



SIEMENS

ASPROM : Driving the Digital Enterprise – on the way to Industrie 4.0

Jean-Pierre Amadio : CEO siemens Industry Software 26 janvier 2016

Comprehensive offering for the Digital Enterprise in process and discrete industries

Digital Enterprise

Process Industries

Discrete Industries

Product design

Process-
and plant
design

Engineering

Operation

Services

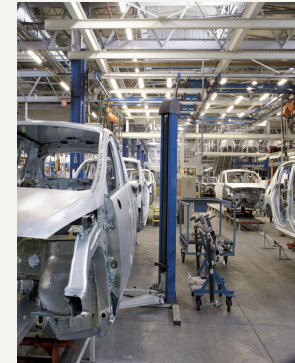
Product
design

Production
planning

Production
engineering

Production

Services

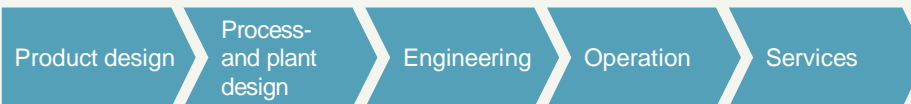


Workflows in process / discrete industry differ

Digital Enterprise

Process Industries

Discrete Industries



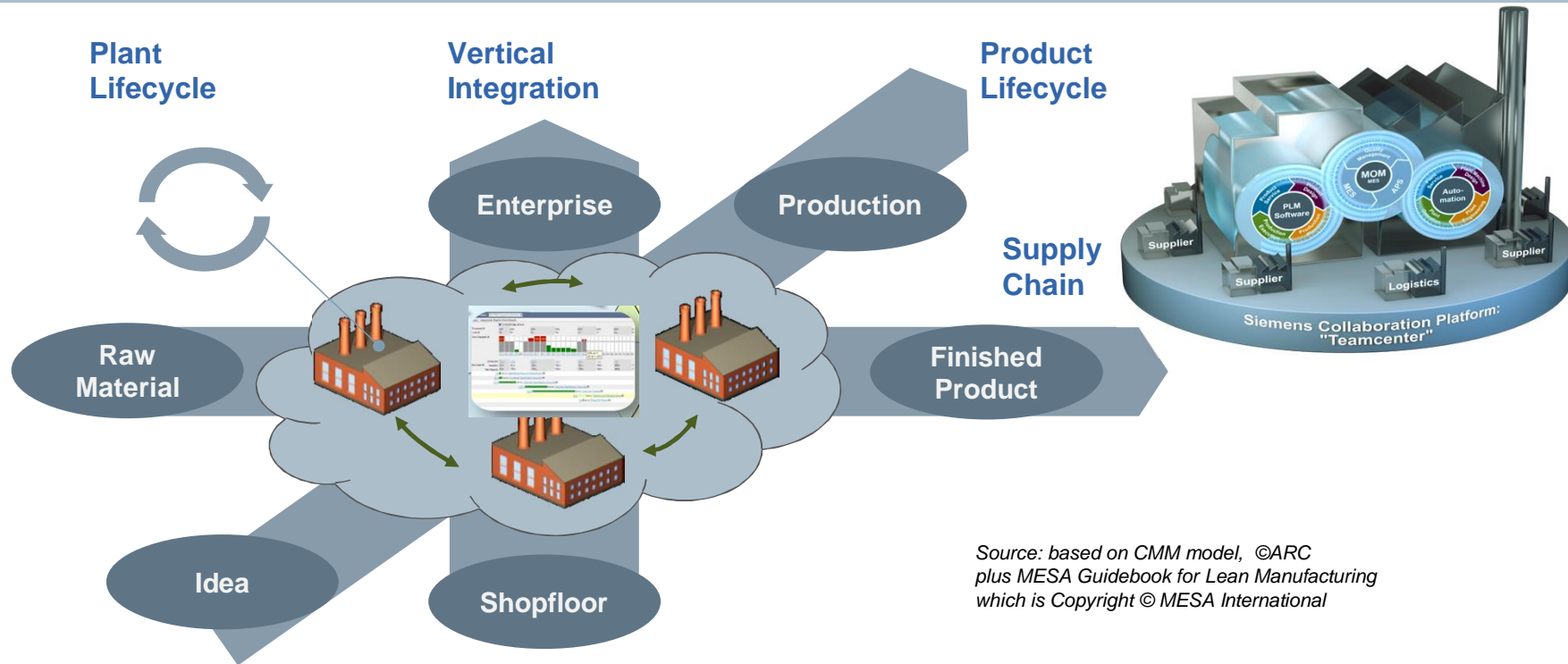
Product design starts in the laboratory
Process design – P&ID
Detailed engineering – electrics, DCS engineering, piping, 3D plant design...
Sensors: temperature, pressure, flow, weight, analytics,
Actuators: pumps/agitators, valve positioners, heating/cooling
Hazardous/explosive environment Ex

The image shows a laboratory setting with various pieces of industrial equipment, including pipes, valves, and a control panel with a keyboard.

Product design and Production planning in CAD
Machine and Line Automation driven by mechatronic CAD/CAE
Sensors : proximity, encoders, position, motion...
Actuators: hydraulics, servo-motors, linear drives

The image is a collage showing a person working at a CAD workstation, a factory floor with automated machinery, and a close-up of a robotic arm.

Software is the key to manage current and future challenges in Manufacturing and Production



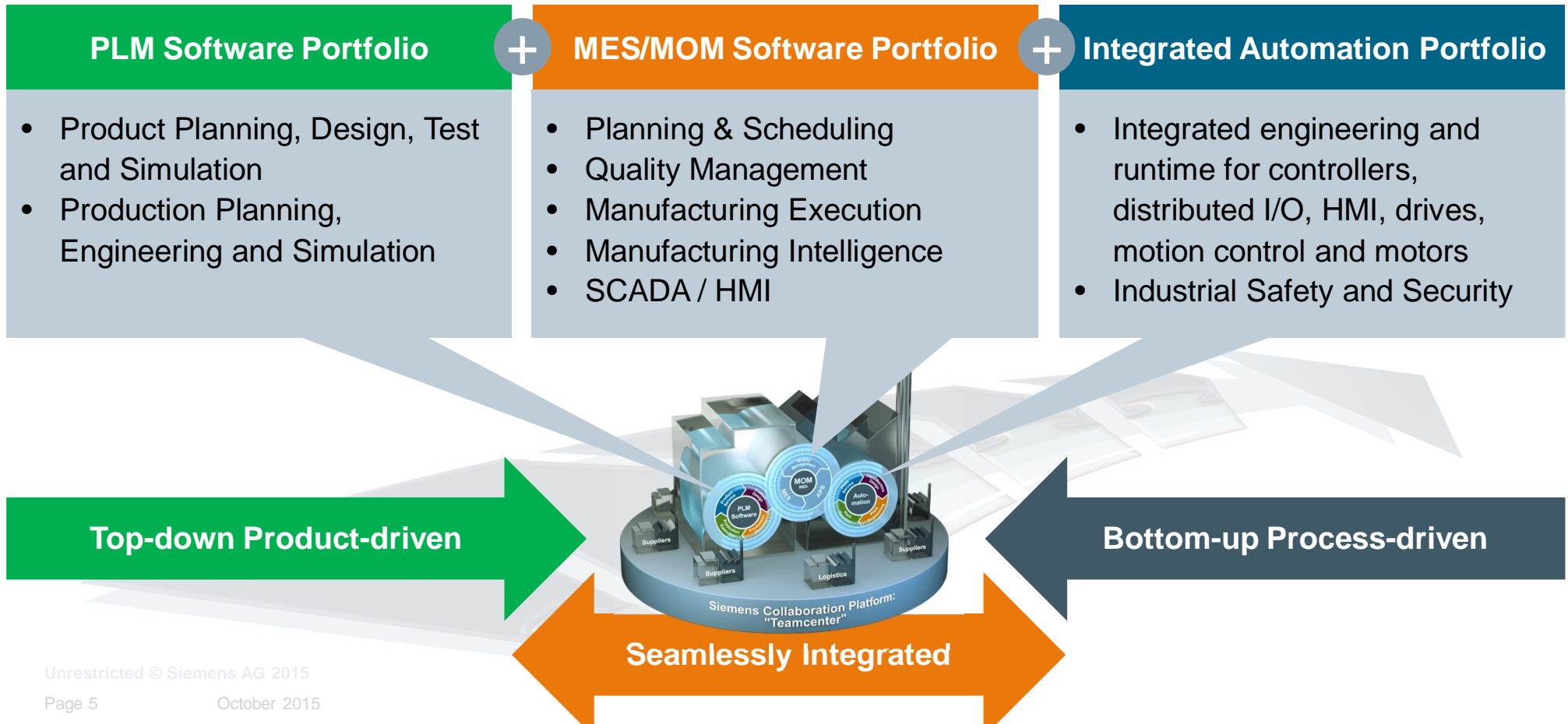
Source: based on CMM model, ©ARC plus MESA Guidebook for Lean Manufacturing which is Copyright © MESA International



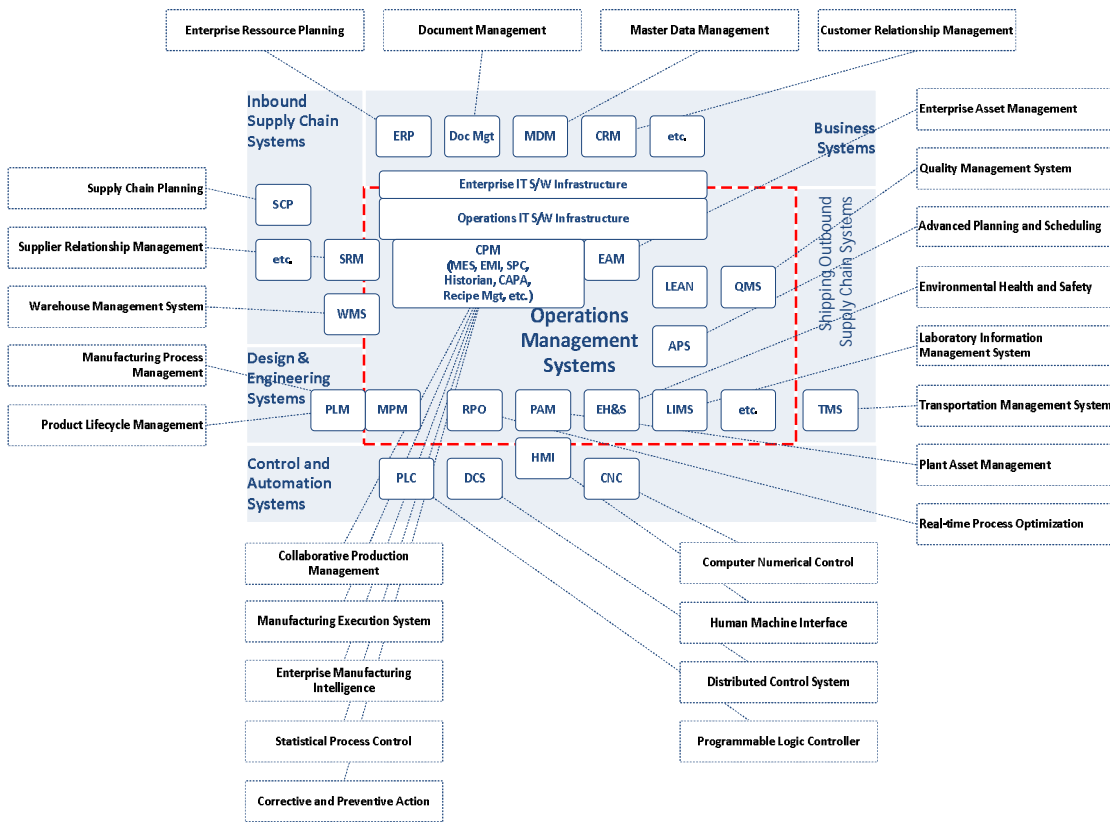
Software is the main enabler for improvement & innovation

The Digital Enterprise

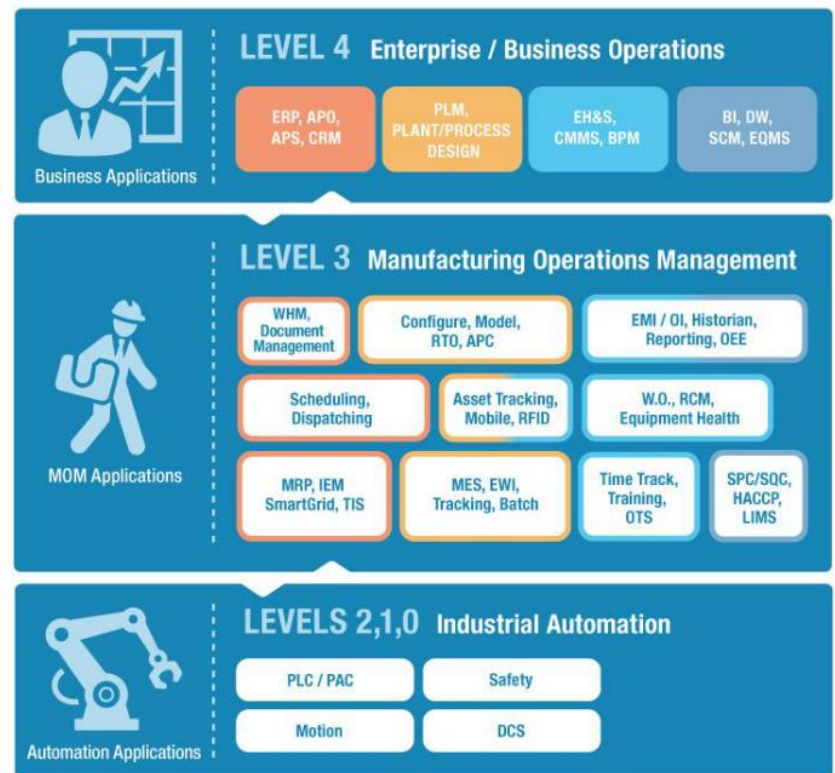
PLM, MOM and Automation Domains Currently Covered by 3 Portfolios



Operation Management System (ARC) Manufacturing Operation Management (LNS Research)

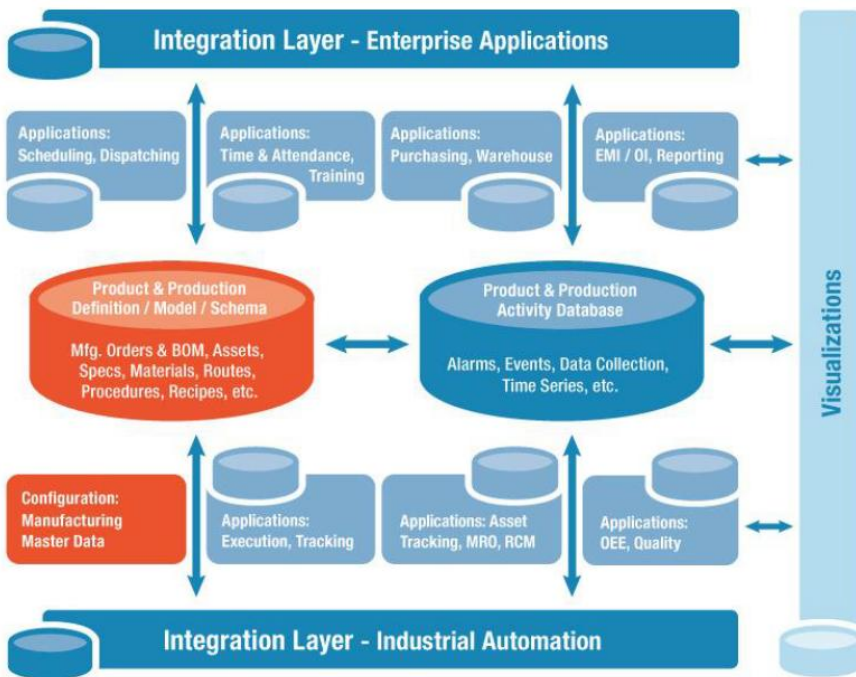


MANUFACTURING OPERATIONS MANAGEMENT Software / Application View

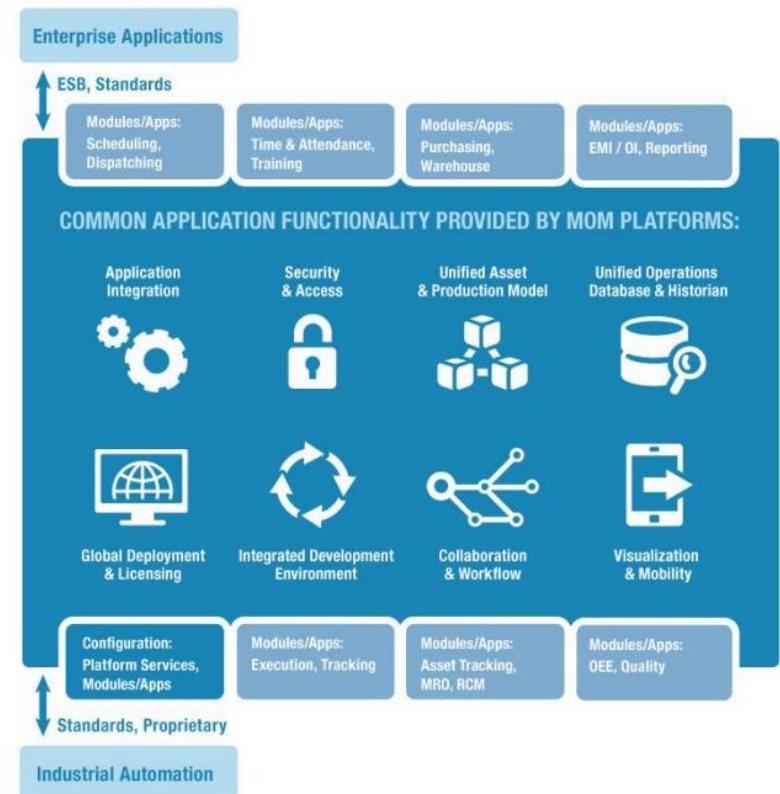


Manufacturing Operation Management Software Architecture evolution (LNS research)

MANUFACTURING OPERATIONS MANAGEMENT Traditional Database-Centric Architectures

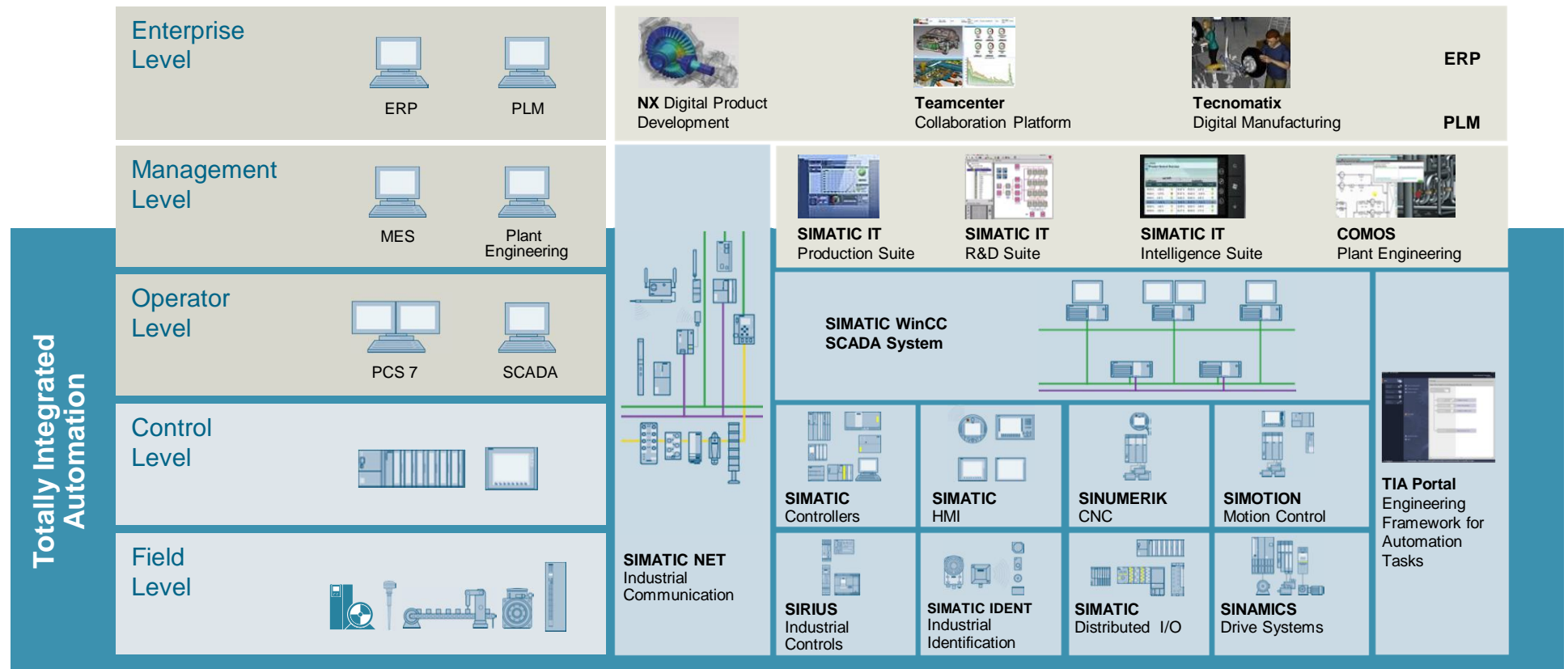


MANUFACTURING OPERATIONS MANAGEMENT Future: Integration & Collaboration Platforms



Totally Integrated Automation (TIA)

The complete automation portfolio for digitalization from the Field to MES



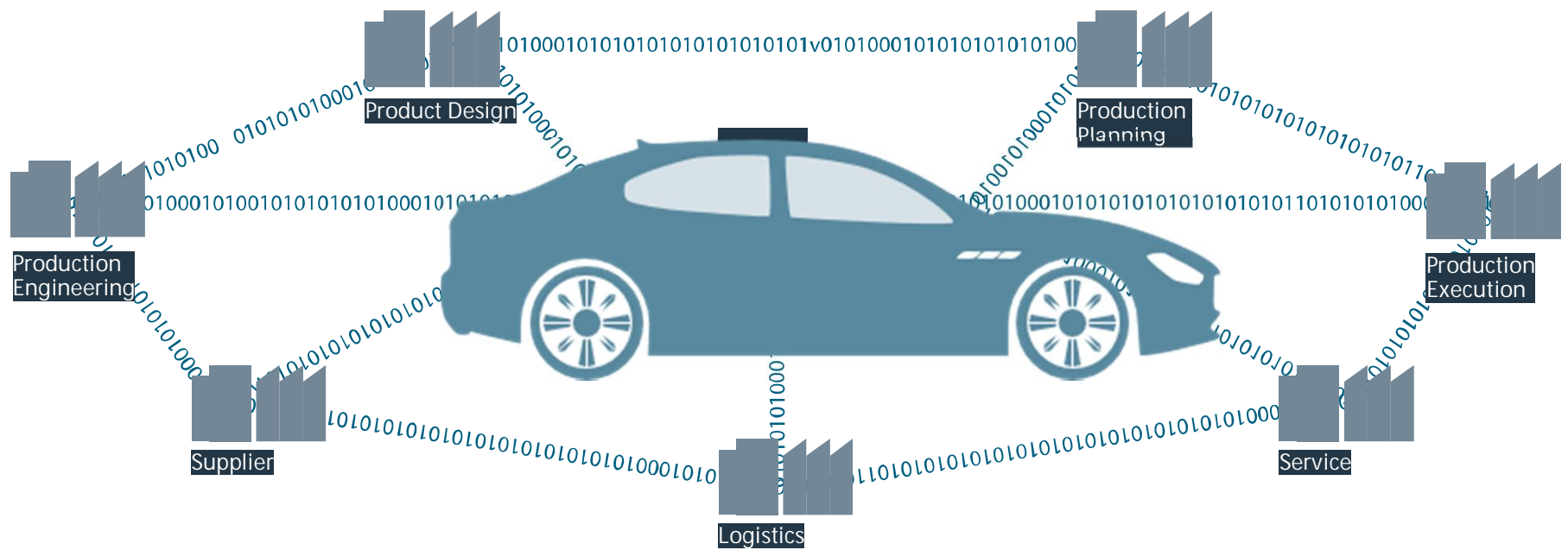
The Digital Enterprise Software Suite Value through digitalization

- Reducing the time to market 
- Enhancing flexibility 
- Increasing efficiency 



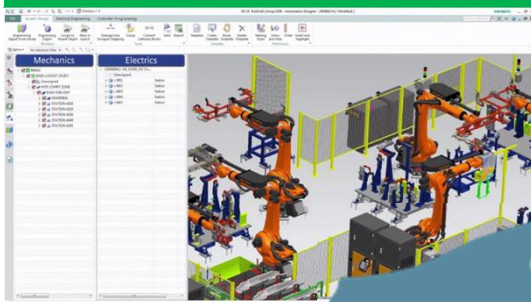
The Digital Enterprise Software Suite offers a holistic automation solution for the complete workflow creating value from smaller to large plants,,

Siemens Collaboration Platform: Teamcenter

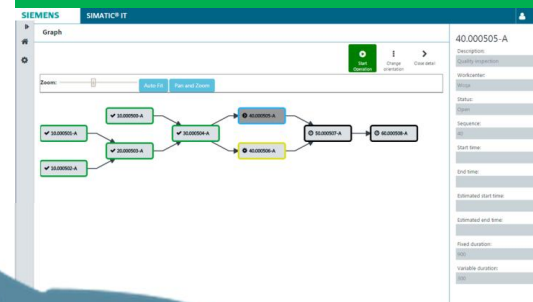


Digital Enterprise Architecture Common Manufacturing Model

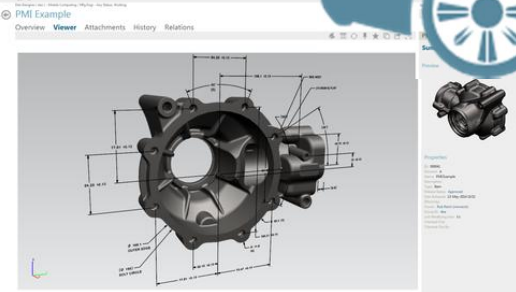
Plant Model



Bill of Process



Bill of Materials



As Built

Order No.	Production Order	Status	Quantity	Due Date	Plant Location	Start Date	End Date
40000505-A	40000505-A	Done	1	02018	SIEMENS000118	1	18
40000505-A	40000505-A	Done	1	02018	SIEMENS000118	1	18
40000505-A	40000505-A	Active	1	02018	SIEMENS000118	1	18
40000505-A	40000505-A	Active	1	02018	SIEMENS000118	1	18
40000505-A	40000505-A	Active	1	02018	SIEMENS000118	1	18
40000505-A	40000505-A	Active	1	02018	SIEMENS000118	1	18

Quantity	Operation	Operation Description	Type	Description	Operation Status	Material	Material WBS11	Raw Material	Material WBS12	Material WBS13	Material WBS14	Material WBS15	Material WBS16	Material WBS17	Material WBS18	Material WBS19	Material WBS20	Material WBS21	Material WBS22	Material WBS23	Material WBS24	Material WBS25	Material WBS26	Material WBS27	Material WBS28	Material WBS29	Material WBS30	Material WBS31	Material WBS32	Material WBS33	Material WBS34	Material WBS35	Material WBS36	Material WBS37	Material WBS38	Material WBS39	Material WBS40	Material WBS41	Material WBS42	Material WBS43	Material WBS44	Material WBS45	Material WBS46	Material WBS47	Material WBS48	Material WBS49	Material WBS50	Material WBS51	Material WBS52	Material WBS53	Material WBS54	Material WBS55	Material WBS56	Material WBS57	Material WBS58	Material WBS59	Material WBS60	Material WBS61	Material WBS62	Material WBS63	Material WBS64	Material WBS65	Material WBS66	Material WBS67	Material WBS68	Material WBS69	Material WBS70	Material WBS71	Material WBS72	Material WBS73	Material WBS74	Material WBS75	Material WBS76	Material WBS77	Material WBS78	Material WBS79	Material WBS80	Material WBS81	Material WBS82	Material WBS83	Material WBS84	Material WBS85	Material WBS86	Material WBS87	Material WBS88	Material WBS89	Material WBS90	Material WBS91	Material WBS92	Material WBS93	Material WBS94	Material WBS95	Material WBS96	Material WBS97	Material WBS98	Material WBS99	Material WBS100
1	40000505-A	Blank clearing	Material consumption	Operation status: Complete	Material WBS11: Raw Material	Material WBS12: Raw Material	Material WBS13: Raw Material	Material WBS14: Raw Material	Material WBS15: Raw Material	Material WBS16: Raw Material	Material WBS17: Raw Material	Material WBS18: Raw Material	Material WBS19: Raw Material	Material WBS20: Raw Material	Material WBS21: Raw Material	Material WBS22: Raw Material	Material WBS23: Raw Material	Material WBS24: Raw Material	Material WBS25: Raw Material	Material WBS26: Raw Material	Material WBS27: Raw Material	Material WBS28: Raw Material	Material WBS29: Raw Material	Material WBS30: Raw Material	Material WBS31: Raw Material	Material WBS32: Raw Material	Material WBS33: Raw Material	Material WBS34: Raw Material	Material WBS35: Raw Material	Material WBS36: Raw Material	Material WBS37: Raw Material	Material WBS38: Raw Material	Material WBS39: Raw Material	Material WBS40: Raw Material	Material WBS41: Raw Material	Material WBS42: Raw Material	Material WBS43: Raw Material	Material WBS44: Raw Material	Material WBS45: Raw Material	Material WBS46: Raw Material	Material WBS47: Raw Material	Material WBS48: Raw Material	Material WBS49: Raw Material	Material WBS50: Raw Material	Material WBS51: Raw Material	Material WBS52: Raw Material	Material WBS53: Raw Material	Material WBS54: Raw Material	Material WBS55: Raw Material	Material WBS56: Raw Material	Material WBS57: Raw Material	Material WBS58: Raw Material	Material WBS59: Raw Material	Material WBS60: Raw Material	Material WBS61: Raw Material	Material WBS62: Raw Material	Material WBS63: Raw Material	Material WBS64: Raw Material	Material WBS65: Raw Material	Material WBS66: Raw Material	Material WBS67: Raw Material	Material WBS68: Raw Material	Material WBS69: Raw Material	Material WBS70: Raw Material	Material WBS71: Raw Material	Material WBS72: Raw Material	Material WBS73: Raw Material	Material WBS74: Raw Material	Material WBS75: Raw Material	Material WBS76: Raw Material	Material WBS77: Raw Material	Material WBS78: Raw Material	Material WBS79: Raw Material	Material WBS80: Raw Material	Material WBS81: Raw Material	Material WBS82: Raw Material	Material WBS83: Raw Material	Material WBS84: Raw Material	Material WBS85: Raw Material	Material WBS86: Raw Material	Material WBS87: Raw Material	Material WBS88: Raw Material	Material WBS89: Raw Material	Material WBS90: Raw Material	Material WBS91: Raw Material	Material WBS92: Raw Material	Material WBS93: Raw Material	Material WBS94: Raw Material	Material WBS95: Raw Material	Material WBS96: Raw Material	Material WBS97: Raw Material	Material WBS98: Raw Material	Material WBS99: Raw Material	Material WBS100: Raw Material			

Value through digitalization

Different starting positions... , substantial results

Competitiveness



Siemens Factory Amberg, Germany

- Automated production of SIMATIC: **Machines handle 75% of the value chain** on their own while **>1000 product variants can be manufactured**
- Low defect rate: **Production quality is at 99.9988%**

Shorten time to market



Canon EOS 20D, Japan

- **Digital twin simulation** helped to **reduce the time from concept to production by >30%**
- **~300 TB of data** converted throughout the entire development: **200 times more compared to 10 years before**

Flexibility



BMW Brilliance Shenyang, China

- Flexibility enables **individualized mass production: 5 different types of cars in 1 production line**
- **Real-time monitoring with 99% availability** avoids bottlenecks

MES/MOM for the Digital Enterprise – SIMATIC IT Unified Architecture

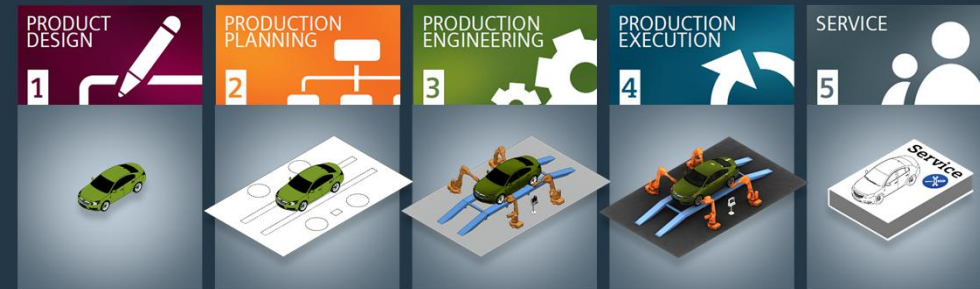
Company-wide challenges require Holistic Solutions

Today's Market Leading
Manufacturing Operations Management



Integrated Product / Production Engineering & Production Execution World

One consistent model from product design to manufacturing



MOM for Intelligent Production: Autonomous & Self Adapting

Define where to go
↓
No need to drive



Define what to produce
↓
Self adapting how to produce



SIEMENS



Thanks You

Jean-Pierre Amadio : CEO Siemens Industry Software 26 janvier 2016