

PTC® Live Global

PTC 110 - Process Planning Management with PTC Windchill MPMLink

Jean-Claude Niyonkuru (JC)


Solution Manager Director



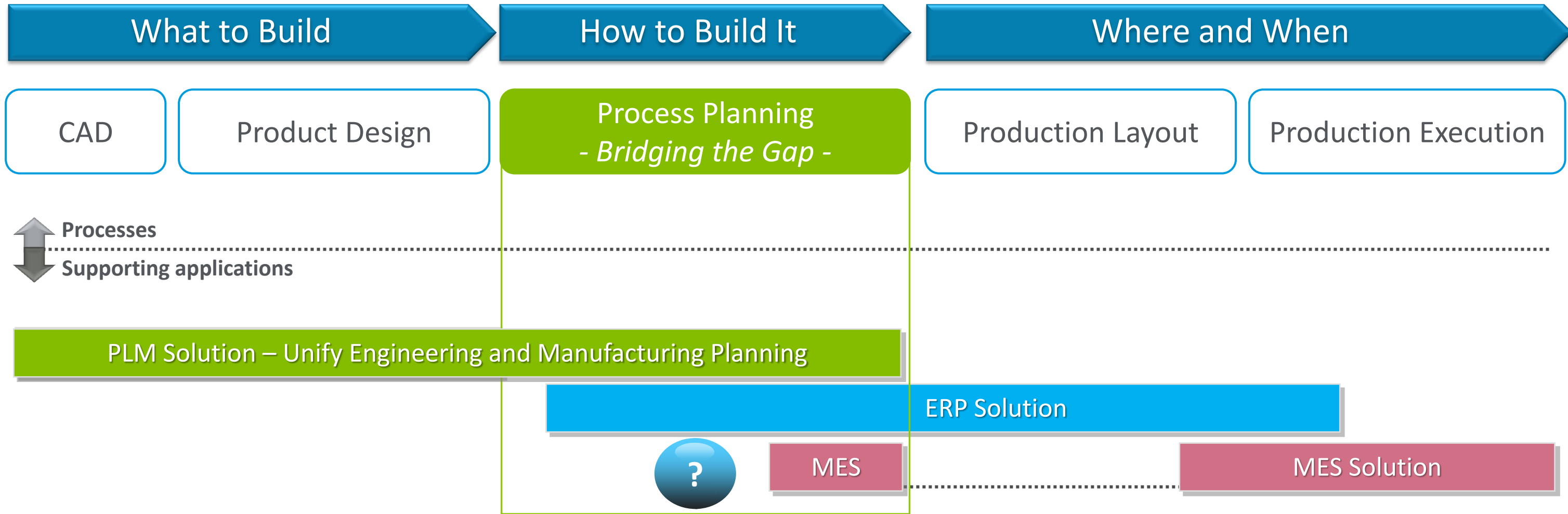
- PTC's Manufacturing Value Proposition
- Presentation of PTC Windchill MPMLink 10.2
- Smart Connected Work Instruction



PTC Windchill MPMLink Value Proposition

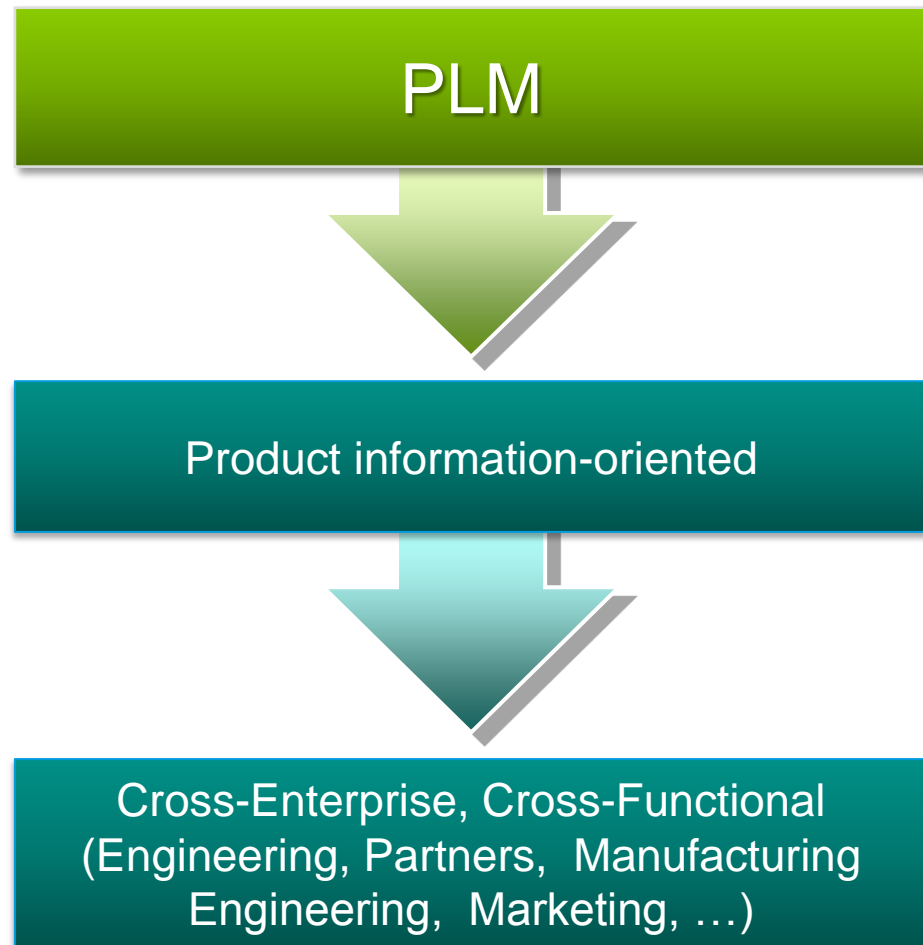


Gain competitive
advantage through
improved process
planning



What Approach should you use?

What is required to maximize business value?



ERP **PLM** MES

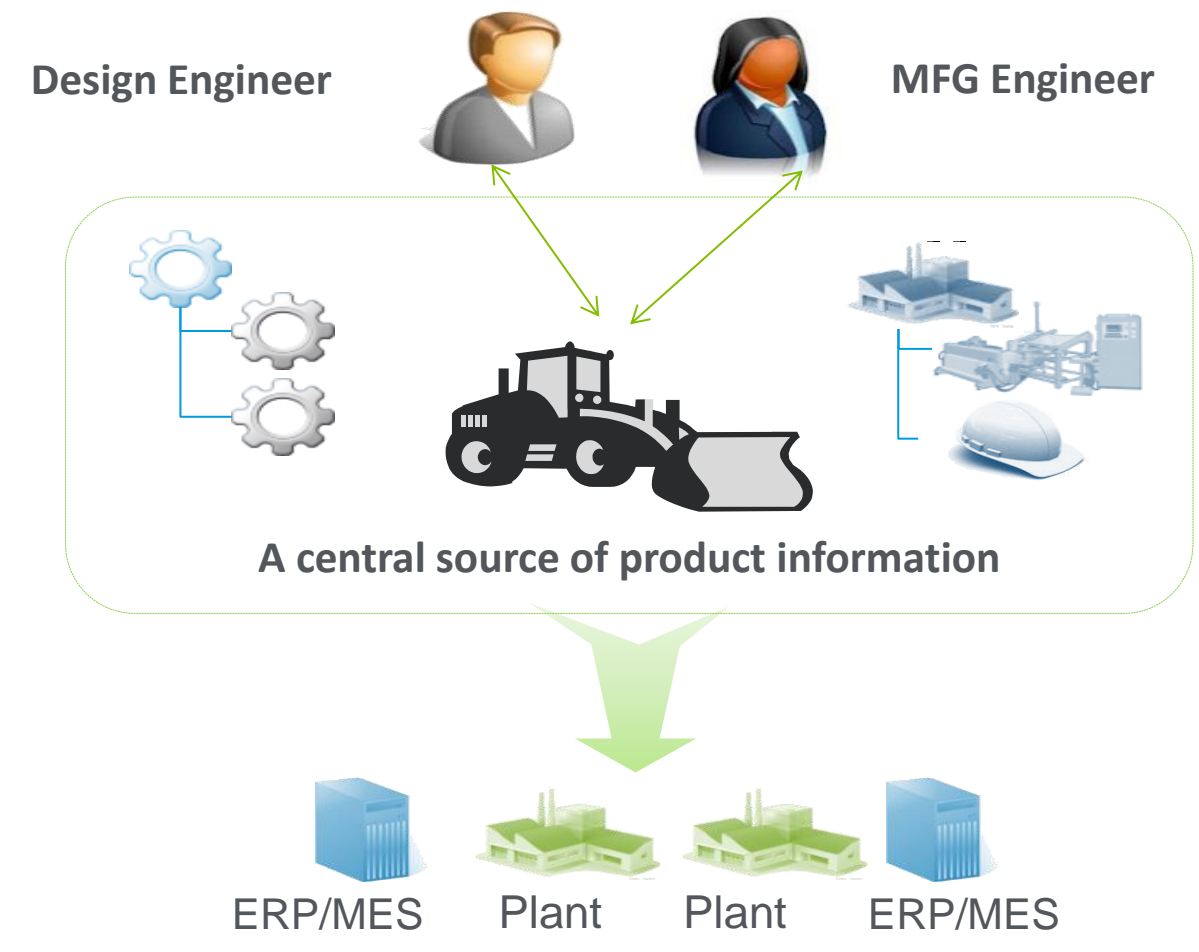
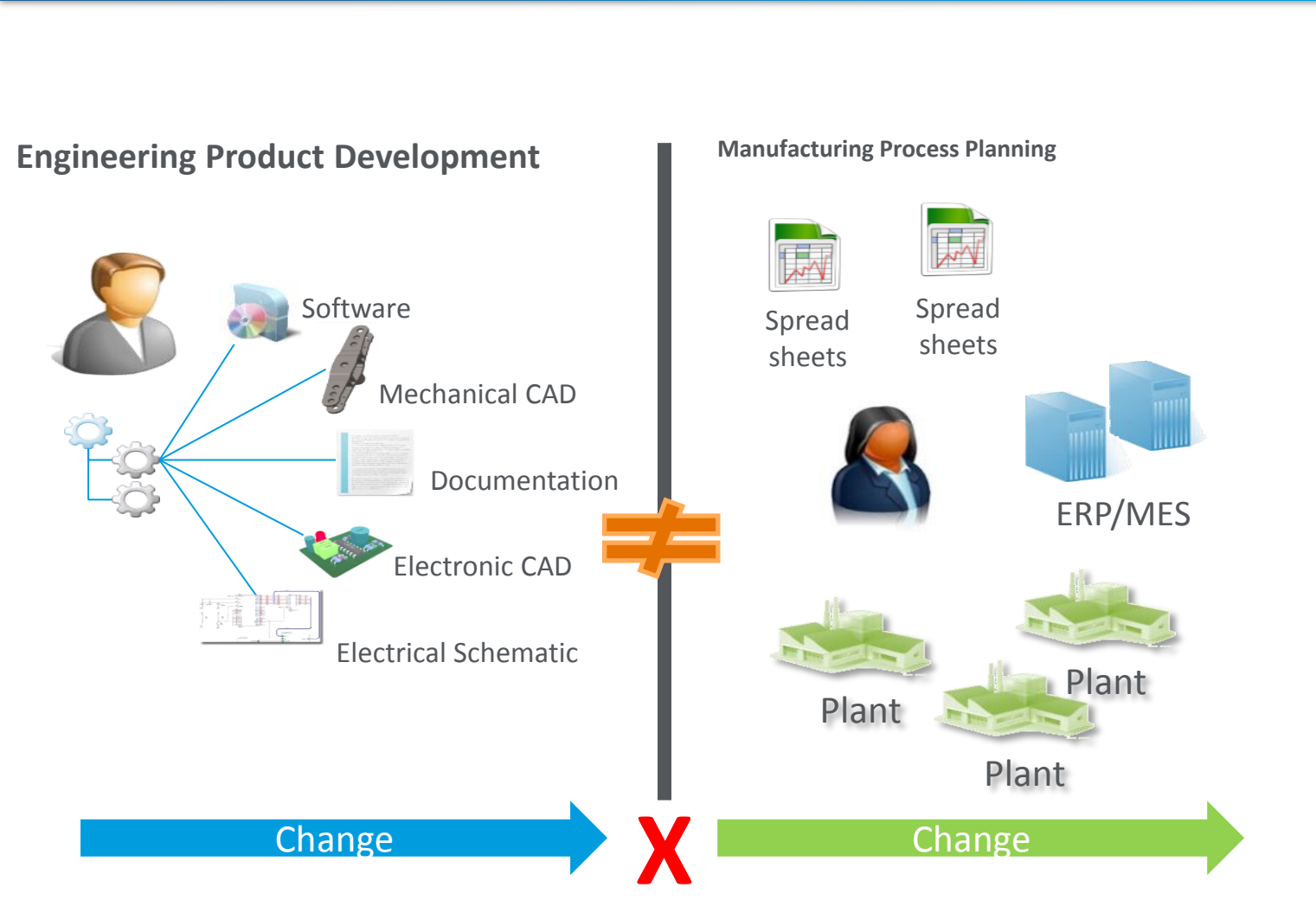
**MANUFACTURING PROCESS MANAGEMENT
IS THE RIGHT APPROACH:**

- Provides a combined design and process planning platform
- Digital process-planning directly from design data
- Integrated change and configuration management
- Validation and Optimization of the Processes

Transaction-Oriented Event-Oriented

Cross-Enterprise, Cross-Functional
(Production, Financial, Procurement, HR, ...)

Internal – Shop Floor & Production Users



Challenges

- Disconnected teams and processes
- Multiple systems with manual re-entry of data
- Synchronization from engineering to manufacturing-planning to MES/ERP systems

Positive Outcomes

- ✓ Concurrent processes
- ✓ Leveraging data across teams
- ✓ Associative views of information

CAPBILITIES		BENEFITS
Associative EBOM & MBOM & Process Plan	Role based views of product information that update to remain in-synch	Reduce errors; enable faster time to production
Detailed Reports	Quickly compare and contrast different versions and iterations of product information	Improved quality
Unified Change Management	Streamline change across engineering and manufacturing	Reduce scrap and rework
3D Design Data in MFG Planning	Leverage rich design data to create manufacturing information*	Improved planning decisions
Automatic Publish to MES/ERP	Ensure information is up-to-date in production systems	Speed time-to-production



UNIFY

design, manufacturing planning and resources together on a single system

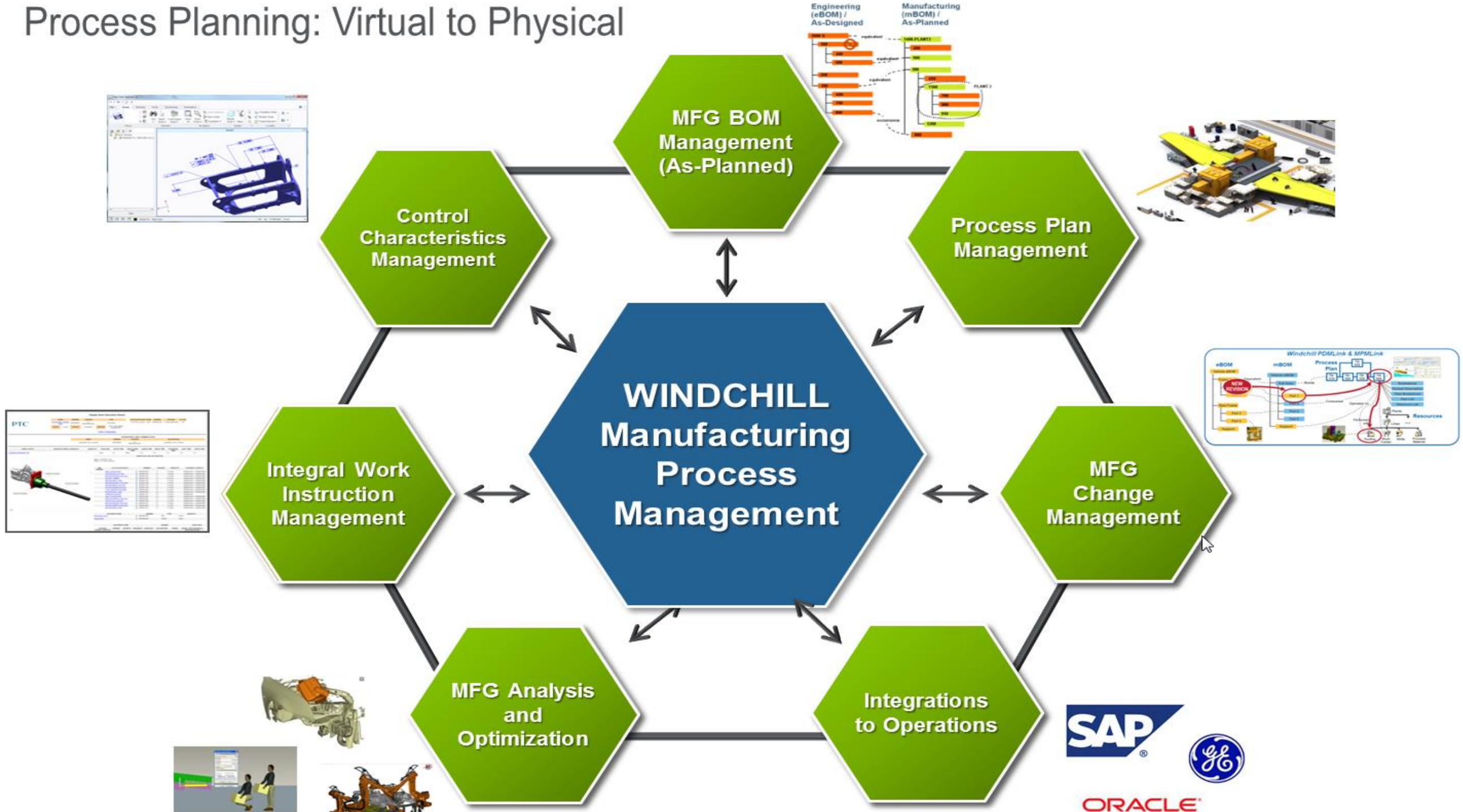
STREAMLINE

process planning development leveraging virtual product representations

OPTIMIZE

manufacturing planning across products and sites

Process Planning: Virtual to Physical



PTC Windchill MPMLink 10.2

More Usable --- Visual --- Performing

The image displays two side-by-side screenshots of the Manufacturing Associative Part Structure Browser (MAPSB) interface, showing the transition from a Design view to a Manufacturing view.

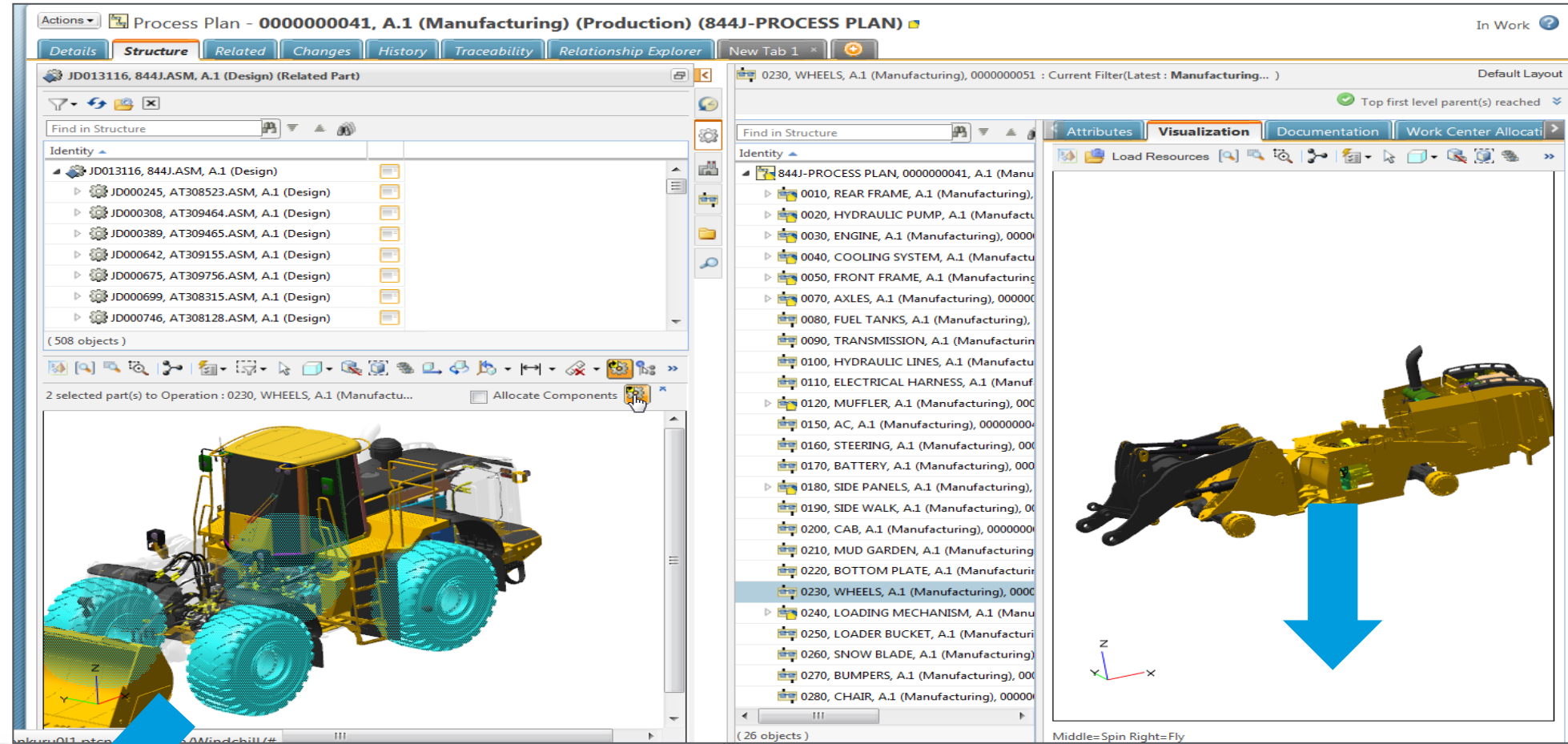
Left Screenshot (Design View):

- Browser title: Manufacturing Associative Part Structure Browser - Mozilla Firefox
- URL: jniyonkuru011.ptcnet.ptc.com/Windchill/ptc1/mapsb/mapsb?startingOID=wt.part.WTPart:575759&locale=en_US&uniqueId=2882837
- Find in Structure: [Search]
- Identity: JD013116, 844J.ASM, A.1 (Design)
- Tree structure (86 objects):
 - JD000245, AT308523.ASM, A.1 (Design)
 - JD001236, AT309420.ASM, A.1 (Design)
 - JD001476, AT309421.ASM, A.1 (Design)
 - JD005551, AT332361.ASM, A.1 (Design)
 - JD000308, AT309464.ASM, A.1 (Design)
 - JD000389, AT309465.ASM, A.1 (Design)
 - JD000642, AT309155.ASM, A.1 (Design)
 - JD000675, AT309756.ASM, A.1 (Design)
 - JD000699, AT308315.ASM, A.1 (Design)
 - JD000746, AT308128.ASM, A.1 (Design)
 - JD000856, AT309755.ASM, A.1 (Design)
 - JD000997, AT311070.ASM, A.1 (Design)
 - JD001698, AT310902.ASM, A.1 (Design)
- Visualization: (86 objects)
- 3D Model: A yellow and black machine component with a cyan-colored sub-assembly highlighted.

Right Screenshot (Manufacturing View):

- Browser title: Manufacturing Associative Part Structure Browser - Mozilla Firefox
- URL: jniyonkuru011.ptcnet.ptc.com/Windchill/ptc1/mapsb/mapsb?startingOID=wt.part.WTPart:575759&locale=en_US&uniqueId=2882837
- Find in Structure: [Search]
- Identity: JD013116, 844J.ASM, A.1 (Manufacturing)
- Tree structure (5 objects):
 - JD001476, AT309421.ASM, A.1 (Design) ✓
 - JD005551, AT332361.ASM, A.1 (Design) ✓
 - JD000245, AT308523.ASM, A.1 (Design) ✓
 - JD001236, AT309420.ASM, A.1 (Design) ✓
- Visualization: (5 objects)
- 3D Model: A yellow and black machine component with a cyan-colored sub-assembly highlighted.

More Usable --- Visual --- Performing



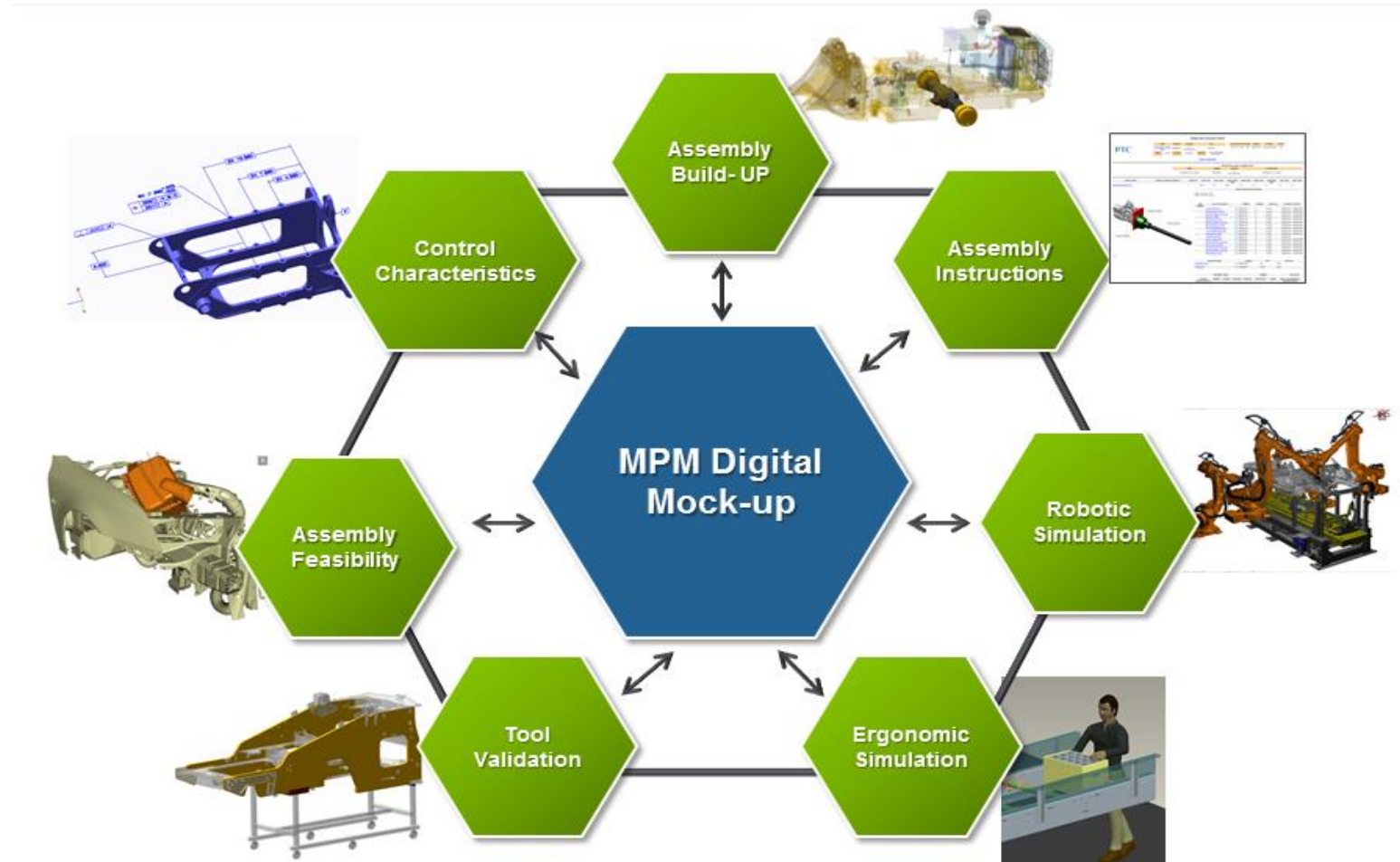
View Product Through Line

The screenshot displays the PTC Windchill interface for a manufacturing process plan. The main window shows a 3D visualization of an engine assembly line. The process plan is titled "ENGINE PROCESS PLAN, 000000081, A.1 (Manufacturing) (Production) (ENGINE PROCESS PLAN)". The left-hand navigation pane shows a tree view of the process plan, with the following items listed:

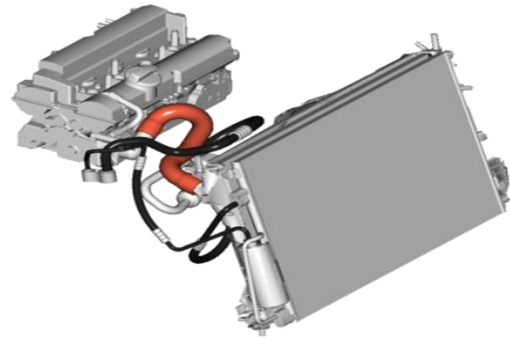
- ENGINE PROCESS PLAN, 000000081, A.1 (Manufacturing)
- 0010, INSTALL ENGINE BLOC, A.1 (Manufacturing), 00000001
- 0020, INSTALL CRANCKSHAFT, A.1 (Manufacturing), 00000001
 - 0000005501, main_brg_cap_end.prt, A.1 (Design)
 - 0000005581, main_brg_cap.prt, A.1 (Design)
 - 0000005635, main_bearing_mid.prt, A.1 (Design)
 - 0000005645, main_bearing_end.prt, A.1 (Design)
 - 0000005679, main_bearing_end2.prt, A.1 (Design)
 - 0000005714, crankshaft.prt, A.1 (Design)
 - 0000005781, main_brg_cap_end2.prt, A.1 (Design)
 - 0000005900, Bearing Bolt, Type A, A.1 (Design)
- STATION 1, A.1 (Design) (Workstation), 0000005180
- 0030, INSTALL PISTONS, A.1 (Manufacturing), 0000000110
- 0040, INSTALL OIL PAN, A.1 (Manufacturing), 0000000106
- 0050, INSTALL HEAD, A.1 (Manufacturing), 0000000104
- 0060, INSTALL TIMING BELT, A.1 (Manufacturing), 000000010
- 0070, INSTALL WATER PUMP, A.1 (Manufacturing), 00000001
- 0080, INSTALL OIL PUMP, A.1 (Manufacturing), 0000000109
- 0090, INSTALL DISTRIBUTOR, A.1 (Manufacturing), 00000001
- 0100, INSTALL ALTERNATOR, A.1 (Manufacturing), 00000001
- 0110, INSTALL FLYING WHEEL, A.1 (Manufacturing), 00000001
- 0120, INSTALL CLUTCH, A.1 (Manufacturing), 0000000112

The 3D visualization shows a red engine block being assembled on a yellow conveyor belt. Two workers in blue shirts are visible, one standing and one kneeling. The interface includes a top toolbar with tabs for "Attributes", "Documentation", "Visualization", "Work Center Allocation", "Uses", "Part Allocation", and "Processing Resources". The bottom status bar indicates "(22 objects)".

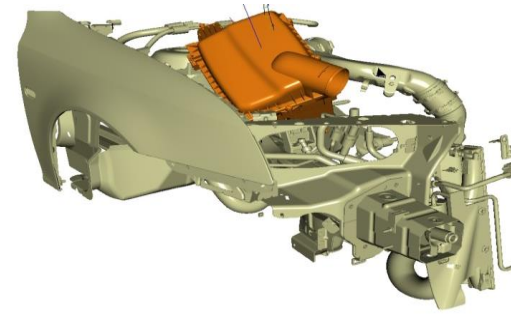
1. **Assembly Build-Up**
 - Validate the process flow in 3D
2. **Assembly Instructions**
 - Leverage 3D for rich work instructions
3. **Assembly Analysis**
 - Static Interference check
 - Dynamic Interference check
4. **Robotic**
 - Robotic Path Optimization
 - OLP
5. **Ergonomic Simulation**
 - Static Analysis: Push, Pull and Vision
 - Dynamic Analysis
6. **Tool Validation**
 - Static Interference check
 - Dynamic Interference check



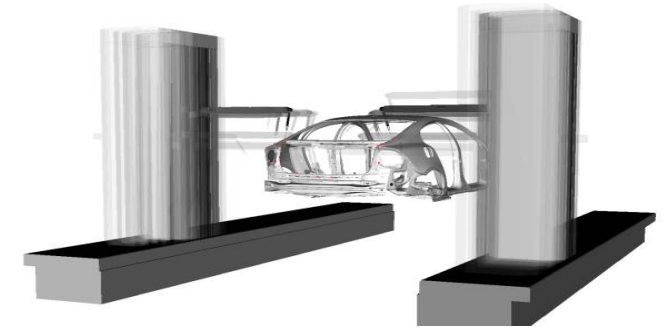
Flexible Structure Simulation



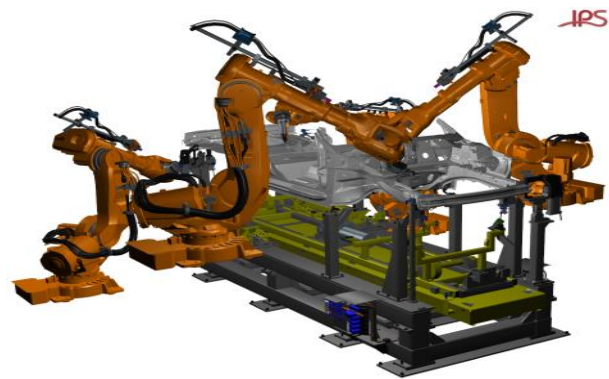
Assembly Path Planner



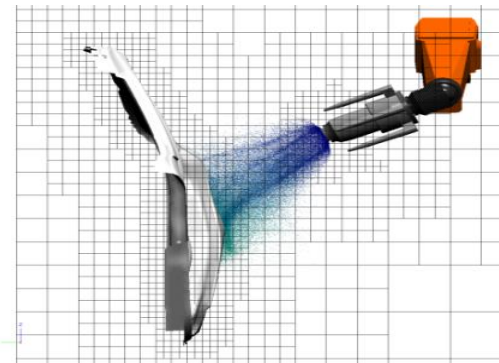
Inspection Path Planner



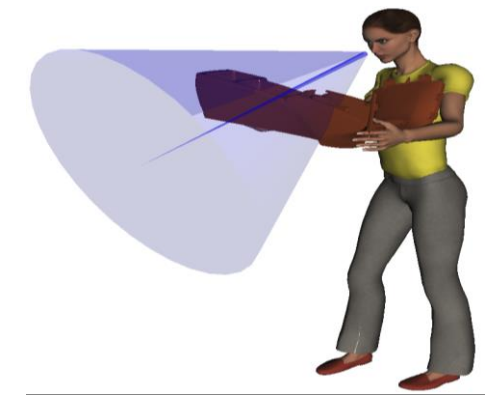
Robot Path Planner



Virtual Paint and Sealing



IMMA



Smart Connected Work Instruction

PTC241 Smart, Connected Operations: Fast Track Your Manufacturing Intelligence, Smart Manufacturing and Industry 4.0 Initiatives With ThingWorx: Jackson EF
Tuesday, June 9 5:00 PM - 5:45 PM



Smart, Connected Operations

Similar Industry Terms:

- Industry 4.0
- Smart Manufacturing
- Factory of the Future
- Brilliant Factory
- The Connected Enterprise

Bi-directional connection to:

Connected - Tailored - Actionable



People (operator):

- Single sign-on
- Role-based



Mfg systems (ERP/MES):

- Work orders
- Operations, parts, resources
- Competencies check



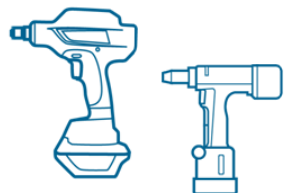
PLM / MPM / CAD:

- 2D / 3D
- Part and process plan details
- Standard operating procedures



Quality / data capture:

- Traceability, genealogy
- Operator feedback



Industrial tools:

- Torque, angle, battery life, ...
- Position and orientation

Work Instruction App Operator: John B. Work Center # ThingWorx

Work Order #2591834 844J Loader Parking Brake Installation Competency Check

OP 0010 OP 0020 OP 0030 OP 0040

Position Brake with Plate Mounting Holes

Position Parking Brake with Plate Mounting Holes

Name	Number	Quan	Unit	Bin #
PARKING BRAKE	AT314986	1	ea	583

Resource	Category	Quan	Unit	Available
Assembler Level 2	Assembler	1	ea	Available
Measuring tape	Tool	1	ea	Not Available

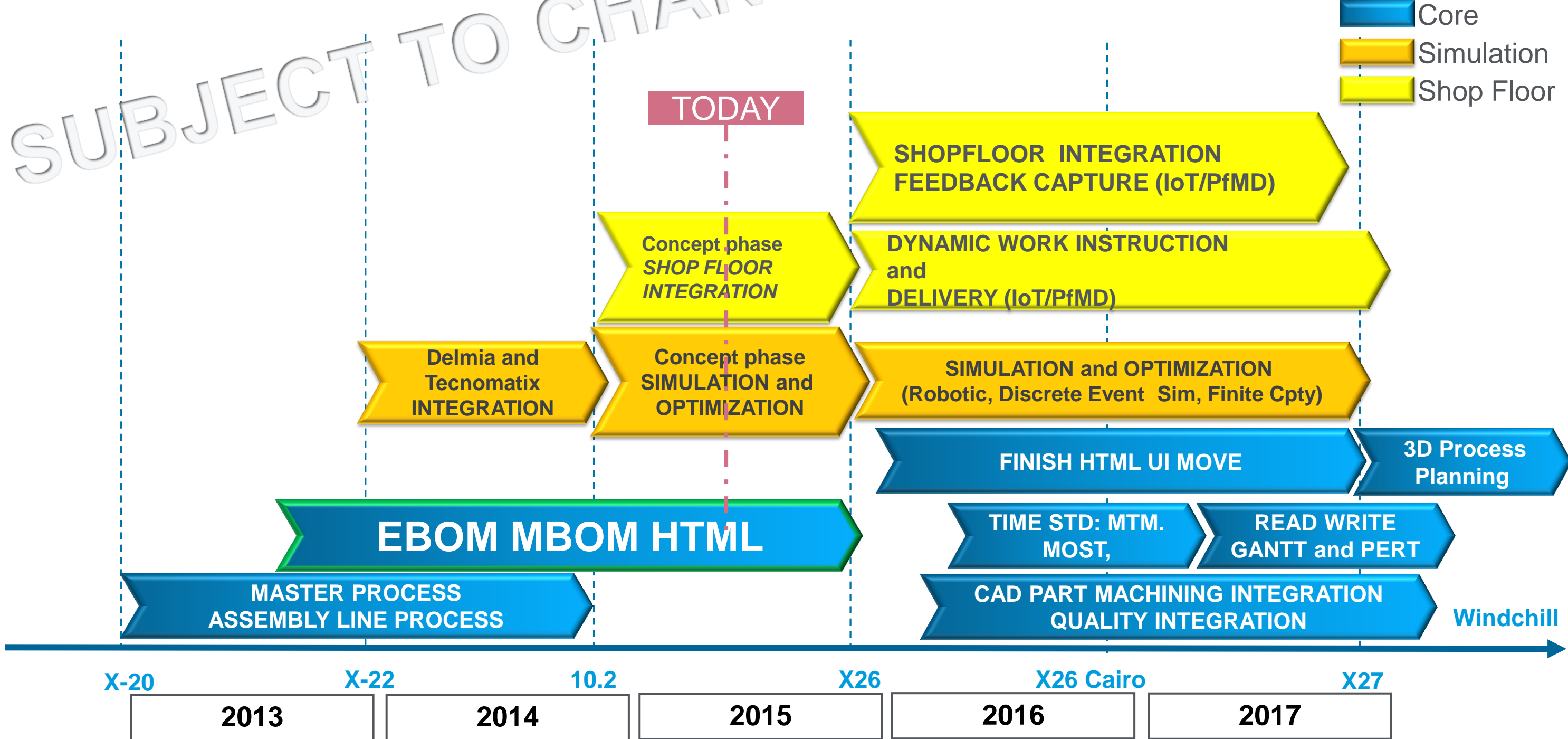
Blog Training Video Complete Work Order

Acetylene Pressure

Issue Description Pressure too high Log FRACAS Incident

SUBJECT TO CHANGE

- Core
- Simulation
- Shop Floor



- Your feedback is valuable
- Don't miss out on the chance to provide your feedback
- Gain a chance to win an instant prize!
- Complete your session evaluation now

PTC[®] Live Global