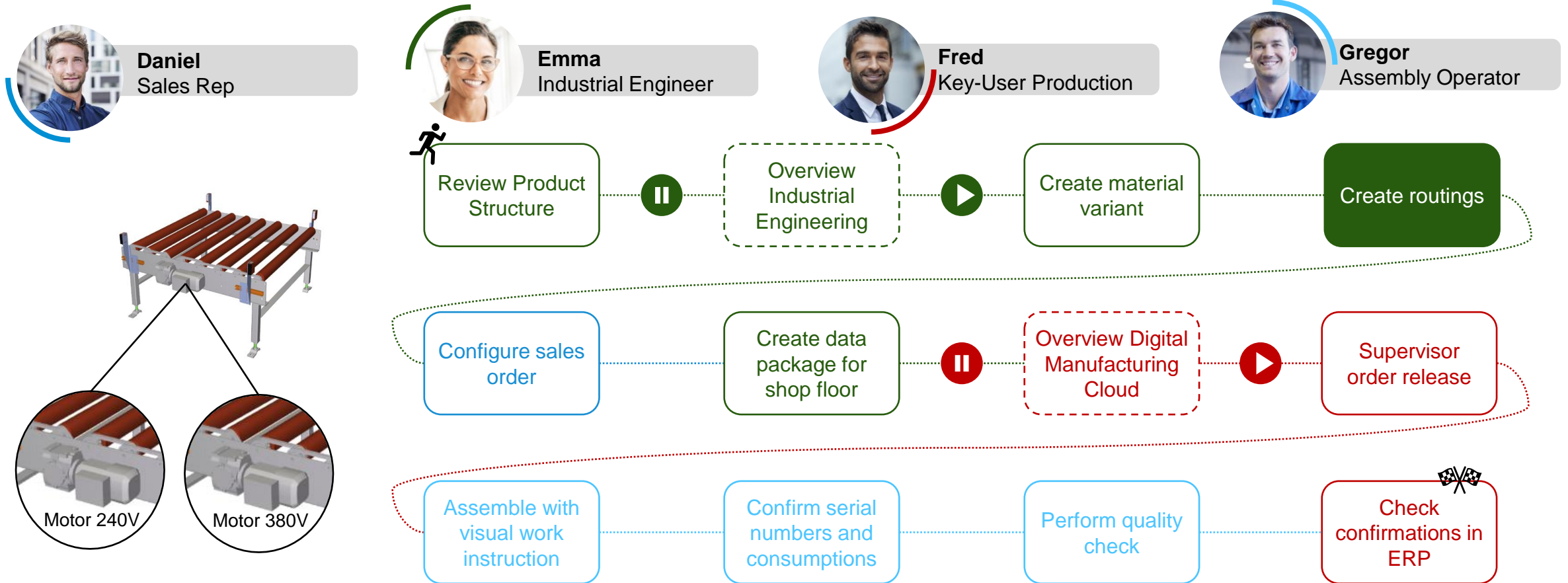


**Change** variants



**Find and reuse** variants in sales process

# Process Flow: Industrial Engineering & Execution on the shop floor





# Create routings

## Business Outcomes

“As an **Industrial Engineer**, I want to create plant-specific routings to accommodate the different production situations in the plants.”



**Emma**  
Industrial Engineer

## Process Highlights & Benefits



Use **virtual routings** in early product development phases



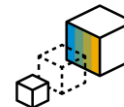
Create routings in one application



Integrated product and manufacturing view

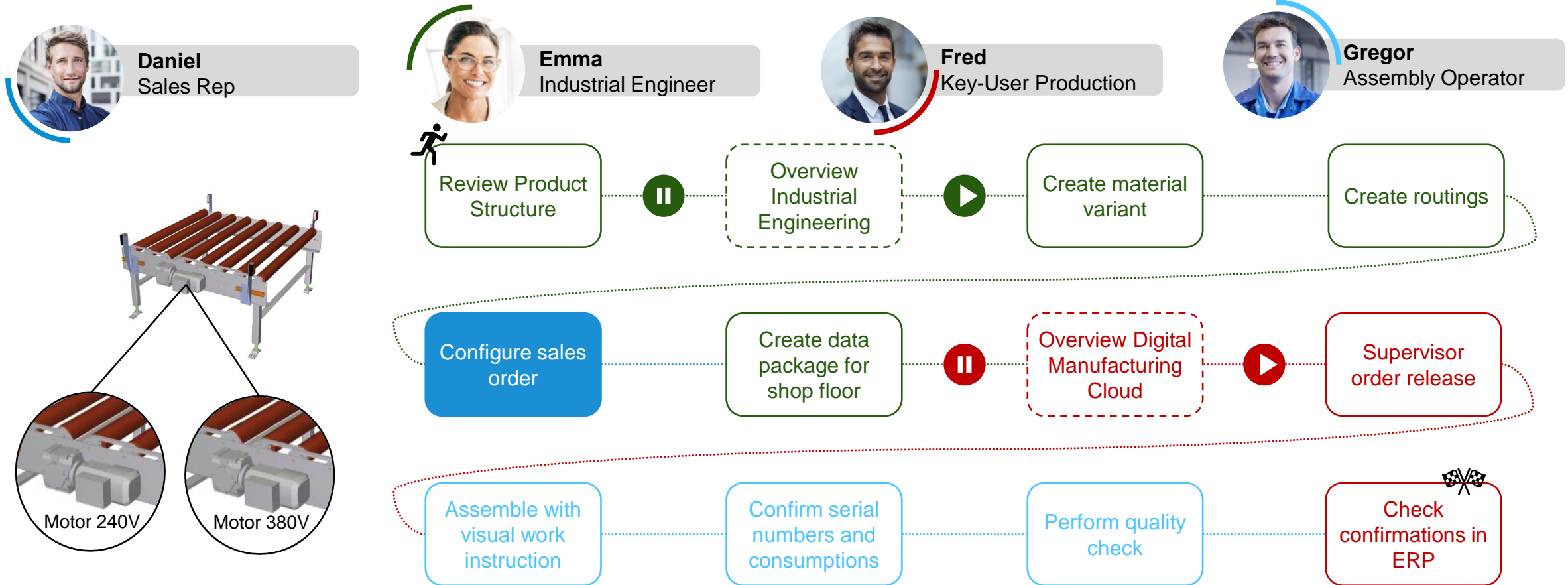


Manage variants



Use **3D models** for better planning processes

# Process Flow: Industrial Engineering & Execution on the shop floor



# Configure sales order

## Business Outcomes

“As a **Sales Rep**, I want to be supported in configuring a sales order so I can do an order confirmation fast and error free.”



**Daniel**  
Sales Rep

The screenshot shows the SAP Variant Configuration interface for 'Evoguard Double Seat Valve'. The top bar includes the SAP logo and 'Variant Configuration'. Below this, there are fields for 'Configuration Status' (Released), 'Net Value' (2,000.00 EUR), 'Sales Document' (0005030097 / 000001), 'Ship-To-Party' (Intermix GmbH (0001000082)), 'Order Quantity' (1,000 EA), and 'Date' (01.04.2022). The main area is divided into three sections: 'Configurable Items' (a table with columns for Component, Pos., Cat., and Qty), 'Default Group' (with dropdowns for Head Kit Cover Color, Head Unit Hood Color, Sequence Air Tube Assembly, and Type of Head), and 'D20\_EVOGUARD\_DBL\_SEAT\_VLV...' (with a 'Basic Information' panel showing Name, Material, Status, Process, and BOM Explosion details).

## Process Highlights & Benefits



**Reduce** creating sales order time



**Enhance the sales order configuration process with engineering knowledge to create error free sales order** without additional engineering support



**Start** manufacturing and procurement processes

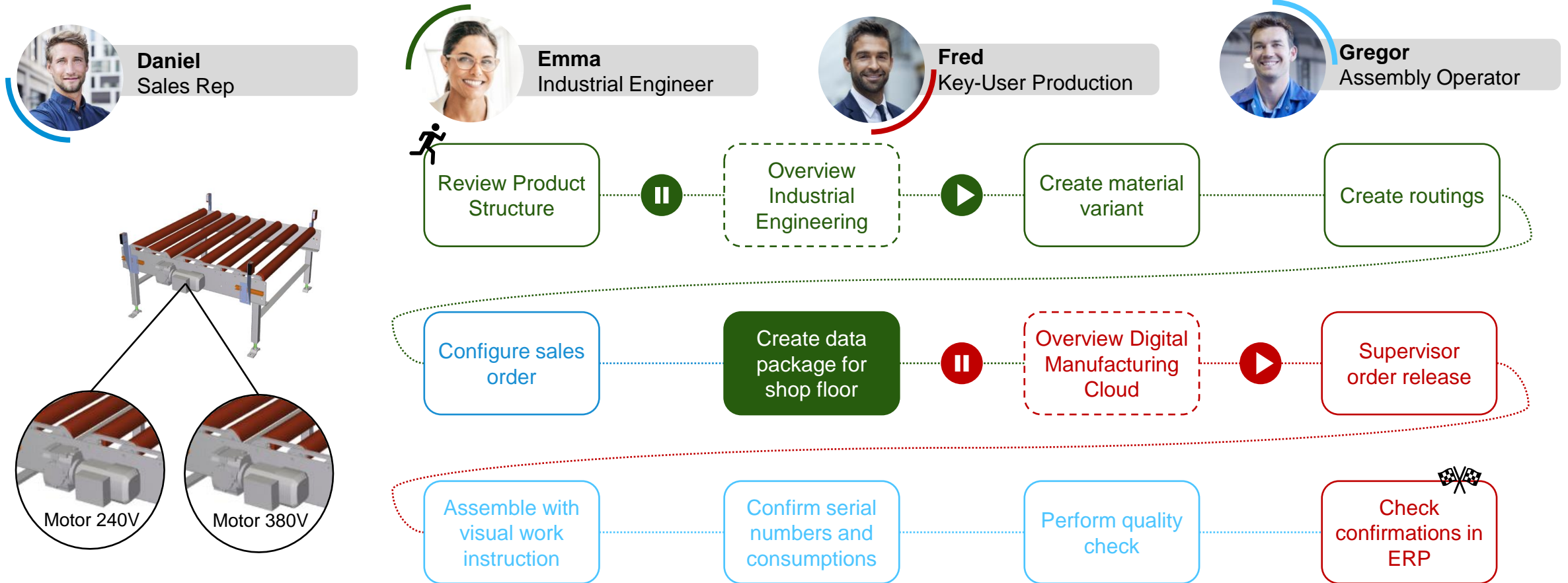


**Automated** document generation



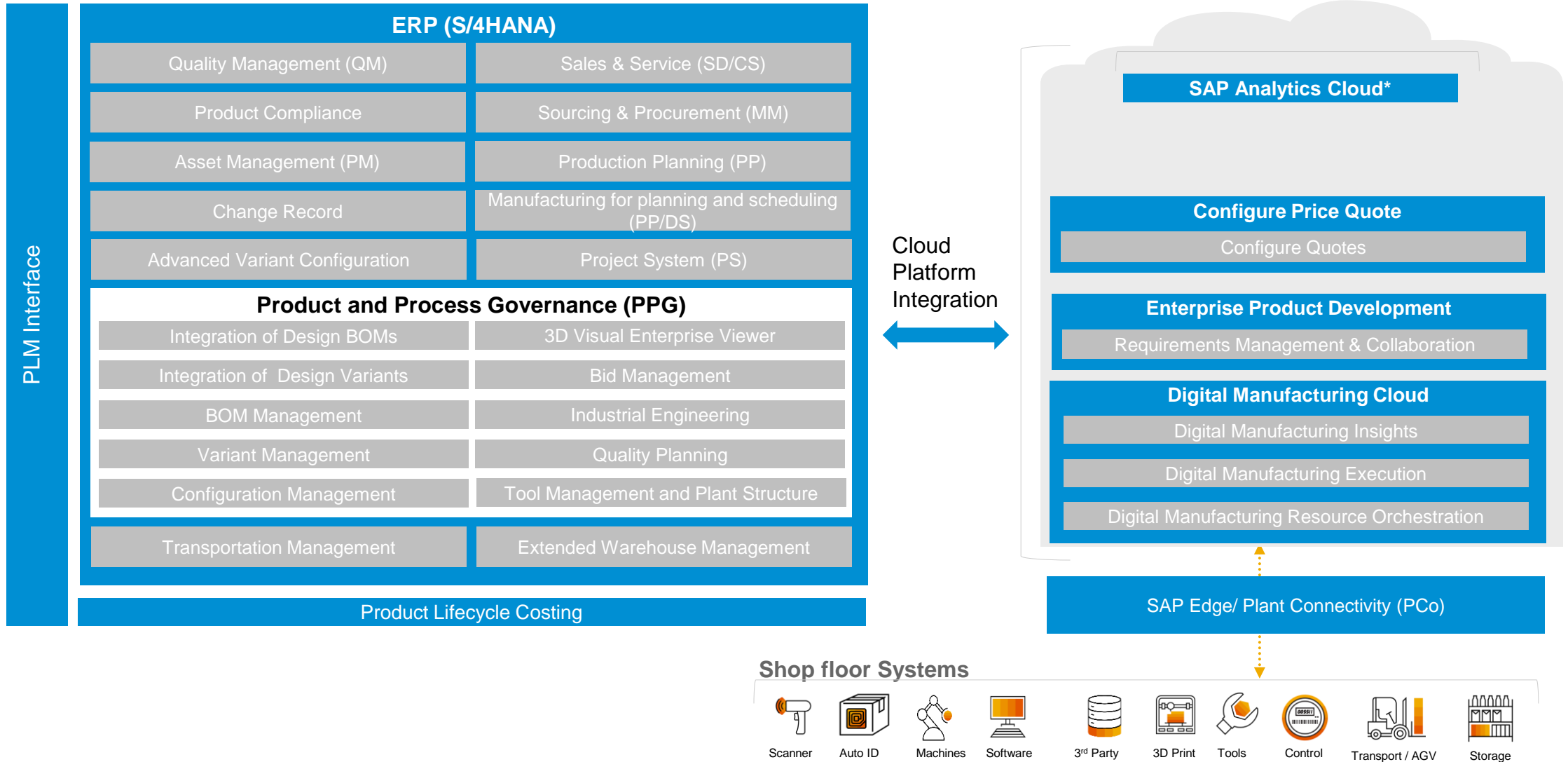
**Integrate** Front- and Backend Systems

# Process Flow: Industrial Engineering & Execution on the shop floor

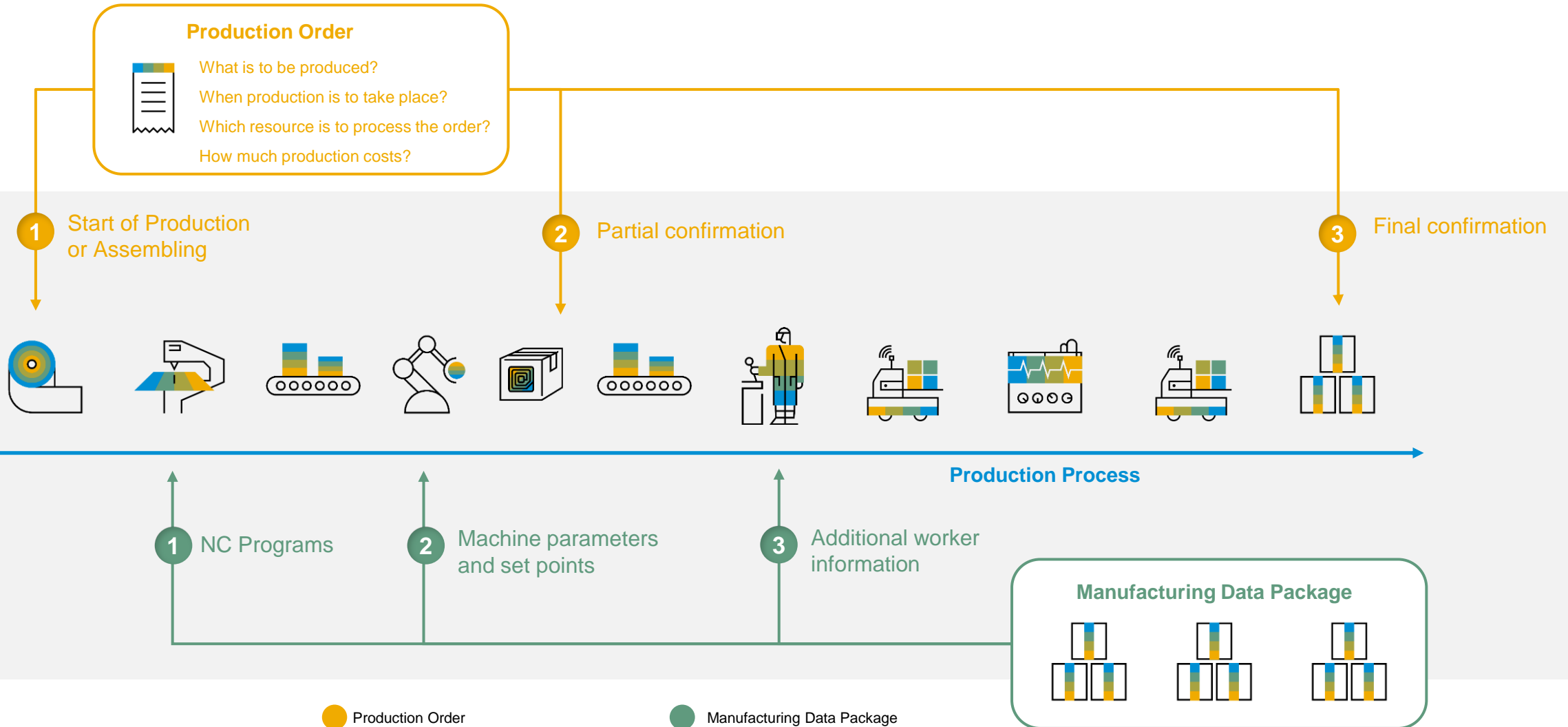




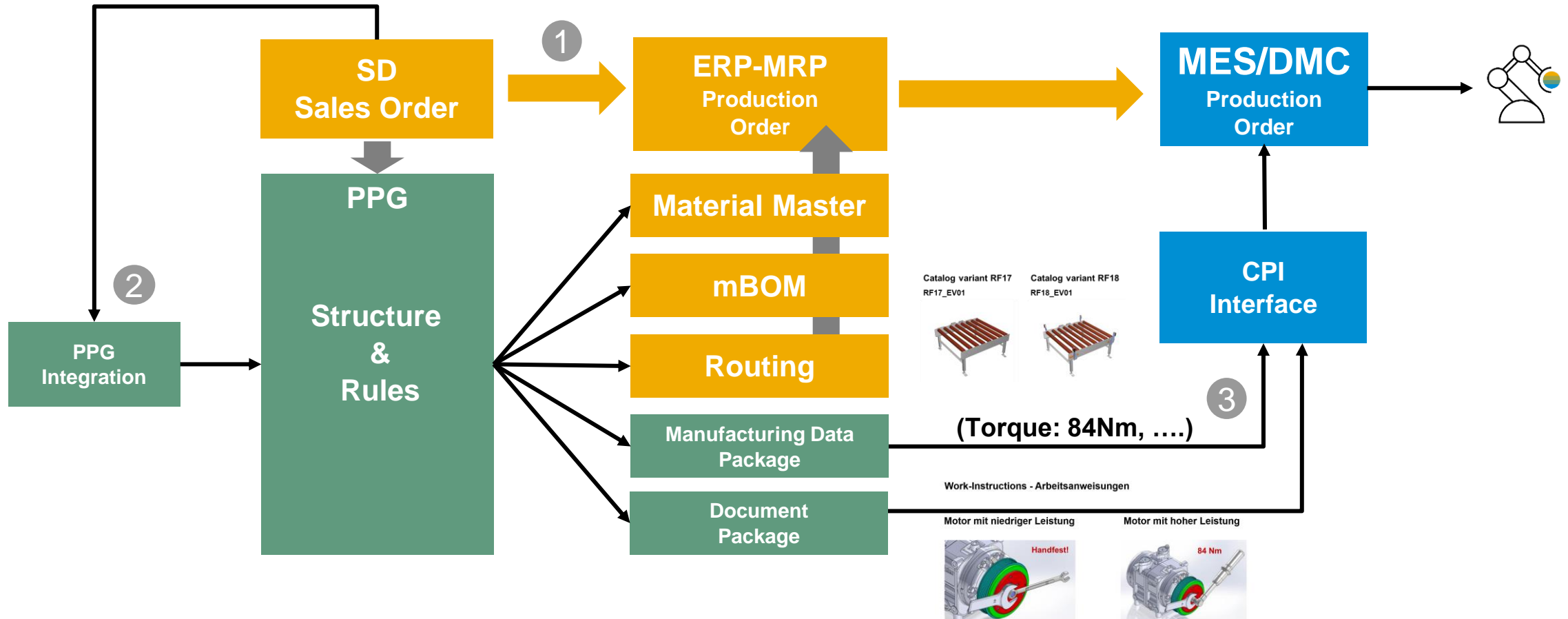
# Architecture ERP & MES



# Manufacturing Information Flow



# Automated Generation and integration of Manufacturing Data Data



1. The SD Order configures the product und generates a production order.
2. The PPG integration and data model assigns or generates the variant specific production data.
3. To provide more detailed data for each sales configuration to MES a manufacturing data package is generated.

# Create manufacturing data package for shop floor

## Business Outcomes

“As an **Industrial Engineer**, I want to supply the shop floor with all the relevant data so that production can be started and there are no queries.”



**Emma**  
Industrial Engineer

A	B	C	D	E	F	G
AUTOID	KUNDENR	ARTIKELNR	BEZEICHNUNG	KNDARTIKELNR	KNDBESTN	SYSTEMNR
386	205	275148 983000.11.99		9010096100		983000.00.99

A	B	C	D	E	F	G	H
AUTOID	KUNDENR	ARTIKELNR	POSITION	KOMPONENTE	MENGE	ME	BESCHREIBUNG
236	219	1571 983000.11.99	10	901009.61.00.4600		1	
237	220	1571 983000.11.99	1010	983000.30.99		1	
238	221	1571 983000.11.99	1020	983000.32.99		1	
239	222	1571 983000.11.99	1030	595082.00.00.900		2	

A	B	C	D	E	F	G
AUTOID	KUNDENR	ARTIKELNR	POSITION	ARBGNR	AG_FOLGE	BESCHREIBUNG
169	95	275148 983000.11.99	10	31269		0 ABLAENGEN AUF MASS (OBJEKTFERTIGUNG)

## Process Highlights & Benefits



The **automation level increases** if the shop floor is provided not only with a variant specific routing and mBOM but also with all other instructions in a single data package.



**Change management is simplified** if only the data package needs to be edited. Thus new products can be launched faster.

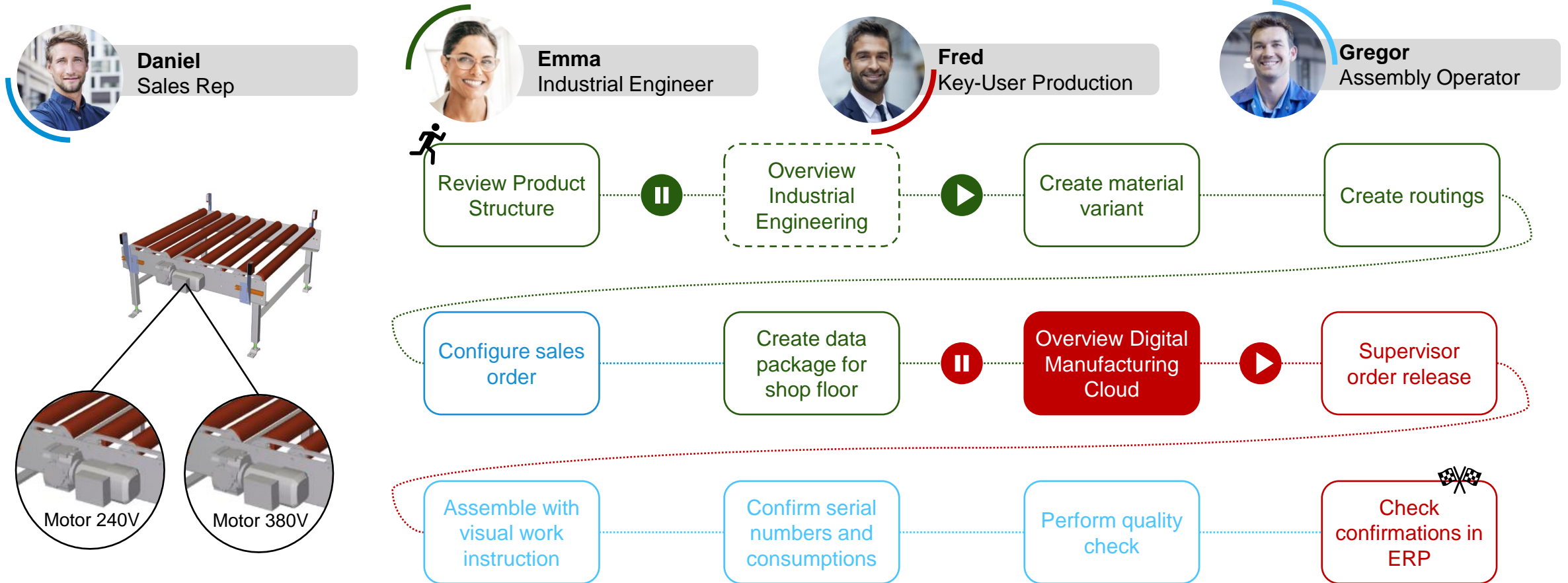


The ability of the product structure to **configure the manufacturing data package automatically** allows to fully leverage the flexibility of the robots.



The **complexity** in the manufacturing execution system and customization effort is **reduced**.

# Process Flow: Industrial Engineering & Execution on the shop floor





# SAP Digital Manufacturing Cloud – Launchpad

SYNTAX Home Plant: 2000 (Modellfabrik, SAP Webinar)

My Home Manufacturing Insights Manufacturing Execution Personalized Dashboards, Reports, and KPIs Manufacturing Master Data Management Enterprise Hierarchy Manufacturing Automation Manufacturing Insights Configuration AI/ML Scena

**Favorit**

- Manage Orders
- Montage (Montage Pod)
- Manage Alerts
- Product History
- POD Designer

**Insights**

- Global Insights
- Plant Insights
- KPI Analytics
- OEE Insights
- Manage Alerts

**Execution**

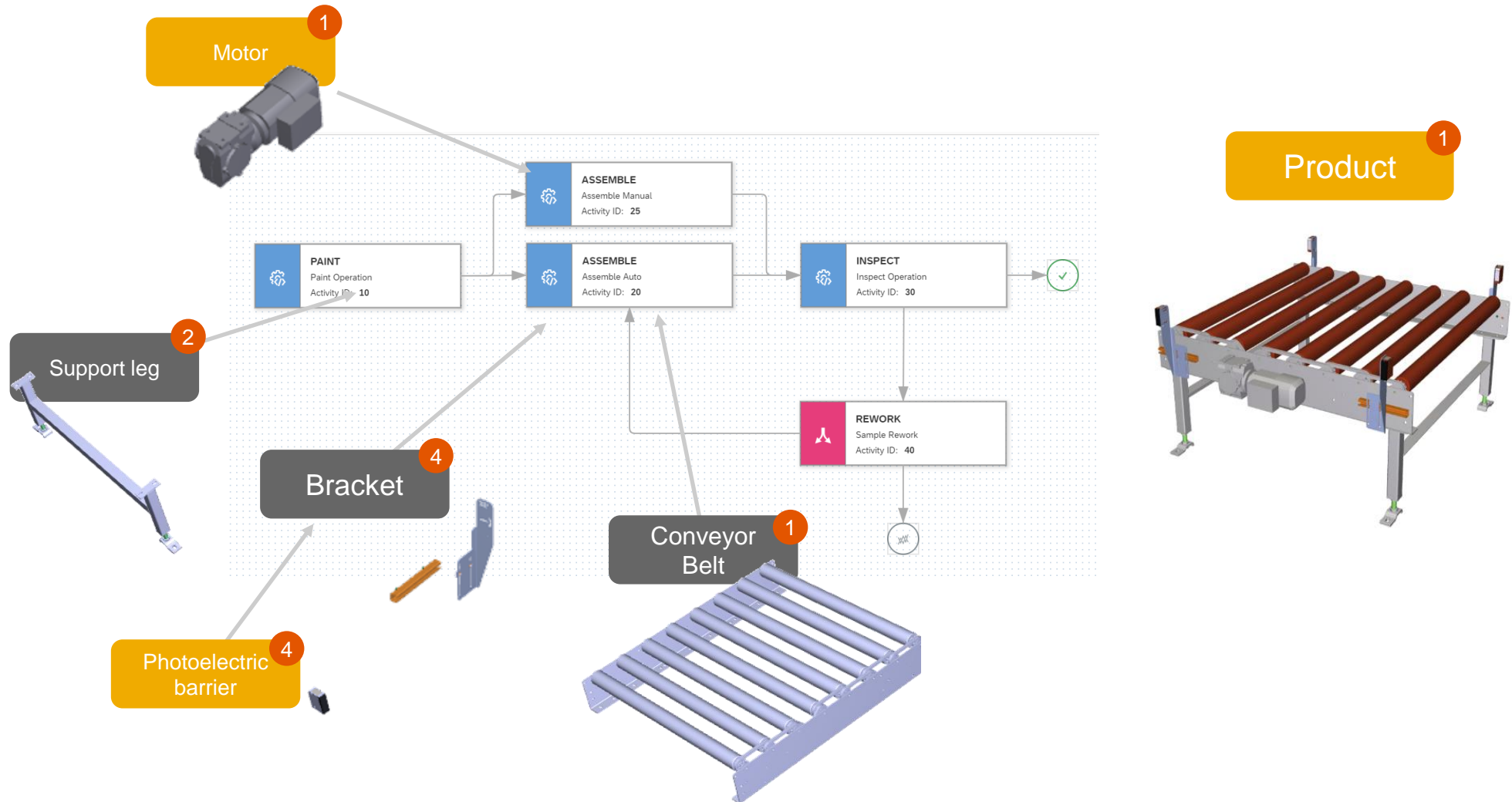
- Dispatching and Monitoring (Old Version)
- Dispatching and Monitoring 2.0
- Schedule Labor
- View Labor Schedule
- Schedule Tools
- Work Center POD (Default)
- Order POD (Default)
- Operation Activity POD (Default)
- OEE POD
- Post-Production Reporting POD (Default)
- Manage Holds
- Manage Resource Assignments
- Load Resources with Components
- Manage Floor Stocks
- Manage Staging
- Manage Orders
- Manage Cancellations
- Manage Tool Assignments

**Digital Manufacturing Cloud** is an MES solution.

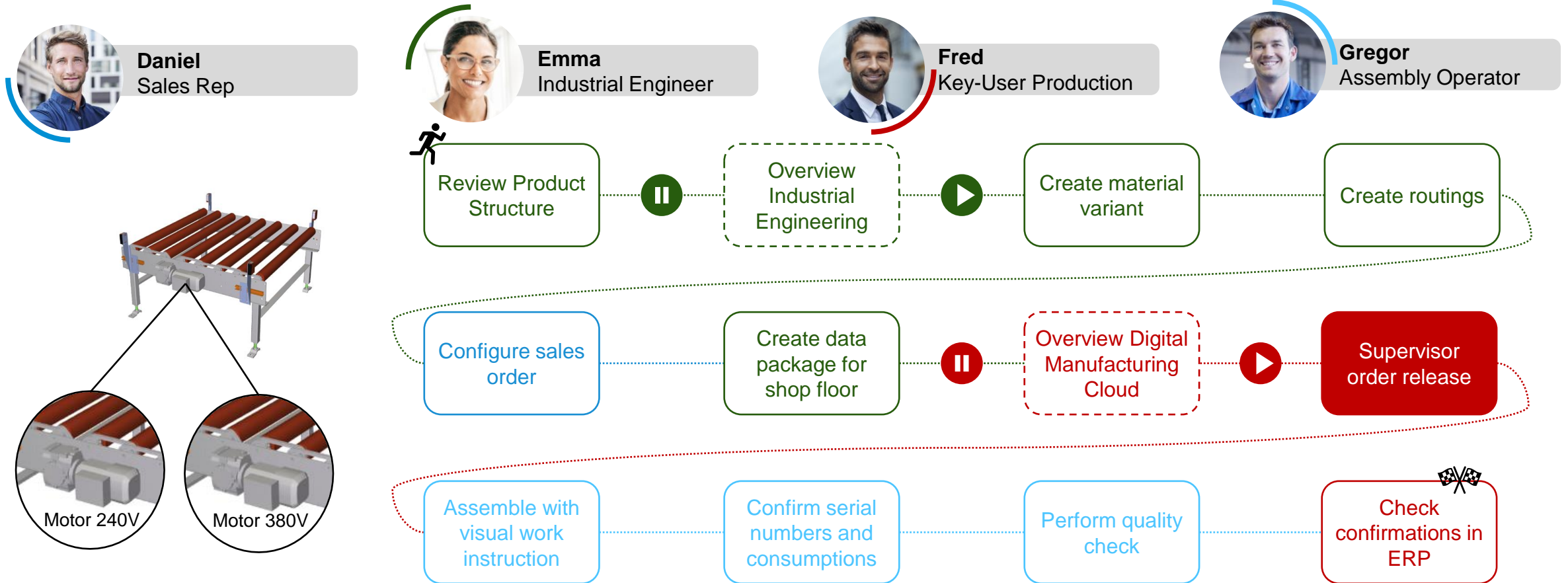
The MES solution covers manufacturing execution, analytics and scheduling. It guides the worker, integrates with machines and provides full traceability of the production process.



# Flexibility in the SFC Definition enables the exact Genealogy



# Process Flow: Industrial Engineering & Execution on the shop floor



# Supervisor order release

Orders

10001 [X] [Q] Release Status: [v] Execution Status: [v] Planned Start Date: [MMM d, y, h:mm:ss a] [📅] Planned Completion Date: [MMM d, y, h:mm:ss a] [📅] Material: [🔍] Customer: [ ] Customer Order: [ ]

Go Clear Adapt Filters (1)

Items (7)

Order ID	Material / Version	Material Description	Release Status	Execution Status	Order Quantity	BOM / Version	Planned Start Date/Planned Completion Date	Quantity Progress Completed	UOM	Batch
1000129	209570 / 1	Roller conveyor	Releasable	Not In Execution	1 EA	209570_RF_240V / 1	Mar 29, 2022	0 of 1	EA	>
1000135	209570 / 1	Roller conveyor	Released	Active	1 EA	209570_RF_240V / 1	Mar 31, 2022 – Apr 1, 2022	0 of 1	EA	>
1000131	209570 / 1	Roller conveyor	Released	Active	1 EA	209570_RF_240V / 1	Mar 29, 2022	0 of 1	EA	>
1000132	209570 / 1	Roller conveyor	Released	Hold	1 EA	209570_RF_240V / 1	Mar 29, 2022	0 of 1	EA	>
1000133	209570 / 1	Roller conveyor	Released	Active	1 EA	209570_RF_240V / 1	Mar 29, 2022	0 of 1	EA	>
1000130	209570 / 1	Roller conveyor	Released	Not In Execution	1 EA	209570_RF_240V / 1	Mar 29, 2022	0 of 1	EA	>
1000143	209570 / 1	Roller conveyor	Released	Not In Execution	1 EA	209570_RF_240V / 1	Mar 29, 2022	0 of 1	EA	>

### Release Order

1000129

Material: 209570 / 1 (Roller conveyor)

Order Information

Production Type: SFC-Based

ERP Order: Yes

BOM / Version: 209570\_RF\_240V / 1

Routing / Version: 209570\_ROLLER / 1

Priority: 500

Planned Material / Version: 209570 / 1

Build Quantity: 1 EA

Available Quantity to Release: 1 EA

Quantity to Release: 1 EA

Batch:

Planned Start: Mar 29, 2022, 4:02:41 PM

Planned Completion: Mar 29, 2022, 4:03:41 PM

Scheduled Start: Mar 29, 2022, 5:00:00 PM

Scheduled Completion: Apr 1, 2022, 9:15:00 PM

Release Edit Copy Hold Release Close

Release Cancel

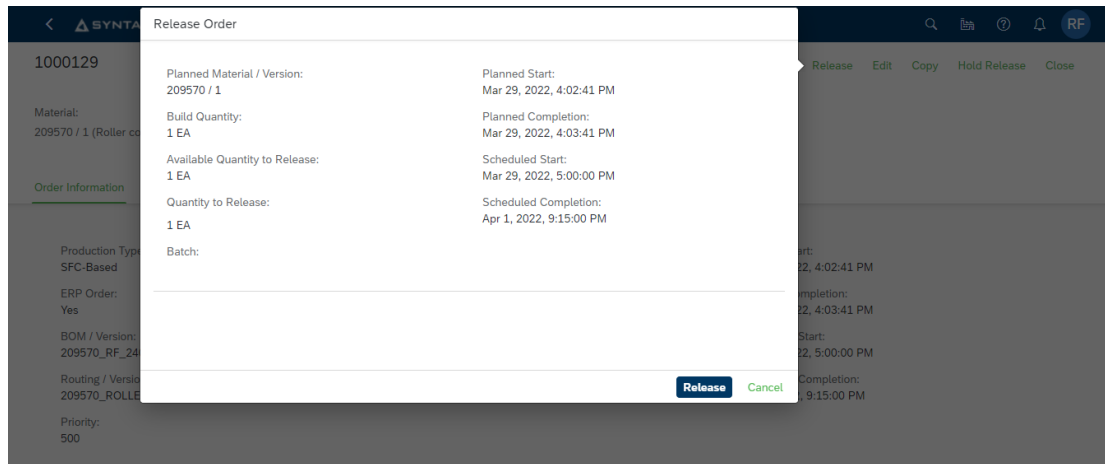
# Supervisor order release

## Business Outcomes

“As **Key-User Production**, I want to decide which order should start so that I can influence the priority.”



**Fred**  
Key-User Production



## Process Highlights



**Release** an order to the shop floor



**Review** all relevant Order details before release



**React** just in time changes e.g. Priority



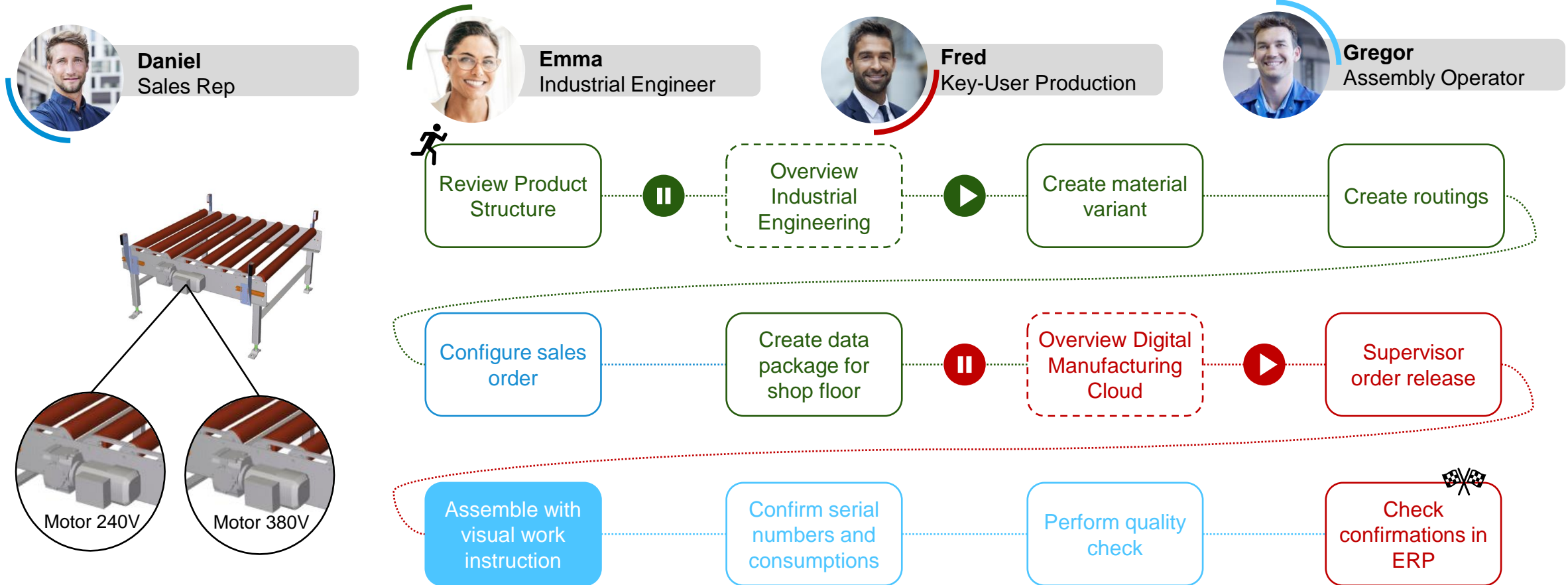
**Visualize** Bom, Routing, Status and Yield/Scrap Progress view



**Full** integrated interface with ECC, S/4HANA and S/4HANA Cloud



# Process Flow: Industrial Engineering & Execution on the shop floor



# Assemble with visual work instruction

SYNTAX MONTAGE Plant: 2000 ( Modellfabrik, SAP Webinar )

Main Page / Arbeitsplatz 21:41:13

Start Operation Sign off Operation Complete Operation Create Notification

### Operation Activity List (1)

Operation Activity/Step ID	Activity Description	Status Icon	Qty	Action
0010/10	Assembly instruction (69Nm)	◆	1	Start

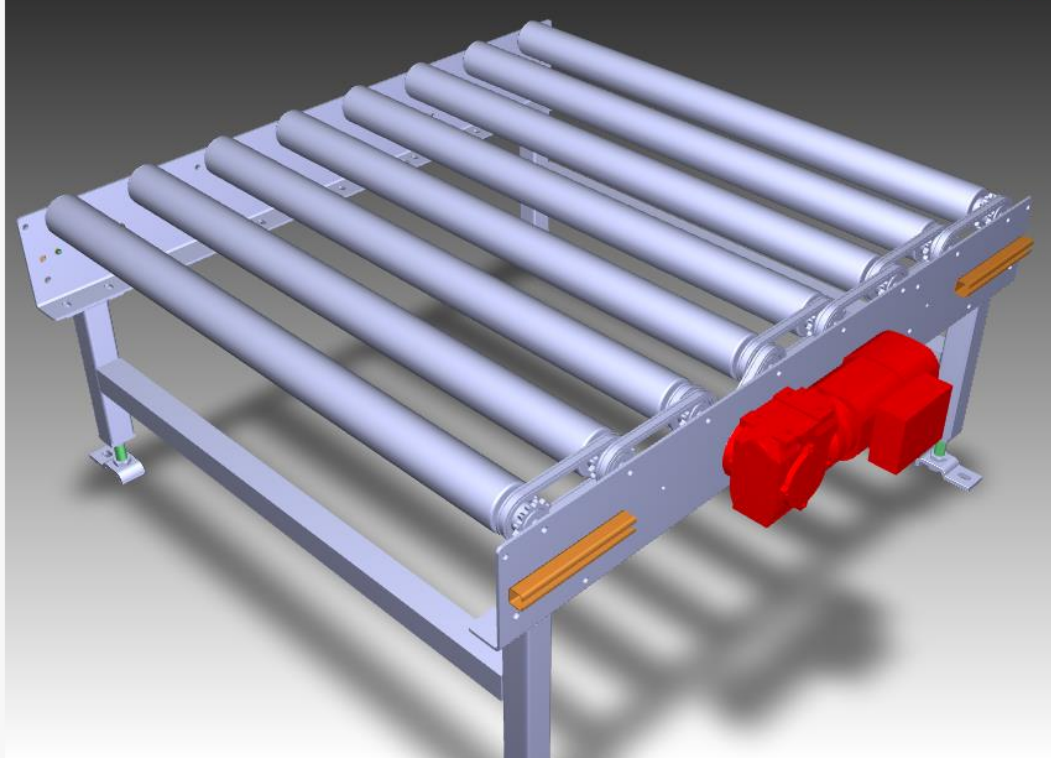
Instructions Data Nonconform... Features Components

### Component List

Assembly Sequence	Component/Version	Description	Required Quantity	Remaining Quantity	Action
<b>Not Assembled</b>					
30	209576 / 1	Engine 240V	1	1	Assemble
40	209617 / 1	Support	2	2	Assemble
<b>Assembled</b>					
10	209575 / 1	Assembly group bent sheet metal	4	0	Remove
20	209578 / 1	Conveyor 2m/s	1	0	Remove

### Work Instruction ROLLENFOERDERER\_MODELL\_240V/1, Mode: Independent

3D Object



# Assemble with visual work instruction

## Business Outcomes

“As an **Assembly Operator**, I want to see which components I have to use and how many remain so that I am always informed.”



**Gregor**  
Assembly Operator

The screenshot displays the SAP Montage interface. At the top, there are navigation buttons: 'Start Operation', 'Sign off Operation', 'Complete Operation', and 'Create Notification'. Below this is the 'Operation Activity List (1)' table:

Operation Activity/Step ID	Activity Description	Status Icon	Qty	Action
001010	Assembly instruction (69Nm)		1	Start

Below the activity list is the 'Component List' table:

Assembly Sequence	Component/Version	Description	Required Quantity	Remaining Quantity	Action
<b>Not Assembled</b>					
30	209976 / 1	Engine 240V	1	1	Assemble
40	209617 / 1	Support	2	2	Assemble
<b>Assembled</b>					
10	209575 / 1	Assembly group bent sheet metal	4	0	Remove
20	209578 / 1	Conveyor 2m/s	1	0	Remove

To the right of the component list is a 3D model of a roller conveyor assembly, with a red component highlighted.

## Process Highlights



**List** all components based on CTO/MTS BoM



**Use** text based work instructions and visual work instructions like images, drawings or 3D models



**Choose** the Assembly Mode: Choose Sequence and Choose Auto Next

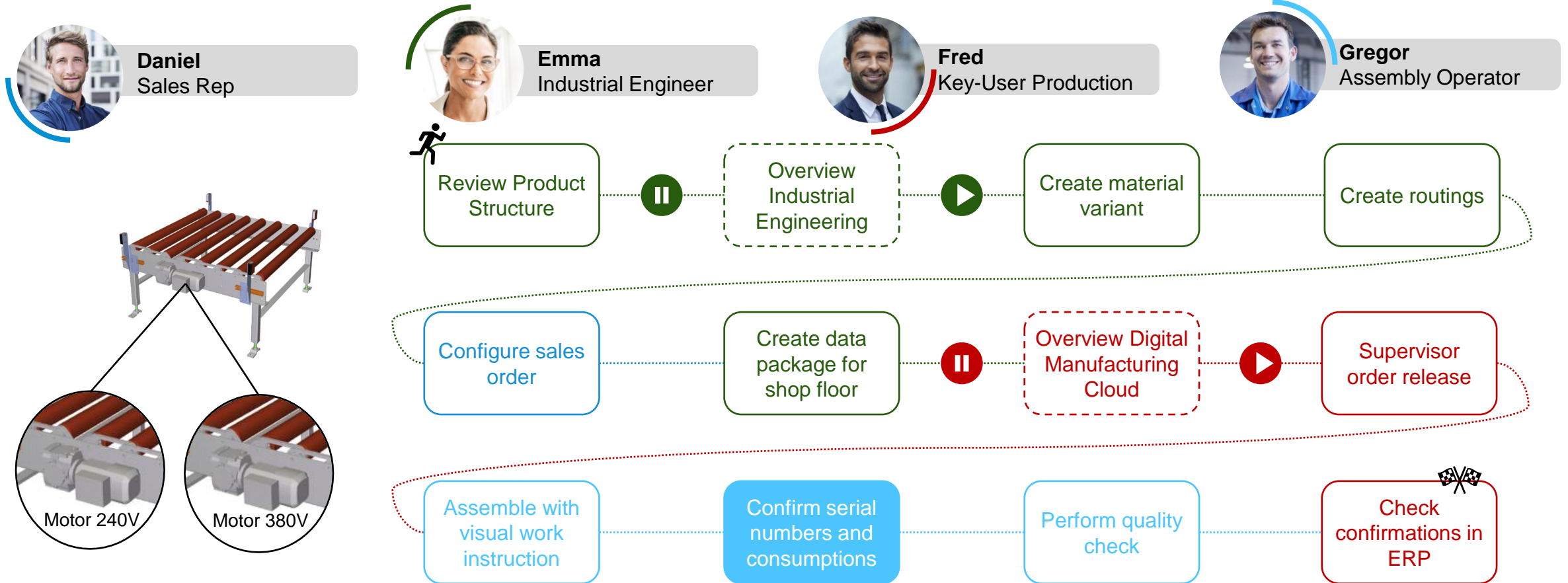


**Allow** Skipping Components



**Executing** Discrete or Time-Based Assembly

# Process Flow: Industrial Engineering & Execution on the shop floor



# Confirm serial numbers and consumptions

The screenshot displays the SAP Montage interface for a plant (2000) during an assembly operation. A modal window titled 'Komponentenliste' is open, showing details for an 'Engine 240V' component. The modal includes fields for Component Name (209576), Version (1), Description (Engine 240V), and Quantity (1). An 'Assembly Data' section contains a SERIALNUMBER field with the value 51279745. An 'Add' button is visible at the bottom right of the modal. The background shows the 'Operation Activity List' and a 'Component List' table.

Operation Activity List (1)

Operation Activity/Step ID	Activity Description
0010/10	Assembly instruction (69Nm)

Component List

Assembly Sequence	Component/Version	Description	Required Quantity
<b>Not Assembled</b>			
30	209576 / 1	Engine 240V	1
40	209617 / 1	Support	2
<b>Assembled</b>			
10	209575 / 1	Assembly group bent sheet metal	4
20	209578 / 1	Conveyor 2m/s	1



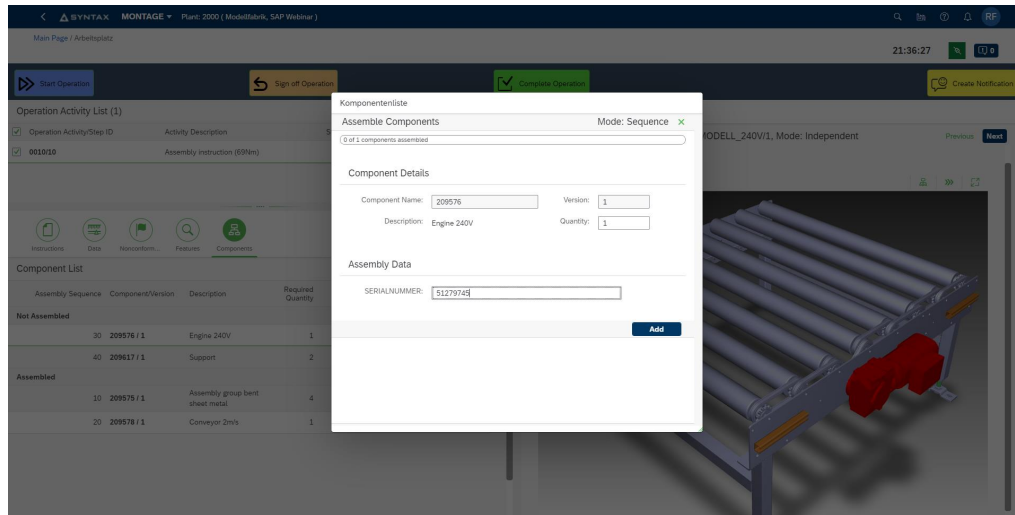
# Confirm serial numbers and consumptions

## Business Outcomes

“As an **Assembly Operator**, I want to confirm my material consumption so that I know how much I still have.”



**Gregor**  
Assembly Operator



## Process Highlights



**Assemble** components based on CTO/MTS BoM



**Validation** of Serial # or Vendor Data



**User guidance** and Assembly steps

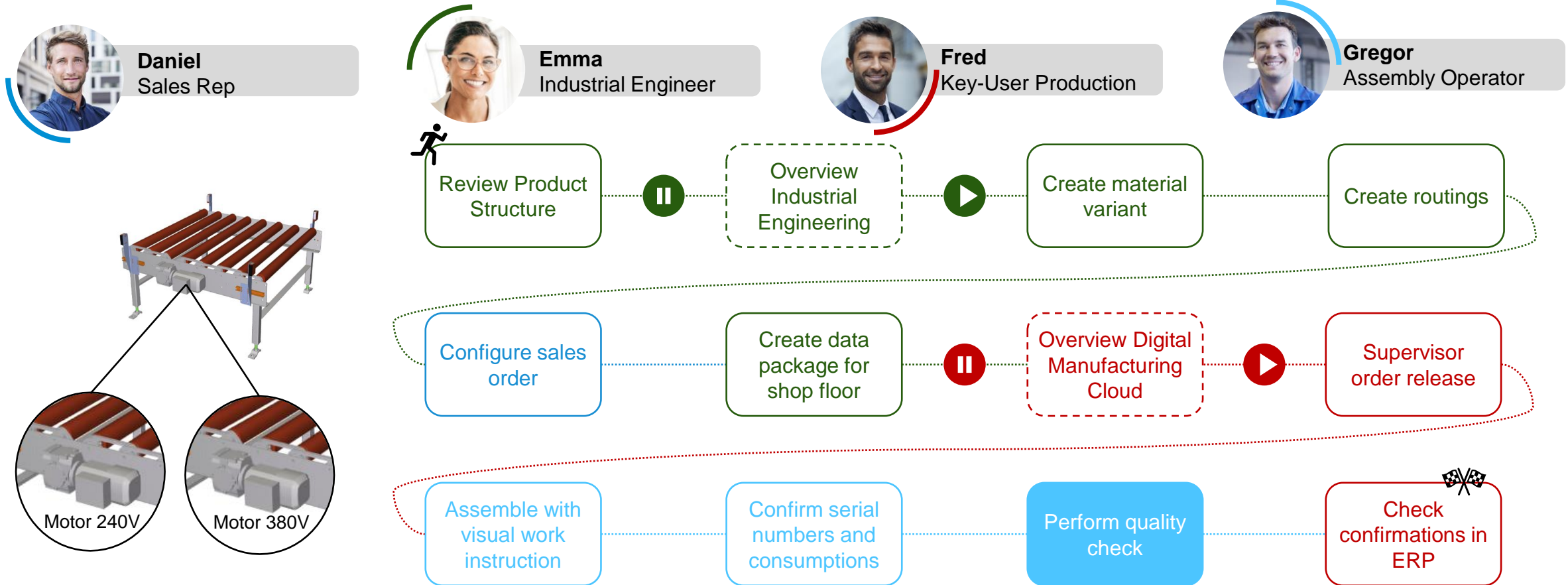


**Enrichment** Order-Specific Objects (Tolerance, Assembly Data, etc.)



**Executing** Discrete or Time-Based Assembly

# Process Flow: Industrial Engineering & Execution on the shop floor



▶▶ Start Operation

↶ Sign off Operation

☑ Complete Operation

😊 Create Notification

Operation Activity List (1)

Operation Activity/Step ID	Activity Description	Status Icon	Qty	Action
0010/10	Assembly instruction (69Nm)	■	1	Complete

- Instructions
- Data
- Nonconform...
- Features
- Components**

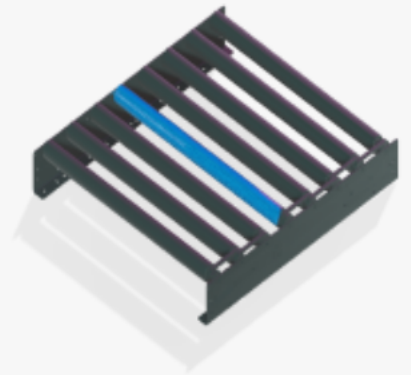
Component List

Component/Version	Description	Required Quantity	Remaining Quantity	Action
<b>Not Assembled</b>				
209575 / 1	Assembly group bent sheet metal	4	4	Assemble
209578 / 1	Conveyor 2m/s	1	1	Assemble
209576 / 1	Engine 240V	1	1	Assemble
209617 / 1	Support	2	2	Assemble

- Instructions
- Vis. Inspector**
- Assembly st...

2000384

Resume 🔍 136% 🔍 Source



✖ SFC 2000384 is likely nonconformant. ✖

Inspection Results

NC Code	Prob...	Logg...
FEHLER_ENDABM	Fehler Endabnahm	88% <span>Log NC</span>

# Perform quality check

## Business Outcomes

“As an **Assembly Operator**, I want to perform a quality check so that I know where I have to perform rework .”



**Gregor**  
Assembly Operator

The screenshot displays the SAP MONTAGE interface for an assembly operation. At the top, there are navigation buttons: 'Start Operation', 'Sign off Operation', 'Complete Operation', and 'Create Notification'. Below this is the 'Operation Activity List (1)' table:

Operation Activity/Step ID	Activity Description	Status Icon	Qty	Action
0010/10	Assembly instruction (69Nm)	Green square	1	Complete

Below the table is a 'Component List' table:

Component/Version	Description	Required Quantity	Remaining Quantity	Action
209575 / 1	Assembly group bent sheet metal	4	4	Assemble
209578 / 1	Conveyor 2m/s	1	1	Assemble
209576 / 1	Engine 240V	1	1	Assemble
209617 / 1	Support	2	2	Assemble

The main area shows a 3D model of a component and an 'Inspection Results' panel. The panel displays a warning: 'SFC 2000384 is likely nonconformant.' and a search bar. Below the search bar, there is a table with columns 'NC Code', 'Prob...', and 'Logg...'. The table contains one entry: 'FEHLER\_ENDABN Fehler Endabnahm' with a value of '88%' and a 'Log NC' button.

## Process Highlights



Connect machines with the DMC



Log automatically machine signals



Using Artificial Intelligence for quality checks

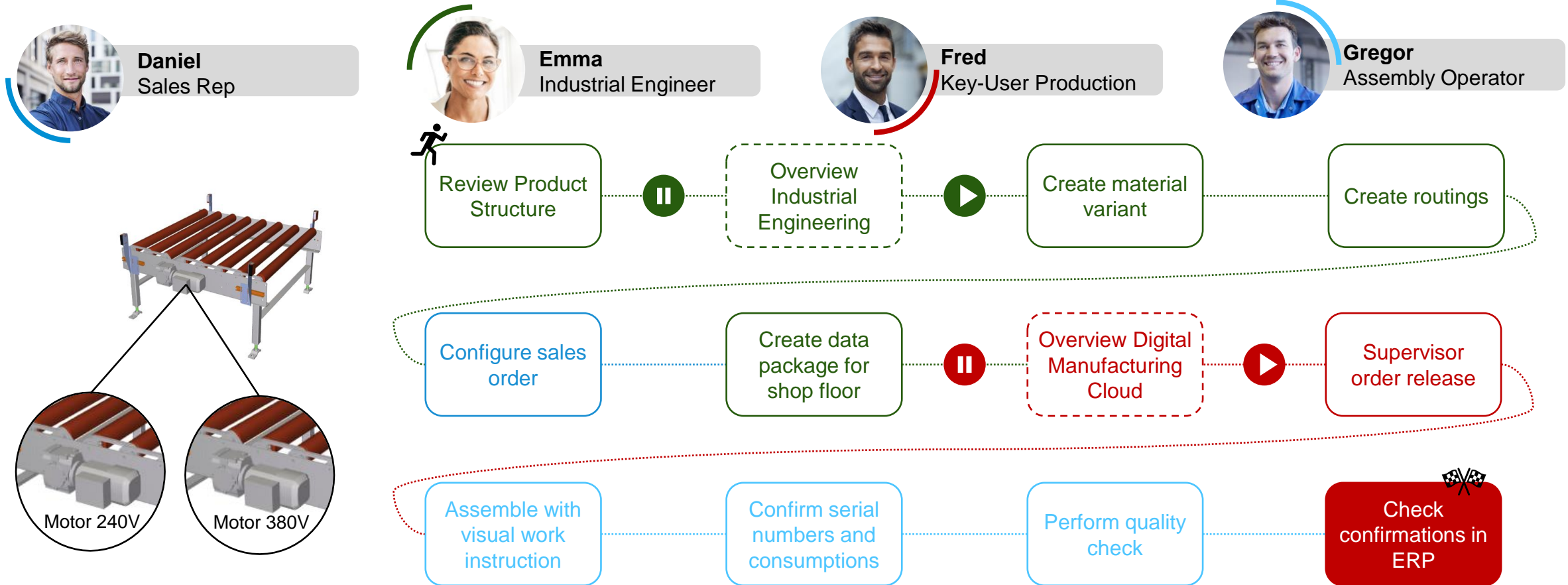


Allows to log AI based non conformance



Inspect the finished product visually

# Process Flow: Industrial Engineering & Execution on the shop floor





# Check confirmations in ERP

## Business Outcomes

“As an **Key-User Production**, I want to see the confirmations from the shop floor in ERP so that I can easily share the data with engineering, quality management, service, and so on.”



**Fred**  
Key-User Production

The screenshot shows the SAP interface for displaying production order confirmations. The header includes the SAP logo and the title 'Display Production Order Confirmation: Operation Overview'. Below the header, there are input fields for Order (0004981), Material (020\_DMC\_CONTROL\_HEAD\_WHITE\_SIMPLE), Material Descr (Head Unit - White Cover Simple Wing), and System Status (REL PCNF PRIC DISB MACM SETC). The main area is a table with columns for Operation/Counter, M., Quantity, Scrap, UoM, OprShrtTst, C, R, F, T, Posting Date, and WFB Name. The table is organized into several sections: 0010 Label Creation, 0020 Preparation of assembly, 0030 Assembly of components, and 0040 Inspection of control head. Each section contains a list of operations with their respective quantities and posting dates.

Operation/Counter	M.	Quantity	Scrap	UoM	OprShrtTst	C	R	F	T	Posting Date	WFB Name
0010		5	0	EA	Label Creation						
0011		1	0	EA						28.04.2020	
0012		1	0	EA						28.04.2020	
0013		1	0	EA						29.04.2020	
0014		1	0	EA						29.04.2020	
0015		1	0	EA						29.04.2020	
0020		5	0	EA	Preparation of assembly						
0021		1	0	EA						28.04.2020	
0022		1	0	EA						28.04.2020	
0023		1	0	EA						28.04.2020	
0024		1	0	EA						29.04.2020	
0025		1	0	EA						29.04.2020	
0030		5	0	EA	Assembly of components						
0031		1	0	EA						28.04.2020	
0032		1	0	EA						28.04.2020	
0033		1	0	EA						28.04.2020	
0034		1	0	EA						28.04.2020	
0035		1	0	EA						28.04.2020	
0040		5	0	EA	Inspection of control head						
0041		1	0	EA						28.04.2020	

## Process Highlights



**Powerful plug & play** integration between ERP, EWM and DMC



**Easily access and share** manufacturing data (digital thread & digital twin)



**Start** collaborations and establish feedback loops to improve product quality or business processes



**Fully automatic** postings in ERP



**Gain** detailed views through shop floor Control Unit (SFC) when needed

# Summary

## The Design-Driven Enterprise is AGIL.EFFICIENT.CUSTOMER-CENTRIC

- ✓ **Increased the level of automation** in the process flow from engineering into sales, production, service with **model once configure anywhere.**
- ✓ Using a **smart product structure** as **single central solution** to achieve **high level of consistency, automation and accuracy** across all departments.
- ✓ Improved leverage of their existing investment in the **SAP Core. Reduce complexity** of applications outside of the core.





A woman in a blue uniform and safety glasses is working in a factory. She is holding a flashlight and inspecting a component. The background shows industrial machinery and a robotic arm.

# Design-Driven Enterprise

**From Manufacturing to Customer for  
Configurable Components and End-products**  
Variantenreiches MTS oder CTO

08.04.2022

# Thank you & see you soon.

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