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L’infrastruttura per la gestione dei dati di prodotto

Una leva strategica per l’innovazione

Leonardo Cipollini

5 Maggio 2016

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Leonardo Cipollini
Business Development Director MM

Digital Factory Division
Product Lifecycle Management

Siemens Industry Software S.r.l.

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Siemens Digital Factory Division Organization

Digital Factory Division

Factory Automation	Control Products	Product Lifecycle Management	Motion Control	eCar Powertrain Systems	Customer Services
World market leader in automation with integrated automation portfolio for all industries	Products and systems to switch, protect and control low-voltage consumers	Proven software solutions to create, validate and manage product and process knowledge across the product lifecycle	Global leading supplier of products, systems and solutions including services: Drives, Motion Control Motors, CNC Solutions for machinery and plants	High quality powertrain components and charging systems for series production of electric and hybrid vehicles	Integrated service offering from a single source throughout the product lifecycle

Integrated product portfolio paves the way for the Digital Enterprise.

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Siemens PLM Software Profile (Italy)

Organization

- Siemens PLM Software
- B.U. of Siemens Digital Factory Division
- Headquarters – Plano, Texas
- Over 10.000 employees (>160 in Italy)

  (Milano, Torino, Modena, Novara, Treviso)

Products/Solutions

- PLM Software and Services

Market shares

- > 90.000 customers (> 4100 in Italy)
- > 11 Million user licenses

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In order to remain competitive manufacturing companies need to achieve enormous improvements in their processes

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Reducing the time to market

- Shorter innovation cycles
- More complex products
- Larger data volumes

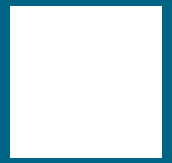
Product and production integrated

Enhancing flexibility

- Individualized mass production
- Volatile markets
- High productivity

Flexible production

Increasing Quality



- Closed loop quality processes
- Traceability and integrated genealogy

Full process transparency

Increasing efficiency

- Energy efficiency and resource efficiency as key competitive factors

Optimized production resources

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Digitalization: The Strategy for Realizing Smart Innovation

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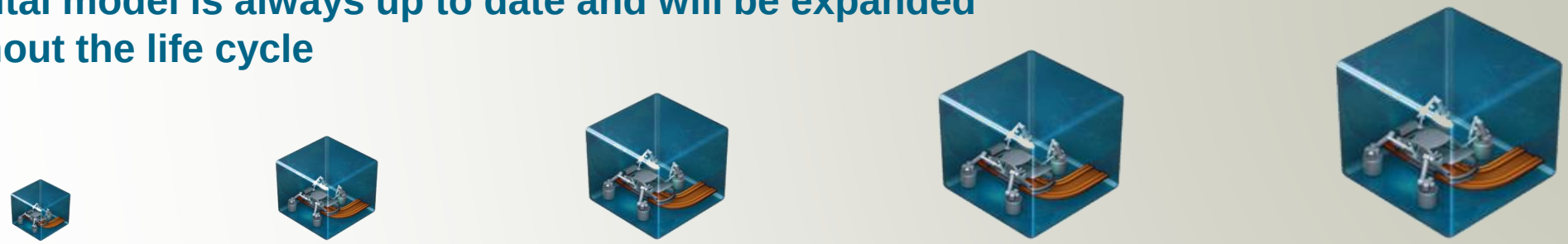
Integrating the digital and real world

Product Information is enriched throughout the life cycle

The digital model is always up to date and will be expanded throughout the life cycle



Product-design | Production planning | Production-Engineering | Production | Service

Digital World

Digitalization
Requirements
Product Structures
Virtual Models

Planning
Work instructions
Quality information
Productions-Simulation

Digital Equipment
Configuration
Validation
Virtual Commissioning

Integrated Plant
Ramp up / Operation
Monitoring
Optimization - CI

Service
Documentation
Maintenance
Condition monitoring

Real World

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The Enterprise Digitalization Strategy
Adoption of the Digital Twins

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From virtual to real and from concept to service

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Optimizing Innovation Within the Digital Enterprise
Siemens PLM portfolio capabilities

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Product Lifecycle Management

Manufacturing Operations Management

Integrated Production Automation

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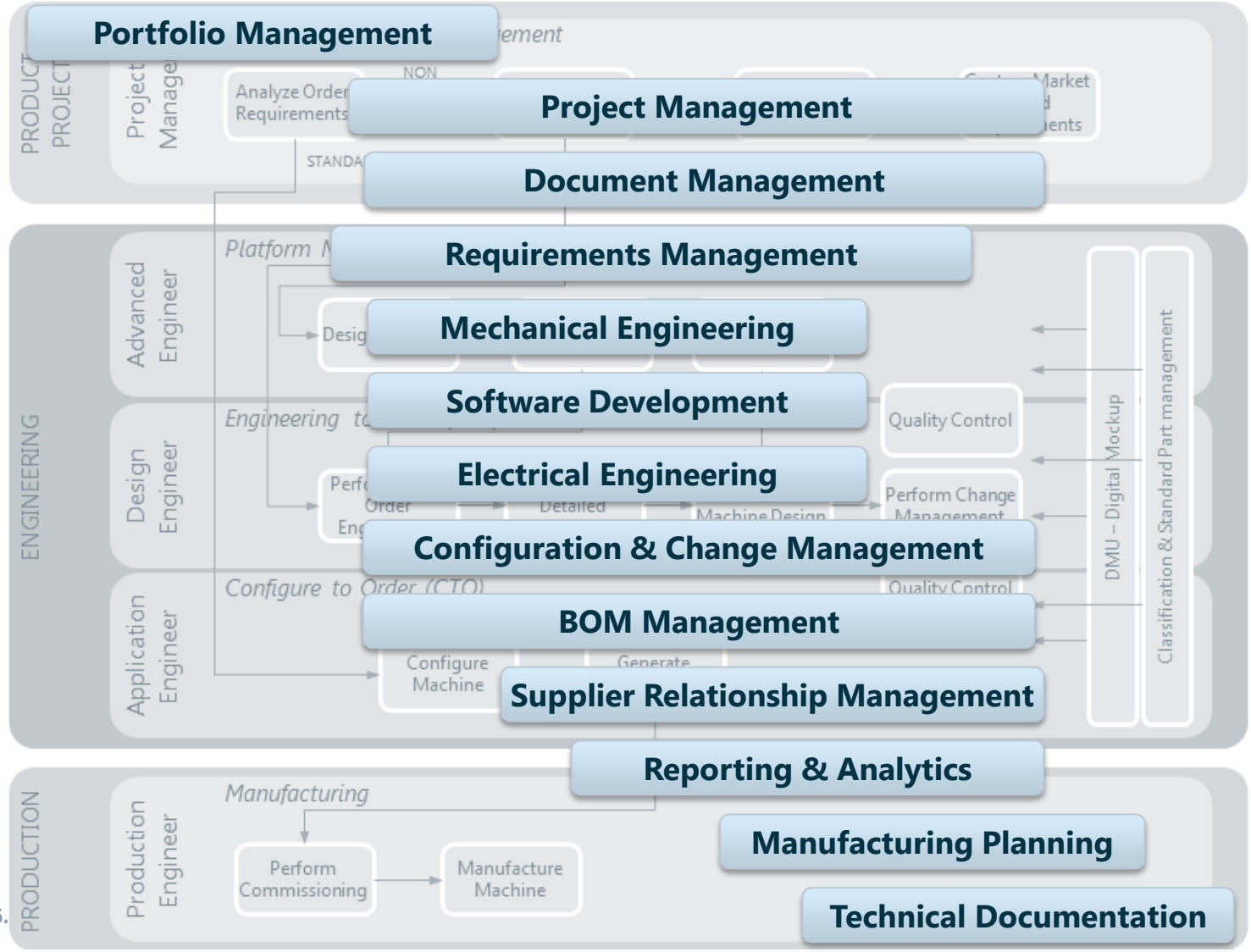
The Product Lifecycle Management functional areas



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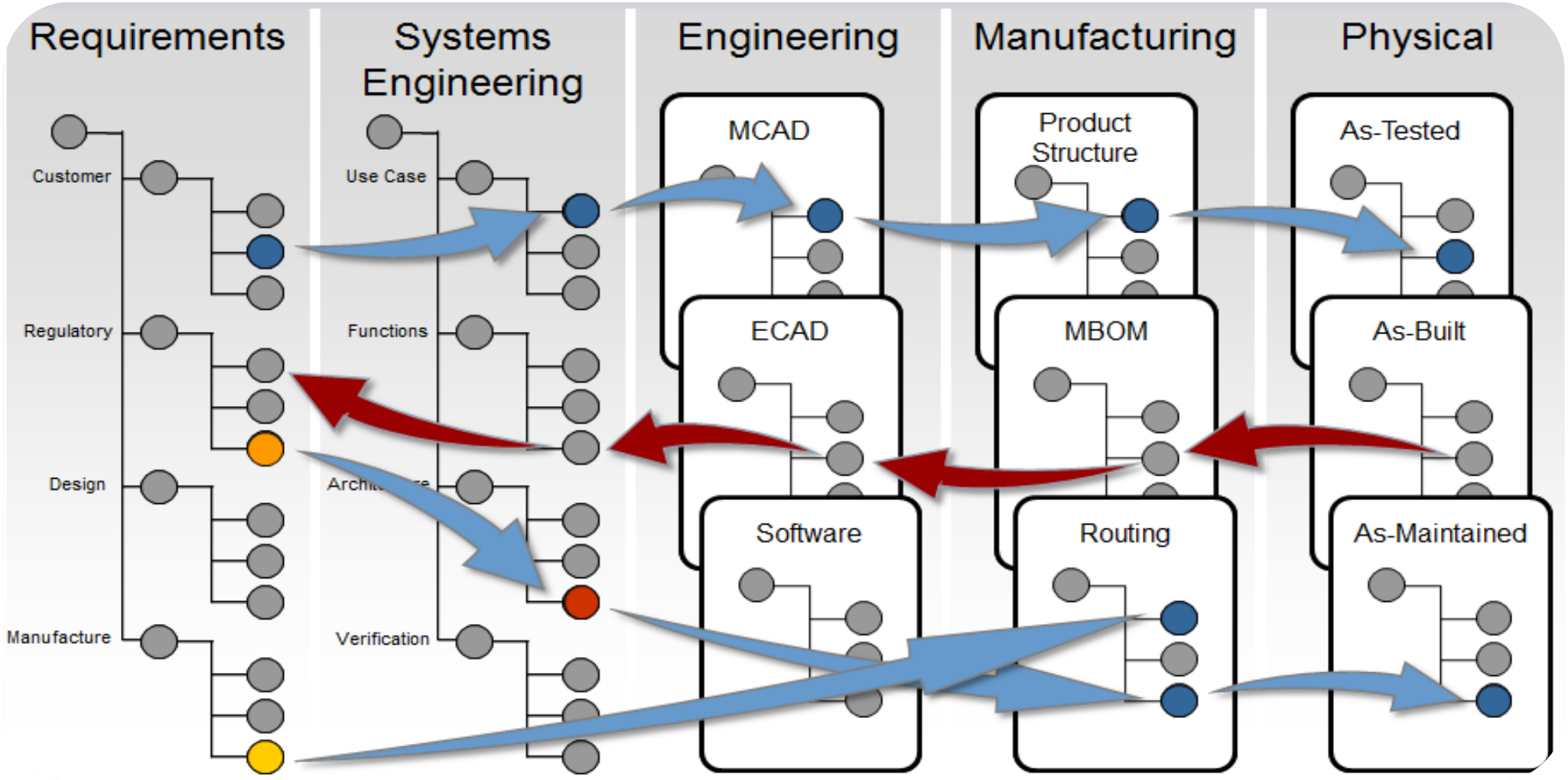
Objectives: Maintaining the links at all stages



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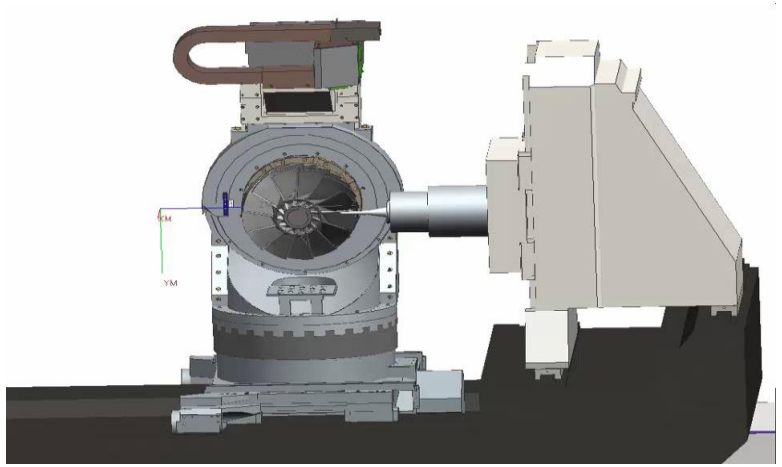
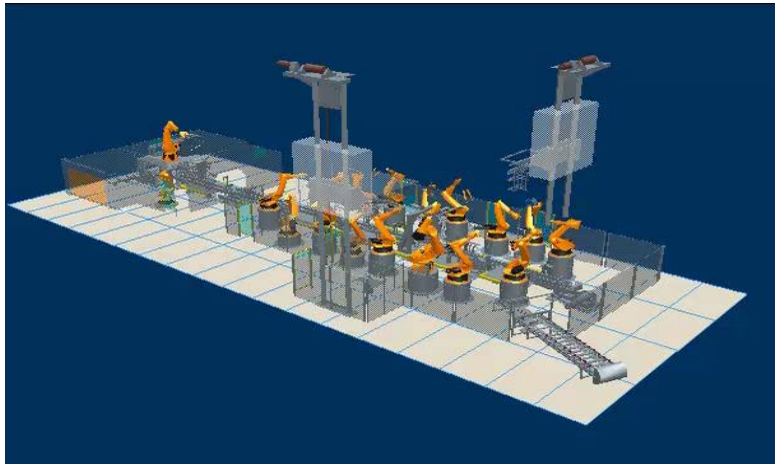
The Digital Manufacturing functional areas

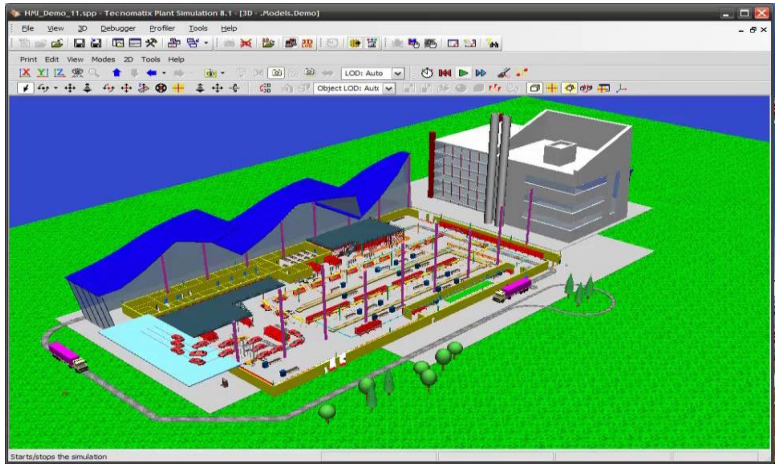
Part Manufacturing



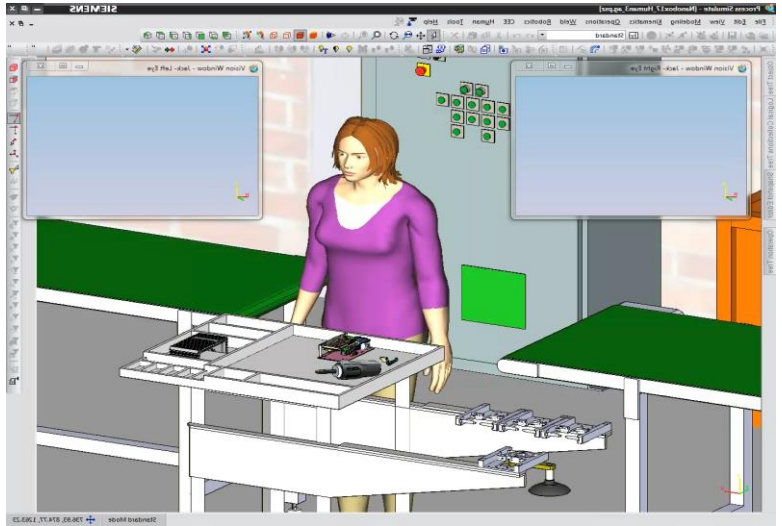
Assembly Planning



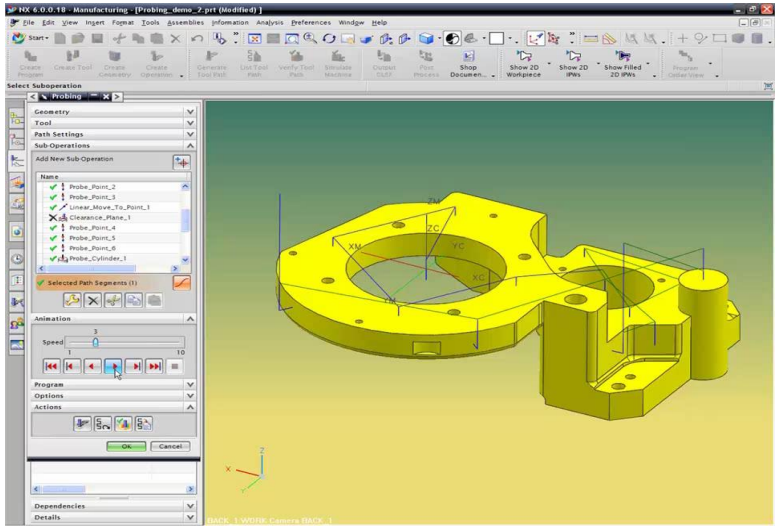
Plant Optimization



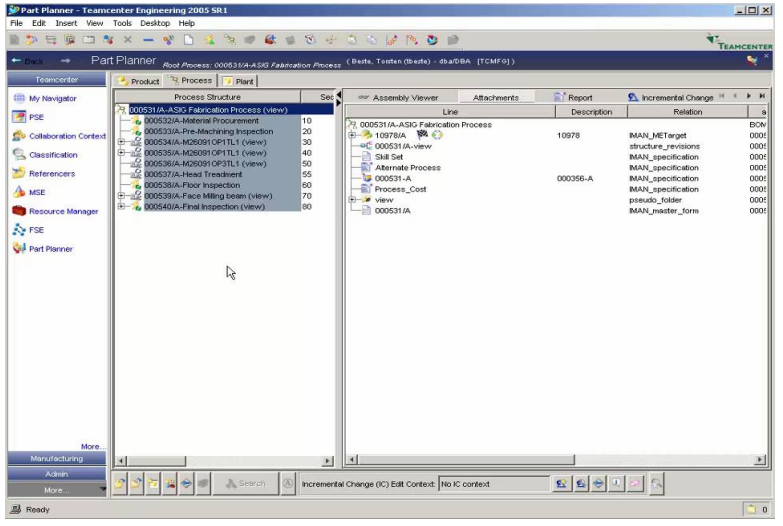
Human Performance



Quality Planning



Production Management

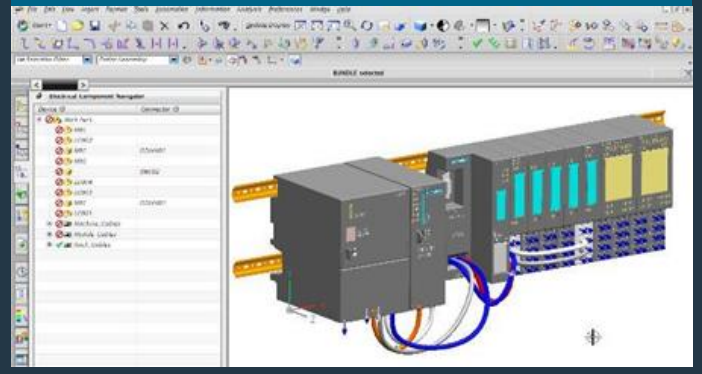


The Digitalization strategy

Digitalization Strategy

Digital Engineering

Digitization of the entire product – digital twin, simulation, Intelligent Models



Digital Manufacturing

Integration of Virtual & Real Systems, Robotics

Digital Service

Service Engineering, Massive Data Analytics

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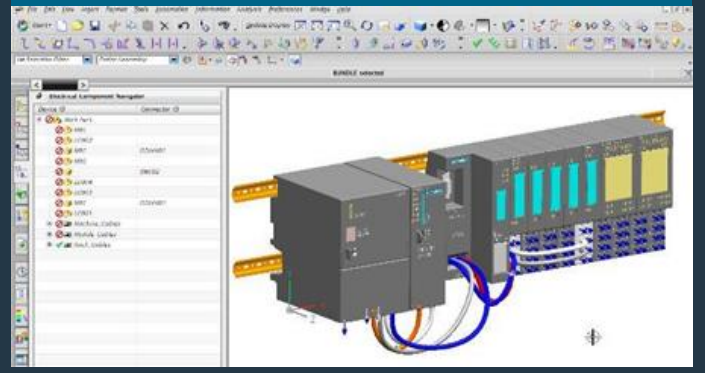
The Digitalization strategy

Digitalization Strategy

Digital Engineering

Digitization of the entire product – digital twin, simulation, Intelligent Models



Digital Manufacturing

Integration of Virtual & Real Systems, Robotics

Digital Service

Service Engineering, Massive Data Analytics

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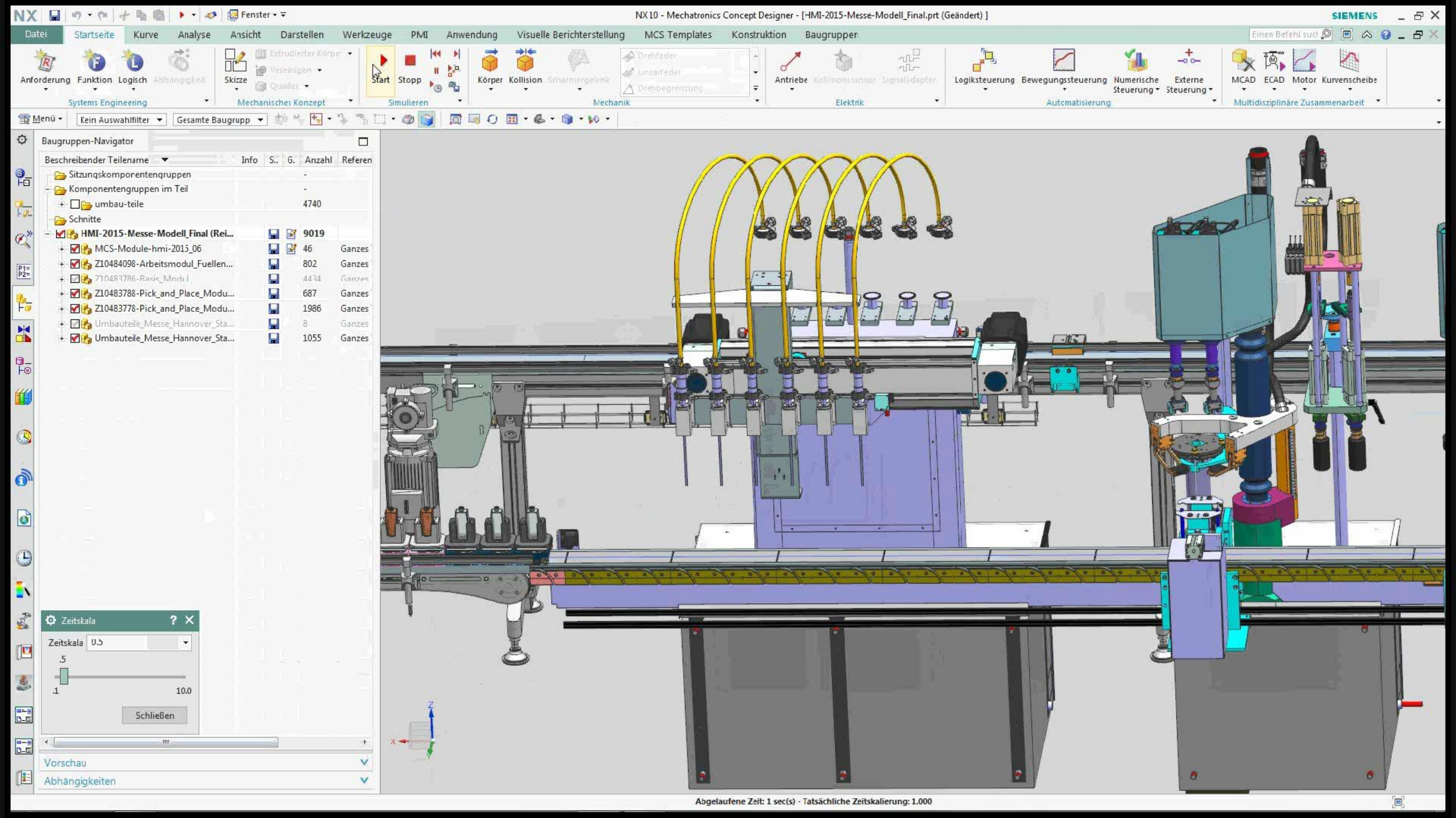
NX 10 - Mechatronics Concept Designer - [HMI-2015-Messe-Modell_Final.prt (Geändert)]
SIEMENS
Datei
Startseite
Kurve
Analyse
Ansicht
Darstellen
Werkzeuge
PMI
Anwendung
Visuelle Berichterstellung
MCS Templates
Konstruktion
Baugruppen
Anforderung
Funktion
Logisch
Abhängigkeit
Systems Engineering
Skizze
Mechanisches Konzept
Start
Stopp
Simulieren
Körper
Kollision
Scharniergelenk
Drehfeder
Linearfeder
Drehbegrenzung
Mechanik
Antriebe
Kollisionssensor
Signaladapter
Elektrik
Logiksteuerung
Bewegungssteuerung
Numerische Steuerung
Externe Steuerung
Automatisierung
MCAD
ECAD
Motor
Kurvenscheibe
Multidisziplinäre Zusammenarbeit
Menü
Kein Auswahlfilter
Gesamte Baugrupp
Baugruppen-Navigator
Beschreibender Teilename
Info
S..
G.
Anzahl
Referen
Sitzungskomponentengruppen
Komponentengruppen im Teil
umbau-teile
4740
Schnitte
HMI-2015-Messe-Modell_Final (Rei...
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MCS-Module-hmi-2015_06
46
Ganzes
Z10484098-Arbeitsmodul_Fuellen...
802
Ganzes
Z10483786-Basis_Modul
4434
Ganzes
Z10483788-Pick_and_Place_Modu...
687
Ganzes
Z10483778-Pick_and_Place_Modu...
1986
Ganzes
Umbauteile_Messe_Hannover_Sta...
8
Ganzes
Umbauteile_Messe_Hannover_Sta...
1055
Ganzes
Zeitskala
Zeitskala
0.5
.5
.1
10.0
Schließen
Vorschau
Abhängigkeiten
Abgelaufene Zeit: 1 sec(s) - Tatsächliche Zeitskalierung: 1.000

Realized Products in Action – Blending Physical & Virtual Worlds

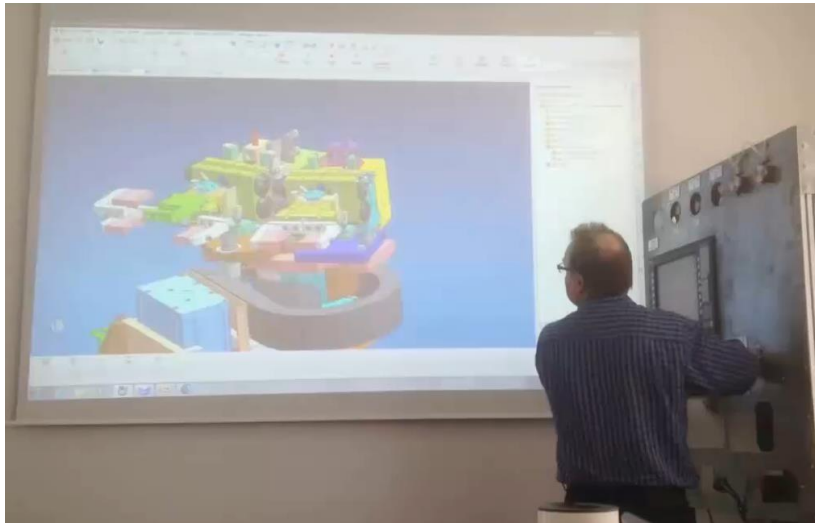
Bring ideas to life faster by seamlessly connecting the digital and physical worlds of product and production.

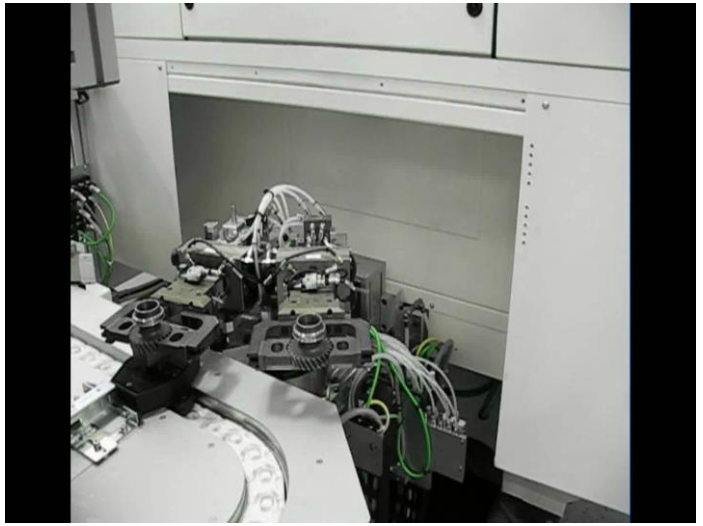
Virtual Machine Commissioning Accelerates Production

Mechatronics Concept Designer drives Integrated Development

Machines commissioned in days instead of weeks

Validating automation virtually reduces collision risks





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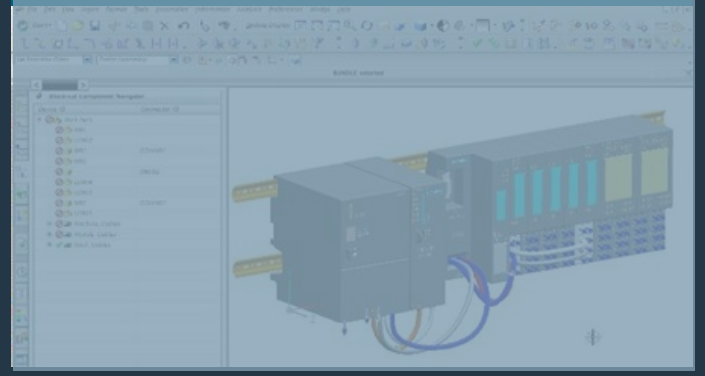
The Digitalization strategy

Digitalization Strategy

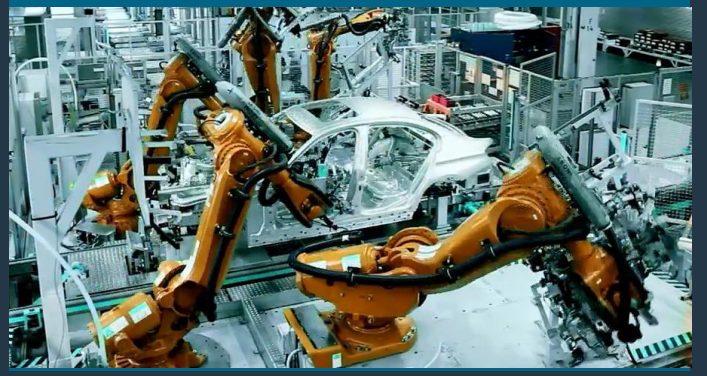
Digital Engineering

Digitization of the entire product – digital twin, simulation, Intelligent Models



Digital Manufacturing

Integration of Virtual & Real Systems, Robotics



Digital Service

Service Engineering, Massive Data Analytics

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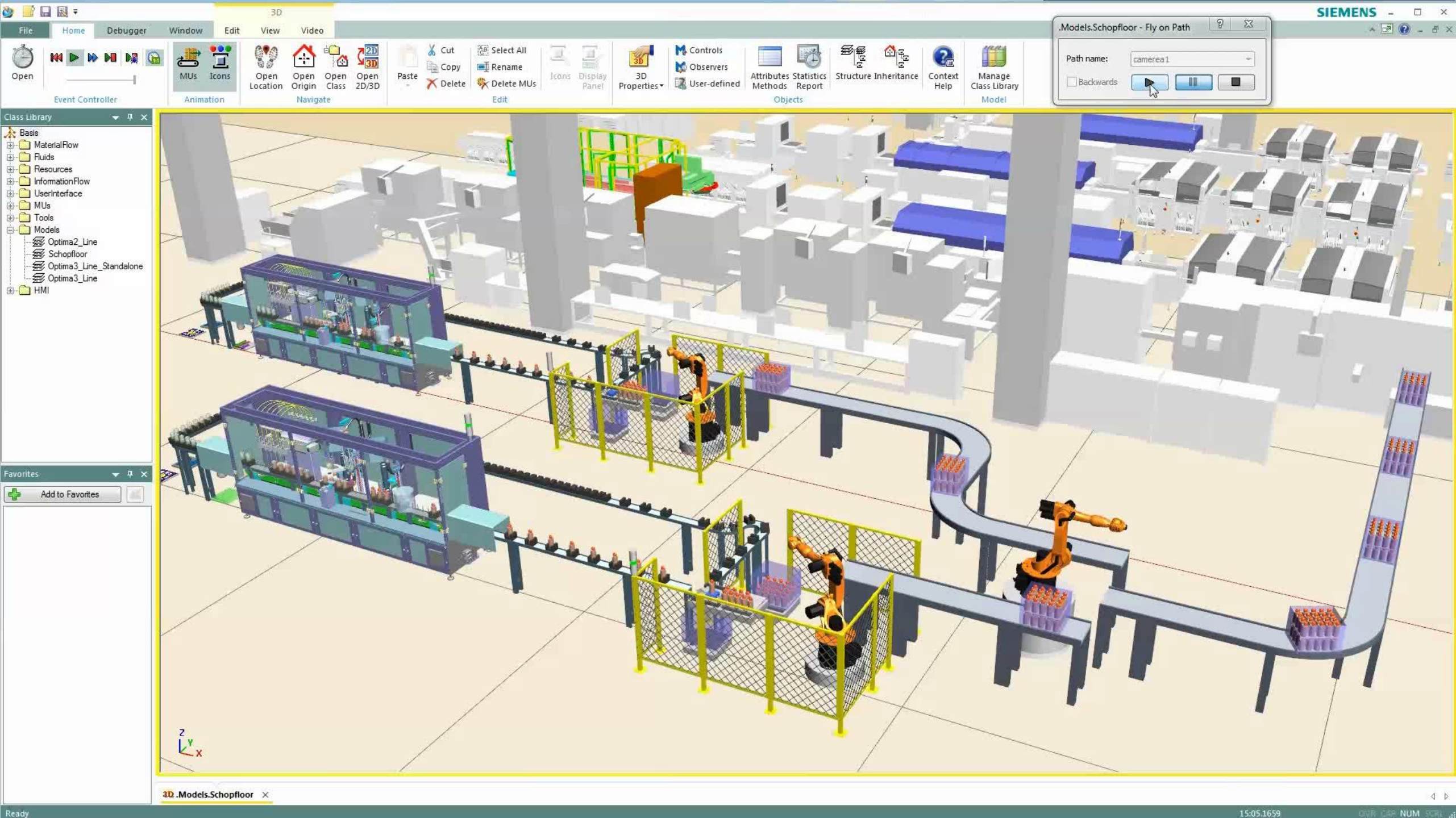
SIEMENS
File
Home
Debugger
Window
Edit
View
Video
3D
Open
Event Controller
MUs
Icons
Animation
Open Location
Open Origin
Open Class
Open 2D/3D
Navigate
Paste
Cut
Copy
Delete
Select All
Rename
Delete MUs
Edit
Icons
Display Panel
3D Properties
Controls
Observers
User-defined
Attributes Methods
Statistics Report
Structure
Inheritance
Objects
Context Help
Manage Class Library
Model
.Models.Schopfloor - Fly on Path
Path name:
camerea1
Backwards
Class Library
Basis
MaterialFlow
Fluids
Resources
InformationFlow
UserInterface
MUs
Tools
Models
Optima2_Line
Schopfloor
Optima3_Line_Standalone
Optima3_Line
HMI
Favorites
Add to Favorites
.Models.Schopfloor
Ready
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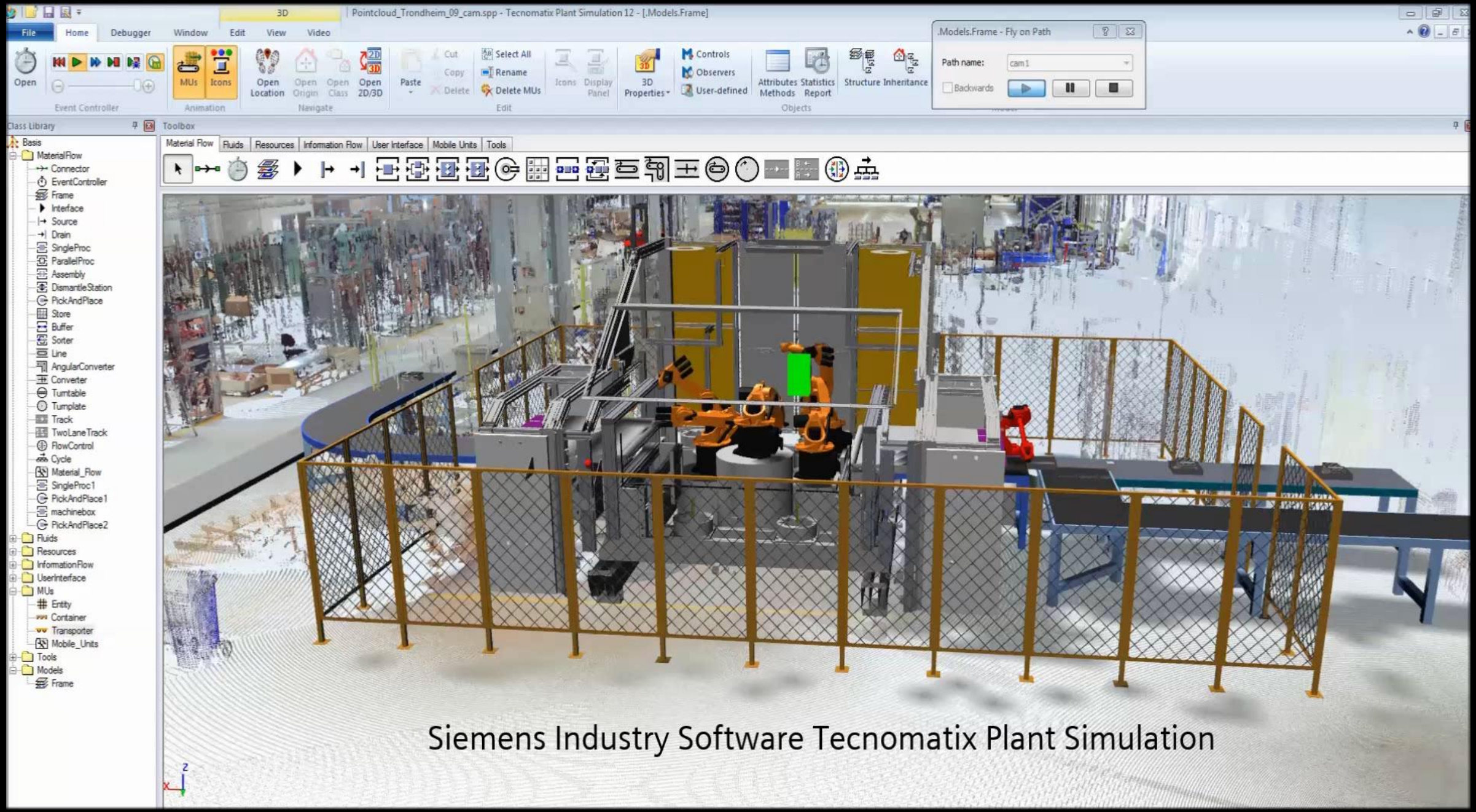
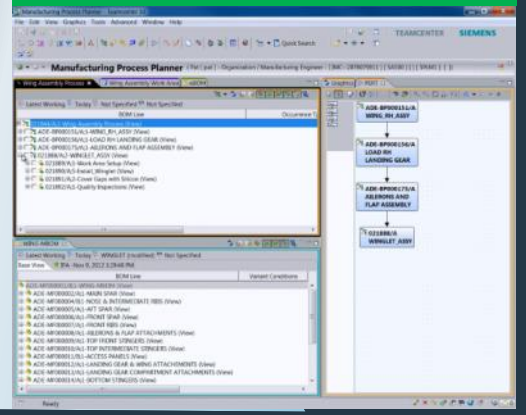
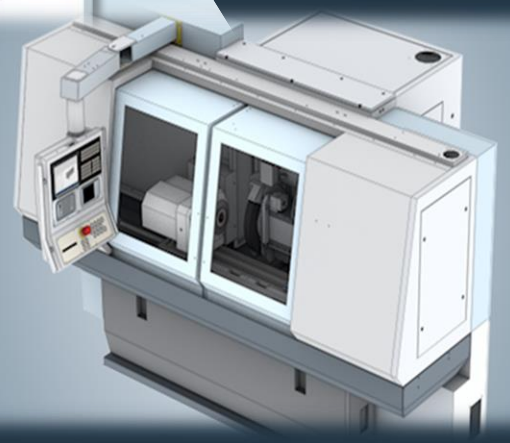

Pointcloud_Trondheim_09_cam.spp - Tecnomatix Plant Simulation 12 - [.Models.Frame]
File
Home
Debugger
Window
Edit
View
Video
.Models.Frame - Fly on Path
Path name:
cam1
Backwards
Class Library
Toolbox
Material Flow
Fluids
Resources
Information Flow
User Interface
Mobile Units
Tools
Basis
MaterialFlow
Connector
EventController
Frame
Interface
Source
Drain
SingleProc
ParallelProc
Assembly
DismantleStation
PickAndPlace
Store
Buffer
Sorter
Line
AngularConverter
Converter
Turntable
Turnplate
Track
TwoLaneTrack
FlowControl
Cycle
Material_Flow
SingleProc1
PickAndPlace1
machinebox
PickAndPlace2
Fluids
Resources
InformationFlow
UserInterface
MUs
Entity
Container
Transporter
Mobile_Units
Tools
Models
Frame
Siemens Industry Software Tecnomatix Plant Simulation

Digital Enterprise Architecture
Common Manufacturing Model

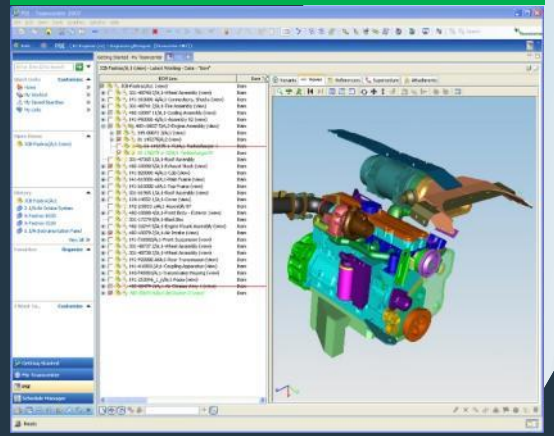
Electronic Work Instructions

Bill of Process

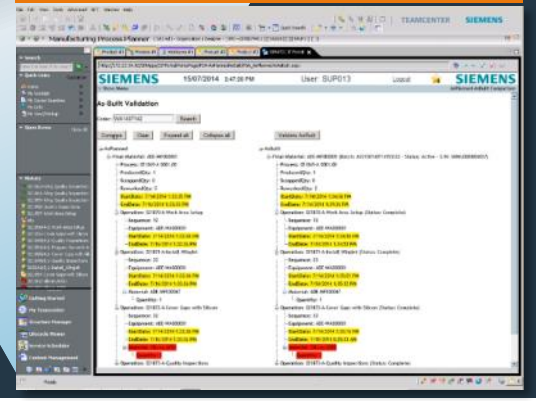




Bill of Materials



As Built



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Intelligent Models
Design complete production systems with high fidelity models

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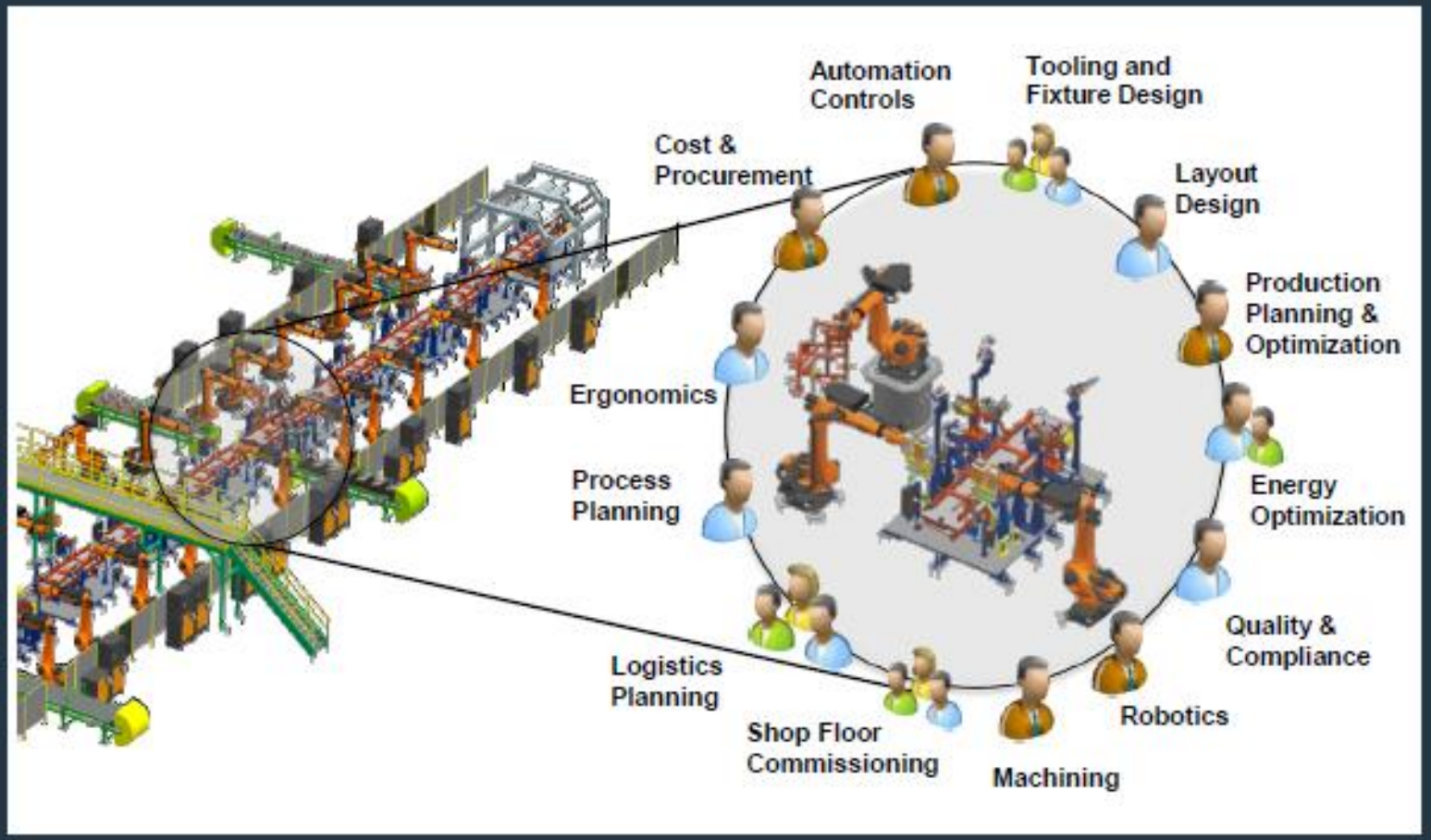
All in one system

- Production systems
- Machinery
- Product lines
- Tooling and fixtures



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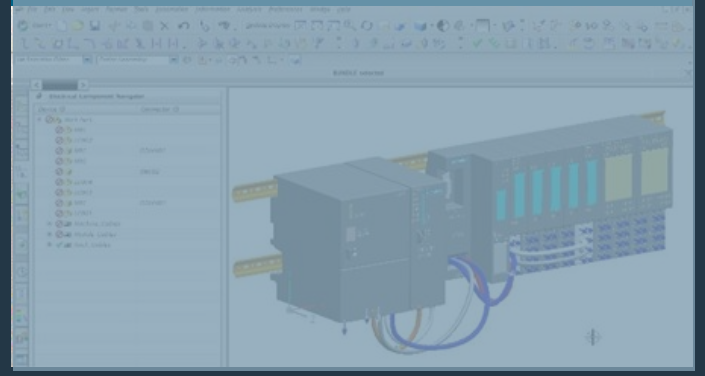
The Digitalization strategy

Digitalization Strategy

Digital Engineering

Digitization of the entire product – digital twin, simulation, Intelligent Models



Digital Manufacturing

Integration of Virtual & Real Systems, Robotics

Digital Service

Service Engineering, Massive Data Analytics

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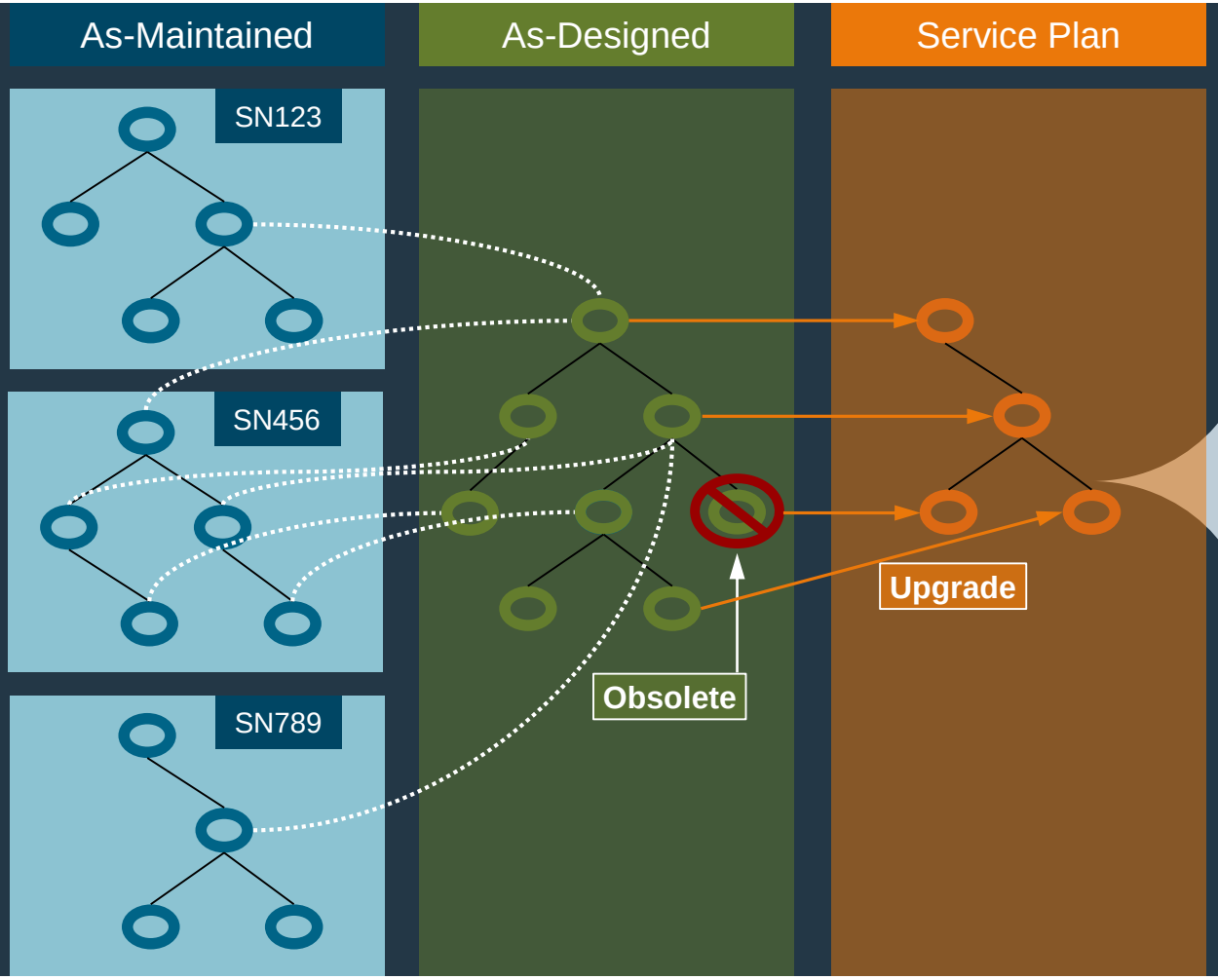
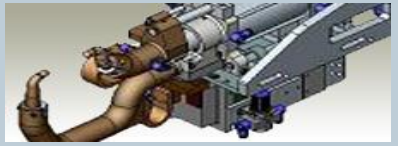
Configuration-Driven Service Management



Tools, Equipment

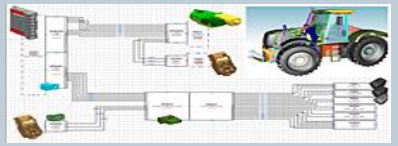


Service Manuals,
Drawings, Schematics

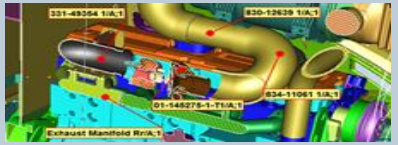
Replacement Parts,
Approved/Allowed Parts

Worker Skill Level,
Inspections

Software, Codes,
Toggles, Settings



Upgrades, Service Bulletins,
Changes



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The Enterprise Digitalization Strategy
Adoption of the Digital Twins

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From virtual to real and from concept to service

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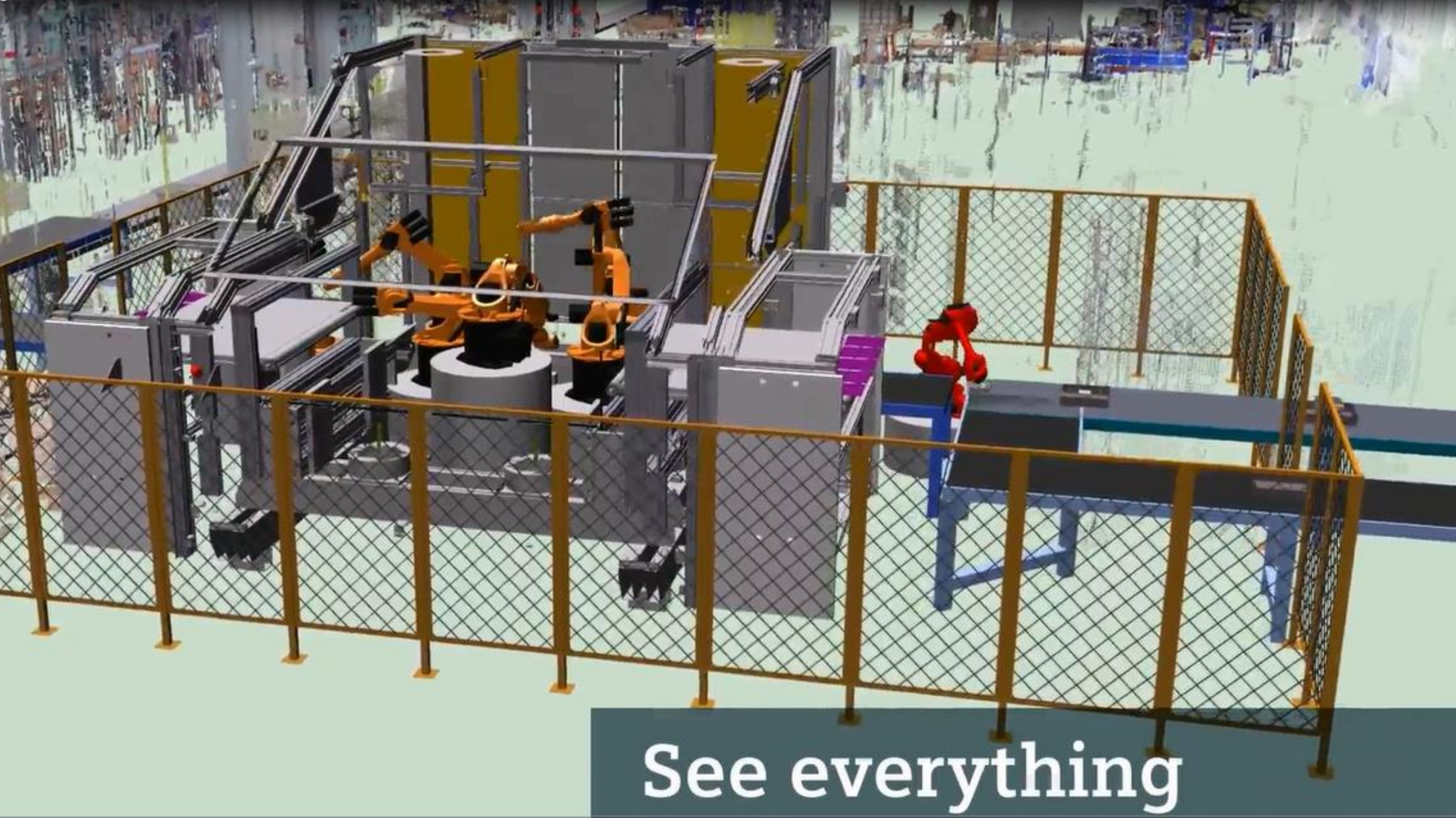
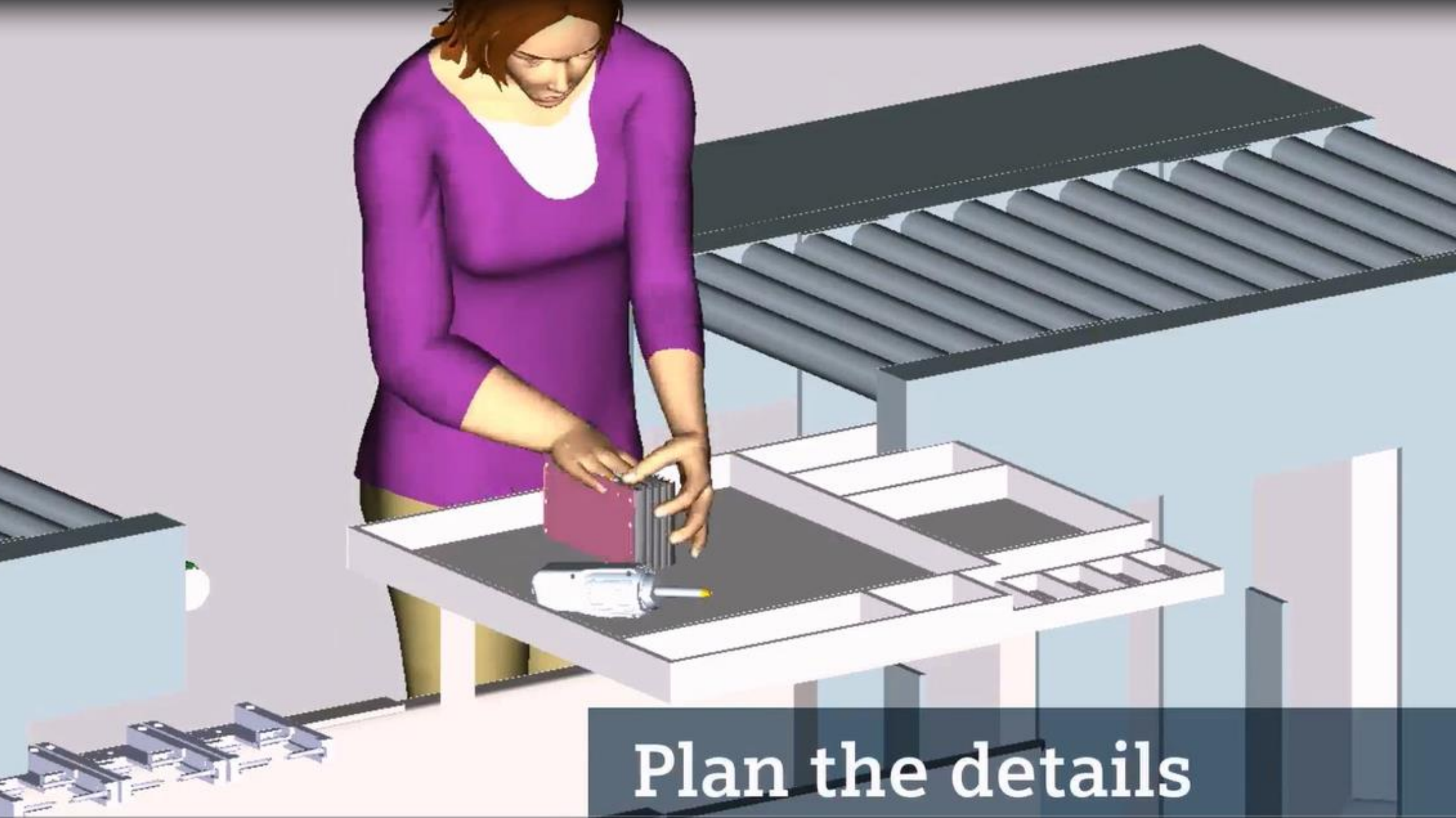
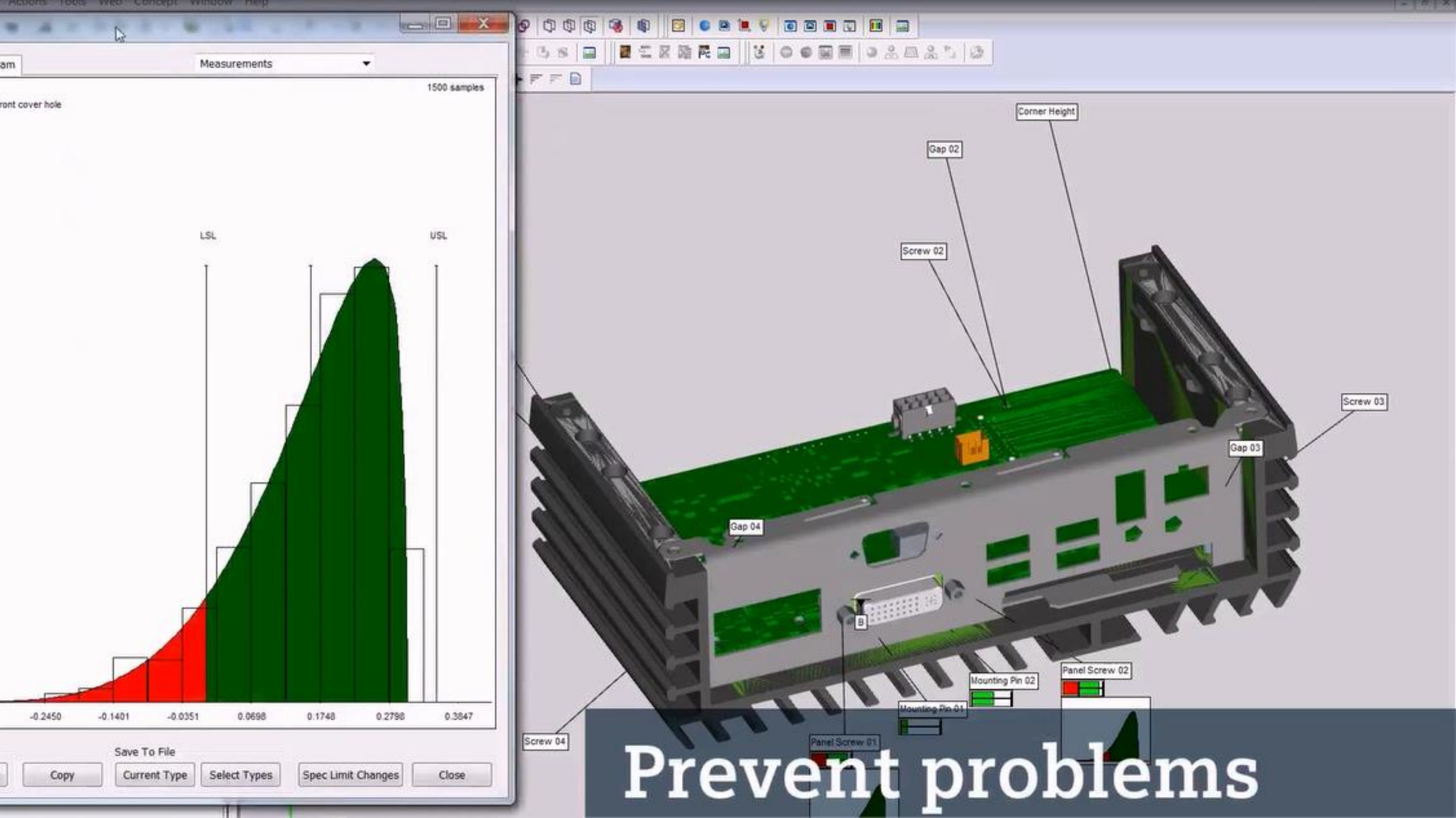
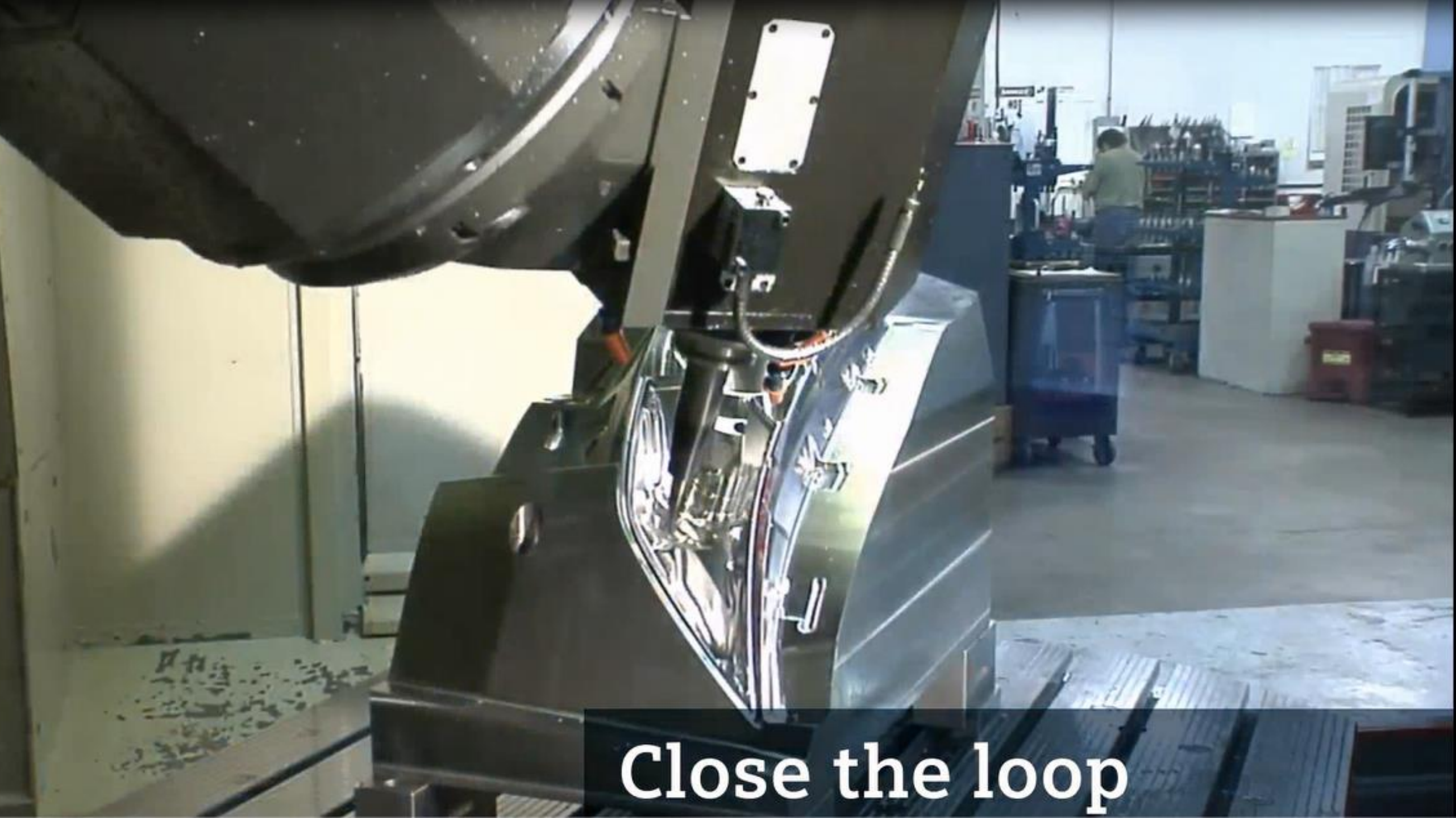
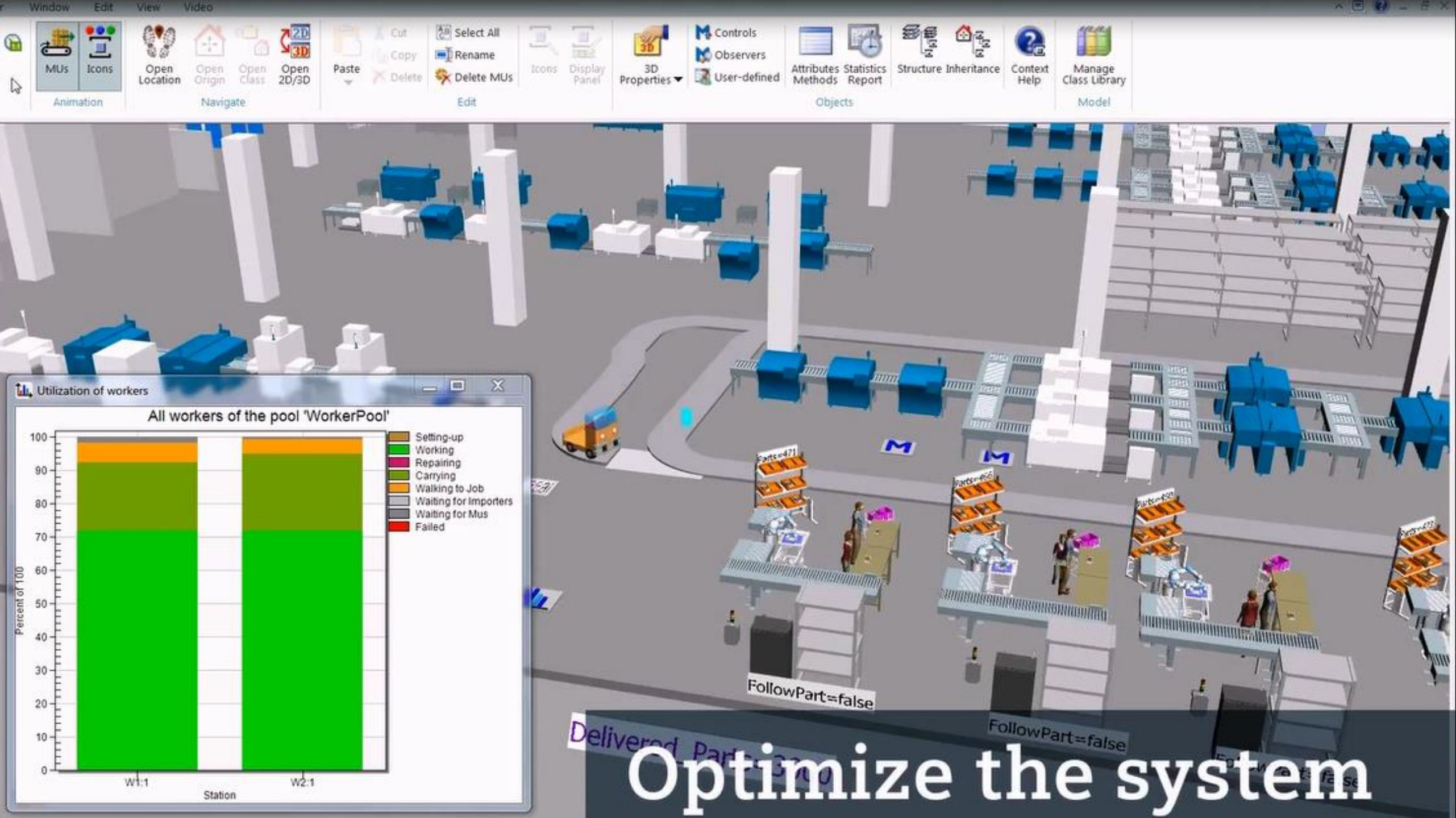
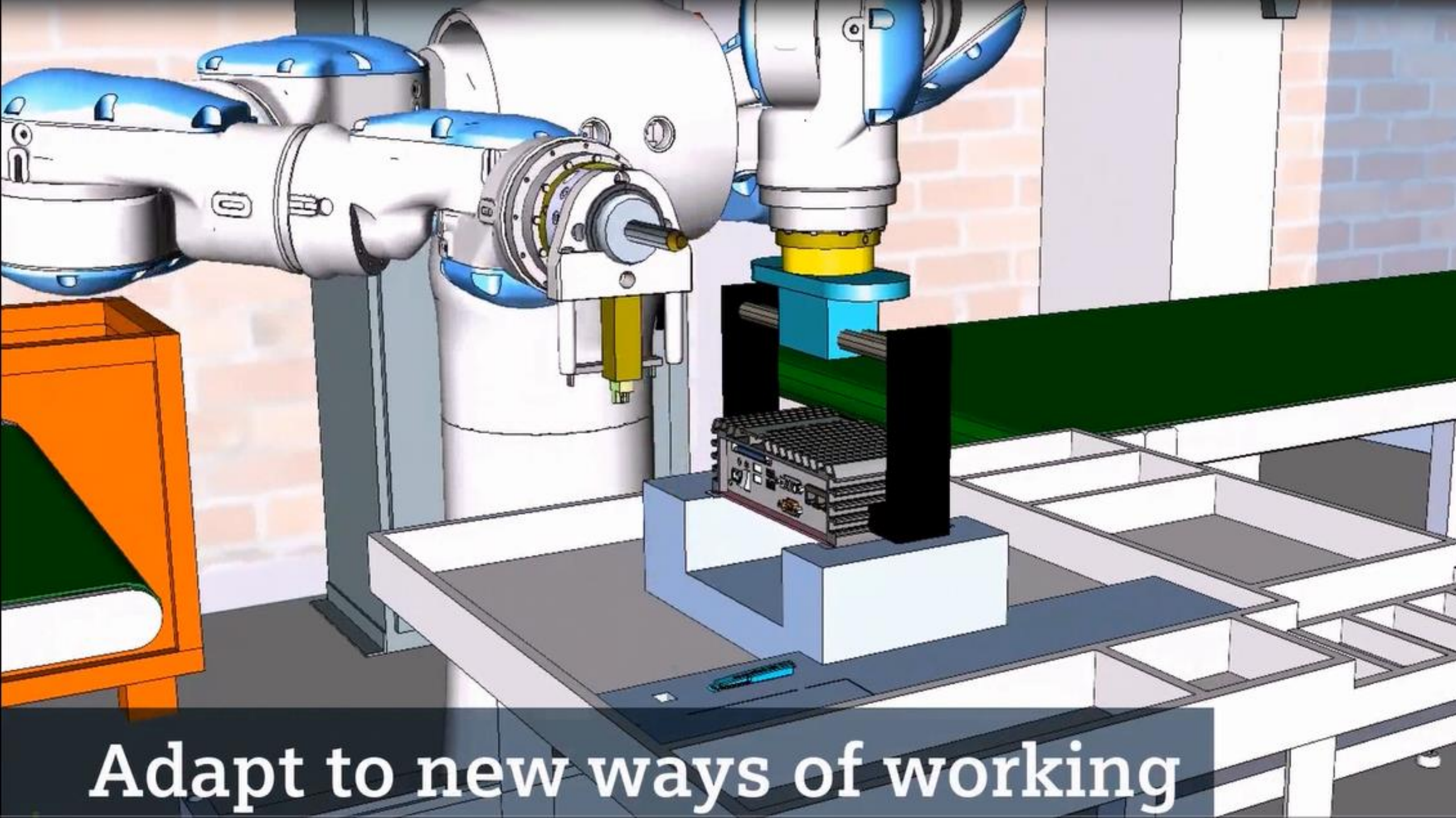

See everything

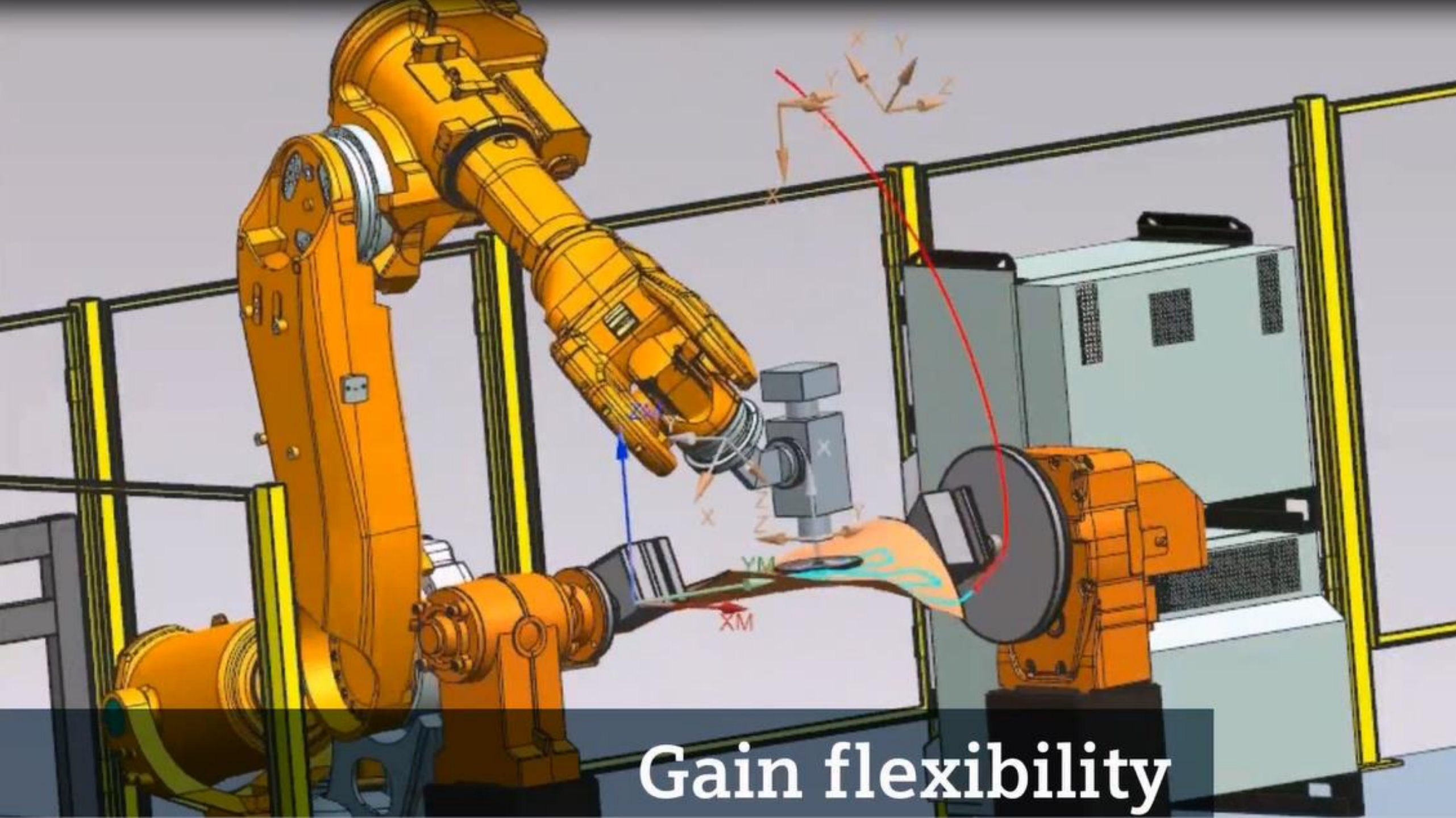

Plan the details


Measurements
1500 samples
front cover hole
LSL
USL
-0.2450
-0.1401
-0.0351
0.0698
0.1748
0.2798
0.3847
Save To File
Copy
Current Type
Select Types
Spec Limit Changes
Close
Corner Height
Gap 02
Screw 02
Screw 03
Gap 03
Gap 04
Screw 04
Panel Screw 01
Mounting Pin 01
Mounting Pin 02
Panel Screw 02
Prevent problems

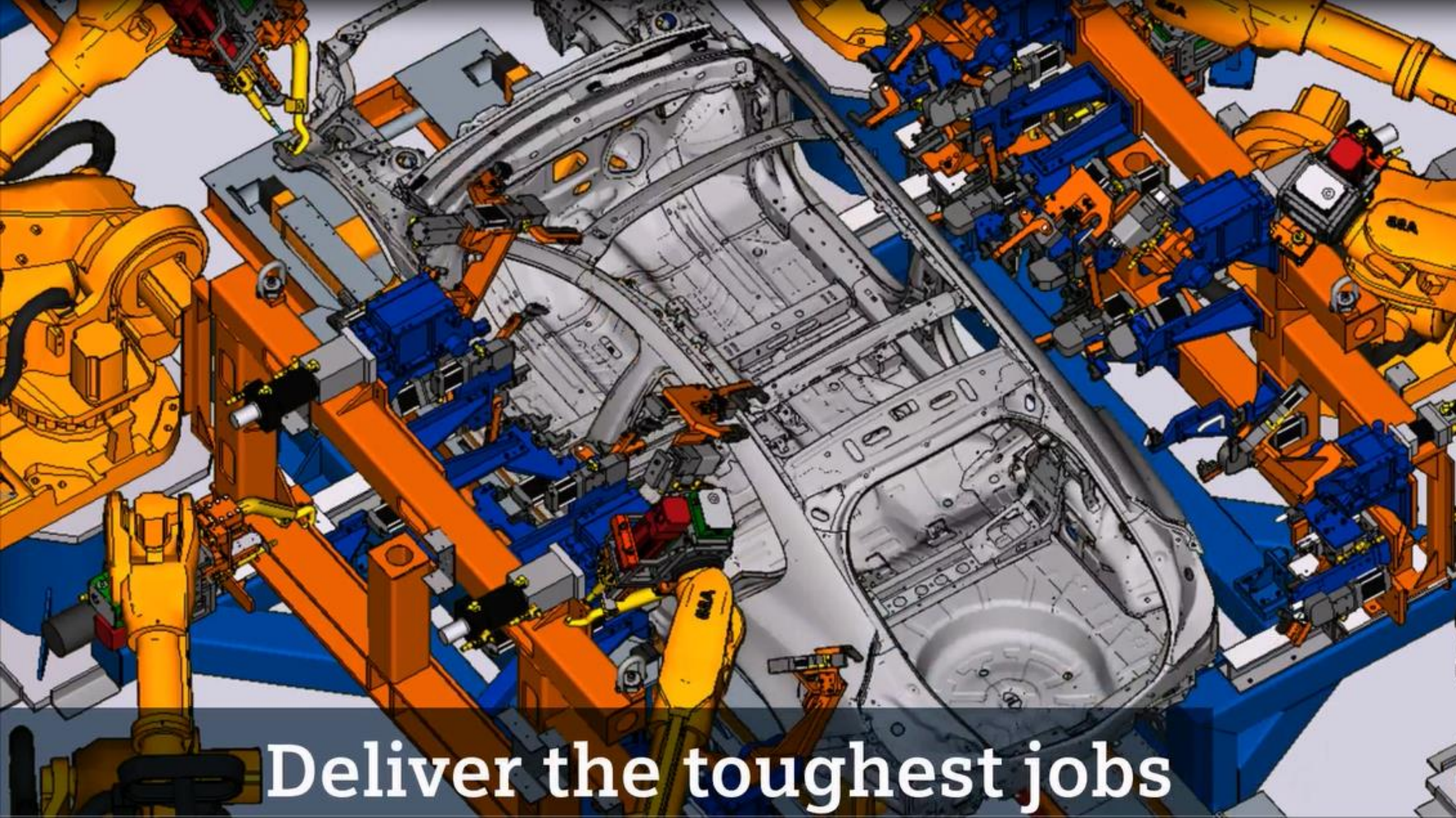

Close the loop


Window
Edit
View
Video
MUs
Icons
Animation
Open Location
Open Origin
Open Class
Open 2D/3D
Navigate
Paste
Cut
Copy
Delete
Select All
Rename
Delete MUs
Edit
Icons
Display Panel
3D Properties
Controls
Observers
User-defined
Attributes Methods
Statistics Report
Structure
Inheritance
Objects
Context Help
Manage Class Library
Model
Utilization of workers
All workers of the pool 'WorkerPool'
Setting-up
Working
Repairing
Carrying
Walking to Job
Waiting for Importers
Waiting for Mus
Failed
Percent of 100
Station
W1:1
W2:1
FollowPart=false
FollowPart=false
Optimize the system


Adapt to new ways of working



Gain flexibility


Deliver the toughest jobs

Let’s make it together with the Digital Twin.

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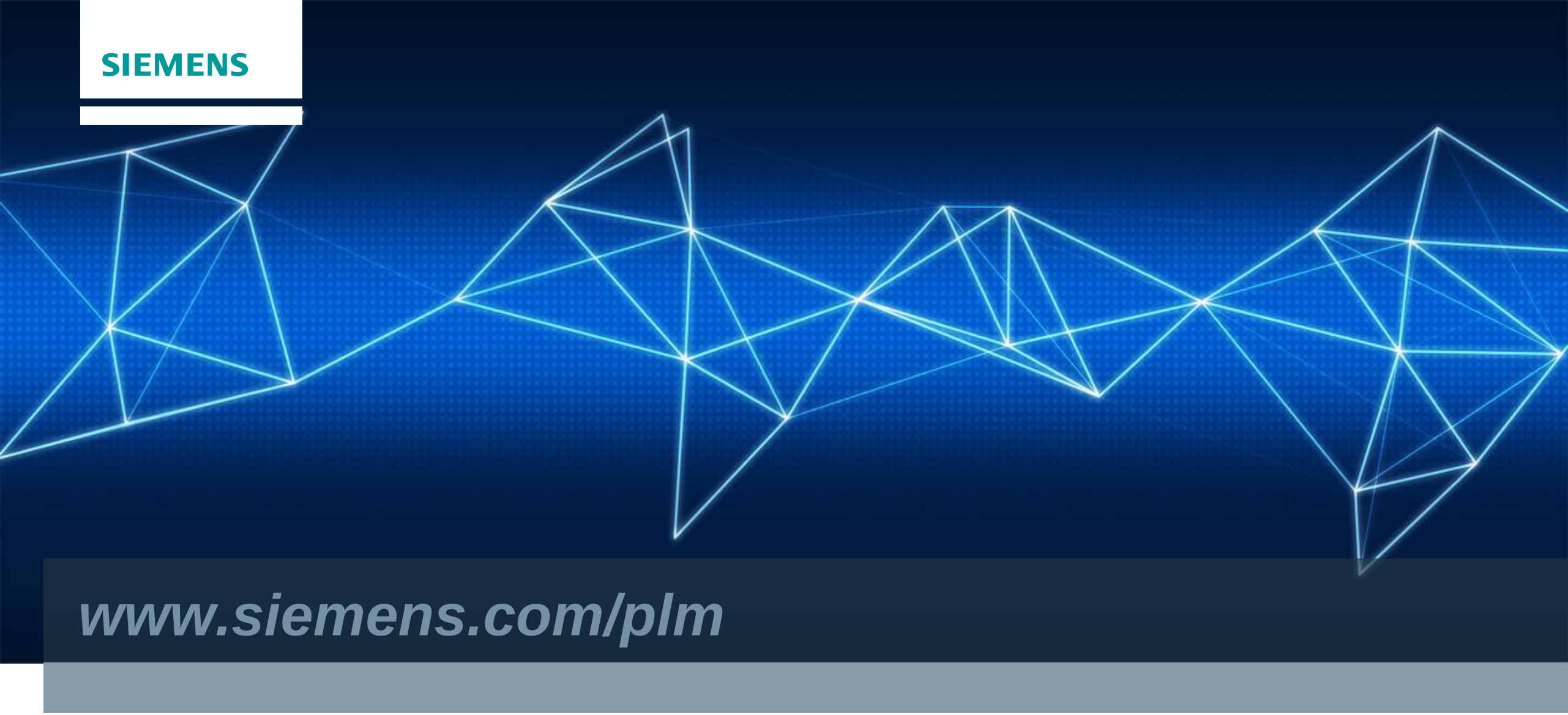

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