

UGS

*Transforming the
process of innovation*



Leveraging manufacturing knowledge in a global innovation network environment

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11-May-06



UGS Enterprise PLM





Introducing Tecnomatix Digital Manufacturing



Transforming the process of manufacturing

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



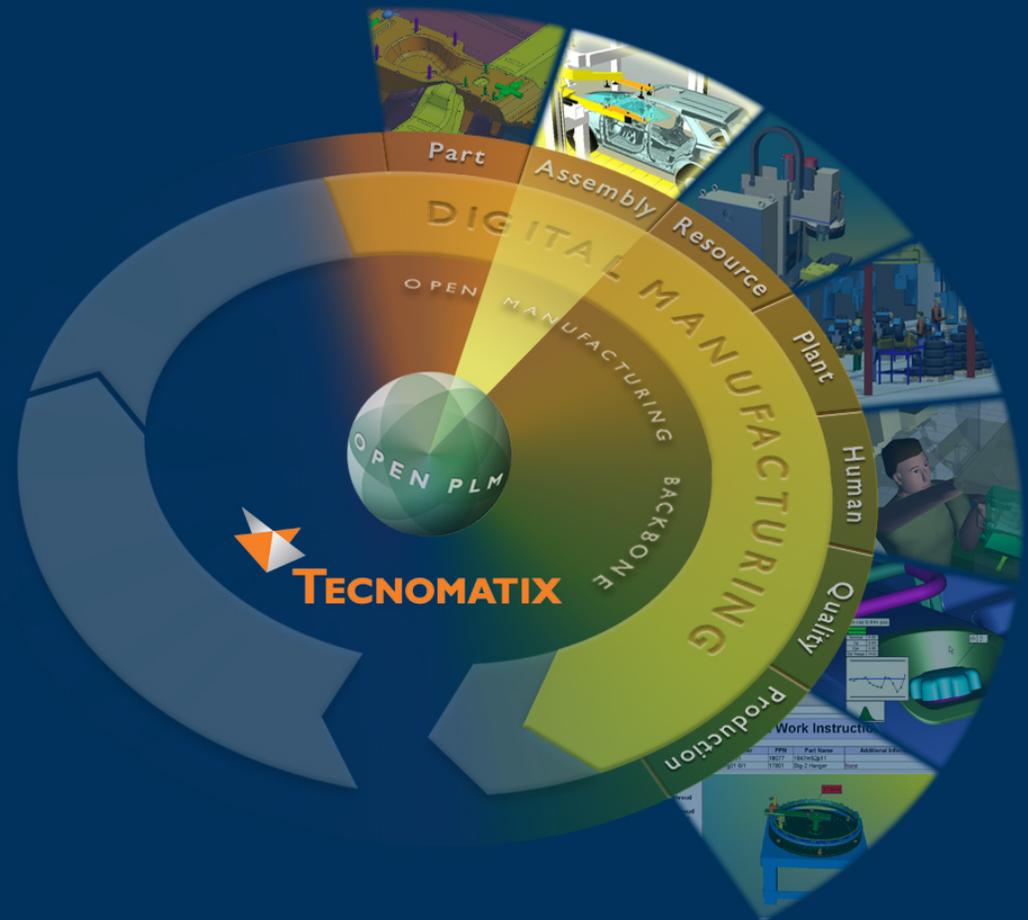


Assembly Process Planning is an integral part of Digital Manufacturing



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

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





Manufacturing Challenges



1.

**More Products,
models &
Variants**

2.

**Increasing
product and
process
complexity**

3.

**Multi Plant
Production -
Globalization**

5.

**Continuous
Process
Improvement**

6.

**Re-use Existing
Production
Resources &
Facilities**

4.

**Mix Model
Assembly
Lines**

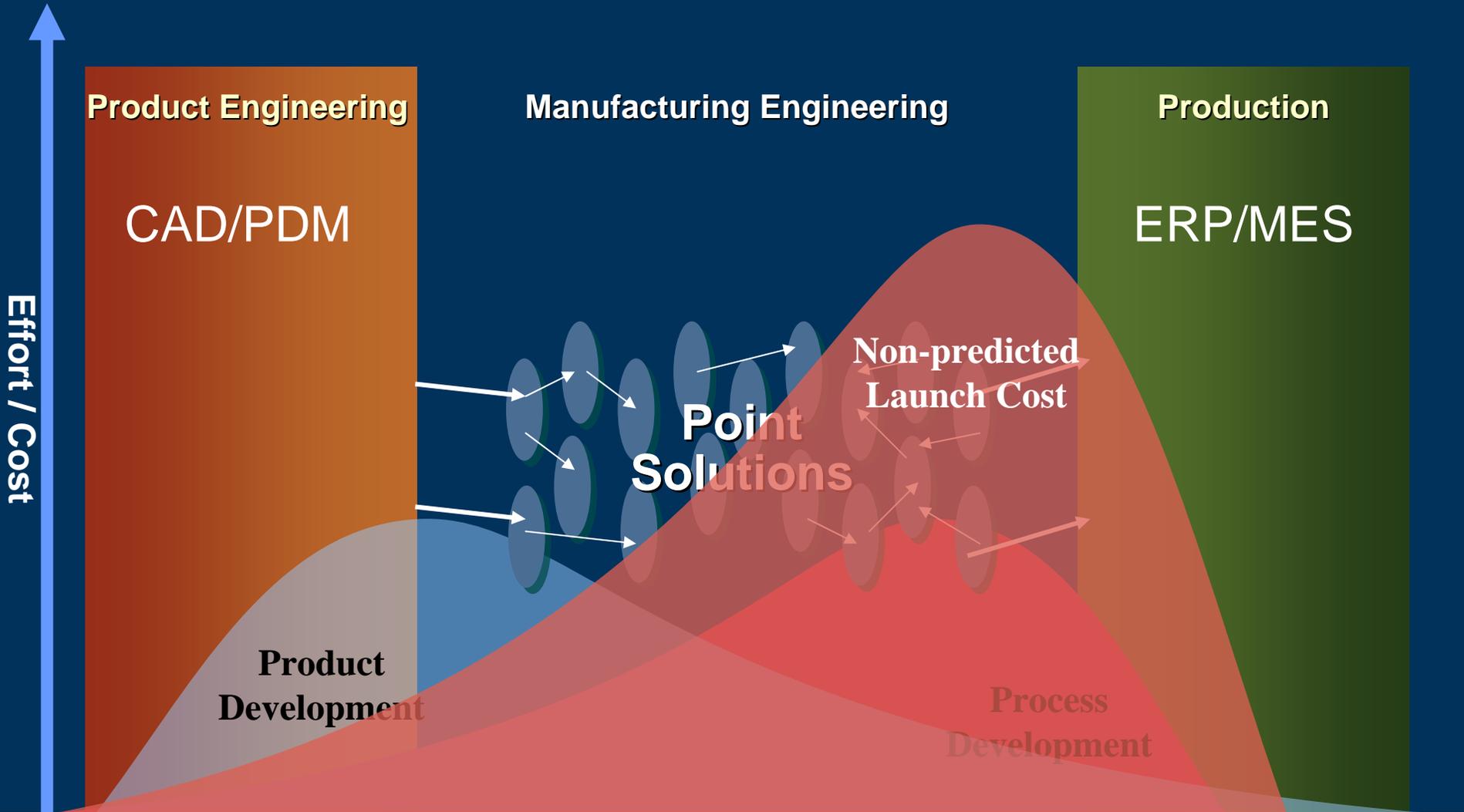


*How to maintain
Profitability
By shortening
Time to Market
And reducing **Cost**
In a **Global Environment***



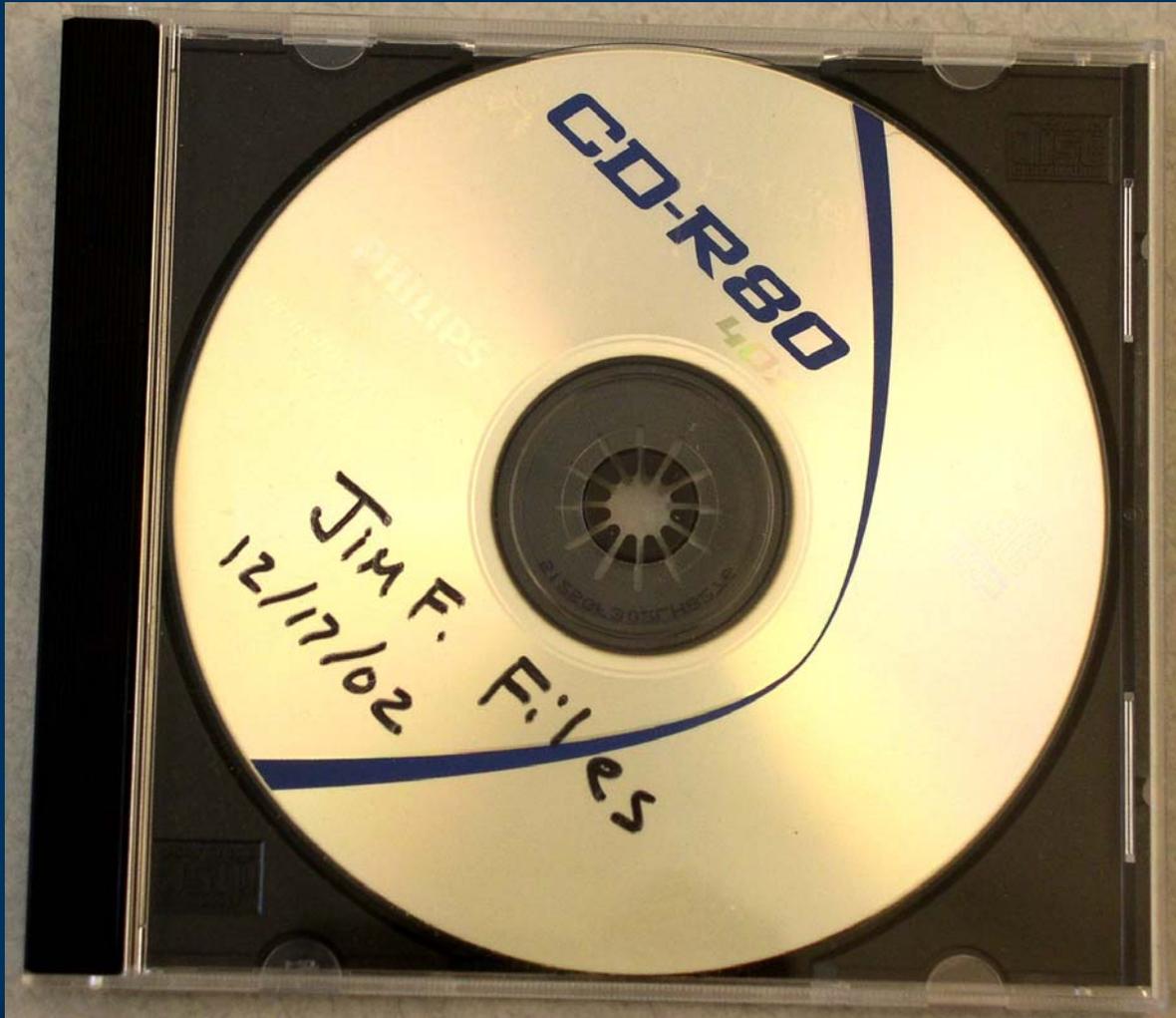


Manufacturing Engineering Struggle





Current Best Case Process Knowledge Capturing & Retrieval System





Process Design Complexity



Process A

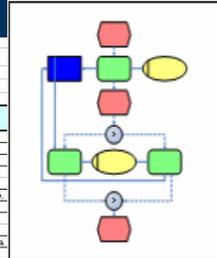
Process

Product Variant A

Product

SEQUENCE OF EVENT (SOE)

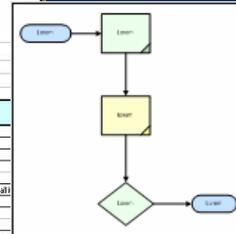
| Model | Time |
|---|-------|
| 1. Grease 7 spot in service station area on base. | 10.61 |
| 2. Screw PCA logic whisk to base. | 4.51 |
| 1. Take and put paper mtr and gear motor to fixture. | 4.88 |
| 2. Press gear motor to paper motor Assy. | 2 |
| 3. Install paper motor Assy to left end and put on the jig. | 4.04 |
| 4. Screw (2) paper mtr to left end. | 7 |
| 5. Give VIP to L&E. | 2 |
| 1. Put L&E 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 VIP to CS&E. | 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 fit cluster gear. | 3.61 |



SEQUENCE OF EVENT (SOE)

| Model | Time |
|---|-------|
| 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 VIP to L&E. | 2 |
| 1. Put L&E 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 VIP to CS&E. | 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 fit cluster gear. | 3.61 |

| Model | Time |
|---|-------|
| 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 VIP to L&E. | 2 |
| 1. Put L&E 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 VIP to CS&E. | 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 fit cluster gear. | 3.61 |



Resources

Resources





Process Design Complexity



Process A

Product Variant A

SEQUENCE OF EVENT (SOE)

Model

Elements Description

1. Take and put base to jig
2. Take and assemble (1) bumper tool to base.
3. Paste serial label to base.
4. Put base to pallet.
1. Install 2 padlock into base.
2. Assemble pad separator rubber and block separator and install it to base.
3. Install adjuster width into base.

| | |
|---|-------|
| 1. Grease 7 spot in service station area on base. | 10.61 |
| 2. Screw PCA logis whisk to base. | 4.51 |
| 1. Take end put paper mtr and gear motor to fixture. | 4.88 |
| 2. Fit gear motor to paper motor base. | 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. Screw VBP to LE2. | 2 |
| 1. Put LE1 assy on jig. | 3.12 |
| 2. Solder cable with connector to paper motor. | 3.66 |
| 3. Install gear cluster to left end. | 4.13 |
| 4. Put gear VBP to CBS. | 2 |
| 1. Install left end assy to base. | 4.4 |
| 2. Screw left end assy to base. | 3.02 |
| 3. Plug paper motor cable to PCA. | 2.5 |
| 4. Grease (1) cluster gear. | 3.14 |



Process A

Product Variant A

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant B

Process A

Product Variant A

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant C

Process A

Product Variant B

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant B

Process A

Product Variant B

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant C

Process B

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant D

Process A

Product Variant A

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant D

Process A

Product Variant A

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant D

Process A

Product Variant B

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant D

Process A

Product Variant B

SEQUENCE OF EVENT (SOE)

Model

Elements Description

Resources

Plant D

Plant A



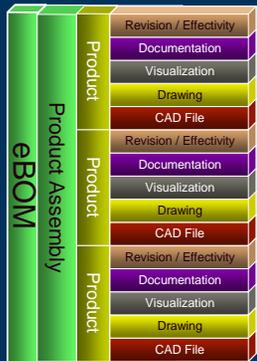


Manufacturing Data Complexity



Engineering

Manufacturing



100X MORE DATA

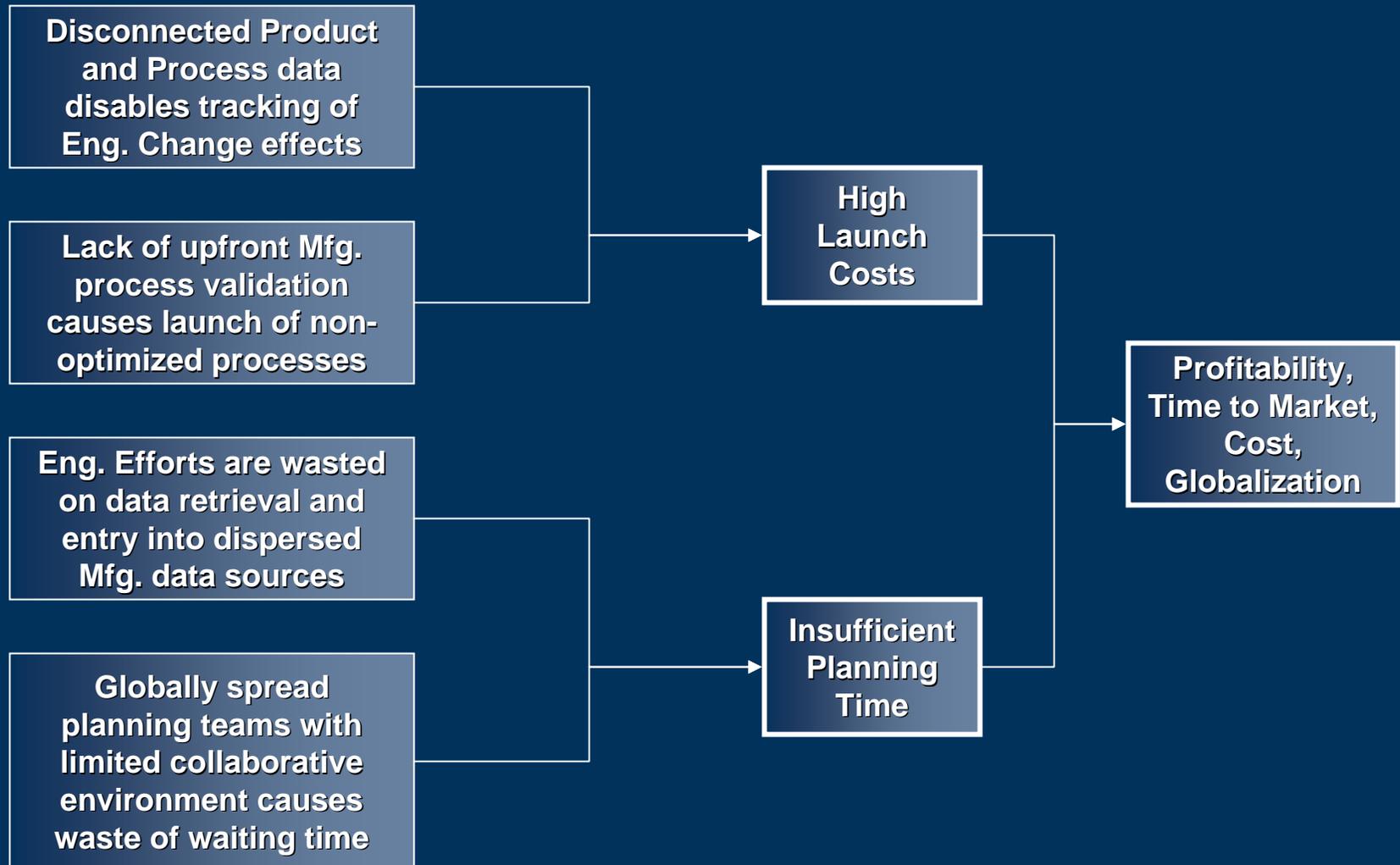


TECNOMATIX

PDM



Impediments to Achievement





Impediments to Achievement



Pains

Disconnected Product and Process data disables tracking of Eng. Change effects



Lack of upfront Mfg. process validation causes launch of non-optimized processes



Eng. Efforts are wasted on data retrieval and entry into dispersed Mfg. data sources



Globally spread planning teams with limited collaborative environment causes waste of waiting time



Needs

Ability to track Eng. Changes and assess their effect on Mfg. processes

Ability to analyze, validate and optimize processes upfront

Ability to define, manage and reuse validated, best-in-class assembly processes

Ability to standardize processes, resources and methods

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!

The screenshot displays the TEAMCENTER software interface. The top menu bar includes File, Edit, Insert, View, Graphics, Tools, Desktop, and Help. The main window is titled 'CC (demo (demo) - dba/DBA [IMC-1392351541])'. The interface is divided into several sections:

- Engineering Navigator:** Shows a tree view with folders for PSE, CC, Ref, and MSE.
- BOM Line Table (Top):** A table with columns: BOM Line, ID In Context..., DeliveredUnit, Rule configured by, Item Rev Status, Sequence..., VO..., HV..., Variant Conditions, EO..., and Effecti. It lists items like 0413-088(A) (view) with ID 1100, 0123-397/A with ID 1109, 0413-002/A with ID 1110, 0413-007/A with ID 1111, 0413-008/A x 4 with ID 1115, 0413-043/A with ID 1116, and 0413-044(A) (view) with ID 1117.
- BOM Line Table (Bottom):** A larger table with columns: BOM Line, ID In Cont, and a list of items from 000700/A-0405-106 to 000722/A-0506-858.
- 3D Model:** A 3D assembly model of a vehicle chassis, showing various components in different colors (blue, green, orange, pink, white).
- Assembly Viewer:** A toolbar with icons for Assembly Viewer, Variants, Attachments, Class Attributes, Object View, and Rep.

The bottom status bar shows 'Incremental Change (IC) Edit Context: No IC context'.



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!

The screenshot displays the TEAMCENTER software interface. At the top, there is a menu bar (File, Edit, Insert, View, Graphics, Tools, Desktop, Help) and a toolbar. Below the menu bar, the title bar shows 'MSE Root Process: 001458-2007 ATV Plant Process (demo (demo) - dba/DBA [IMC-1392351541])'. The main interface is divided into several panes:

- Engineering**: A table showing BOM lines with columns for ID in Context, Delivered Unit, Rule configured by, Item Rev Status, Sequence, Variant Conditions, and Effectivity.
- Navigator**: A vertical sidebar with icons for Engineering, PSE, CC, Ref, and MSE.
- Process Structure**: A tree view showing the hierarchy of processes, including '001458/A-2007 ATV Plant Process' and its sub-processes like '000460/A-ATV Plant', '000461/A-Chassis Assembly Line', and '000462/A-Main Body Assembly'.
- Assembly Viewer**: A 3D model of a vehicle chassis, showing various components like the seat, fenders, and engine cover.

At the bottom, there is a 'Manufacturing' section with 'Admin' and 'More...' options, and a status bar showing 'Incremental Change (IC) Edit Context: No IC context'.



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!

The screenshot displays the TEAMCENTER software interface. The top menu bar includes File, Edit, Insert, View, Graphics, Tools, Desktop, and Help. The main window is divided into several panes:

- Navigator:** Shows a tree view of the product structure with various components like PSE, CC, Class, Ref, and MSE.
- Assembly Viewer:** Displays a 3D model of a vehicle body (ATV Body) with various colored components (blue, green, yellow, red).
- Process Structure Table:** A table showing the relationship between process stations, context IDs, occurrence types, and item descriptions.

| Process Structure | ID In Context (All Lev... | Occurrence Type | Item Description |
|---|---------------------------|-----------------------|------------------|
| 000501/A-Station 101 | | METwinProcessResource | |
| 001552/A-Assemble radiator grill (view) | | | |
| 000670/A-0413-007 | 1111 | MEConsumed | 0413-007 |
| 000671/A-0413-009 x 4 | 1113 | MEConsumed | 0413-009 |
| 001553/A-Station 102 (view) | | | |
| 000502/A-Station 102 | | METwinProcessResource | |
| 001554/A-Assemble radiator fan (view) | | | |
| 000673/A-0413-044 | 1117 | MEConsumed | 0413-044 |
| 000680/A-8475-512 x 7 | 1104 | MEConsumed | 8475-512 |
| 001555/A-Station 103 (view) | | | |
| 000503/A-Station 103 | | METwinProcessResource | |
| 001556/A-Assemble electric cable (view) | | | |
| 000686/A-0123-397 | 1109 | MEConsumed | 0123-397 |
| 000674/A-0413-045 | 1116 | MEConsumed | 0413-045 |
| 000675/A-0413-398 | 1125 | MEConsumed | 0423-398 |
| 000680/A-8475-512 | 1104 | MEConsumed | 8475-512 |
| 001557/A-Close radiator cap (view) | | | |
| 000686/A-0413-002 | 1110 | MEConsumed | 0413-002 |



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!

The screenshot displays the eM-Designer 7.5 interface with the following components:

- Process Review:** A vertical flowchart showing steps: Release front rack (15s), Mount front rack (15s), Get 0423-101, Obtain bolts (10s), Get 0423-101, Fasten bolts (10s), and Check assembly (5s).
- Operation Tree:** A hierarchical tree of assembly components including Main Body Assembly, Flares Assembly, Kick Start Panel Assembly, Lower Rear Fenders Asse, Steering Assembly, Engine Cover Assembly, Gauge Assembly, Seat Assembly, Transmission Lever Assen, Radiator Assembly, Grill Assembly, Lamps assembly, Racks Assembly, and Stations 130-135.
- Relations Viewer - Racks Assembly:** A table listing 37 products with their IDs and status indicators.
- Gantt - Racks Assembly:** A Gantt chart showing task durations for Station 130 and Station 131, including tasks like Obtain fix, Mount from, and Weld WP.

| ID | Status |
|----------|--------|
| 0506-522 | ✓ |
| 0506-524 | ✓ |
| 0506-523 | ✓ |
| 1406-062 | ✓ |
| 1406-061 | ✓ |
| 0506-575 | ✓ |
| 0406-984 | ✓ |
| 8482-006 | ✓ |
| 1406-032 | ✓ |
| 0406-983 | ✓ |
| 8482-006 | ✓ |
| 1406-033 | ✓ |
| 0406-815 | ✓ |
| 0406-815 | ✓ |
| 1406-122 | ✓ |
| 0406-815 | ✓ |

| Task | Duration |
|---------------|----------|
| Station 130 | 0 |
| Obtain fix... | 0 |
| Obtain fro... | 5 |
| Mount from... | 5 |
| Obtain 2 h... | 7 |
| Mount holl... | 8 |
| Obtain rac... | 7 |
| Mount part... | 7 |
| Inspect ra... | 8 |
| Station 131 | 0 |
| Weld WP ... | 2.5 |



Assembly Planning Solution

Workflow 2/3



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

The screenshot displays the eM-Designer 7.5.1 interface. The main window shows the 'DataCard Times' dialog, which is used for defining process parameters. The 'Basic Data' section includes a table for 'Standard data basic values' and a table for 'Use Tool, Pick up, Position and Put Down'. The 'Properties' window on the right shows fields for 'Allocated Time', 'Verified Time', 'Calculated Time', and 'Data Card'.

| Pick up and Position | | Dist. range cm | <= 20 | > 20 to <= 50 | > 50 to <= 80 | Use Tool, Pick up, Position and Put Down | Code | 1 | 2 |
|----------------------|---------------------|----------------|----------|---------------|---------------|--|-------------|----------|----------|
| | approx. | AA | 20 | 35 | 50 | Approximate | HA | 25 | 45 |
| easy | loose | AB | 30 | 45 | 60 | Loose | HB | 40 | 60 |
| | tight | AC | 40 | 55 | 70 | Tight | HC | 50 | 70 |
| <= 1 | approx. | AD | 20 | 45 | 60 | Movement Cycles | Code | 1 | 2 |
| | loose | AE | 30 | 55 | 70 | 1 movement | ZA | 5 | 15 |
| | tight | AF | 40 | 65 | 80 | Following movements | ZB | 10 | 30 |
| handful | approx. | AG | 40 | 65 | 80 | Transfer and 1 movement | ZC | 30 | 45 |
| | approx. | AH | 25 | 45 | 65 | Tighten and release | ZD | | 20 |
| > 1 to <= 8 daN | loose | AJ | 40 | 65 | 75 | Body Movements | Code | | |
| | tight | AK | 50 | 75 | 85 | Walk / m | KA | | 25 |
| > 8 to <= 22 daN | approx. | AL | 80 | 105 | 115 | Bend, stoop | KB | | 60 |
| | loose | AM | 95 | 120 | 130 | Sit and Stand | KC | | 110 |
| | tight | AN | 120 | 145 | 160 | Visual Control | Code | | |
| | approximate | PA | 10 | 20 | 25 | Non-influencable proc. time | PTU | | 1 |
| | loose | PB | 20 | 30 | 35 | Influencable proc. time | PTB | | 1 |
| | tight | PC | 30 | 40 | 45 | Process time | PT | | 1 |
| | Operate | Code | 1 | 2 | 3 | | | | |
| | 1 simple operation | BA | 10 | 25 | 40 | | | | |
| | Combined operations | BB | 30 | 45 | 60 | | | | |

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!**

Classification - Teamcenter Engineering V9.1.2.9a

File Desktop Help

Classification (infodba (infodba) - dba/DBA [IMC-1473201907])

Engineering
Manufacturing
Admin
Organization
Business Modeler
Type
List Of Values
Query Builder
Report Designer
Access Manager
Project
Appearance Configuration
Workflow Designer
Schema Editor
Classification Admin
eIntegrator Admin
Command Suppression
Archive/Restore
More...

ICM Classification Root
Resource Management
Conveyers [5]
Container [3]
Assembly Carts [0]
Devices [3]
Dock_System [1]
Gebäude [0]
Grippers [1]
Humans [2]
ITHardware [0]
Layout Objects [0]
Logistic Tools [0]
Pallets [0]
Manipulator [0]
Rollwagen [0]
Robots [1]
Greifwerkzeug [0]
KUKA [1]
Tools [0]
Standard Tools [0]
Hand Tools [0]
Marking Tools [0]
Test Tools [0]
Paint Tools [0]
Trays [0]
Werkstatt [0]
Chemikalien [0]
Schubladen [0]
Wertschutz [0]
Turn_Table [1]
Work_Table [4]

Properties Table

Object ID 000495 / A - Grundtisch 1000x700

| | |
|---------------------------|---------------|
| Tip Opening (Z Dimension) | 000410.000 mm |
| Weld Stroke | 000120.000 mm |
| Back-up Stroke | 000085.400 mm |
| Design Force | Kg |
| Weight | Kg |
| Loop Area | 000001.250 Sp |
| Gun Style | |
| Power Supply | |
| Air Equalized | |
| Catalogue Number | |

Work_Table

000495/A--Grundtisch 1000x700

5 of 4 Clear Search

Ready

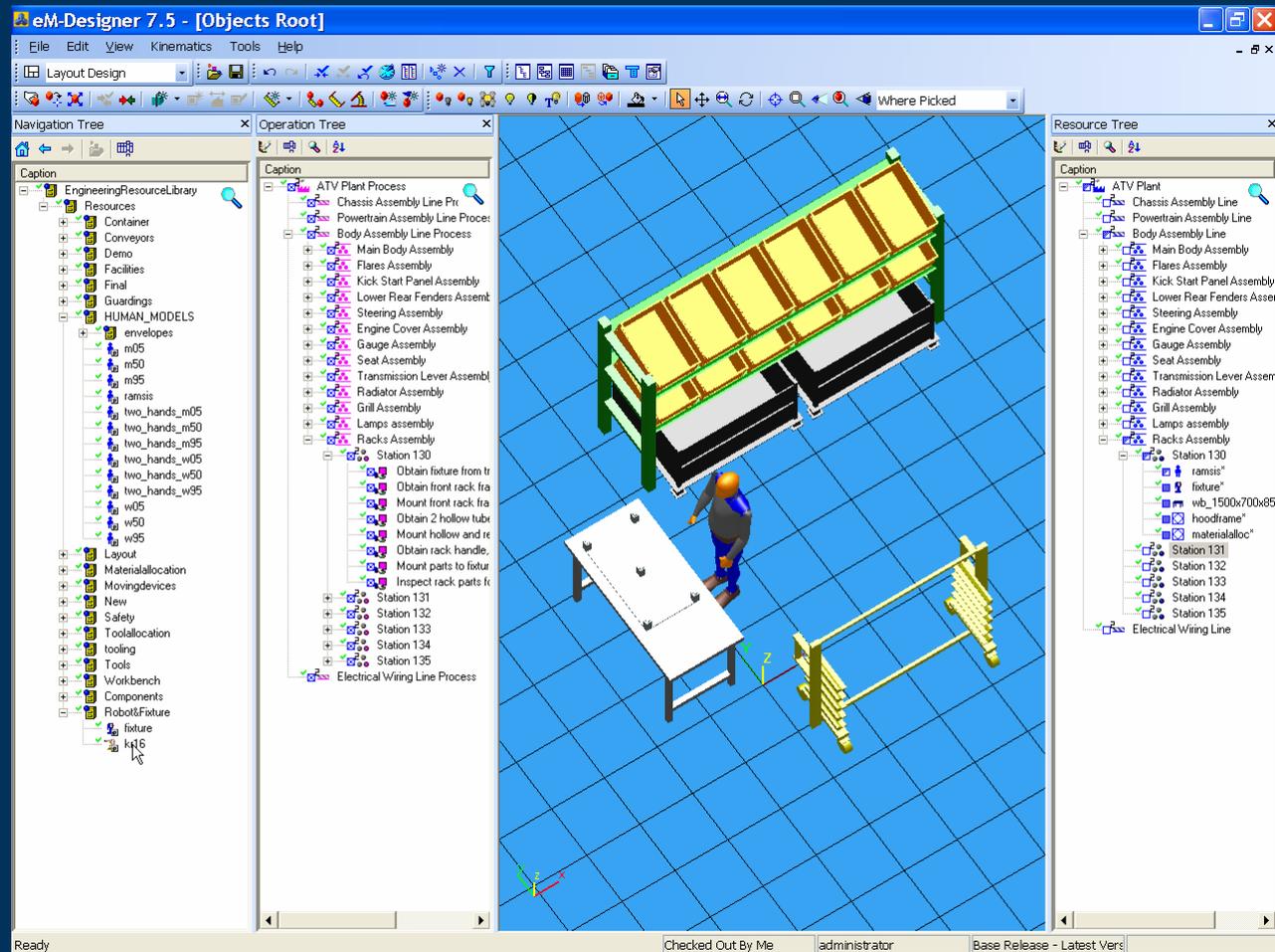


Assembly Planning Solution Workflow 2/3



- ▶ 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!



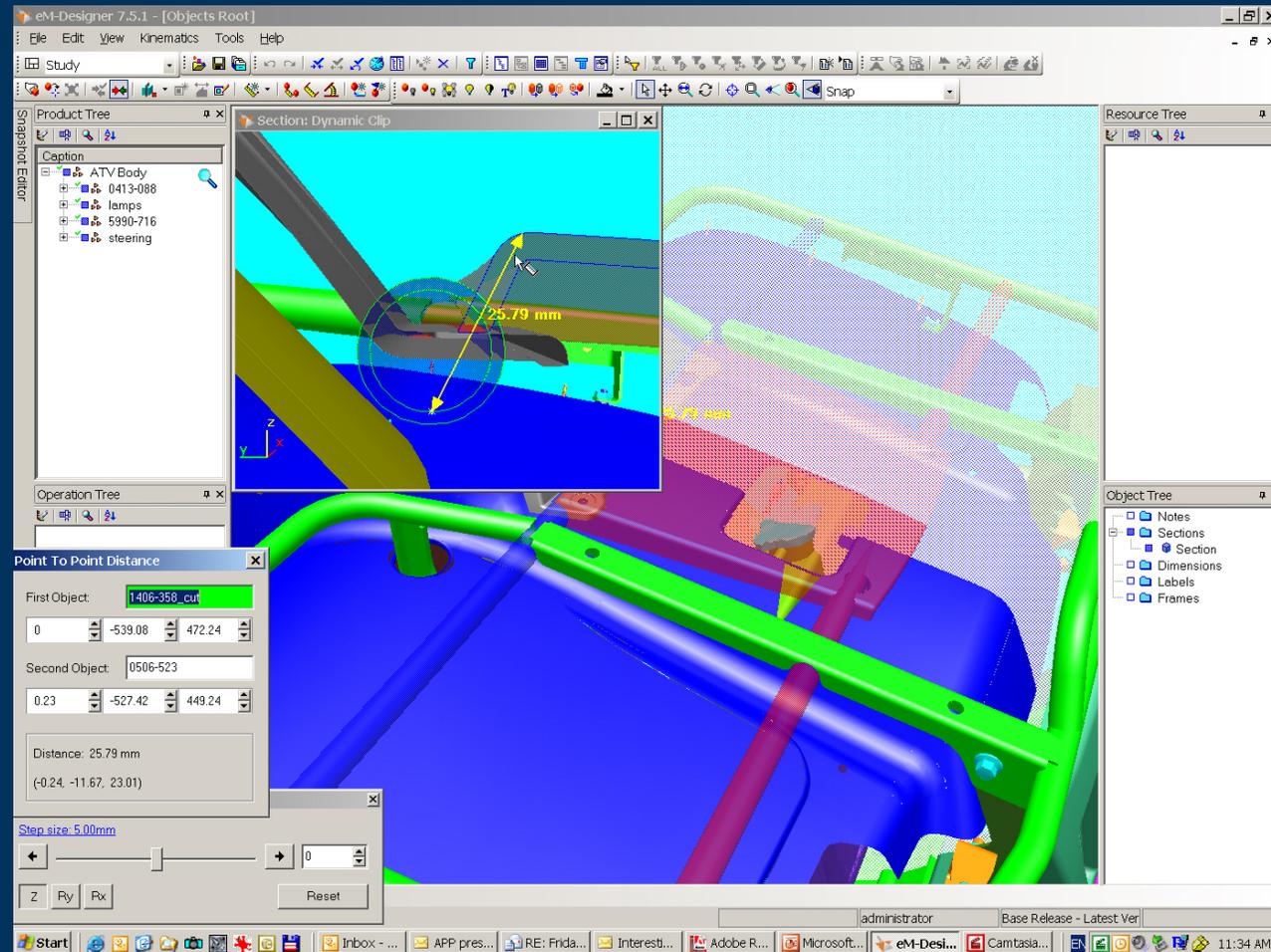


Assembly Planning Solution Workflow 2/3



- ▶ 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!

The screenshot displays the TEAMCENTER software interface, showing a process structure tree on the left and a table of item descriptions on the right. The table is divided into two sections, each with a header row: "Process Structure", "ID In Context (All Lev...", "Occurrence Type", and "Item Description".

| Process Structure | ID In Context (All Lev... | Occurrence Type | Item Description |
|---|---------------------------|-----------------|------------------|
| 001593/A-Mount rear lamp (view) | | | |
| 000937/A-0409-002 | | MEConsumed | 0409-002 |
| 001594/A-Mount side reflectors (view) | | | |
| 000949/A-0411-646 x 2 | | MEConsumed | 0411-646 |
| 000950/A-0411-647 x 2 | | MEConsumed | 0411-647 |
| 001597/A-Rack Assembly (view) | | | |
| 001594/A-Station 130 (view) | | | |
| 001594/A-Obtain fixture from trolley | | | |
| 001595/A-Obtain front rack frame (view) | | | |
| 000736/A-0506-522 | | | 0506-522 |
| 001596/A-Mount front rack frame to tourse | | | |
| 000735/A-1406-062 | | | 1406-062 |
| 000737/A-0506-524 | | | 0506-524 |
| 000738/A-0506-523 | | | 0506-523 |
| 000743/A-1406-061 | | | 1406-061 |
| 001598/A-Mount hollow and rect tubes | | | |
| 000729/A-0506-575 | | | 0506-575 |
| 000728/A-0506-575 | | | 0506-575 |
| 000741/A-0406-984 | | | 0406-984 |
| 000725/A-0482-006 | | | 0482-006 |
| 000742/A-1406-032 | | | 1406-032 |
| 000745/A-0406-983 | | | 0406-983 |
| 000725/A-0482-006 | | | 0482-006 |
| 000746/A-1406-033 | | | 1406-033 |
| 001601/A-Inspect rack part for quality | | | |

| Process Structure | ID In Context (All Lev... | Occurrence Type | Item Description |
|--|---------------------------|-----------------------|------------------|
| 000460/A-ATV Plant (view) | | METwinProcessResource | |
| 001459/A-Chassis Assembly Line Process (view) | | METwinProcessResource | |
| 000461/A-Chassis Assembly Line | | METwinProcessResource | |
| 001460/A-Powertrain Assembly Line Process (view) | | METwinProcessResource | |
| 000462/A-Powertrain Assembly Line | | METwinProcessResource | |
| 001461/A-Body Assembly Line Process (view) | | METwinProcessResource | |
| 000463/A-Body Assembly Line (view) | | METwinProcessResource | |
| 001462/A-Man Body Assembly (view) | | METwinProcessResource | |
| 000464/A-Man Body Assembly (view) | | METwinProcessResource | |
| 001463/A-Station 10 (view) | | METwinProcessResource | |
| 000465/A-Station 10 | | METwinProcessResource | |
| 001464/A-Mount front tender (view) | | MEConsumed | |
| 000778/A-1506-107 | | | 1506-107 |
| 001465/A-Inspect front tender (view) | | MEConsumed | |
| 000714/A-0423-371 x 3 | | MEConsumed | 0423-371 |
| 000765/A-0477-816 x 3 | | MEConsumed | 0477-816 |
| 000782/A-0423-345 | | MEConsumed | 0423-345 |

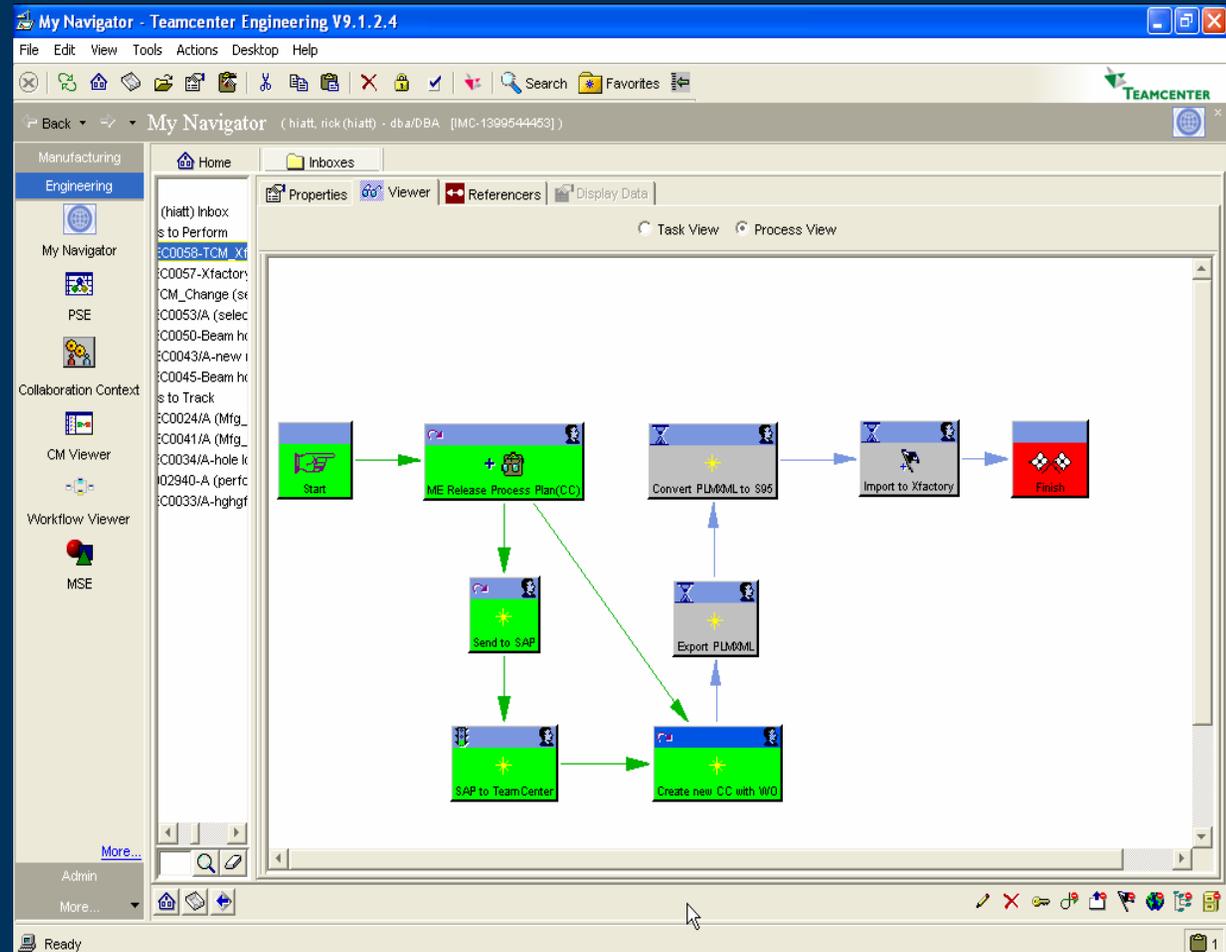


Assembly Planning Solution Workflow 3/3



- ▶ 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!

The screenshot displays the TEAMCENTER software interface. The main window shows a 'Property Table of Request objects' with the following data:

| Name | Reque... | State | State ... | Date C... | Status | Status... | Scope | IC | Description |
|----------|----------|-----------|-----------|-----------|--------|-----------|-------|----|--------------------|
| 2007_ATV | Sync | Completed | | 11-Jun... | Normal | | Vhole | | PIE Service create |
| 2007_ATV | Publish | Pending | | 13-Jun... | Normal | | Vhole | | |

The 'Create/Revise Incremental Change Context' dialog box is open, showing the 'Effectivity' tab. It includes an 'End Item' field, an 'Effectivity Range' section with 'Units' and 'Dates' radio buttons, and a calendar for June 2006. The 'Dates' section shows a table with 'From Date' and 'To Date' columns. The 'From Date' is set to 'Jun 13, 2005 (12:00 AM)'. The 'To Date' column is empty. The calendar shows the month of June 2006 with days 1 through 30. There are 'Set Date' and 'Clear Date' buttons at the bottom of the calendar. The dialog box also has 'OK', 'Apply', and 'Cancel' buttons at the bottom.



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!!!

The screenshot shows the Teamcenter Engineering Web interface in a Microsoft Internet Explorer browser. The page title is "Teamcenter Engineering Web - msv - 2007 ATV Program - [IMC-1392351541] - Microsoft Internet Explorer". The browser address bar shows "http://localhost/cgi-bin/iman/mmCjGoc8dmTB?IMAN_file=cme/msviewer.html". The interface includes a navigation pane on the left with options like "Navigator", "Inbox", "Classification", "Settings", and "Help". The main content area displays a table of assembly lines and stations under the heading "OccurrenceGroups".

| Item ID | Name | Item Rev | Status | Sequence No. | Quantity | Unit of Measure | All Notes |
|----------|------------------------------------|----------|--------|--------------|----------|-----------------|-----------|
| 000463/A | Body Assembly Line (view) | | | | | | |
| 001462/A | Main Body Assembly (view) | | | | | | |
| 001476/A | Flares Assembly (view) | | | | | | |
| 001489/A | Kick Start Panel Assembly (view) | | | | | | |
| 001496/A | Lower Rear Fenders Assembly (view) | | | | | | |
| 001503/A | Steering Assembly (view) | | | | | | |
| 001522/A | Engine Cover Assembly (view) | | | | | | |
| 001531/A | Gauge Assembly (view) | | | | | | |
| 001536/A | Seat Assembly (view) | | | | | | |
| 001543/A | Transmission Lever Assembly (view) | | | | | | |
| 001547/A | Radiator Assembly (view) | | | | | | |
| 001564/A | Grill Assembly (view) | | | | | | |
| 001576/A | Lamps assembly (view) | | | | | | |
| 000512/A | Lamps assembly (view) | | | | | | |
| 001577/A | Station 120 (view) | | | | | | |
| 001582/A | Station 121 (view) | | | | | | |
| 001587/A | Racks Assembly (view) | | | | 10 | | |
| 001588/A | Station 130 (view) | | | | 10 | | |
| 001589/A | Station 131 (view) | | | | 20 | | |
| 001590/A | Station 132 (view) | | | | 30 | | |
| 001591/A | Station 133 (view) | | | | 40 | | |
| 001592/A | Station 134 (view) | | | | 50 | | |



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**





- ▶ 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 manage 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



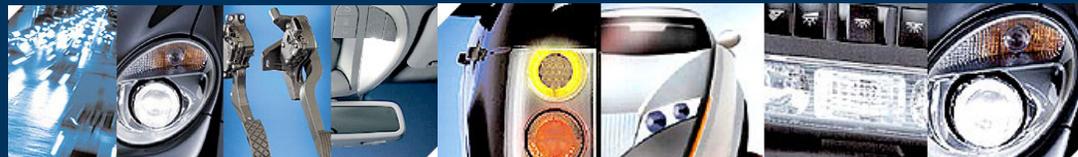
Hella Customer Quote



"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.

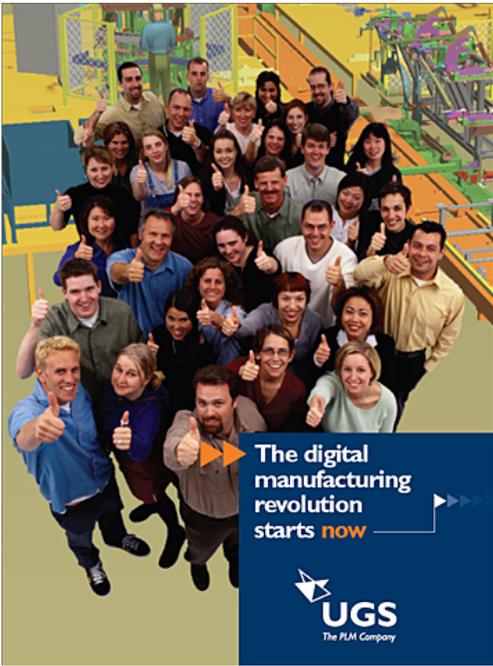
The deployment project includes training of users from different planning departments, developing of interfaces to other legacy systems, and plugging in additional modules of the system."



April 2005

Dr. Andreas Brenke

Corporate Process Standards
Head of Digital Factory
CPS - DF



UGS

*Transforming the
process of innovation*



<http://www.ugs.com>