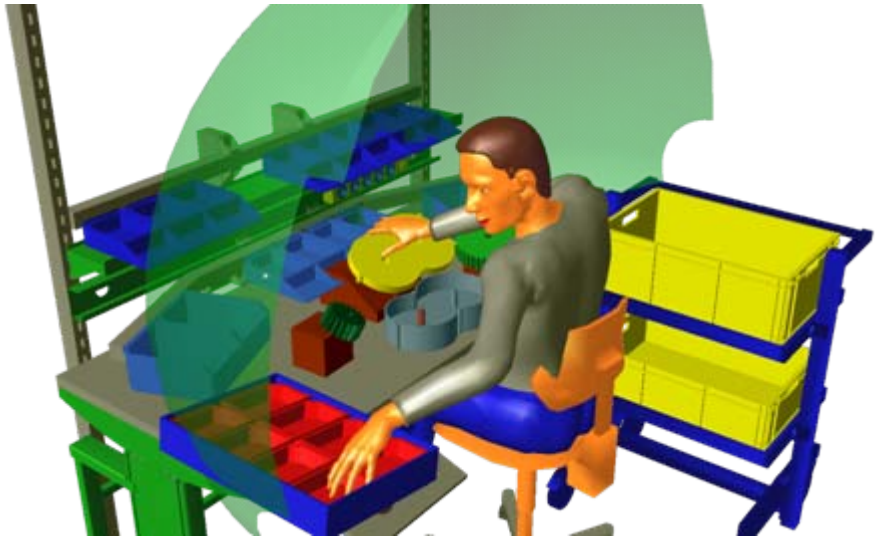


UGS

Transforming the process of innovation

Leveraging manufacturing knowledge in a global innovation network environment

Ulrich Rossgoderer
UGS Products
Manufacturing Solutions Group
11-May-06

UGS Enterprise PLM

TECNOMATIX

NX

Transforming product development

TECNOMATIX

Transforming manufacturing & production

SOLID EDGE

Evolving to 3D for competitive advantage

PLM COMPONENTS

Open solutions for standardization & interoperability

TEAMCENTER

Capturing & sharing product knowledge

Introducing Tecnomatix Digital Manufacturing

TECNOMATIX

Transforming the process of manufacturing

A complete digital manufacturing solution that helps companies quickly identify the best strategies for boosting productivity and lowering cost.

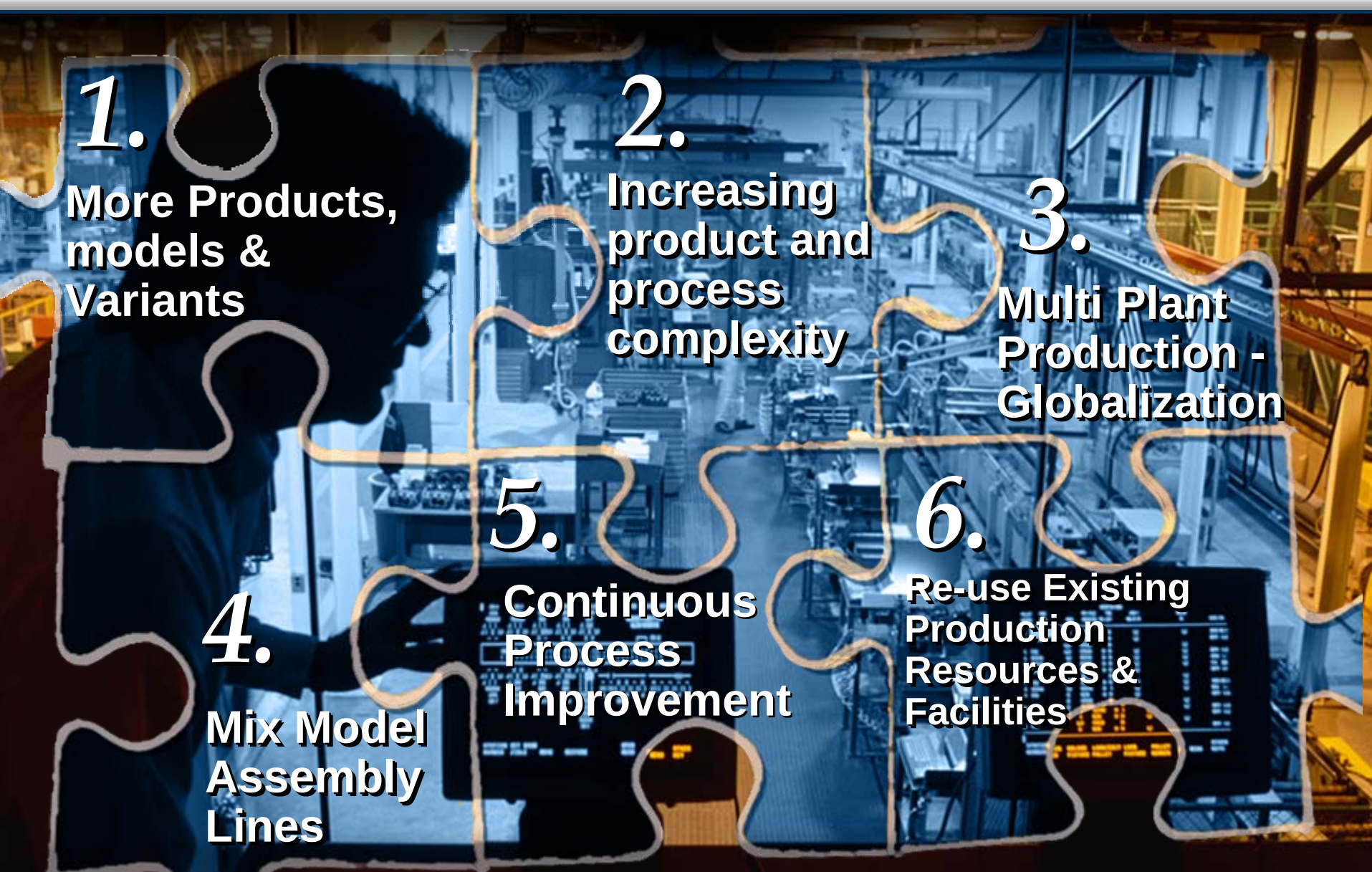
Assembly Process Planning is an integral part of Digital Manufacturing

TECNOMATIX

Plan the best process to design, validate & execute world-class assembly manufacturing systems

- Process planning
- Assembly validation
- System balancing & costing
- Automation & programming

Manufacturing Challenges



Manufacturers Business Challenges

TECNOMATIX

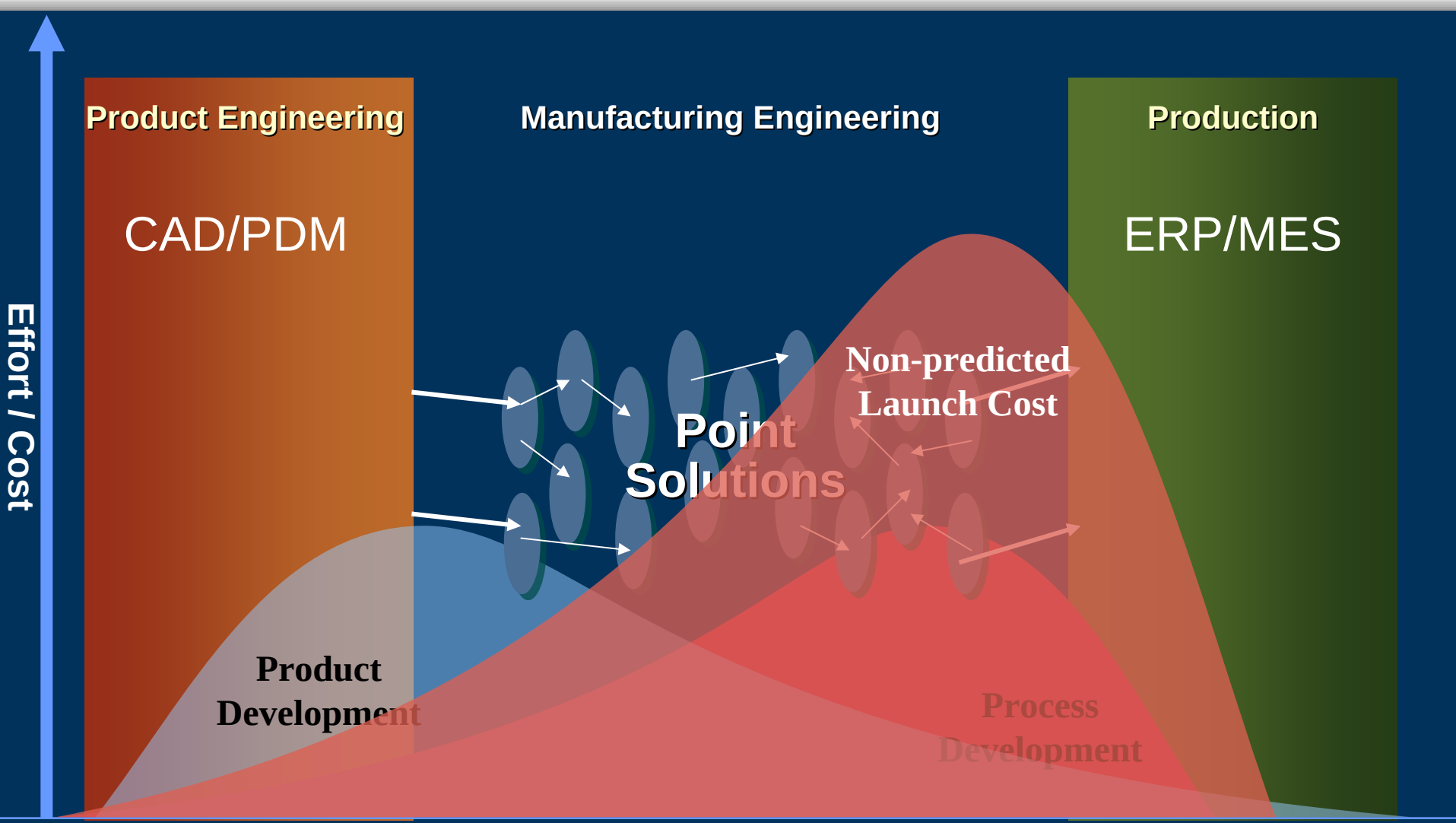
How to maintain
Profitability

By shortening
Time to Market

And reducing **Cost**

In a **Global Environment**

Manufacturing Engineering Struggle



Current Best Case Process Knowledge Capturing & Retrieval System

Process Design Complexity

TECNOMATIX

Process A

Process

Product Variant A

Product

Resources

Resources

Process Design Complexity

TECNOMATIX

Plant A

Process A

Product Variant A

SEQUENCE OF EVENT (SOE)

Model

Elements Description	
1. Take and put base to jig.	
2. Take and assemble (2) bumper foot to base.	
3. Paste serial label to base.	
4. Put base to pallet.	
1.Install 3 pad block into base.	
2. Assemble pad separator rubber and block separetor and install it to base.	
3. Install adjuster width into base.	
1.Paste pad cassette friction into base.	
2. Place absorber waste ink and Absbr-blk waste ink into service station area.	
3. Place PCA logic whisk to base.	
4. Install bracket right to base	
1.Grease 7 spot in service station area on base.	10.61
2. Screw PCA logic whisk to base.	4.51
1.Take and put paper mtr and gear motor to fixture.	4.88
2. Press gear motor to paper motor assy.	2
3. Install paper motor assy to left end and put on the jig.	4.04
4. Screw (2) paper mtr to left end.	7
5. Give WP to LE2	2
1.Put LE1 assy onto jig.	3.12
2. Solder cable with connector to paper motor.	9.66
3. Install gear cluster to left end.	4.13
4. Pass WP to CB5	2
1.Install left end assy to base.	4.4
2. Screw left end assy to base.	9.02
3.Plug paper motor cable to PCA.	2.5
4.Grease (3) cluster gear	3.61

Resources

Process A

Product Variant A

Product Variant B

Plant B

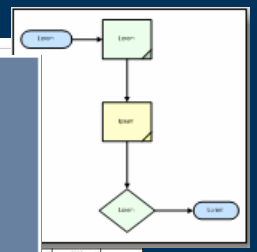
Process A

Product Variant A

Product Variant B

Plant C

Process B



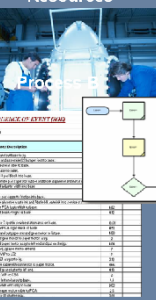
Process A

Product Variant A

Product Variant B

Plant D

Resources



Resources

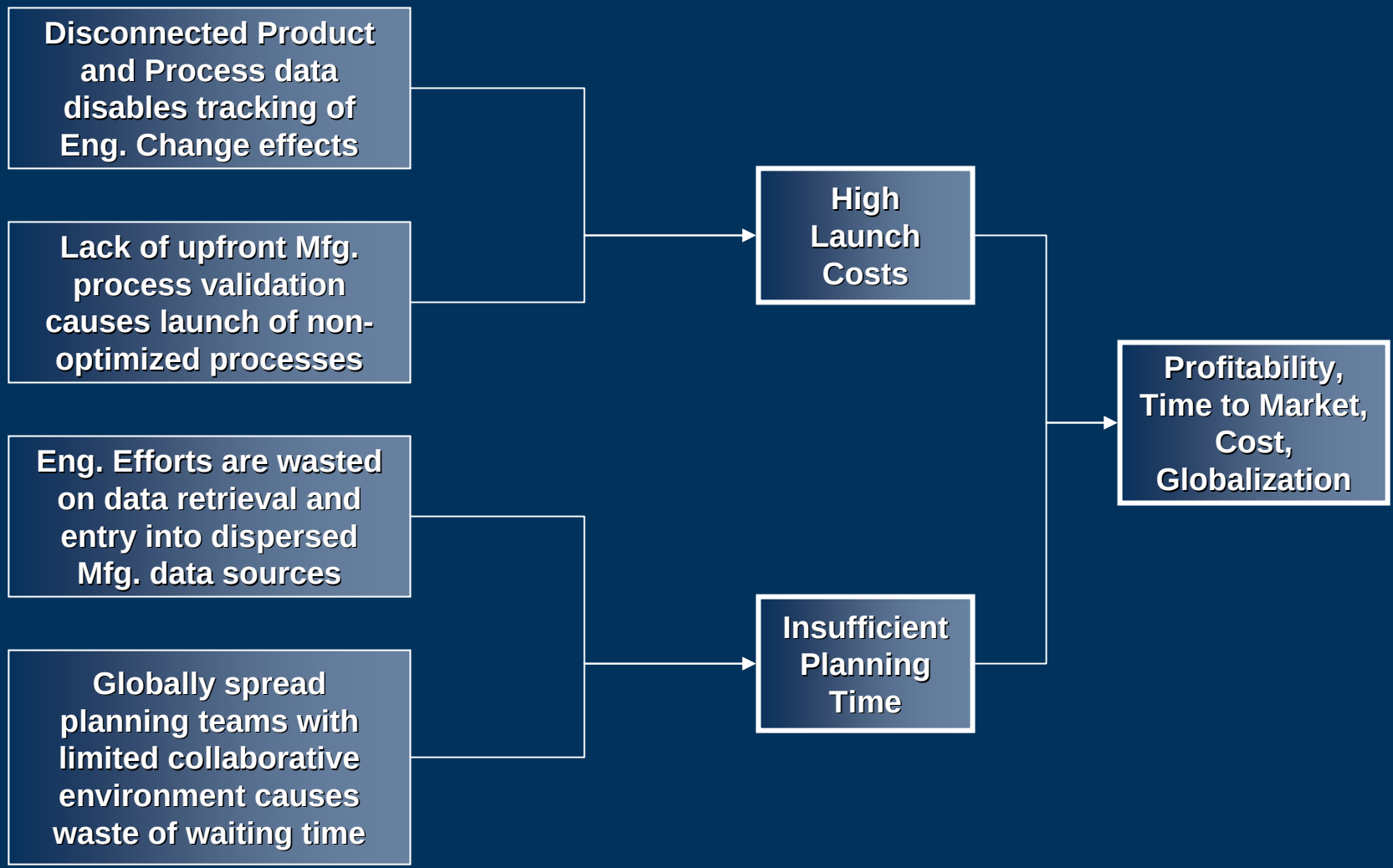
Manufacturing Data Complexity

Engineering

Manufacturing

PDM

Impediments to Achievement



Impediments to Achievement

Pains	Needs
Disconnected Product and Process data disables tracking of Eng. Change effects	Ability to track Eng. Changes and asses their effect on Mfg. processes
Lack of upfront Mfg. process validation causes launch of non-optimized processes	Ability to analyze, validate and optimize processes upfront
Eng. Efforts are wasted on data retrieval and entry into dispersed Mfg. data sources	Ability to define, manage and reuse validated, best-in-class assembly processes
	Ability to standardize processes, resources and methods
Globally spread planning teams with limited collaborative environment causes waste of waiting time	Ability to collaborate with global planning teams

UGS Assembly Planning Solution

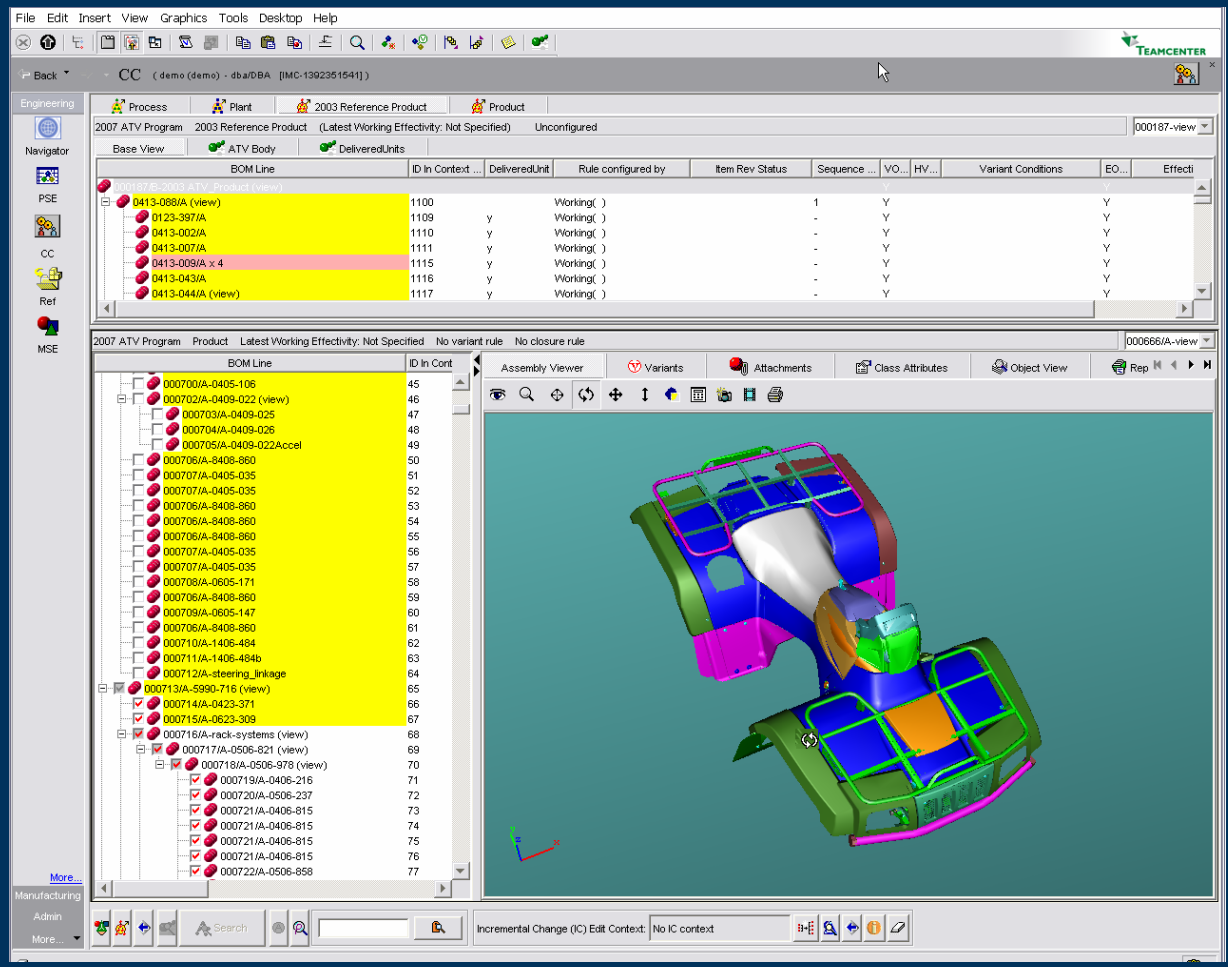
- An End to End methodology and integrated toolset for planning, validating, managing and releasing a Manufacturing Assembly Process
- Based on Tecnomatix Assembly Planning suite of products
- Enables Manufacturing Engineers to define an Electronic Bill Of Process (eBOP) - linking Product Parts, Plant, Resources and Operations together

- Featuring Manufacturing Data Management; Interactive 3D graphics environment for Assembly Process design; Process Effectivity; Product, Process and Plant 2D and 3D views; Time Estimation; Change Management; Resource Management; Work Instructions and reporting

Assembly Planning Solution Workflow 1/3

- Compare previous & new or modified product design
- Create new process from template
- Review product / process association
- Modify process and assign consumed parts

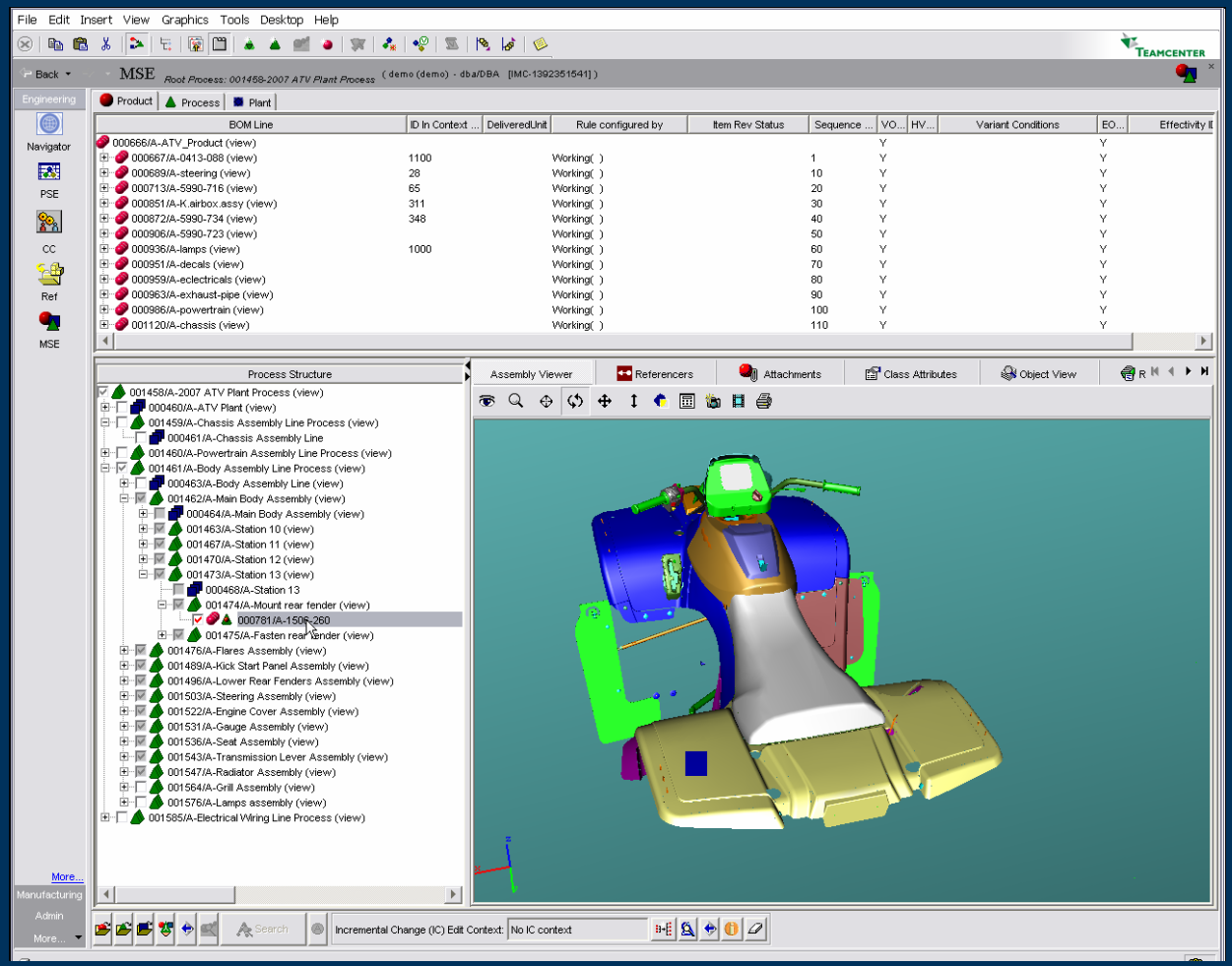
I can quickly identify changes!



Assembly Planning Solution Workflow 1/3

- Compare previous & new or modified product design
- Create new process from template
- Review product / process association
- Modify process and assign consumed parts

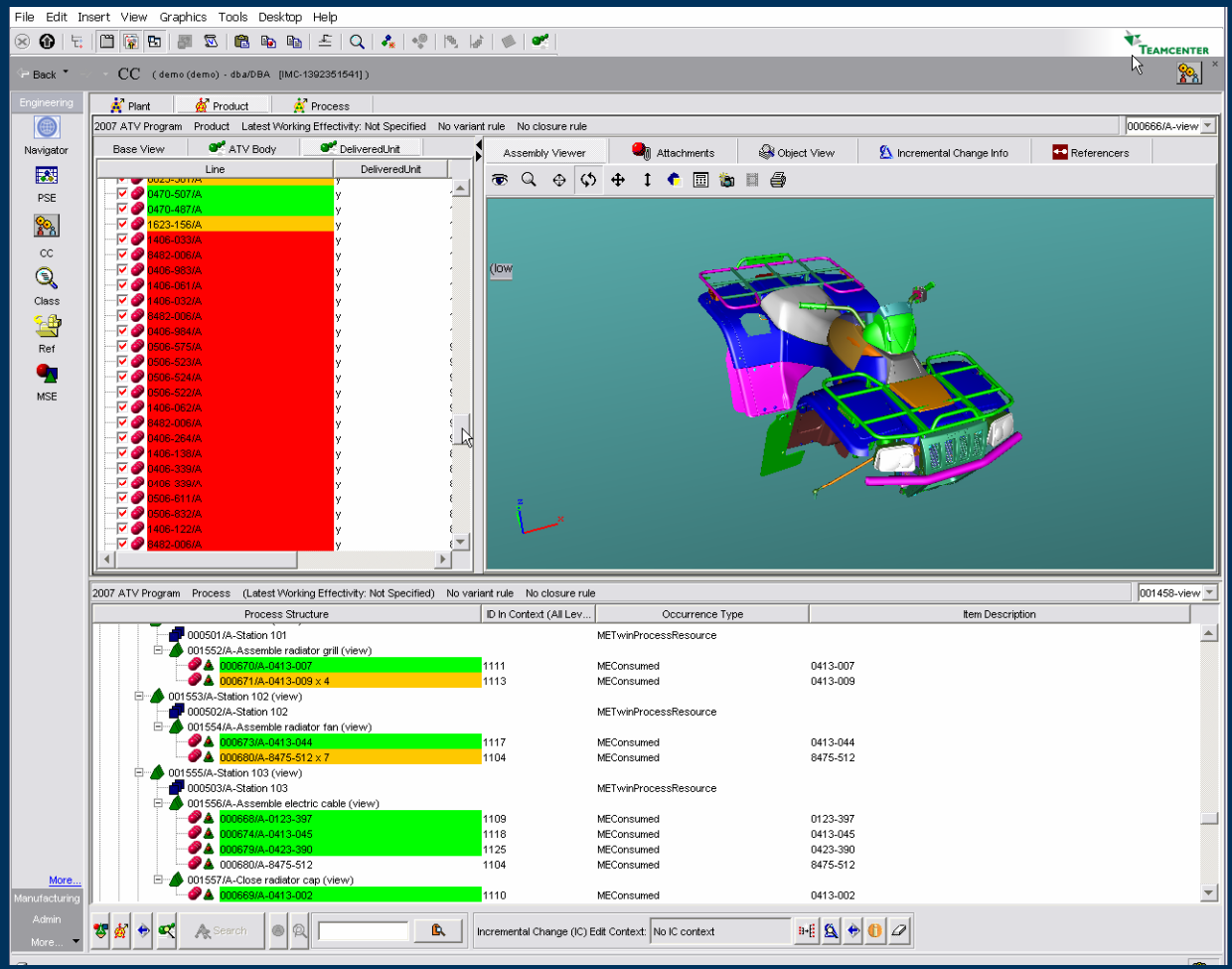
I can reuse best-in-class processes!



Assembly Planning Solution Workflow 1/3

- Compare previous & new or modified product design
- Create new process from template
- Review product / process association
- Modify process and assign consumed parts

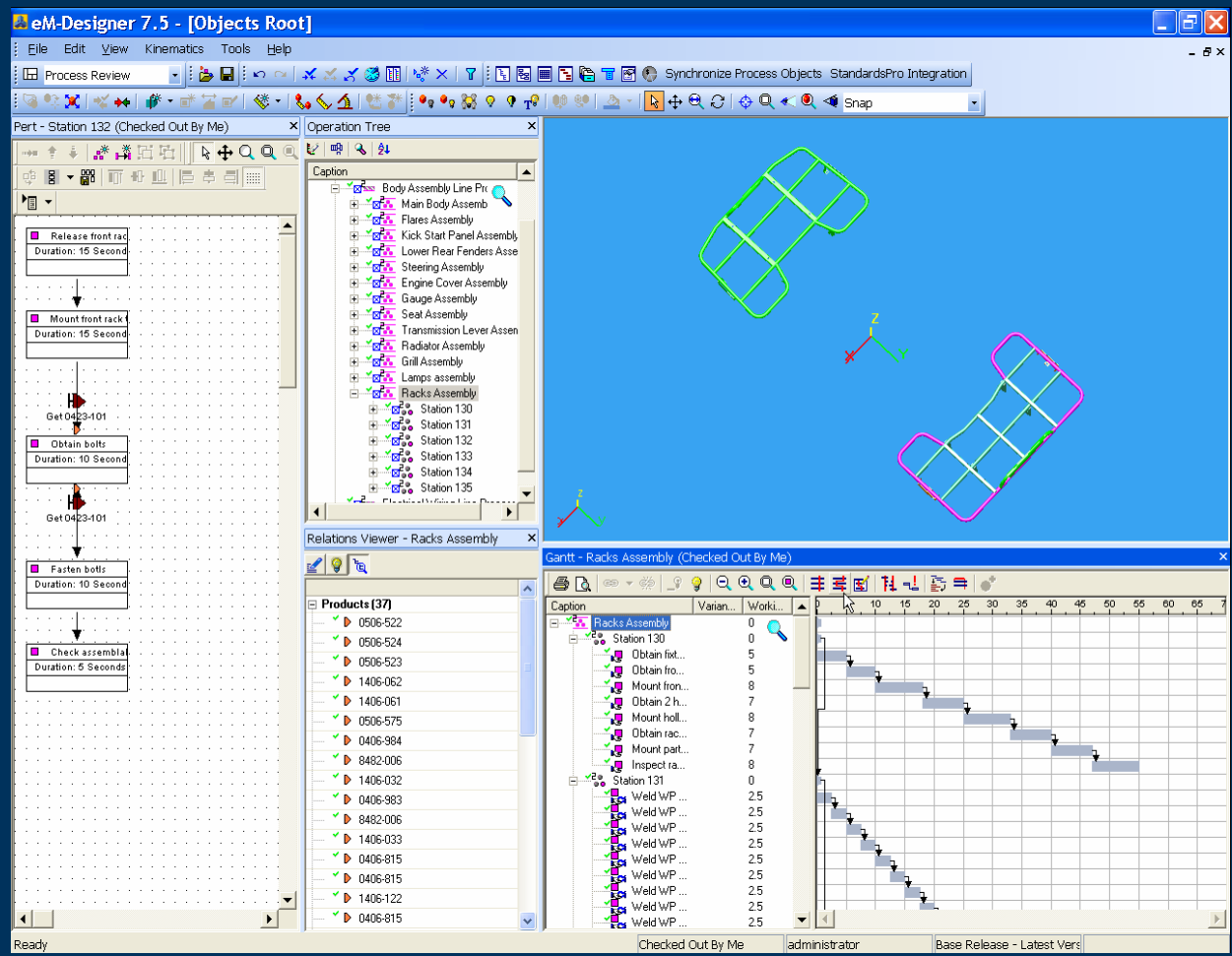
I understand what needs to be changed!



Assembly Planning Solution Workflow 1/3

- Compare previous & new or modified product design
- Create new process from template
- Review product / process association
- Modify process and assign consumed parts

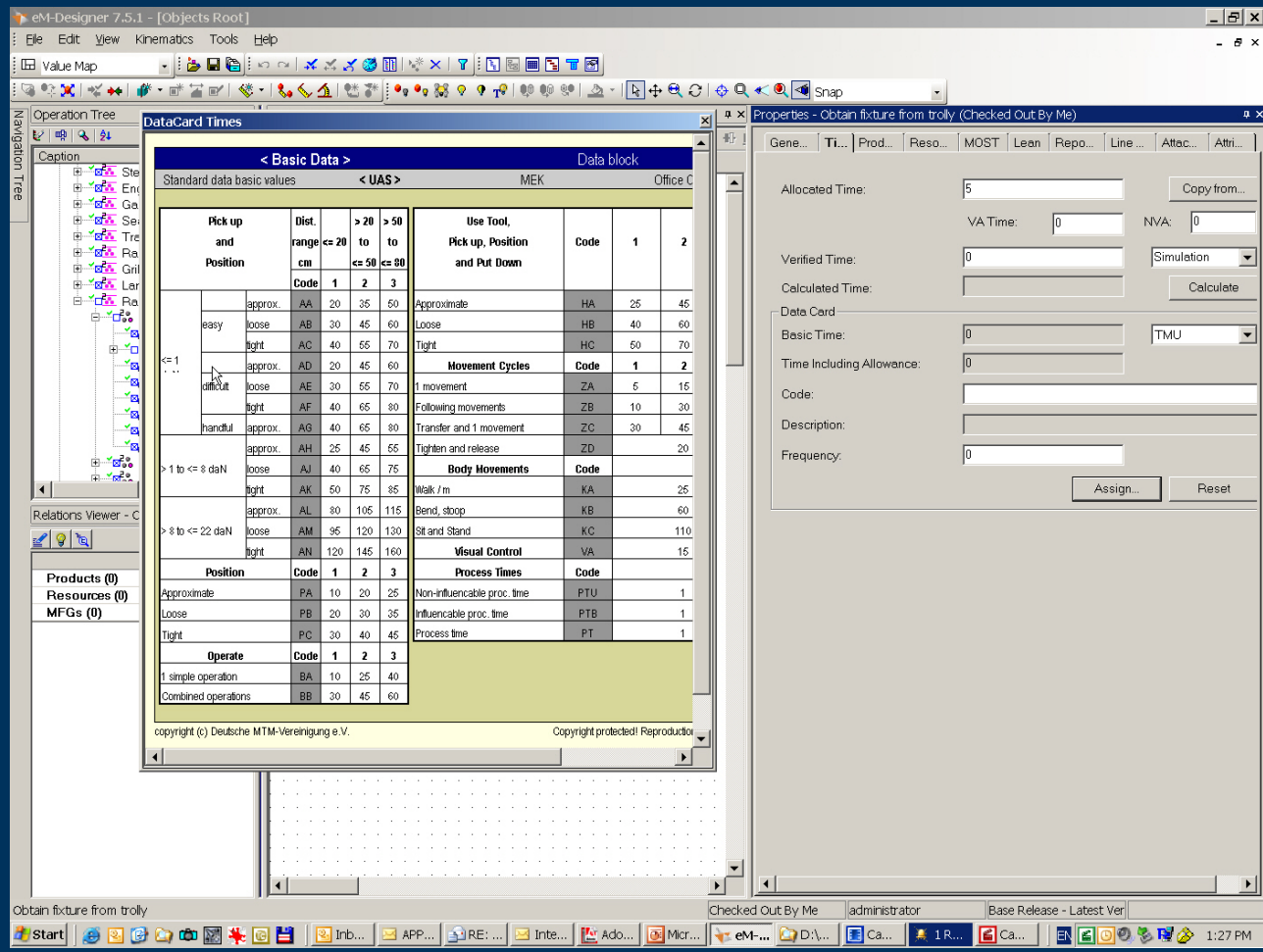
I can design processes in a 3D environment!



Assembly Planning Solution Workflow 2/3

- Estimate process time
- Add equipment and tools from classified libraries
- Line layout and workstation design
- Validate assembly feasibility

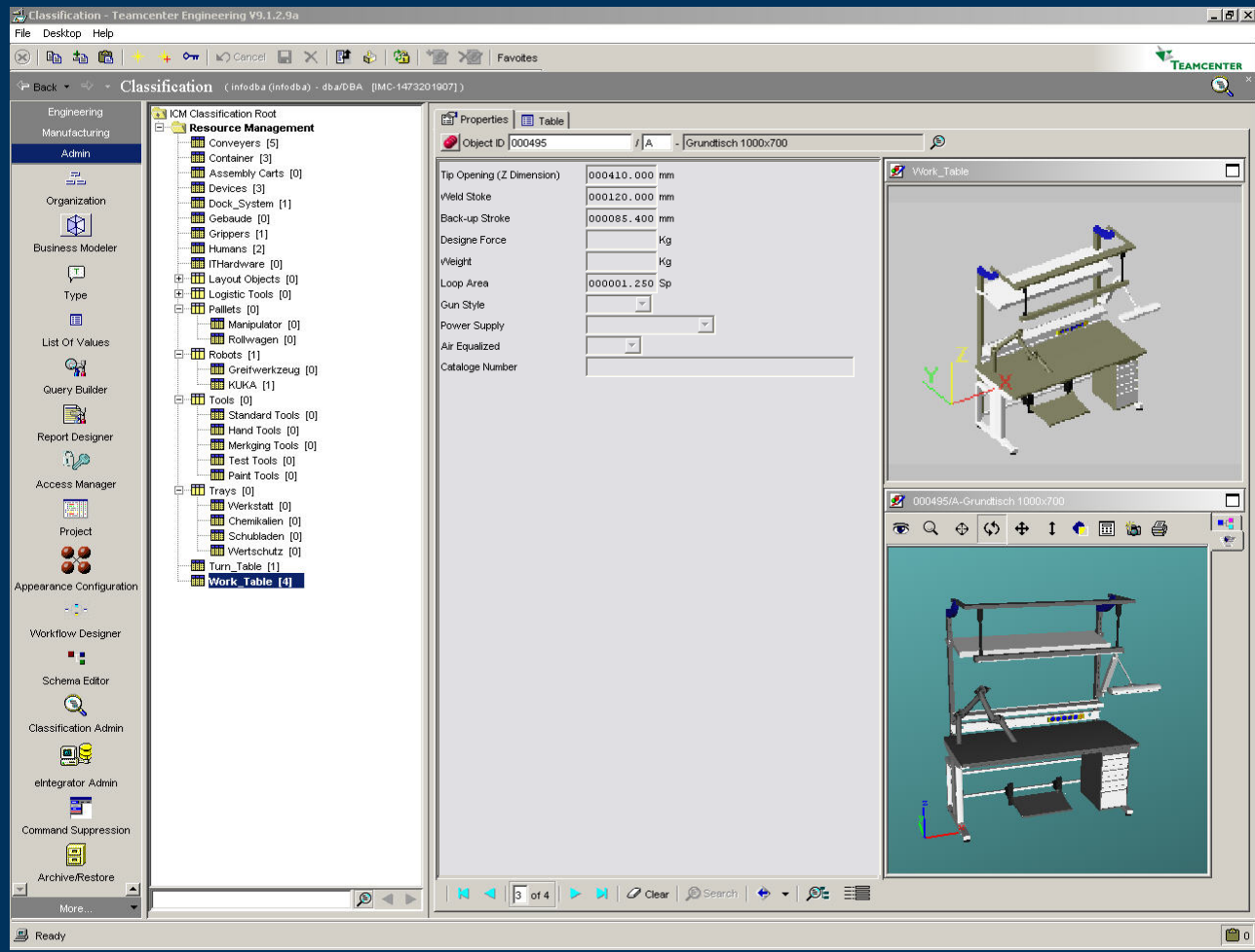
I can optimize the process upfront!



Assembly Planning Solution Workflow 2/3

- Estimate process time
- Add equipment and tools from classified libraries
- Line layout and workstation design
- Validate assembly feasibility

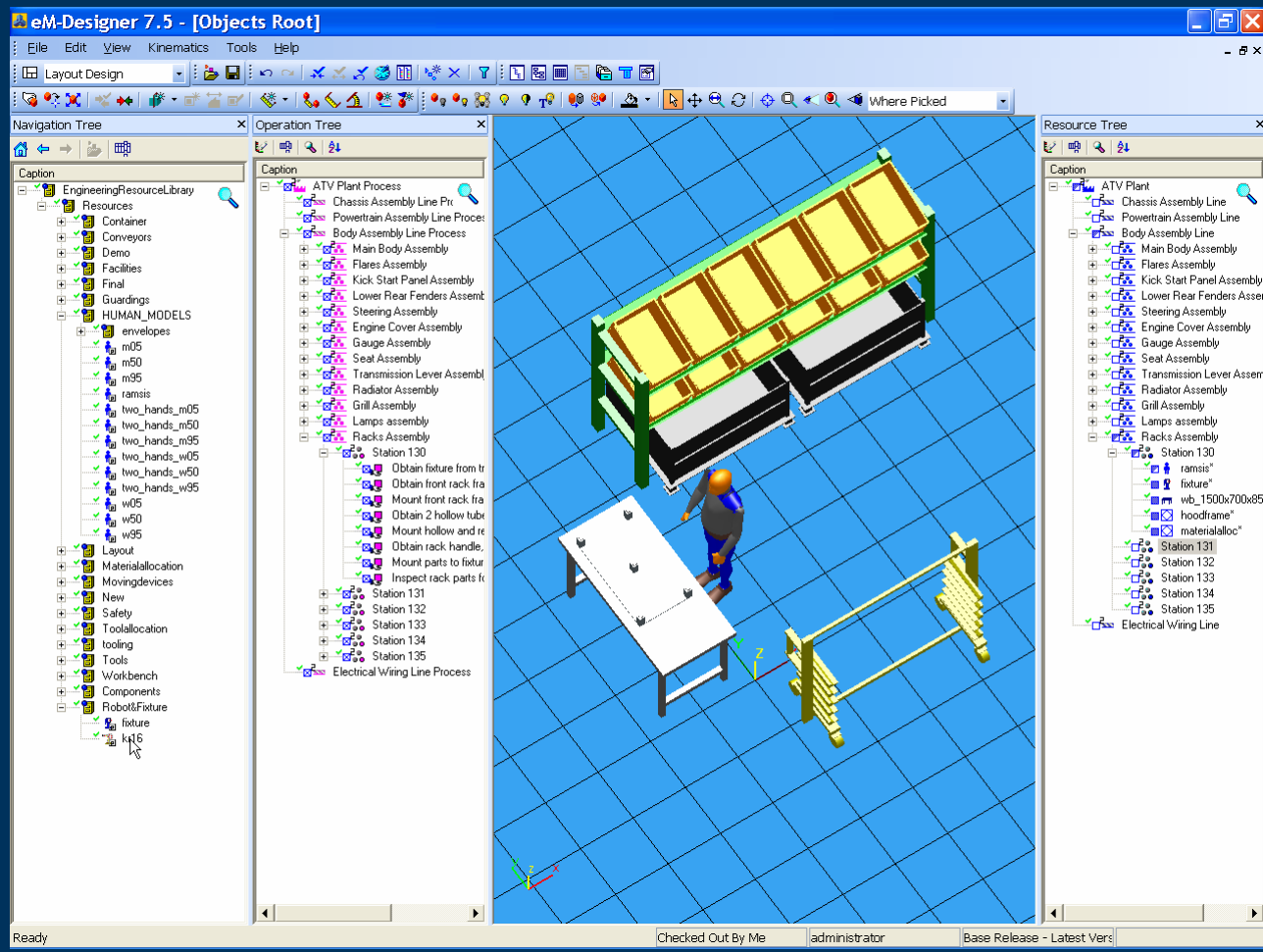
Standardization is key!



Assembly Planning Solution Workflow 2/3

- Estimate process time
- Add equipment and tools from classified libraries
- Line layout and workstation design
- Validate assembly feasibility

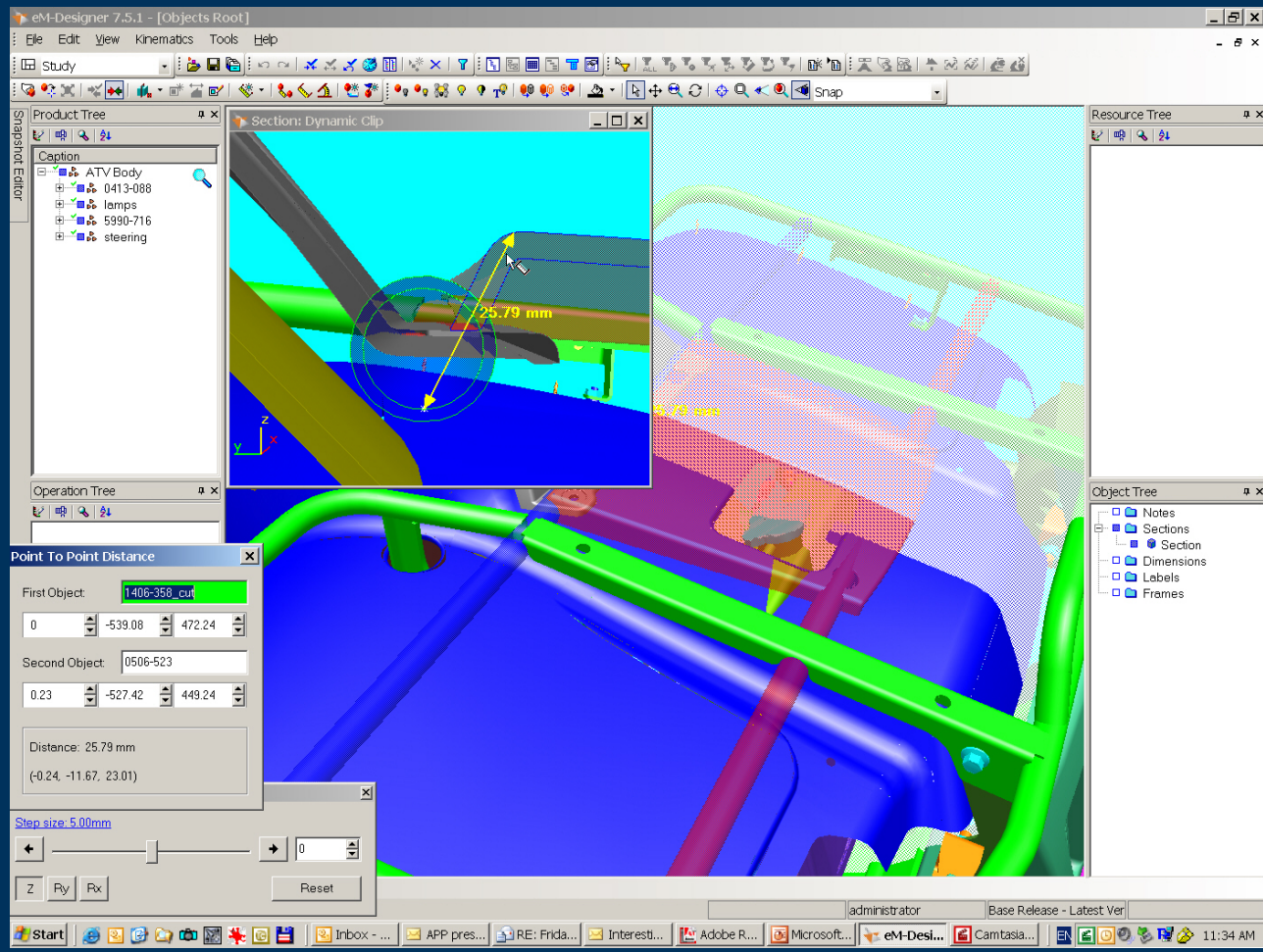
I can optimize material flow and ergonomics!



Assembly Planning Solution Workflow 2/3

- Estimate process time
- Add equipment and tools from classified libraries
- Line layout and workstation design
- Validate assembly feasibility

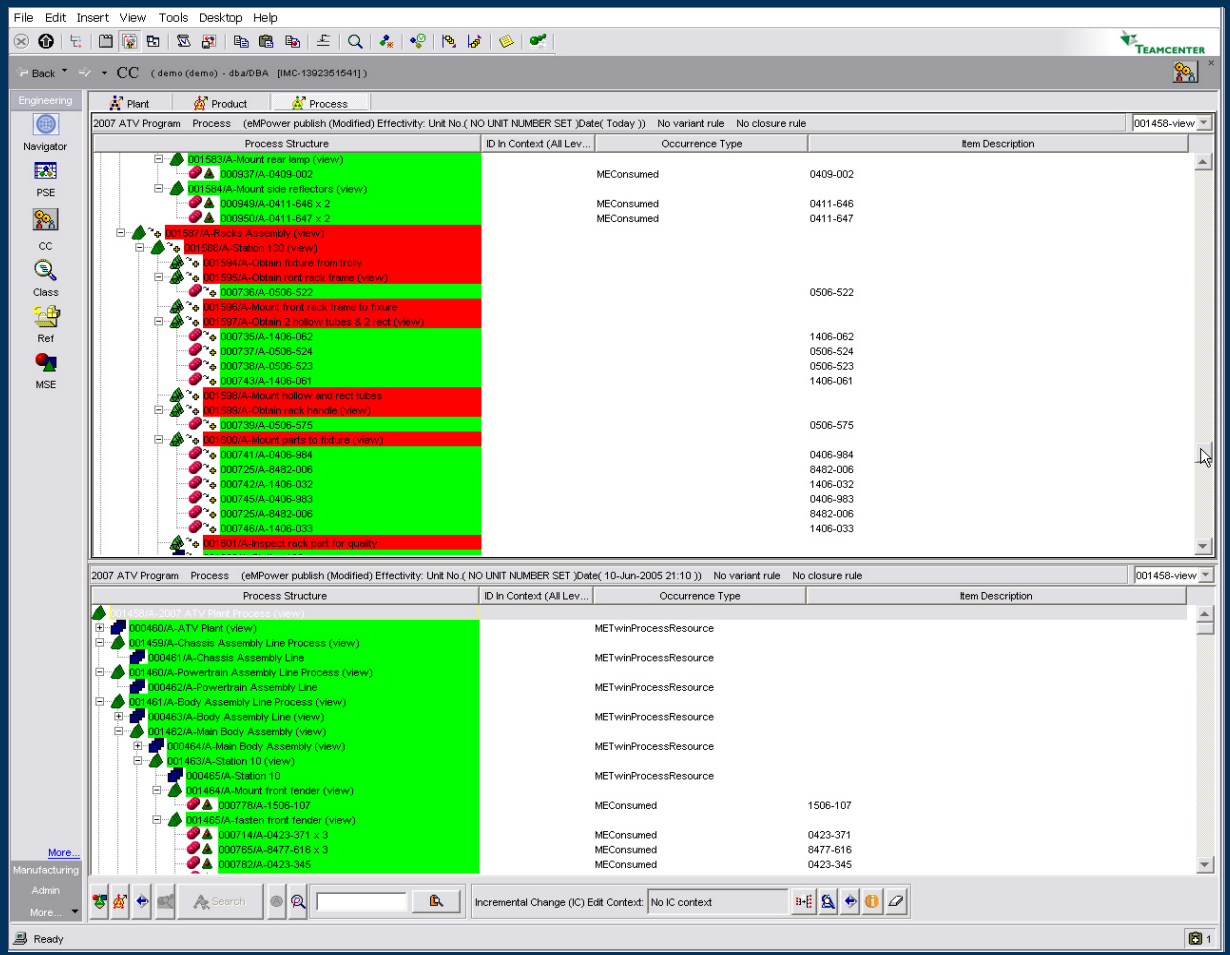
I can validate processes in early stages!



Assembly Planning Solution Workflow 3/3

- Handle Engineering Changes
- Route process for approval
- Release process with effectivity
- Collaborate with product engineering and production

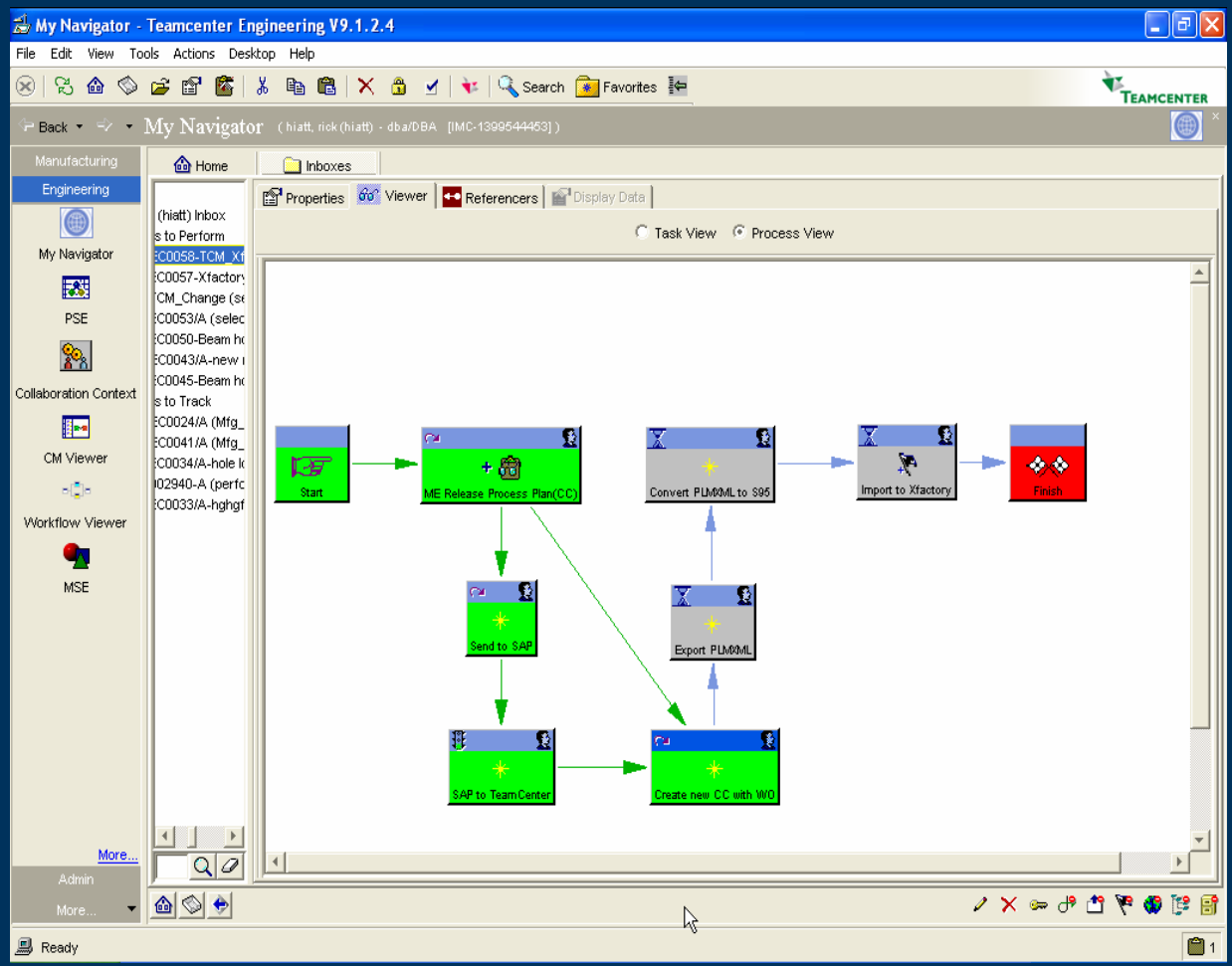
I can analyze the effect of changes!



Assembly Planning Solution Workflow 3/3

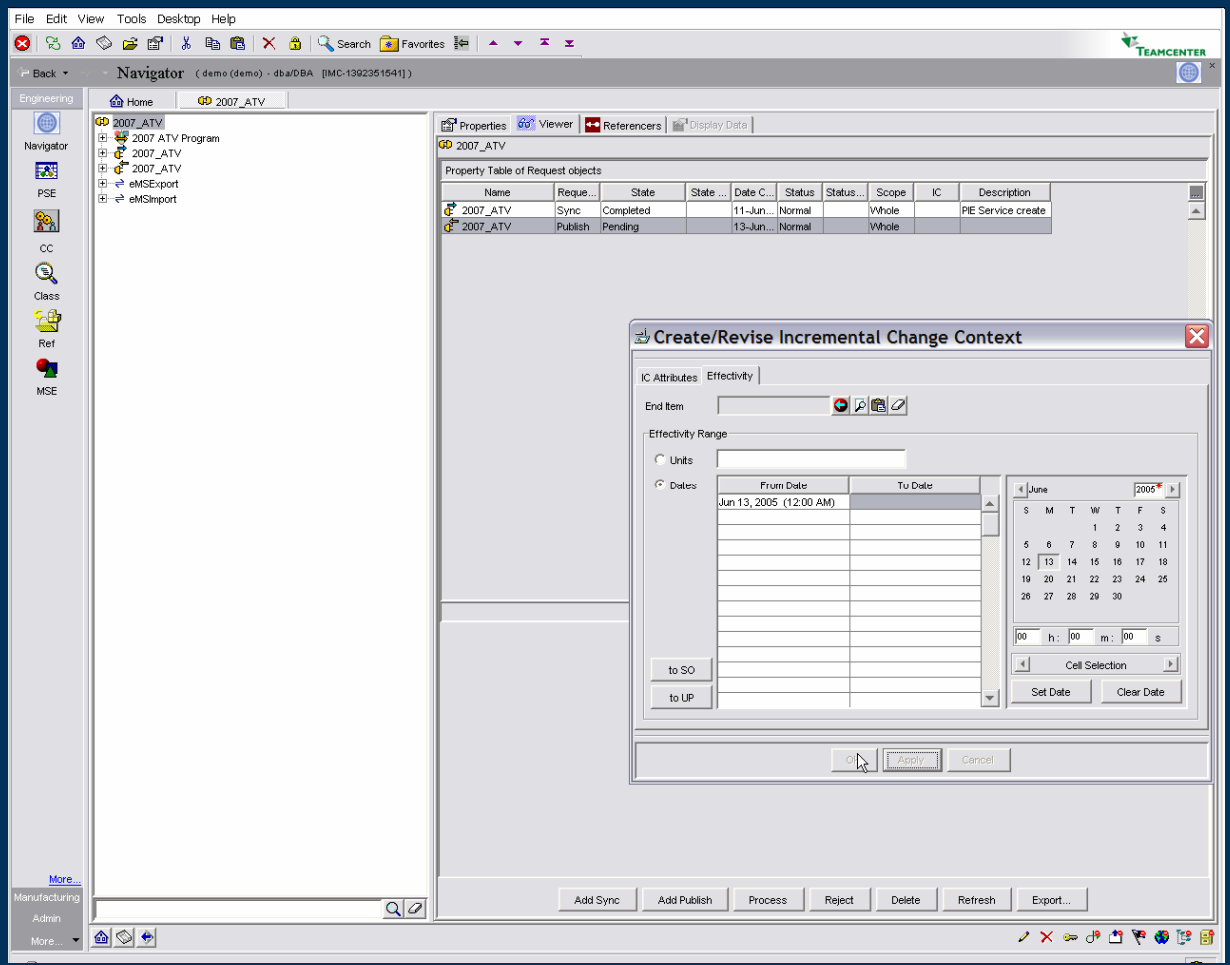
- Handle Engineering Changes
- Route process for approval
- Release process with effectivity
- Collaborate with product engineering and production

I can ensure production readiness!



Assembly Planning Solution Workflow 3/3

- Handle Engineering Changes
- Route process for approval
- Release process with effectivity
- Collaborate with product engineering and production

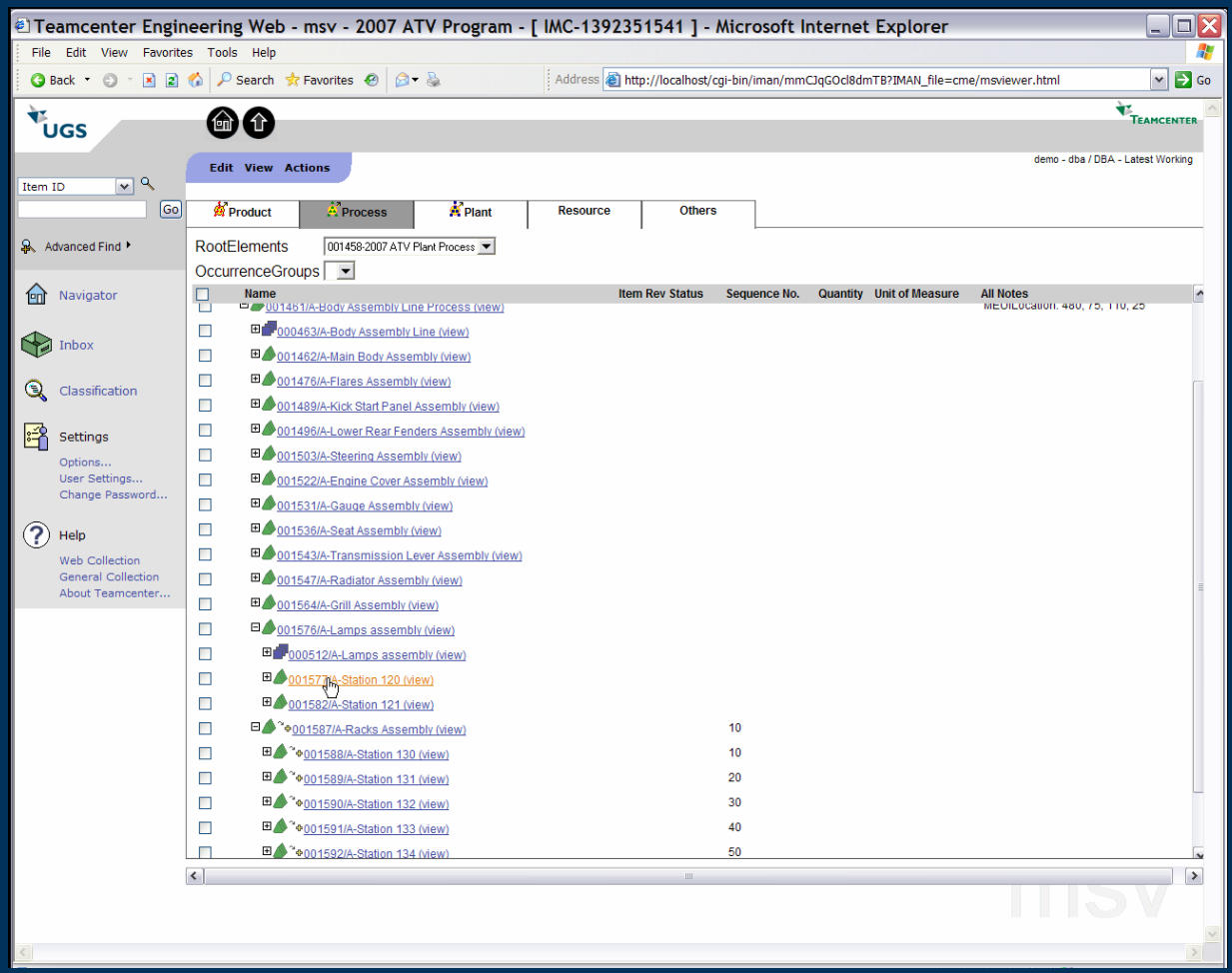


The correct processes will be executed!

Assembly Planning Solution Workflow 3/3

- Handle Engineering Changes
- Route process for approval
- Release process with effectivity
- Collaborate with product engineering and production

I can collaborate in a global environment!!!



Assembly Planning Solution - Benefits

- Reduce Manufacturing Assembly Planning efforts and duration
- Increase manufacturing process quality, commonality and consistency
- Improve collaboration over manufacturing process
- Reduce cost of change
- Capture organization knowledge

Summary

- UGS Tecnomatix Assembly Planning solution enables you today to
  - Reduce Manufacturing Assembly Planning efforts and duration
  - Increase manufacturing process quality, commonality and consistency
  - Improve collaboration over manufacturing process
  - Reduce cost of change
  - Capture organization knowledge

CIMData: “Digital Manufacturing should exist within PLM…”

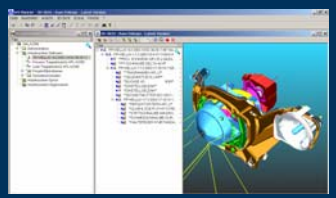
“…It can’t be over-emphasized that Digital Manufacturing solutions need to exist within a PLM environment so that they can mange the processes, data, and resources across the production planning activities and among all of the players (including partners, suppliers, and customers) who are involved in the product development project.”

CIMdata

The Value of Digital Manufacturing in a PLM Environment: A CIMdata Case Study - Fiat Auto S.p.A

March 2005

Hella Customer Quote



”We are very satisfied with the deployment of the UGS Tecnomatix solution for process planning. It is now used productively in more than 10 car headlight projects.

With the UGS consultants we have initiated a plan to develop the DM as the standard for process planning for all new projects.

The deployment project includes training of users from different planning departments, developing of interfaces to other legacy systems, and plugging in additional modules of the system."

April 2005

Dr. Andreas Brenke

Corporate Process Standards
Head of Digital Factory
CPS - DF

UGS

Transforming the process of innovation

http://www.ugs.com