‘Design, make and service in a digital world - A Siemens perspective on Industry 4.0’

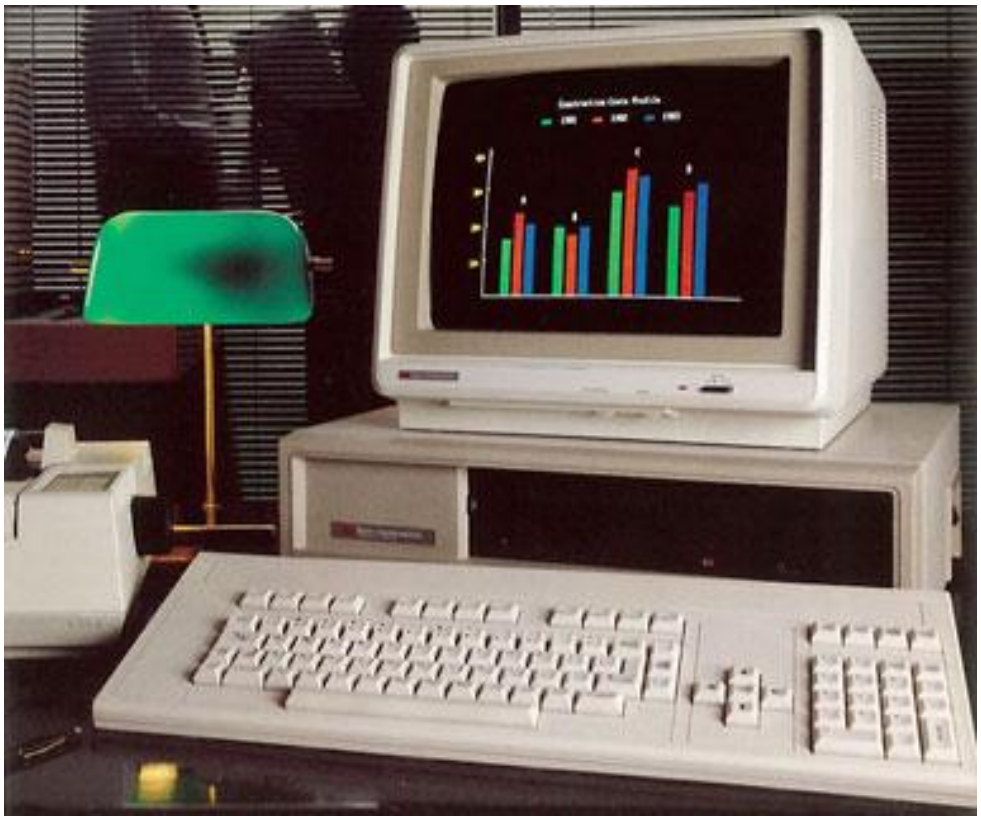
Growing your Service Business in an age of digital disruption

Brian Holliday - Managing Director, Siemens Digital Factory

BrianHolliday01

TIPC

SIEMENS



SIEMENS

- The industrial digital transformation impacting design, manufacturing and service
- Industry 4.0 and the ideas it introduced
- The digital factory and our journey so far
- Making data work better for our service organisation


SIEMENS


SIEMENS


The Future
SIEMENS


SIEMENS


SIEMENS


Digitalization
changes
everything

Digitalization Changes Everything, Everywhere

The pace of technological advances is fueling digital transformation

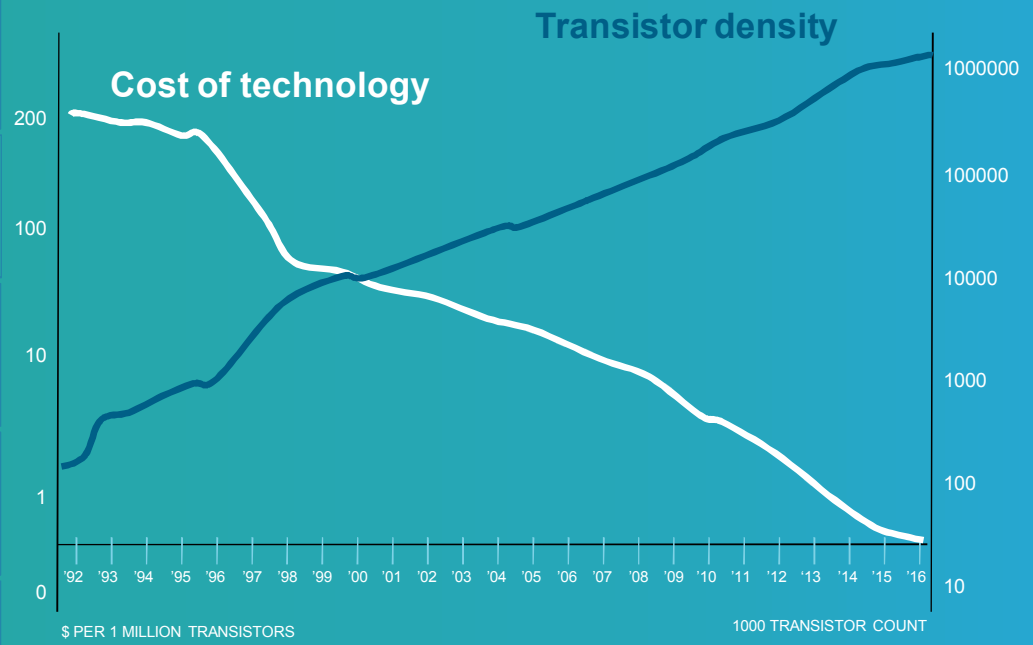
SIEMENS

The cost of key technologies is falling

			COST PER UNIT
DRONES	2007	$100,000	
	2013	$700	
3D PRINTING	2007	$40,000	
	2014	$100	
INDUSTRIAL ROBOTS	2007	$550,000	
	2014	$20,000	
SENSORS	2007	$30,000	
	2014	$80	
SMART PHONES	2007	$449	
	2015	$10	

Source: Accenture Technology Vision 2015

Implications of Moore's Law



Source: Leading Technology Research Vendor

SIEMENS
Ingenuity for life

1 Product design

2 Production planning

3 Production engineering

4 Production execution

5 Services

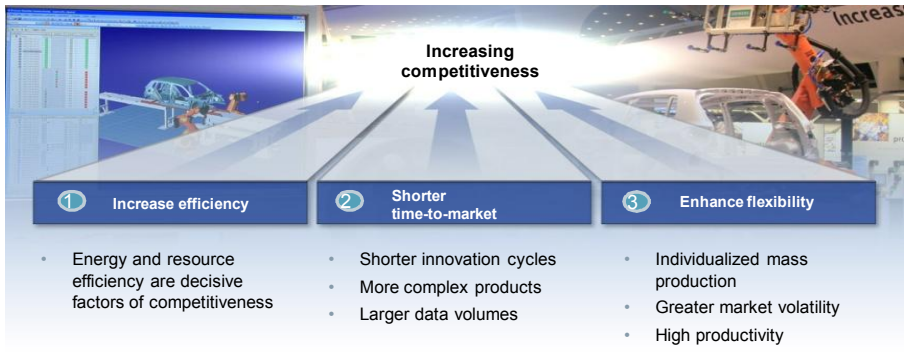
Manufacturers with the longest lead times and most complex products have the most to gain

Digitalization is also a vehicle for newer, more agile companies to leap ahead of existing market leaders

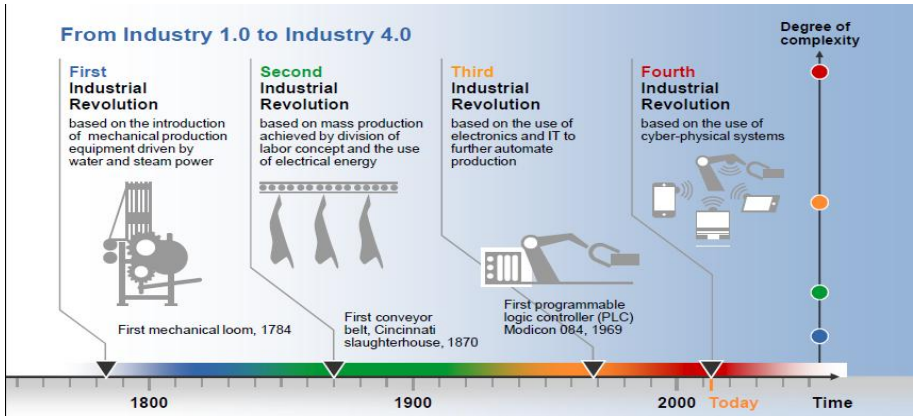
The Future of Manufacturing
Industry 4.0

SIEMENS
Ingenuity for life

Manufacturing is changing



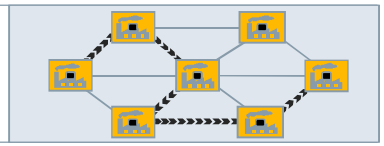
A fourth industrial revolution…



Industry 4.0 – three key elements

1 Production network

Flexible value chains with information available in realtime across company boundaries

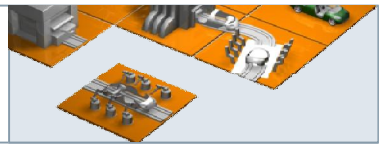


2 Fusion of virtual and real world

Integration of product design and production engineering for shorter time to market

3 Cyber-physical systems

Modular production units with complete and consistent virtual image



Cyber version of real world…

Cyber-physical system (CPS)


Physical production facility

+


Digital model

Contains all the information…

- Software / Informatics
- Mechanics
- Electronics
- Automation, HMI
- Safety, security
- Maintenance
- Location, identity…
- Status
- SW Version
- Interfaces

The digital model is always up-to-date and is extended over the entire lifecycle

Design → **Planning** → **Engineering** → **Prodiuction** → **Services**

SIEMENS

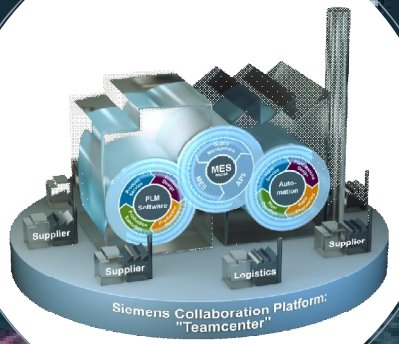
Ingenuity for life

Industrial software and automation

Digital Enterprise Software Suite

Industrial communication

Industrial Communication



Industrial Security

Industry Services

Industrial security

Industrial services

SIEMENS

Ingenuity for life

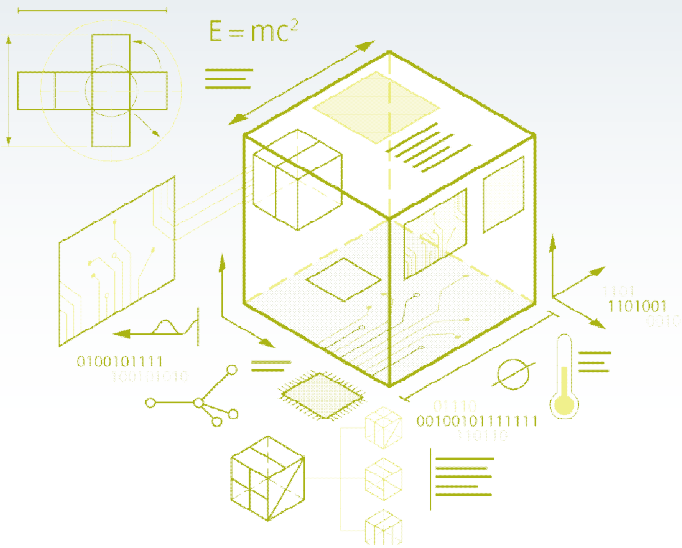
1 Product design

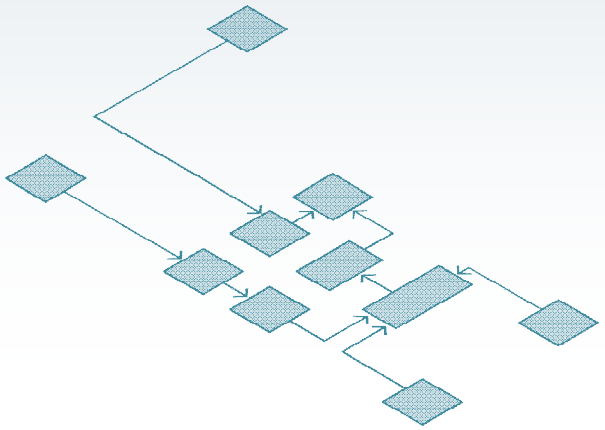
2 Production planning

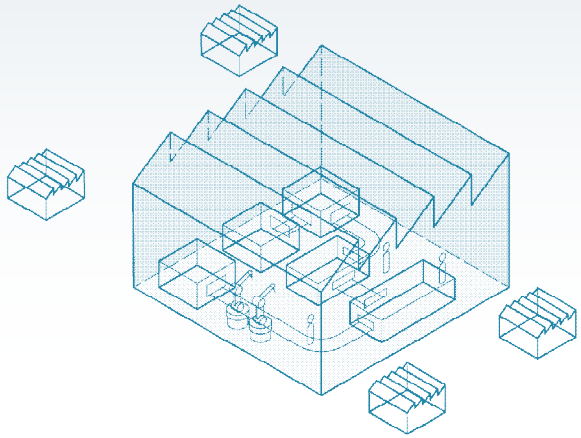
3 Production engineering

4 Production execution

5 Services





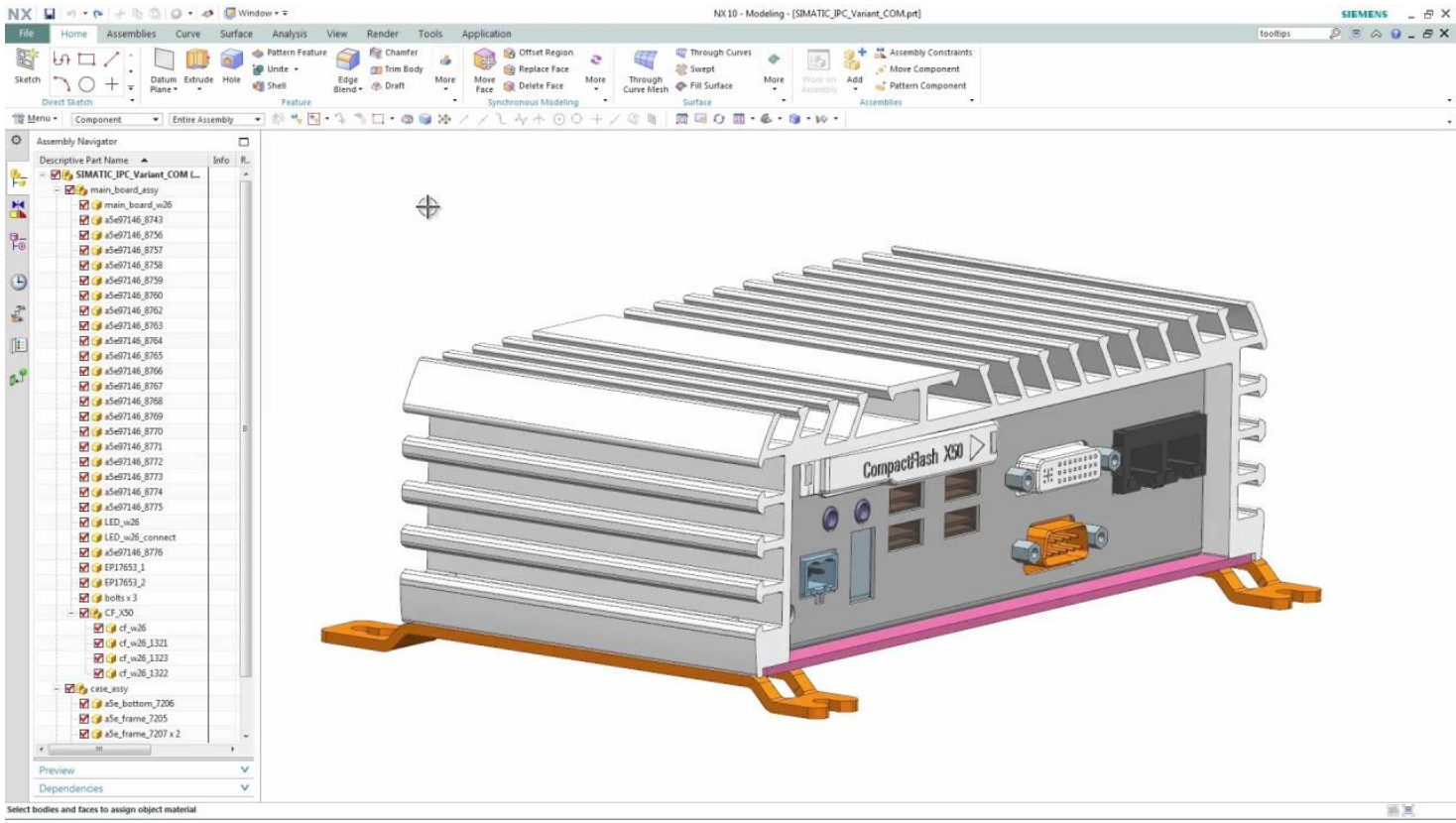


SIEMENS

Ingenuity for life

1 Product design

Suppliers



SIEMENS
Ingenuity for life

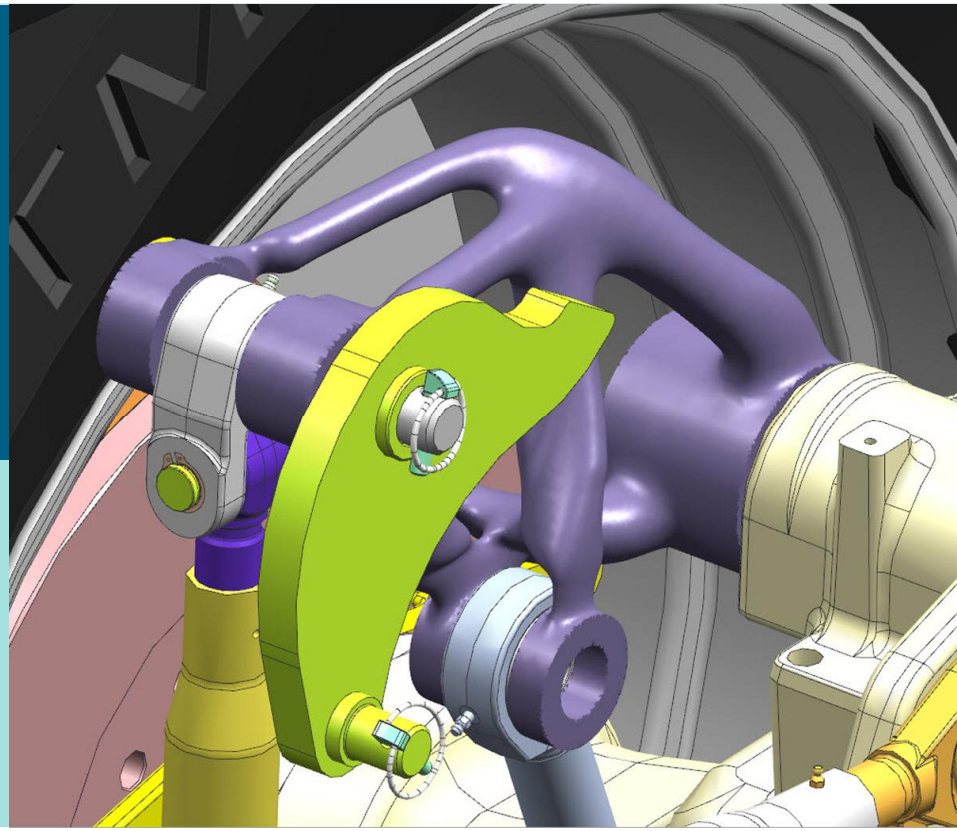
1 Product design

Suppliers

Outdated design software limits product possibilities and hampers competitiveness.

SOLUTION

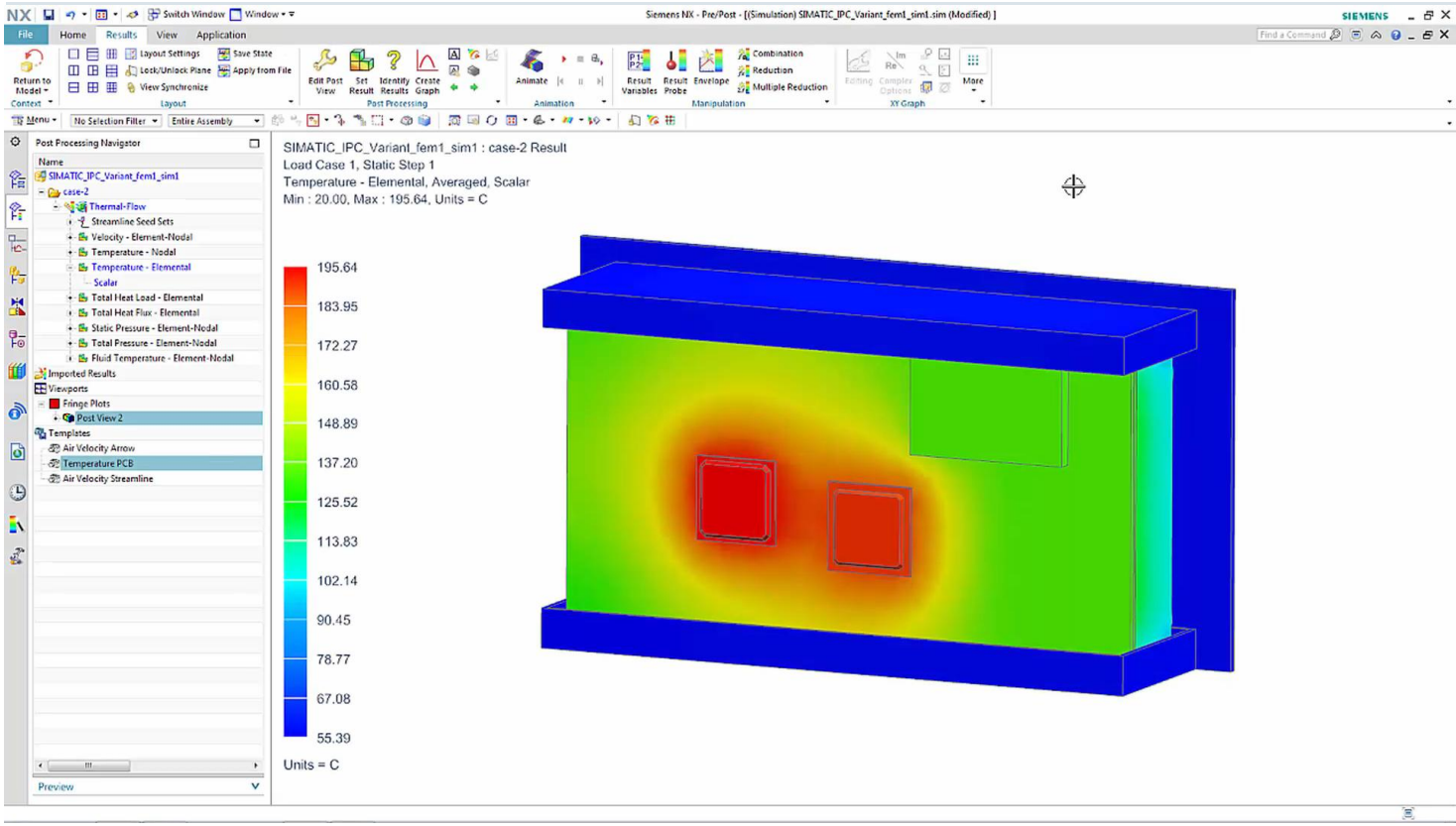
Convergent modeling for additive



SIEMENS
Ingenuity for life

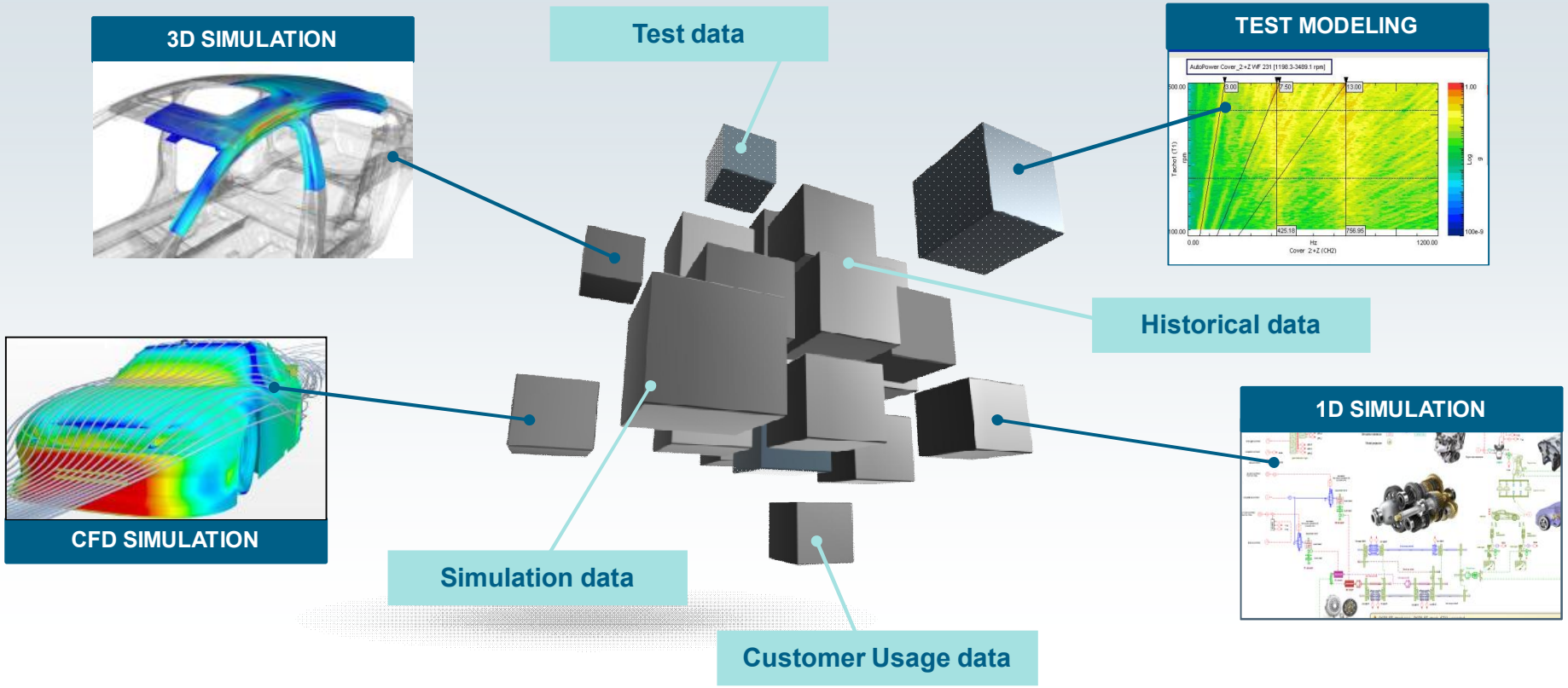
1 Product design

2 Suppliers



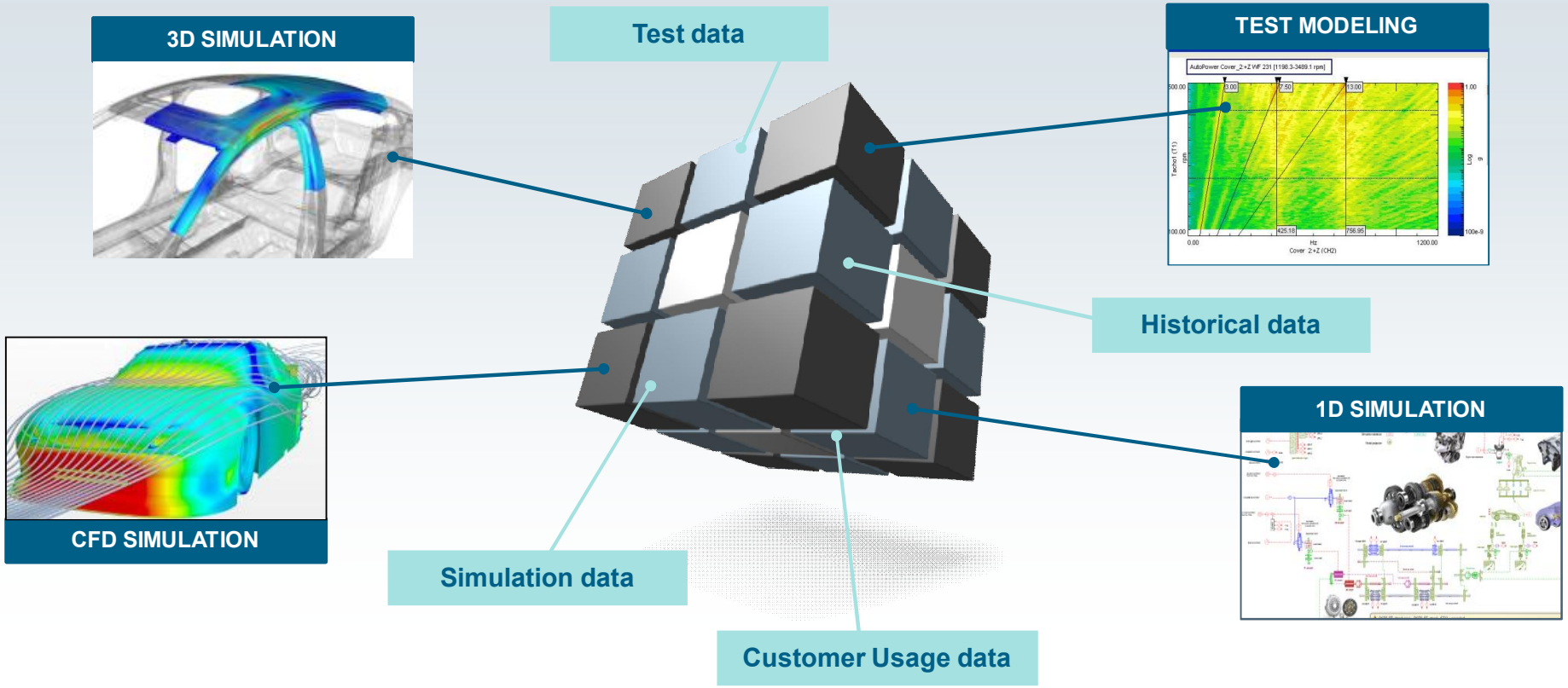
System Driven Product Development
From disconnected models and data …

SIEMENS
Ingenuity for life



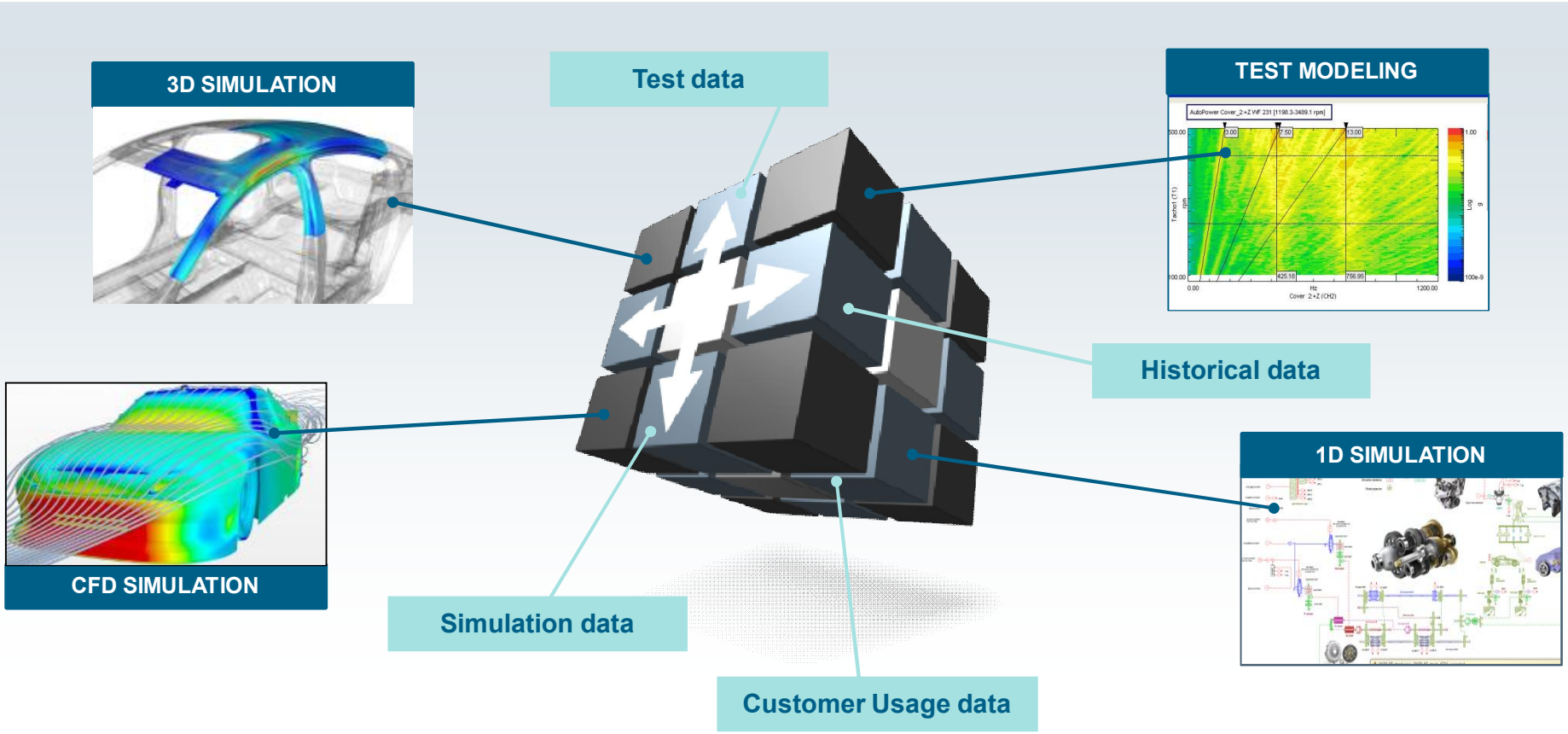
System Driven Product Development
…to a performance Digital Twin

SIEMENS
Ingenuity for life



System Driven Product Development
… enabling Predictive Engineering Analytics

SIEMENS
Ingenuity for life



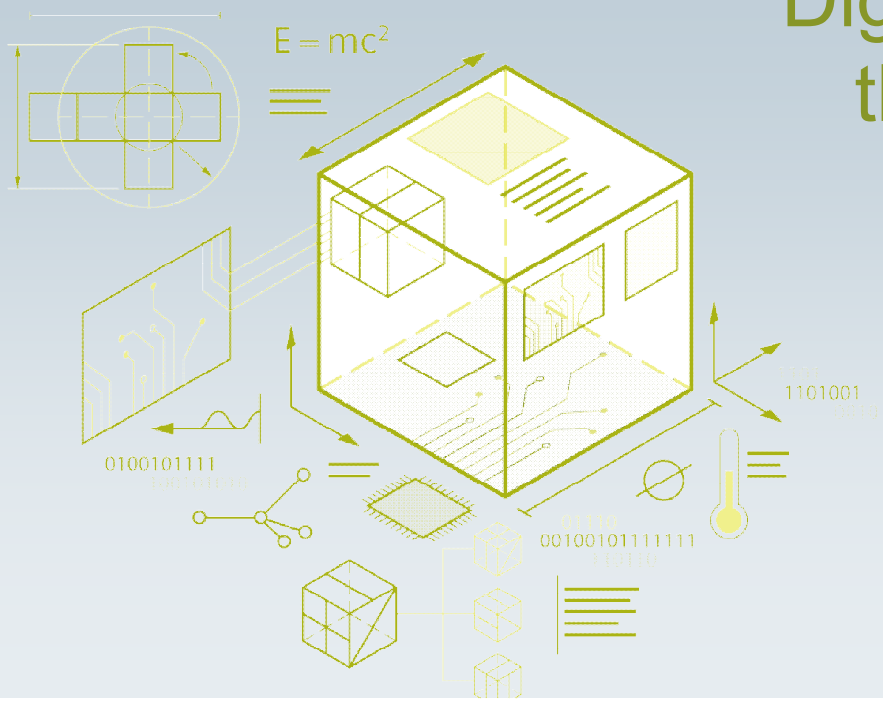
SIEMENS
Ingenuity for life

1 Product design

2

Suppliers

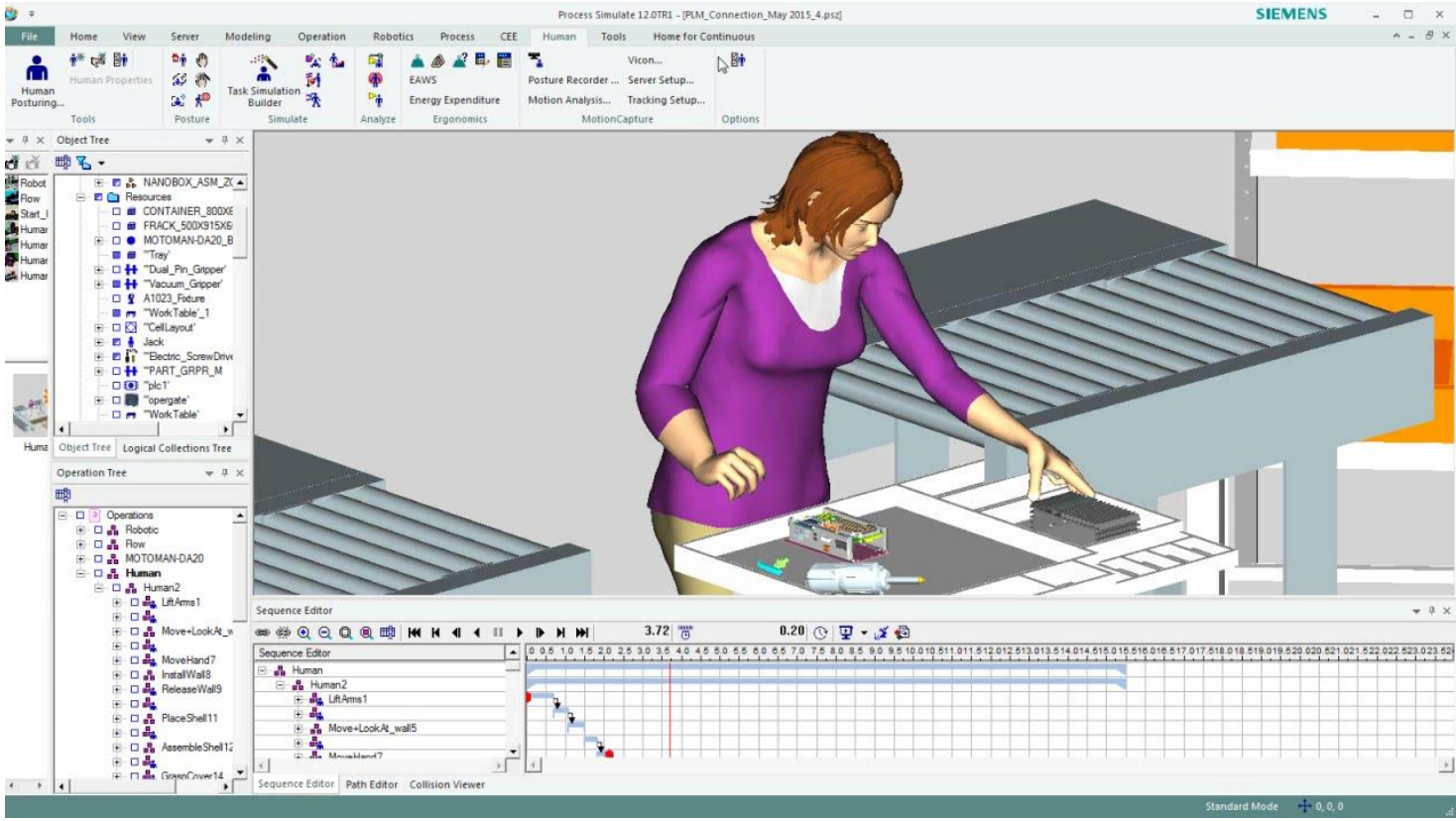
Digital twin of the product



SIEMENS

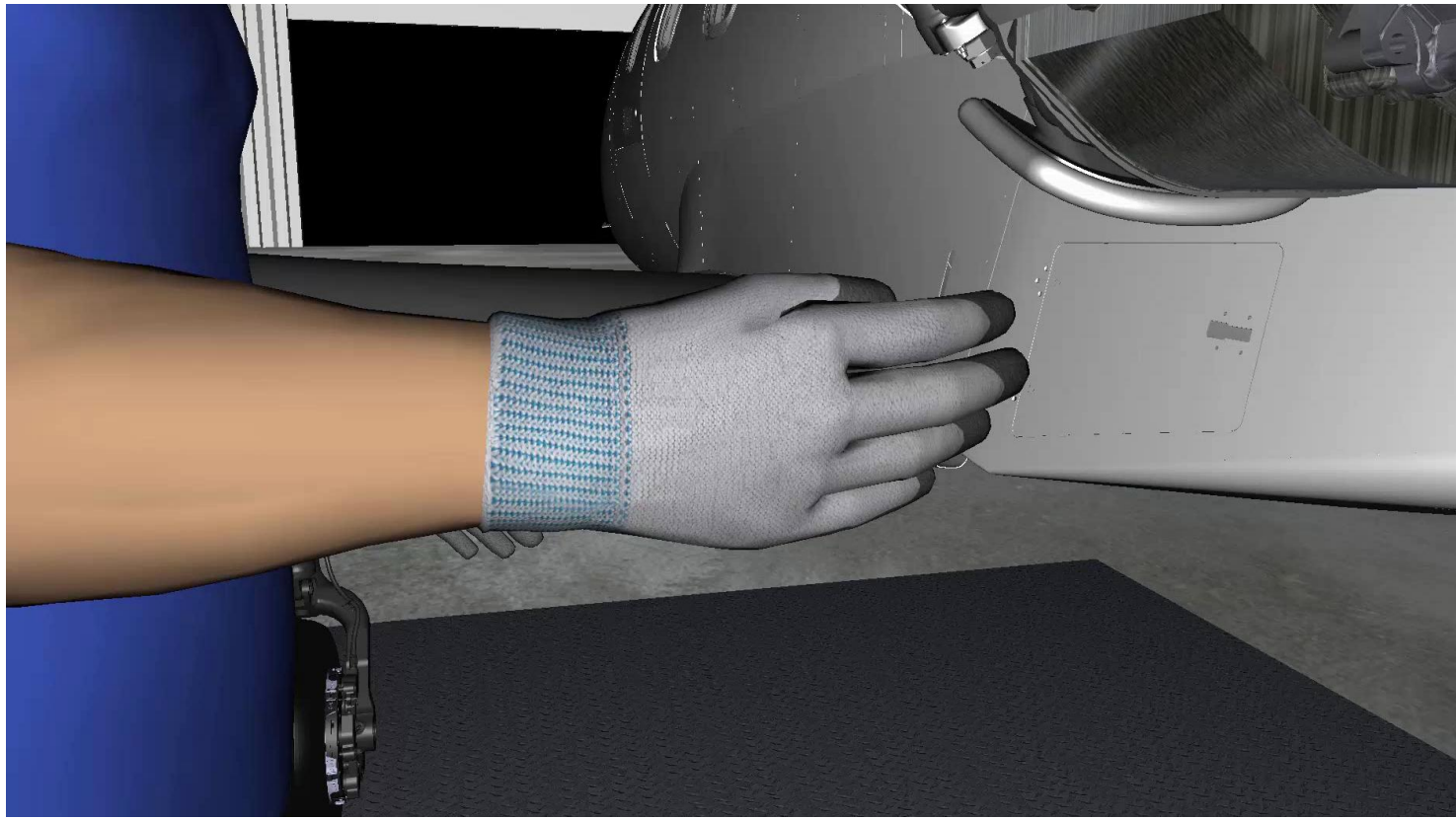
Ingenuity for life

2 Production planning 3



SIEMENS
Ingenuity for life

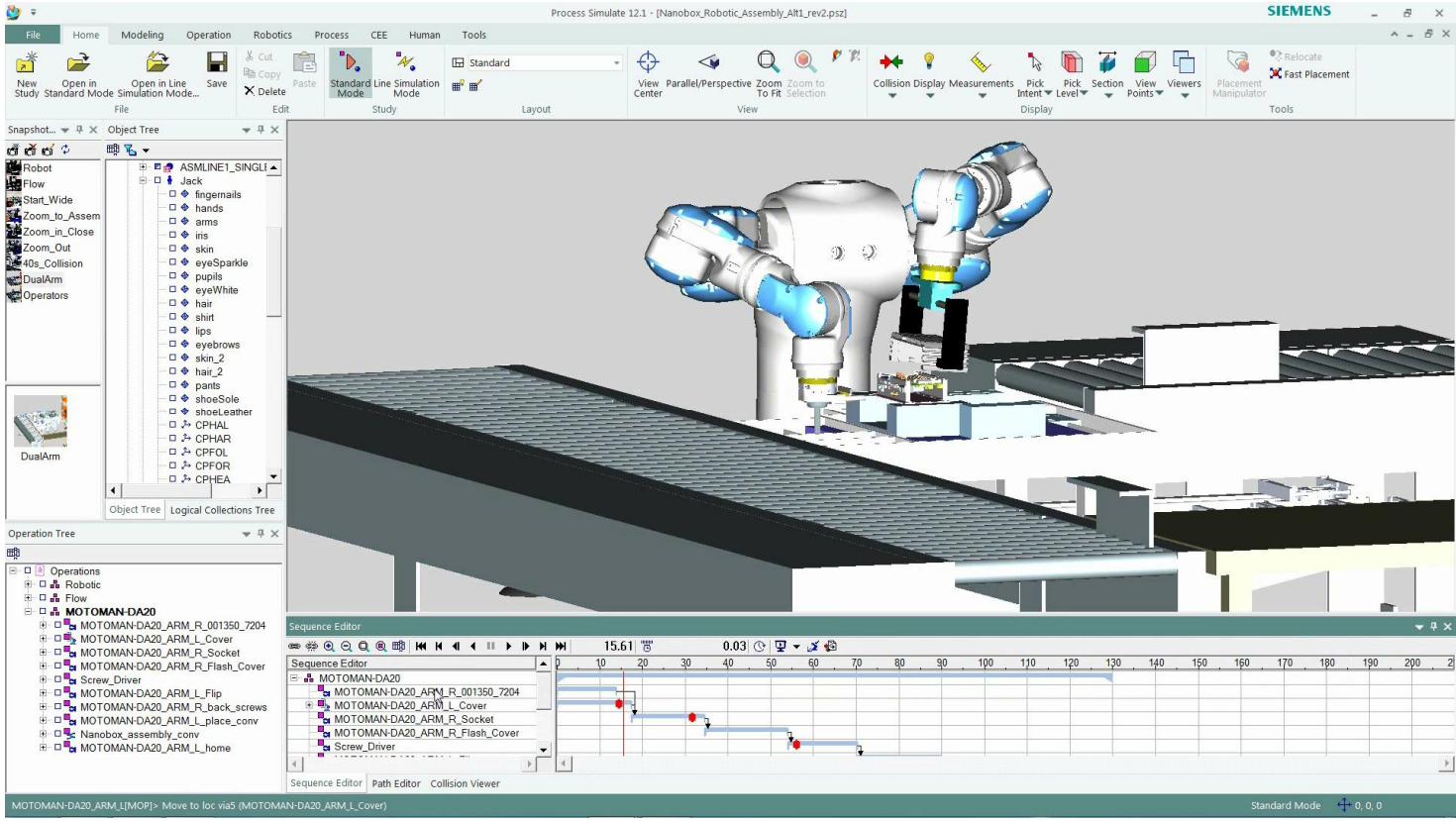
2 Production planning 3



SIEMENS

Ingenuity for life

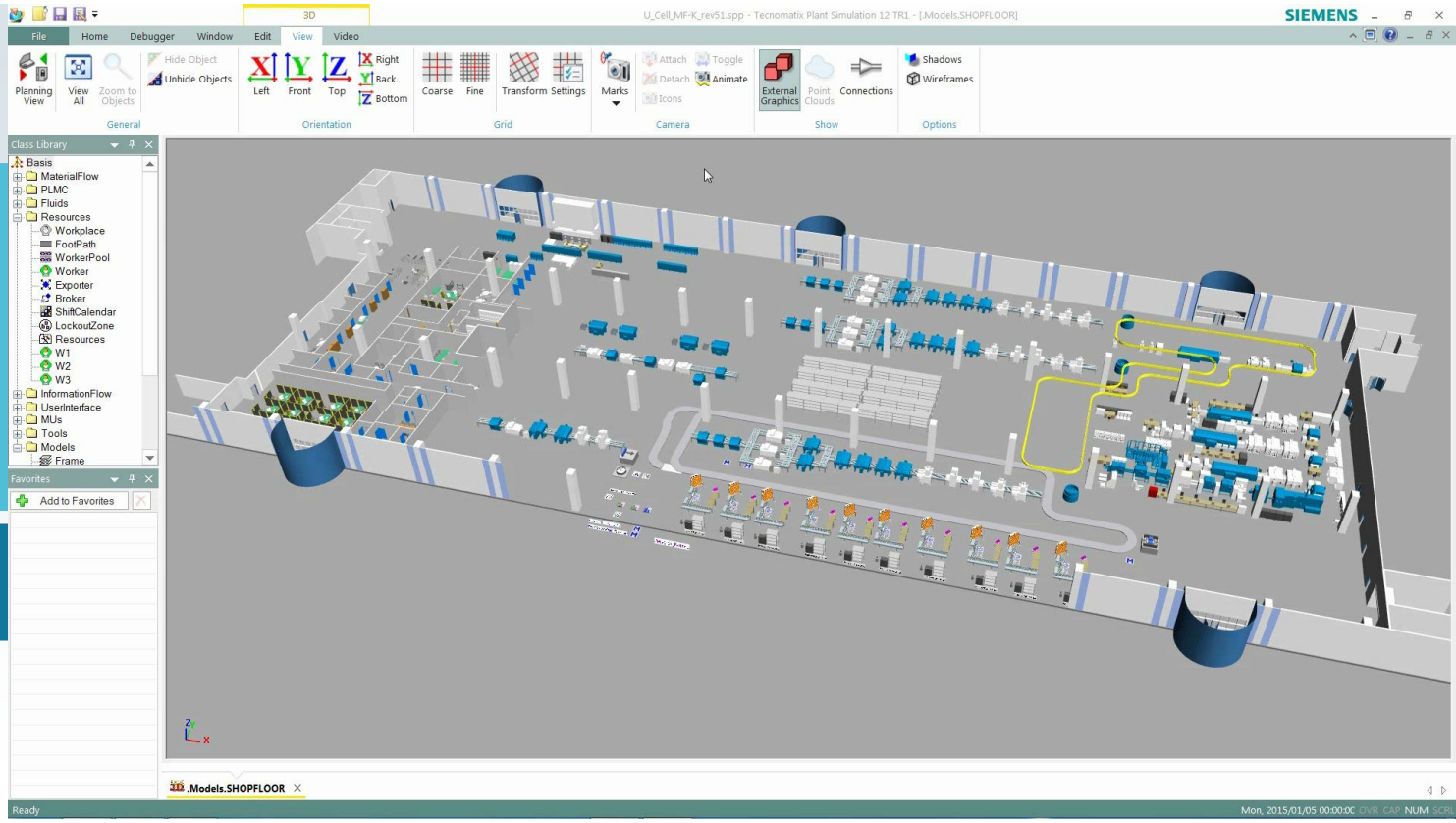
2 Production planning 3



SIEMENS

Ingenuity for life

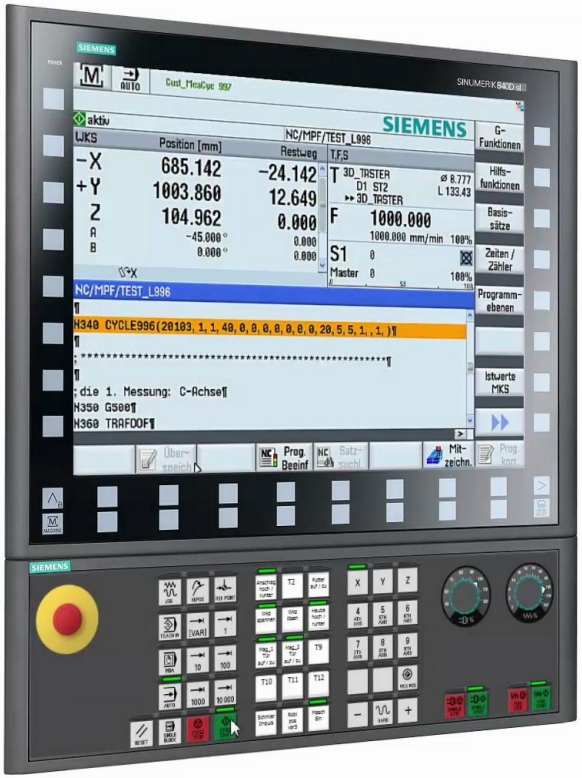
2 Production planning 3

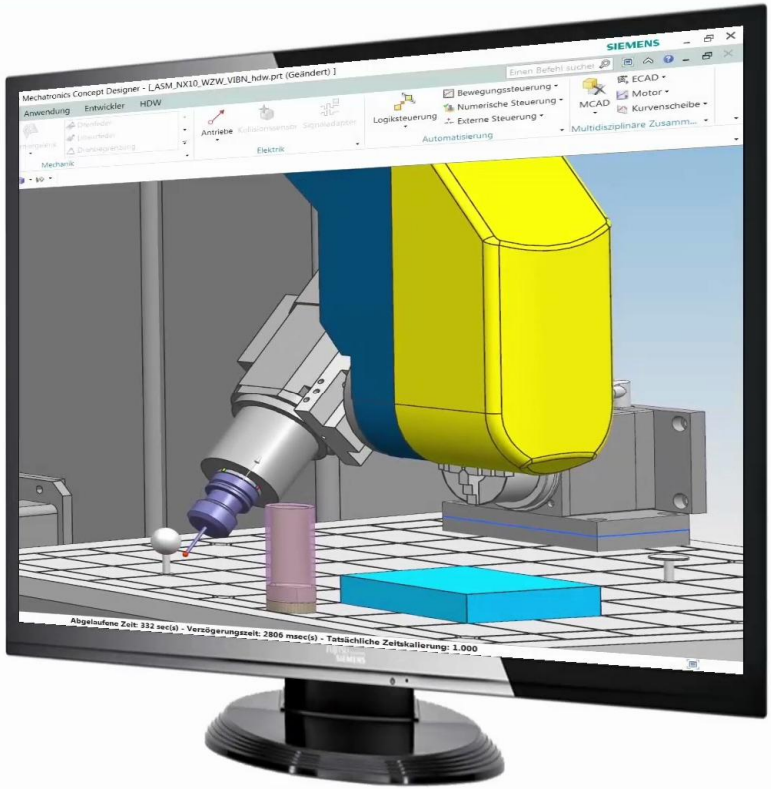


SIEMENS

Ingenuity for life

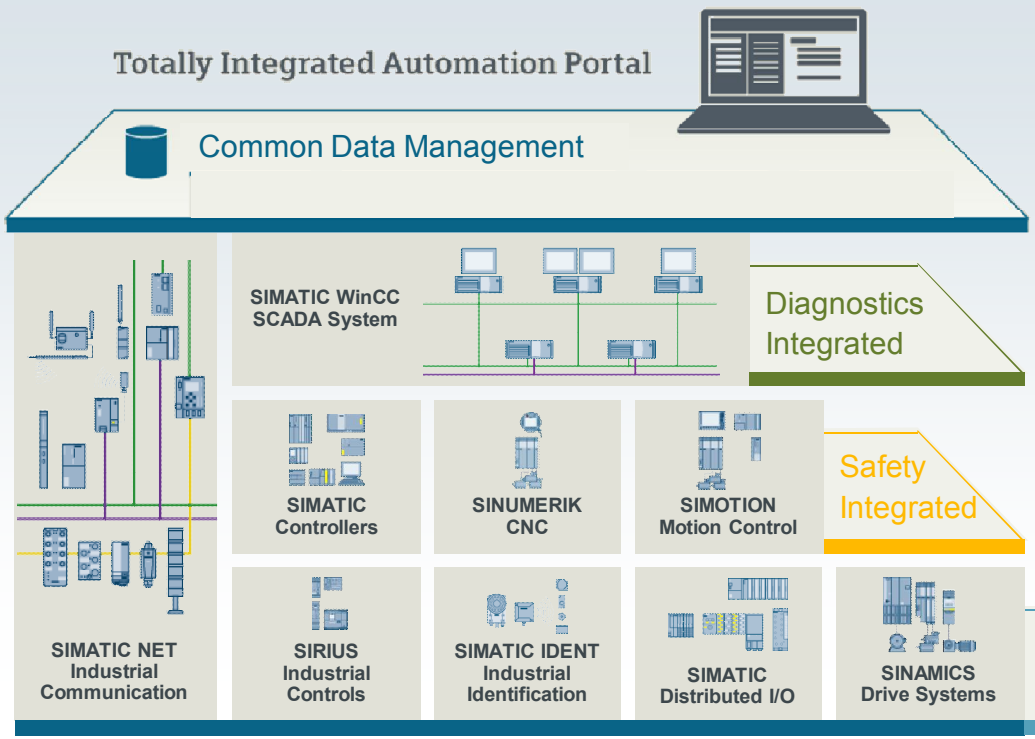
3 Production engineering 4



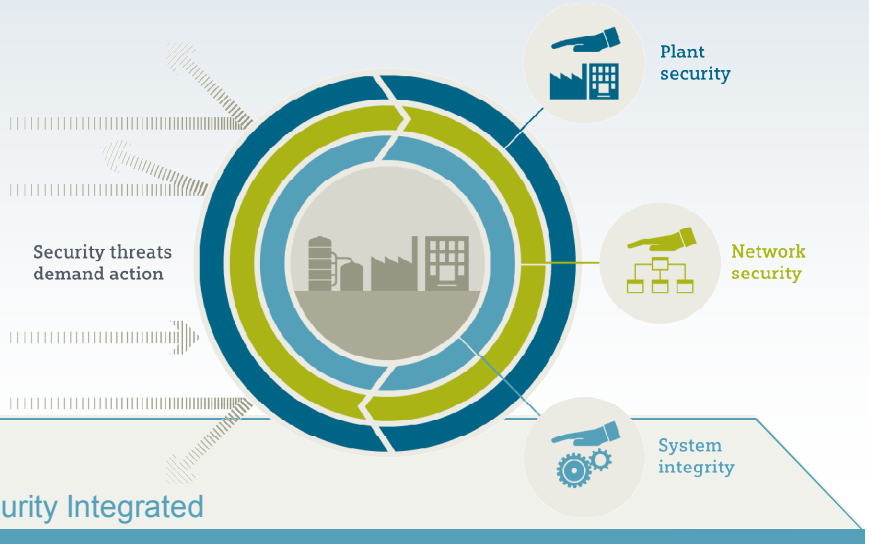


Totally Integrated Automation Portal
Your Automation Gateway to the Digital Enterprise

SIEMENS
Ingenuity for life



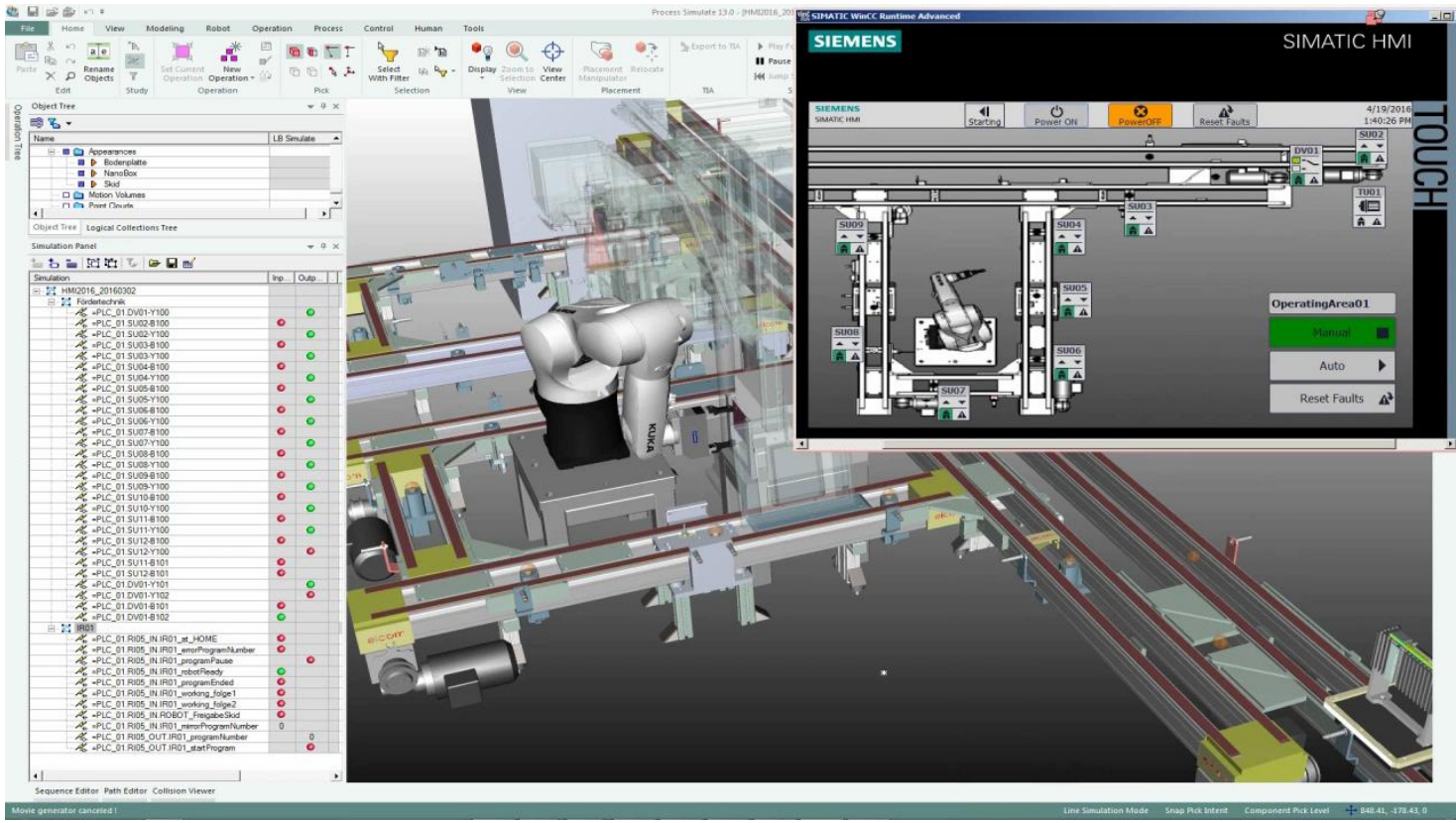
- Data, diagnostics, safety and security is fully integrated



SIEMENS

Ingenuity for life

3 Production engineering 4

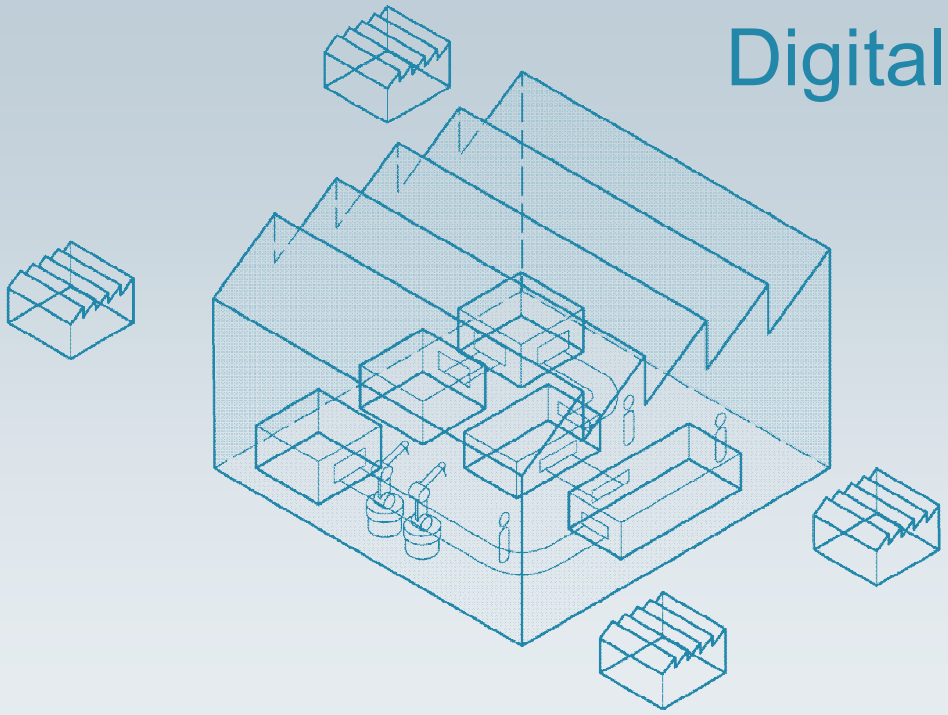


SIEMENS
Ingenuity for life

n

3 Production engineering 4

Digital twin of the equipment



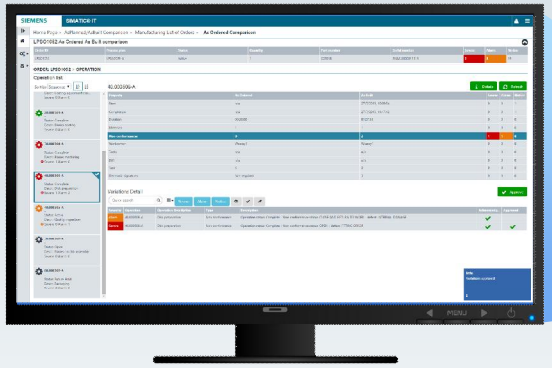

SIEMENS
sup013
Assembly Station 10
op055
Operator: op055
Operation ID: 004499
Operation: Install upper components
Progress: 0%
Current task: 004784
Step: Install Power Supply
Current order: 227E613753
Product: SIMATIC IPC 227E
SN: SN200916062948

SIEMENS

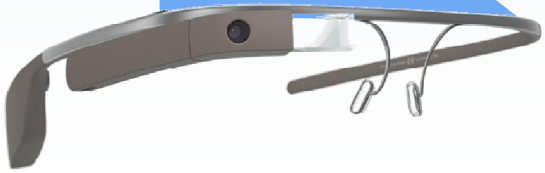
Ingenuity for life

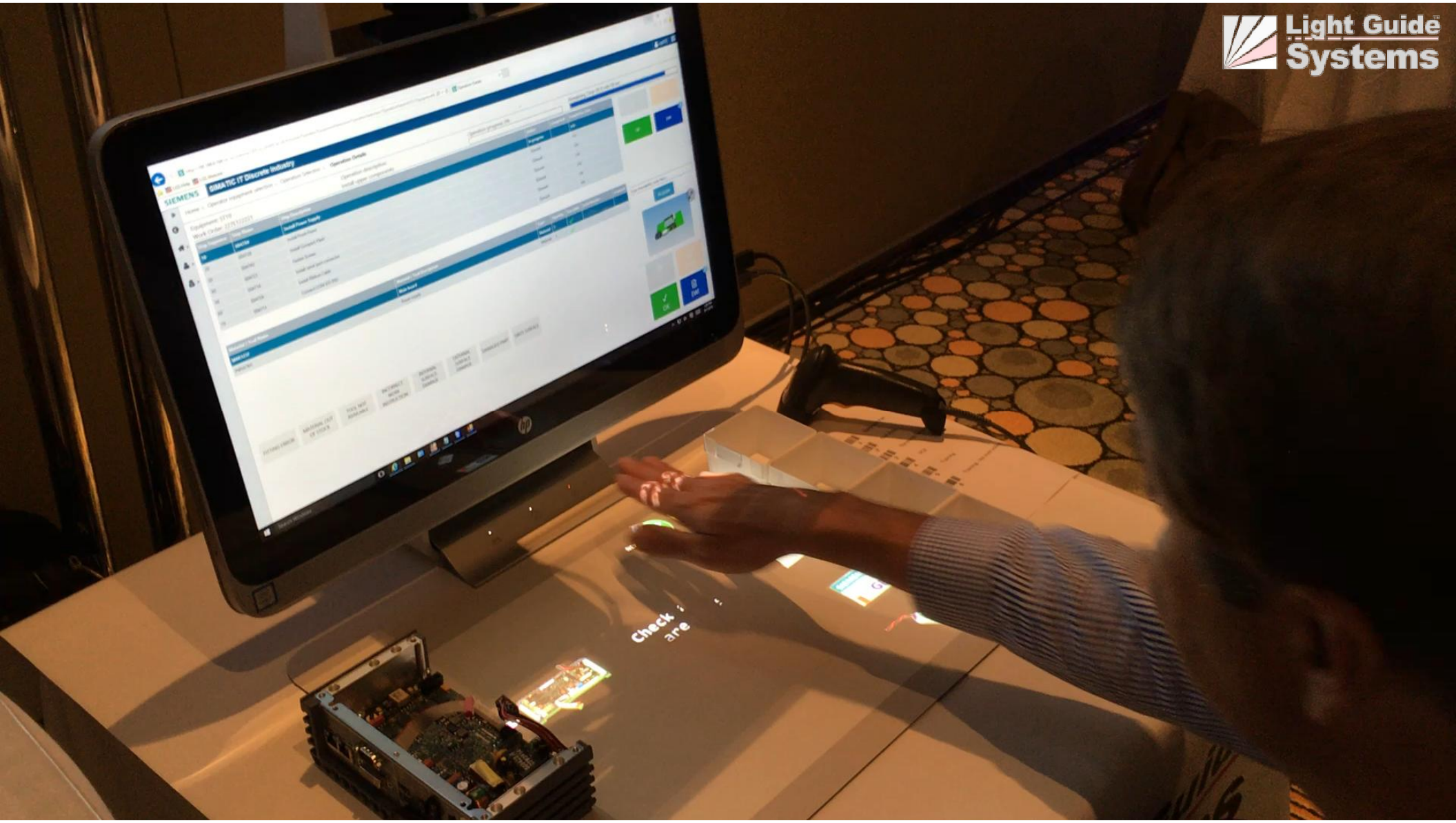
SIEMENS

Ingenuity for life



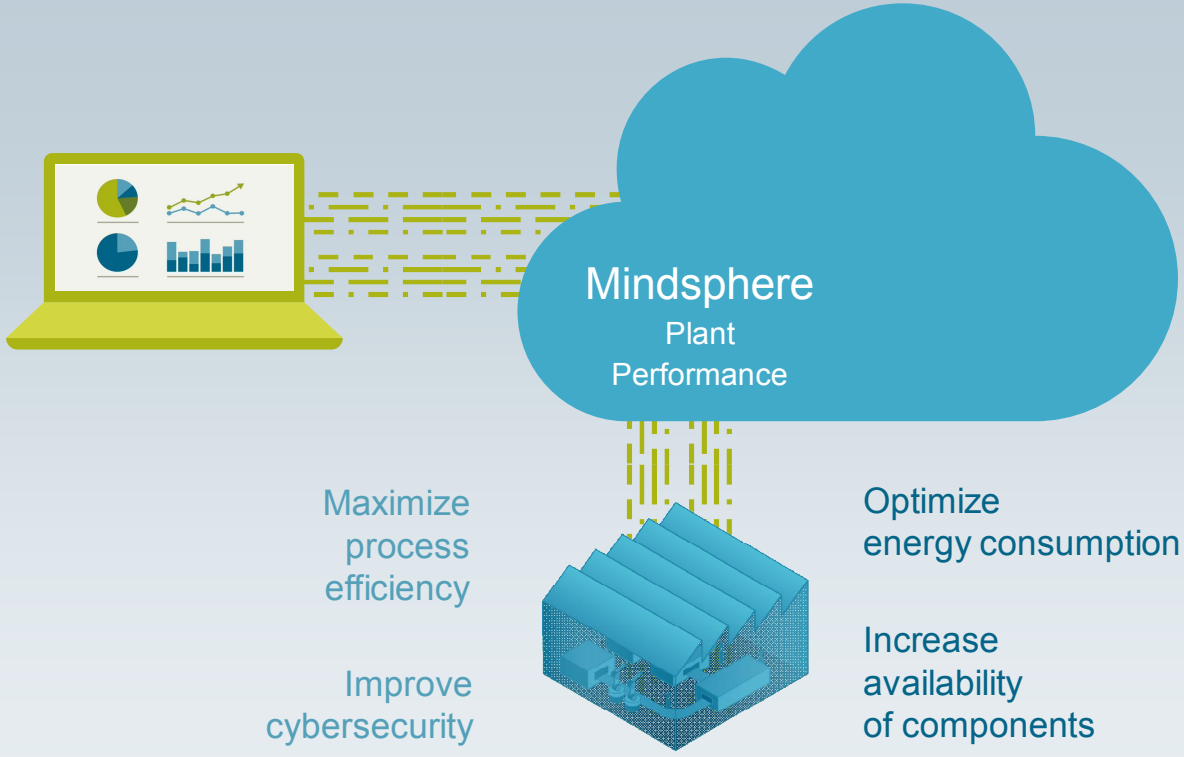
SIT Manufacturing Service APIs




Light Guide Systems
SIEMENS
SIMATIC IT Discrete Industry

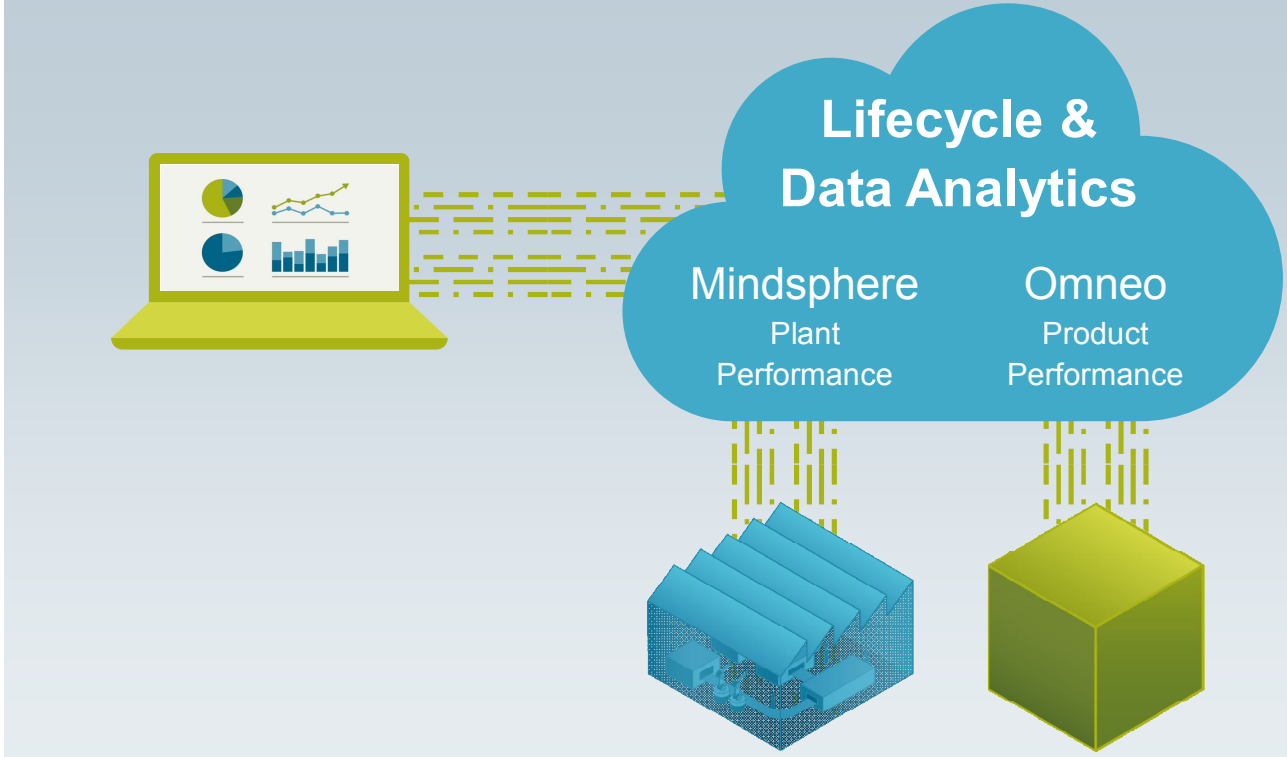
SIEMENS
Ingenuity for life

n 5 Services



SIEMENS
Ingenuity for life

n 5 Services

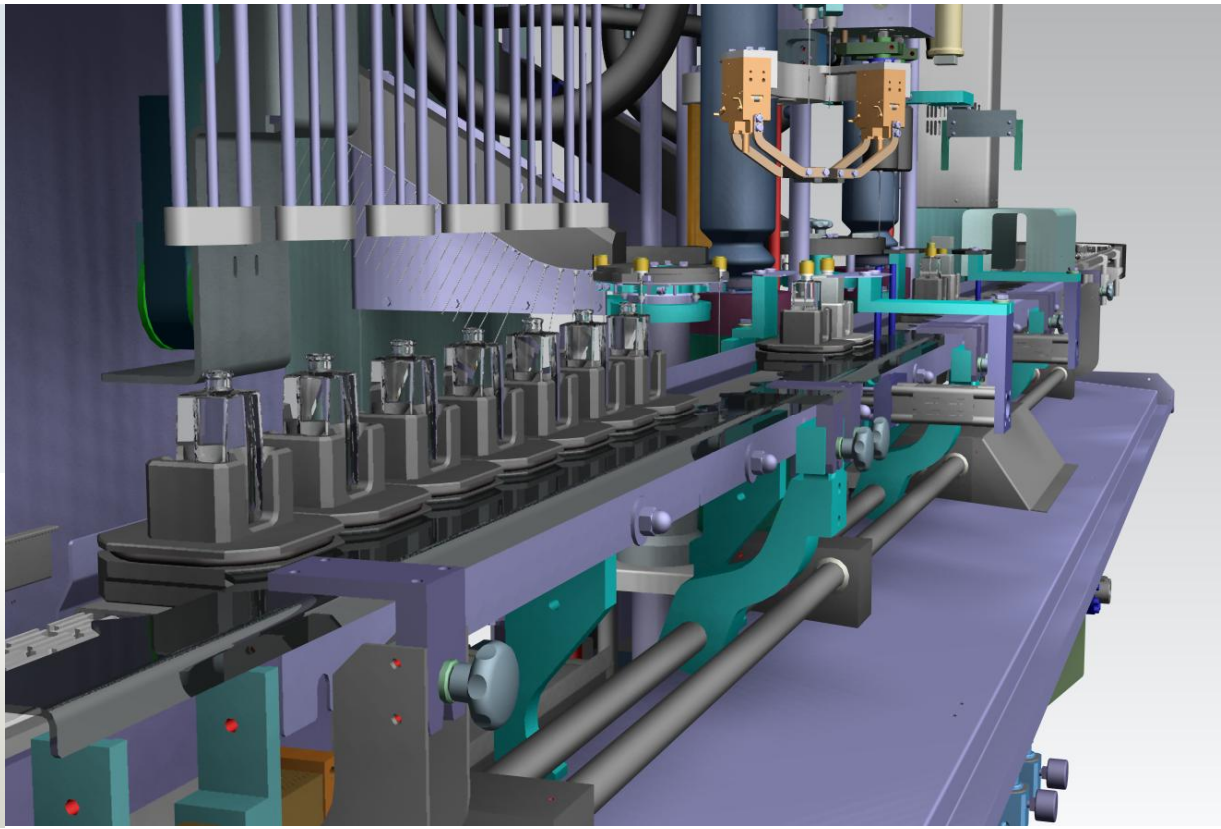


SIEMENS
Ingenuity for life

“The UK’s OEM team connects the UK Machine builders to Siemens technology.

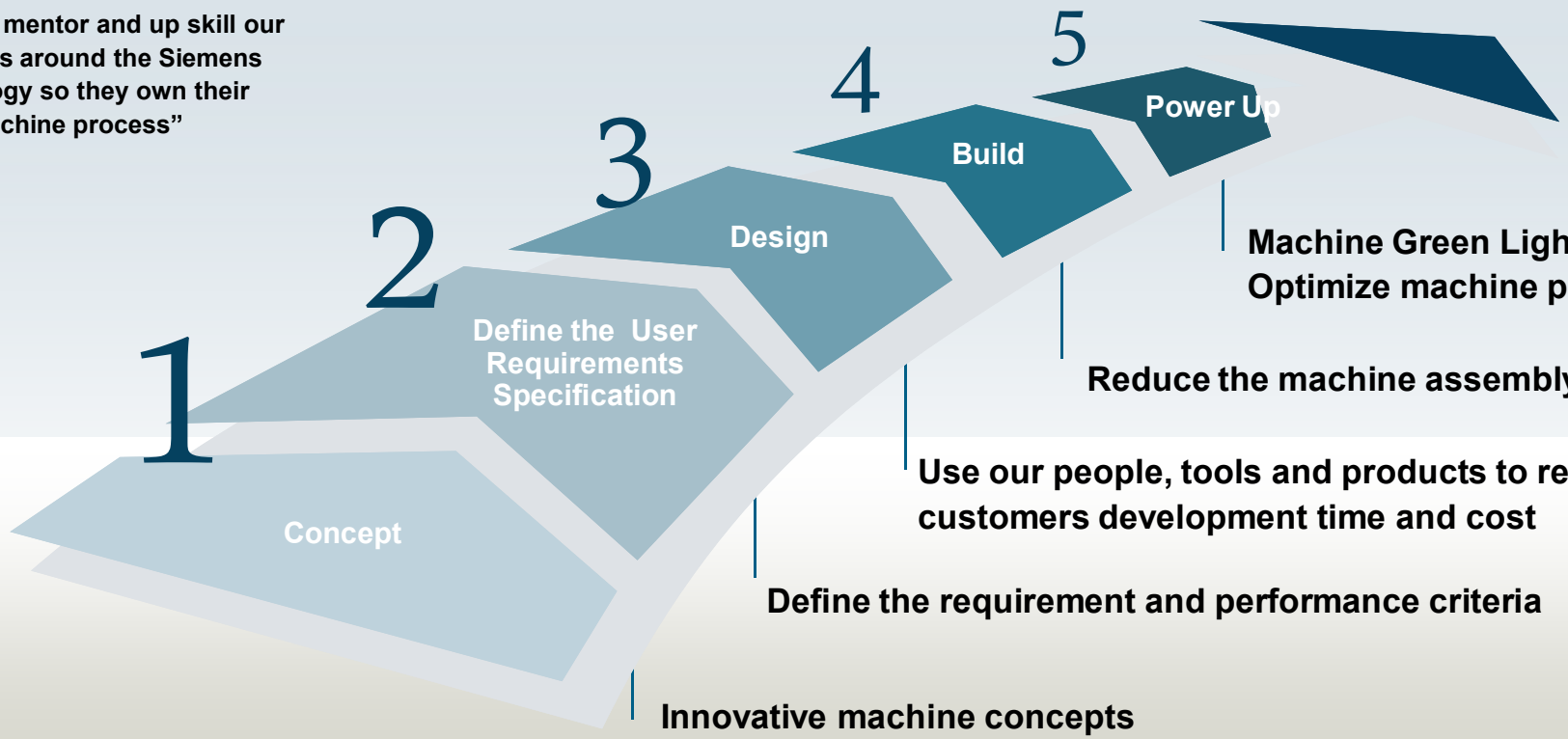
Our aim to help the customer reduce the design, development and machine build costs within their business, while producing world class machines to take to market.”

Marc Booth,
OEM Business
Development Manager



SIEMENS
Ingenuity for life

"We coach, mentor and up skill our customers around the Siemens technology so they own their machine process"



Innovative machine concepts

Define the requirement and performance criteria

Use our people, tools and products to reduce the customers development time and cost

Reduce the machine assembly time

Machine Green Light State & Optimize machine performance

SIEMENS
Ingenuity for life

Reduced complexity…

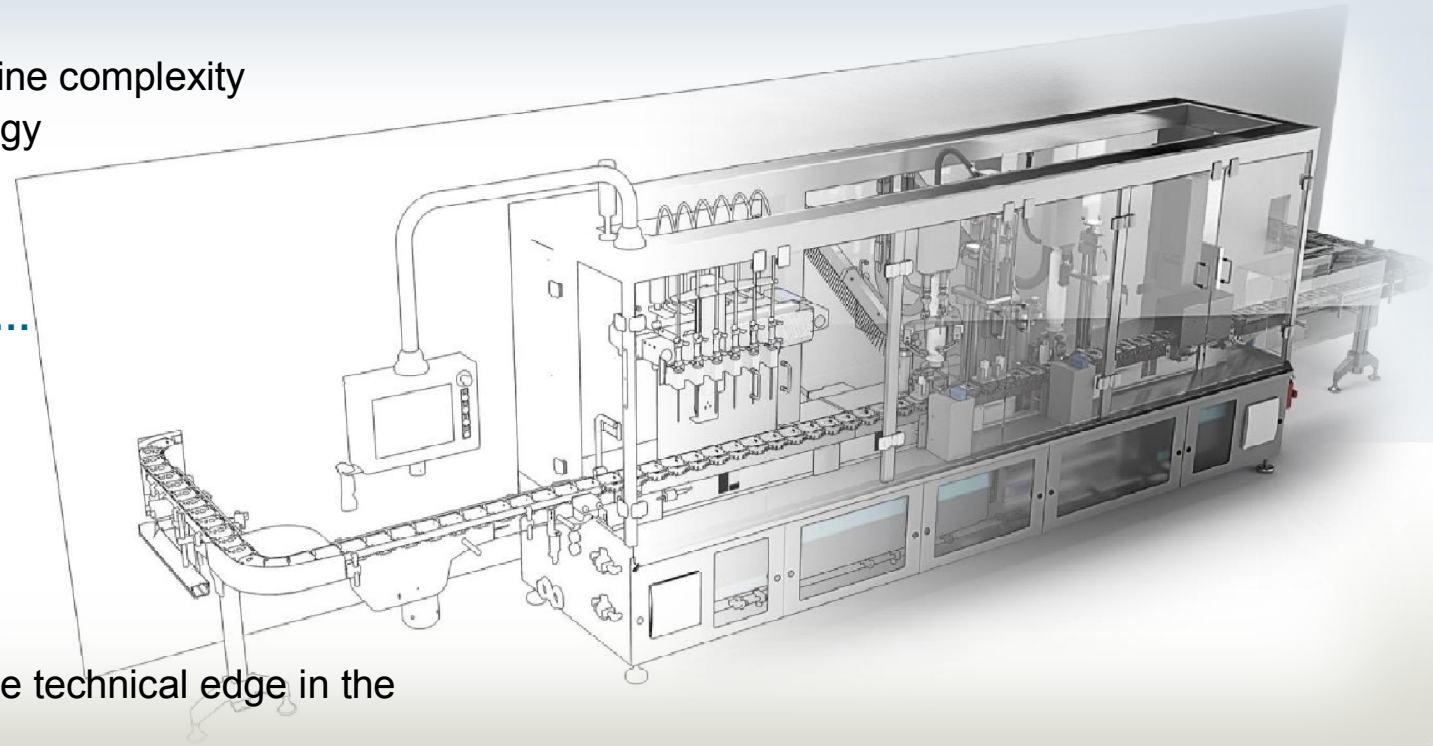
… reduce our customers machine complexity through connectivity of techology

Reduced development costs…

…by creating a right first time culture and Utilizing our tools, apps and industry knowledge

Individualized production…

…use the technology to gain the technical edge in the market place



Asset finance from Siemens Financial Services helps foster growth and sustainability in retail Packaging.

TRAK-RAP

Lancashire based machine manufacturer TRAKRAP provides energy efficient packaging solutions to the retail sector. The firm's patented wrapping system uses 90% less energy and 70% less wrapping film than traditional shrink wrapping by removing the requirement for heat tunnels

Industrial Products Manufactured in Congleton

SIEMENS
Ingenuity for life

Today drives up to 22 kW are designed and manufactured at Congleton

SINAMICS
G110

SINAMICS
G120

SINAMICS
G110D

SINAMICS
G120C

MM4

MICROMASTER
420/430/440

SIMATIC
ET200P

SINAMICS
G120D

SINAMICS
G120P

SINAMICS
G110M

SIEMENS
Ingenuity for life

SIEMENS
Siemens Financial Services

PILKINGTON


SIEMENS

Servitisation and Siemens

SIEMENS
Ingenuity for life