

Virtual Manufacturing

| en viktig pusselbit i 3D PLM

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Dassault Systemes
2006-05-30





Agenda

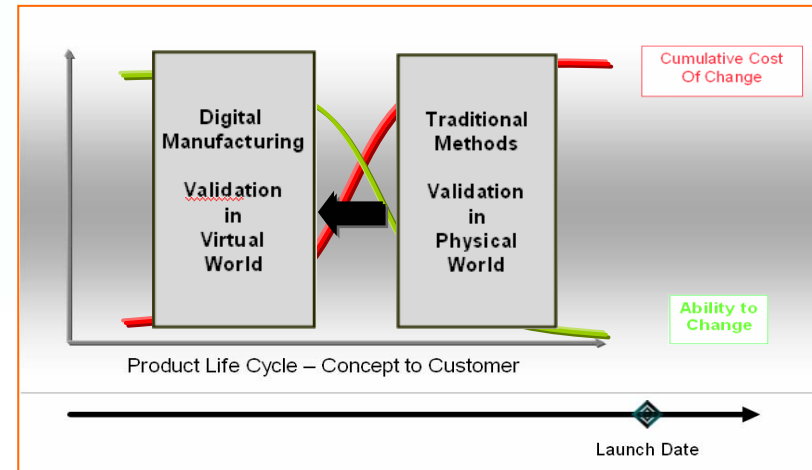
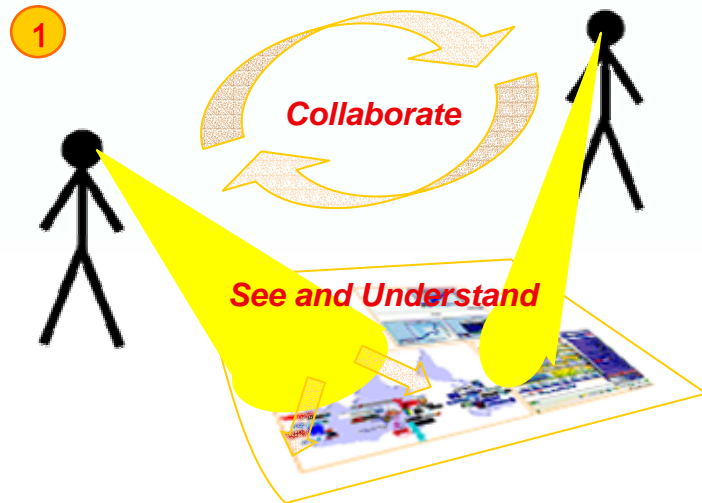
- Why include Virtual Manufacturing in your PLM strategy
- What could be achieved with Virtual Manufacturing
- DELMIA Virtual Manufacturing Portfolio
- Conclusion



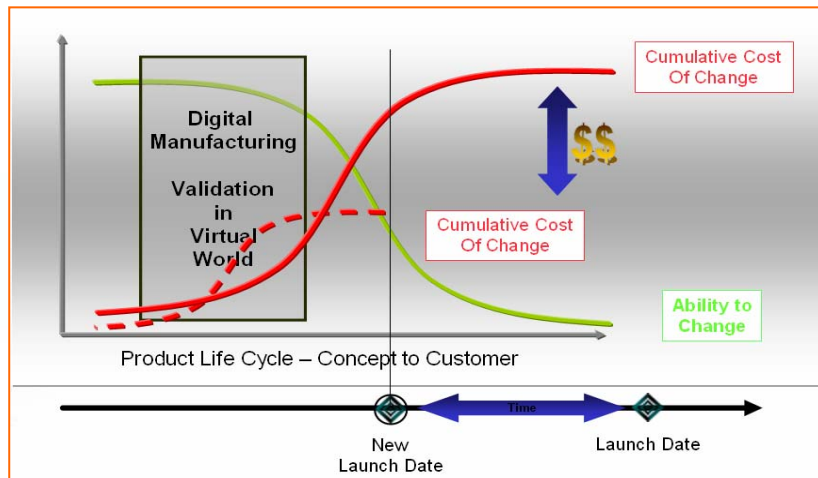
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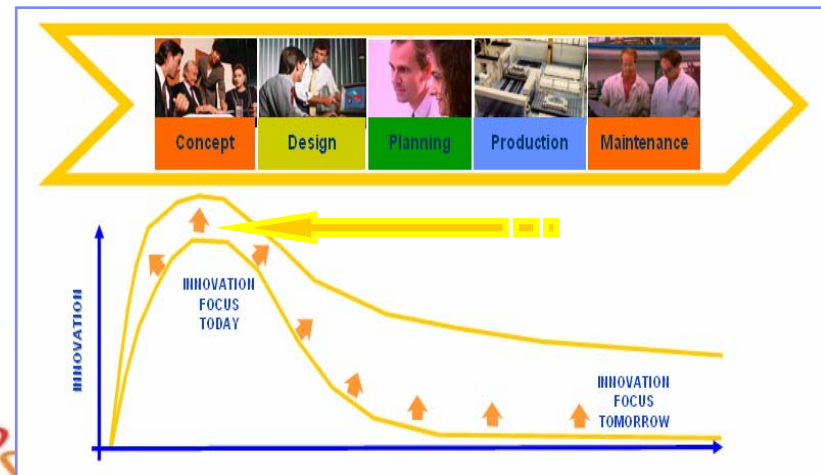
Manufacturing New Playing Field "Business Transformation"



2 ■ Product Digital Validation :
Non Recurrent Costs Decrease



3 ■ Process Digital Validation :
Recurrent Costs Decrease



4 ■ LifeCycle & Synthesis : Profitability Increase

Customer Reference

“Transforming the Development Process”

- Joint commitment to deploy the best car development process in the world based on a PLM strategy with CATIA – ENOVIA – DELMIA
- “Results of the initial V-Comm implementation have shown **lead time** shortened by 33 percent, **changes reduced** by 33 percent, and development **costs reduced** by 50 percent – validating the importance of simulation technologies and the early involvement of the manufacturing team”

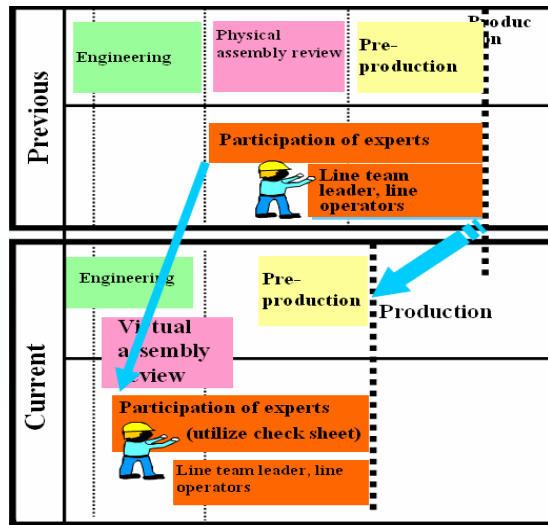


Photo from physical assembly review

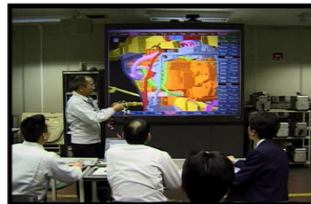
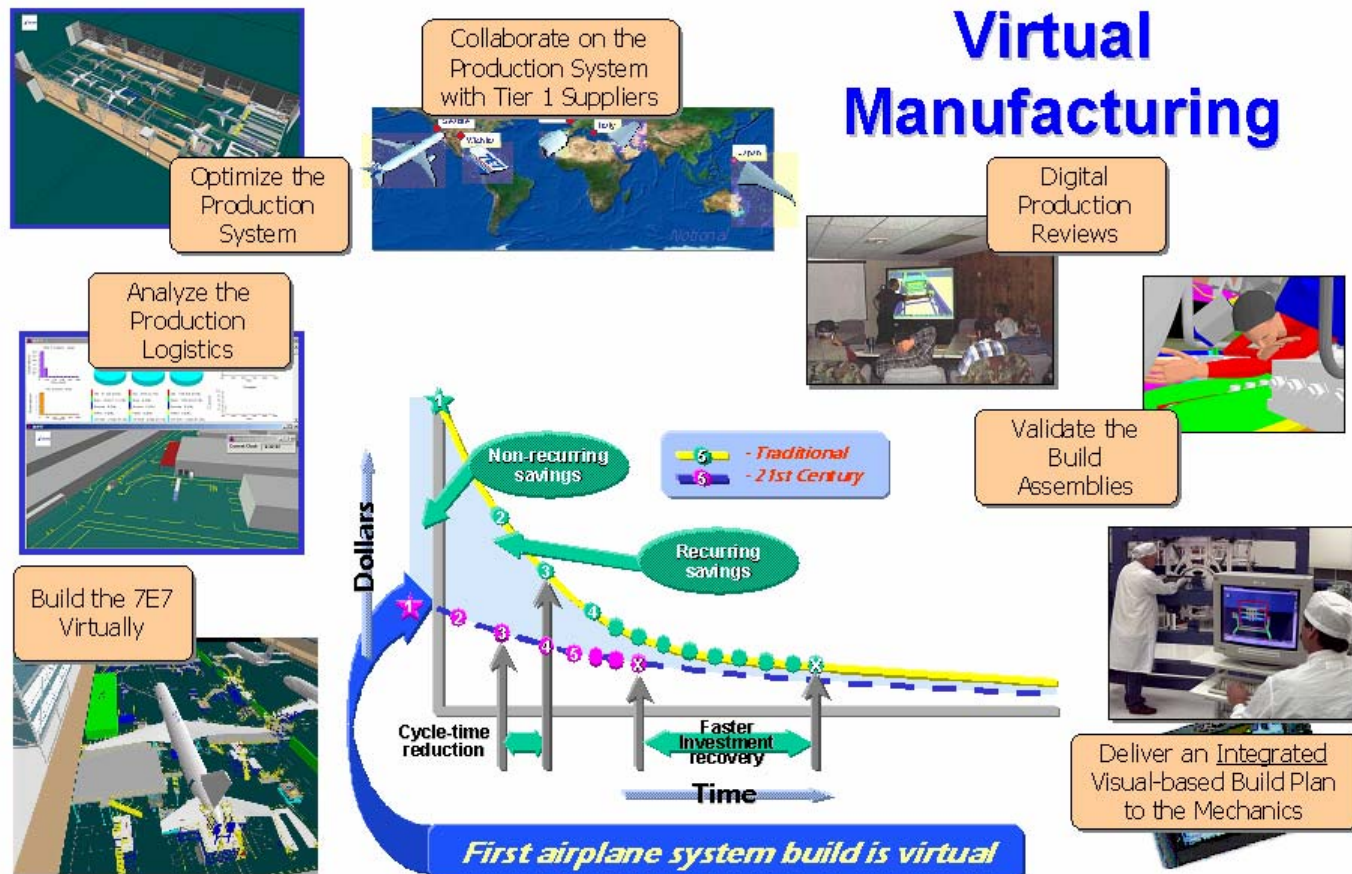


Photo from virtual assembly review



7E7 Partner / Supplier Collaborative Environment

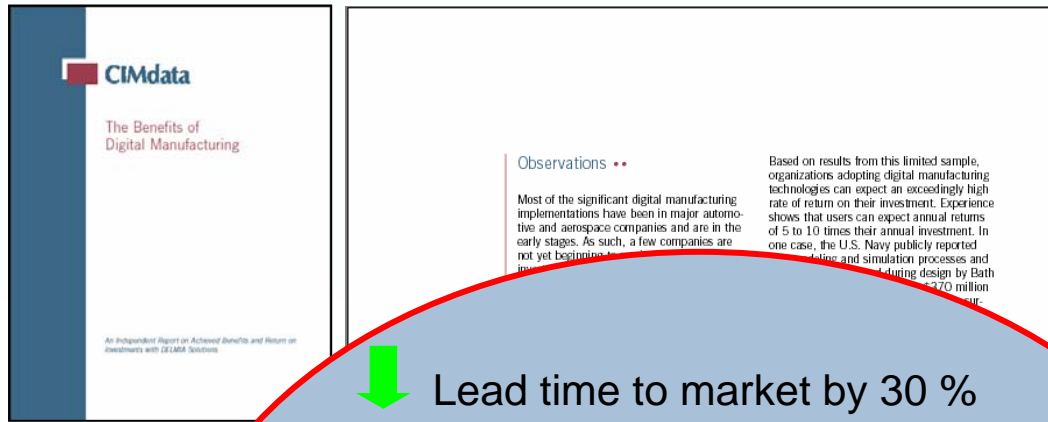
The 7E7 Program and Partners managing an integrated manufacturing network for the Airplane that enables a range of Virtual Manufacturing capabilities.



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ROI study for Digital Manufacturing

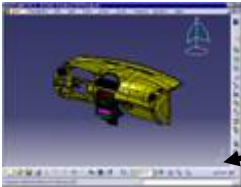


- ↓ Lead time to market by 30 %
- ↓ Number of design changes by 65 %
- ↓ Time spent in the manufacturing planning process by 40 %
- ↓ Reduction in Search Time Due to Shared Data by 80%
- ↑ Production throughput up by 15 %
- ↓ Overall production costs cut by 13 %

Process Graph Definition

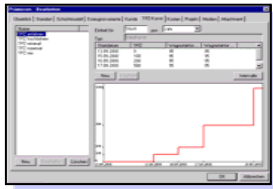
Manufacturing Concept

Product



Premises

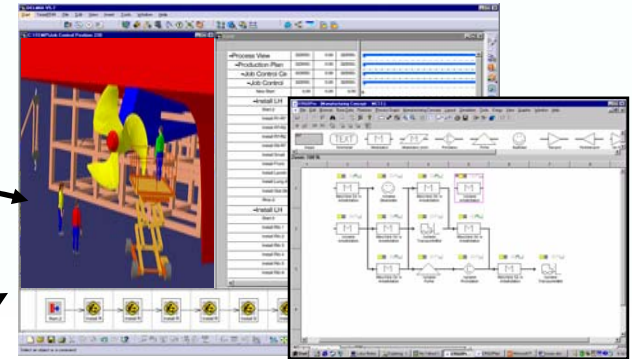
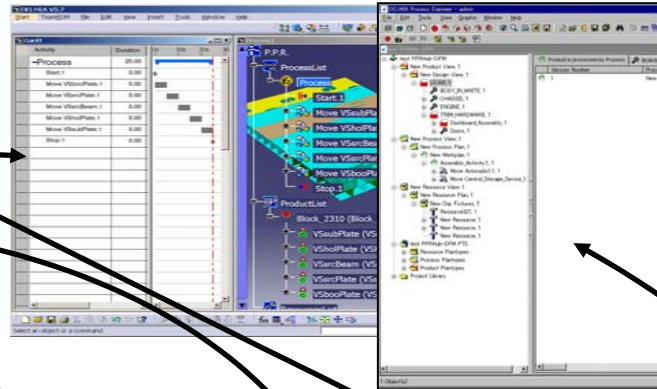
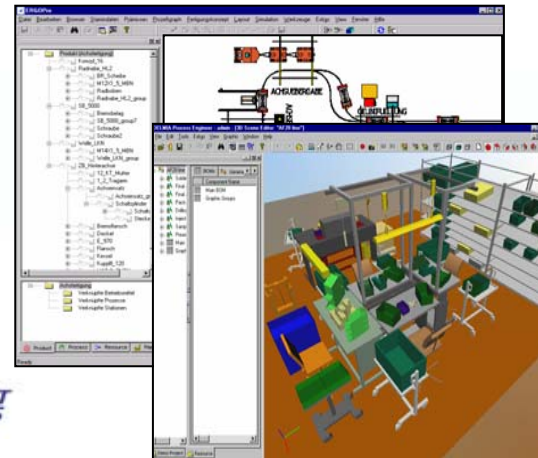
- cost targets
- technical plan
- shift models

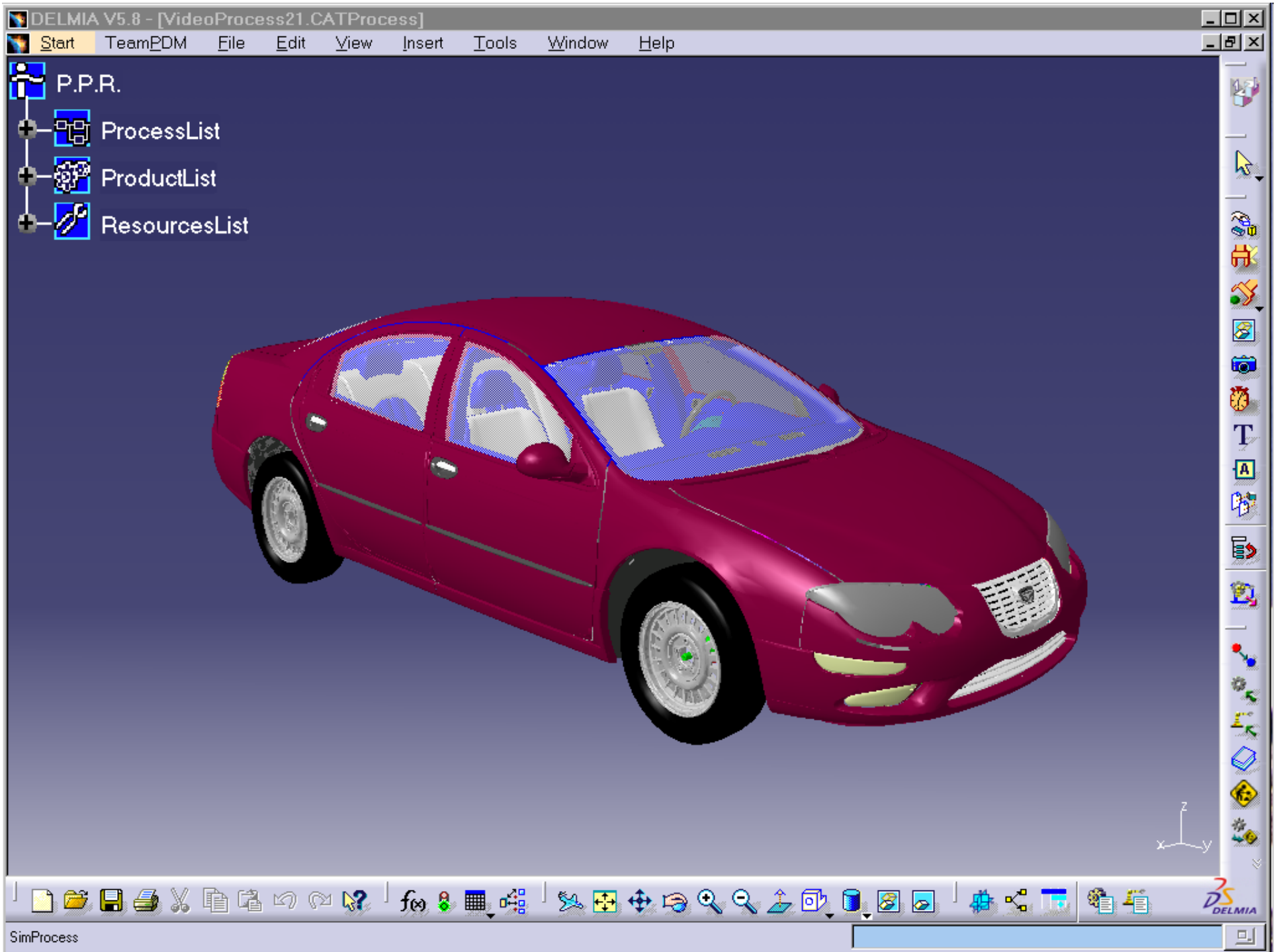


Simulation

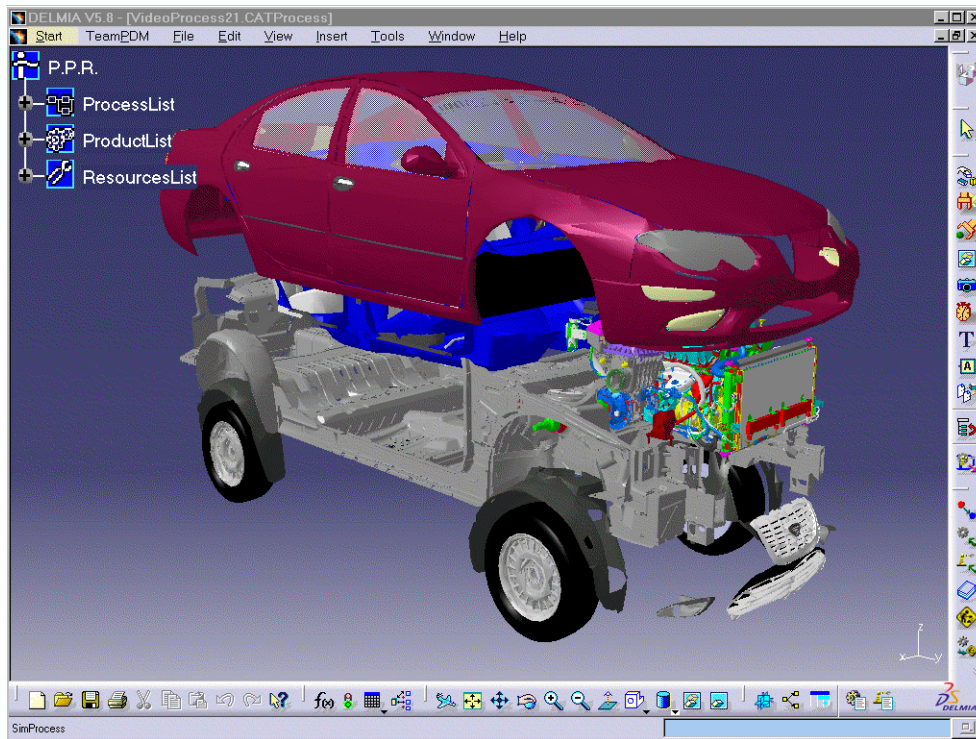


Layout Definition





Generative Tooling “Design in Plant context”



Customer Benchmark 1 (all times in minutes)

	S1-Configure NC Finger	S2-Configure Riser	S3-Configure Backup	S4-Automated Clash Detection	S5-Drafting Generation	S6-BOM Generation
3D	10	15	12	45	30	15
PLM V5	0.5	0.5	0.5	2	1	0.5

Customer Benchmark 2 (all times in minutes)

	S1-Clamper Type	S2-Arm Type	S3-Arm Height	S4-Hinge Position	S5-Jig Orientation	S6-Axis Rotation
3D	10	45	45	20	5	45
PLM V5	0.5	0.7	0.5	1	0.5	1

Calculated Global Savings on a Car Program

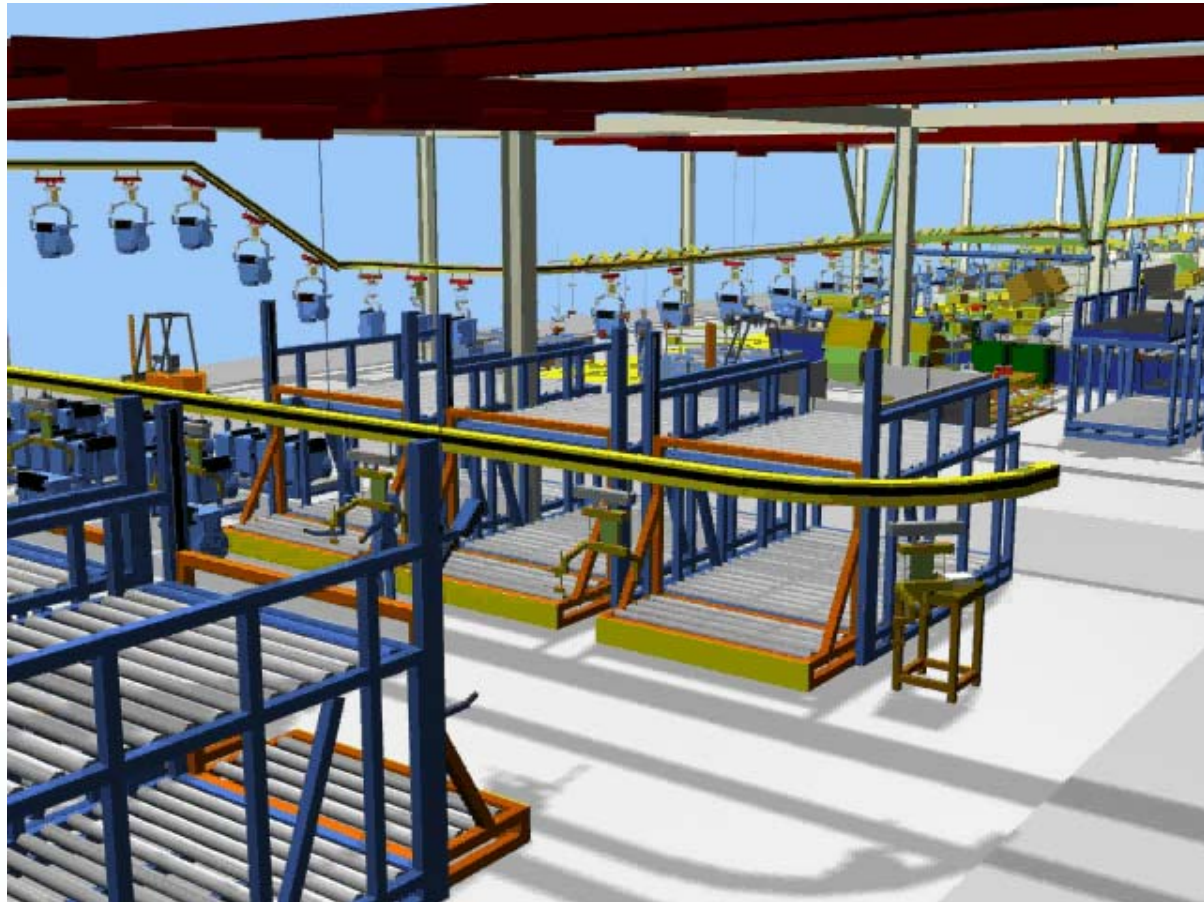
- Jigs and Fixtures \$ 3 400 000
- Checking Fixtures \$ 650 000

Pain #1 : Heavy cost due to non tooling standardisation
 Pain #2 : Restart tooling design from scratch at every car program
 Pain #3 : Heavy manufacturing cost due to design issues discovered late

Benefits			
Cycle Time	⬇	++	Re-use of intelligent tooling template from car program to next Ultra Fast Modification process with associative Design
Quality	⬆	+	Enable Tooling simulation in plant context
Cost	⬇	++	Tooling standardization through OEM template catalog

Digital Mockup of Process and Resource

- Process information
- Process times
- Assembly stages
- Indirect labor
- Space requirements
- Part bins
- Materials
- Throughput
- Equipment
- ...



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The entire planning of Product, Process and Resources
can be optimized through what-if scenarios

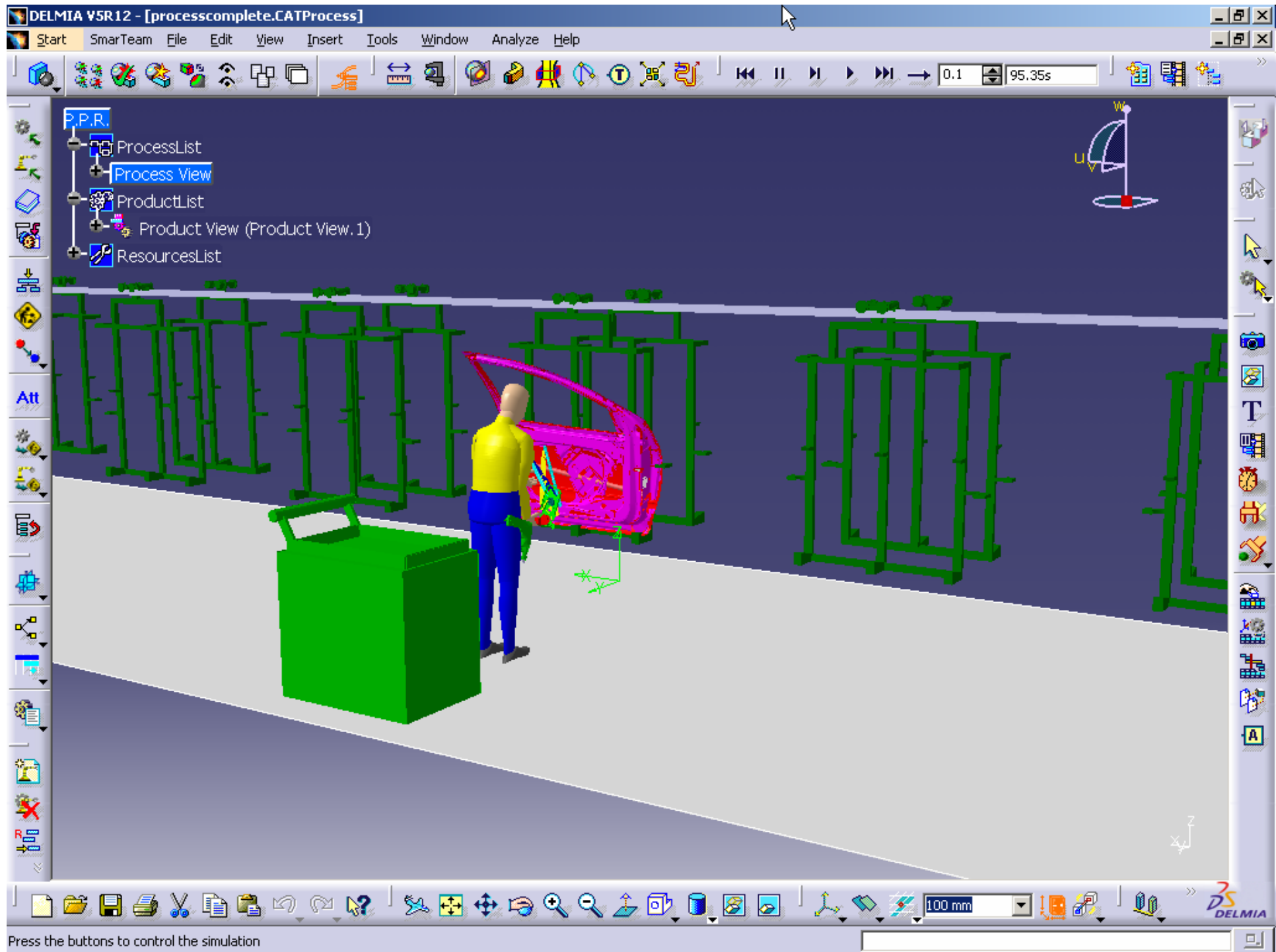




- P.P.R.
- ProcessList
- ProductList
- ResourcesList

Process Simulation

⏪ | ⏸ | ⏩ | ⏴ | ⏵ | 0.05 | 3.3s



Press the buttons to control the simulation

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PLM Solution

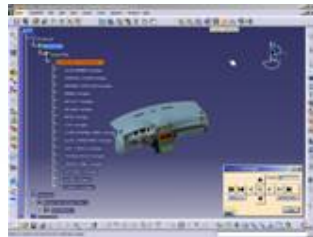


DELMIA Virtual Manufacturing Solutions

Product Design



Process Planning



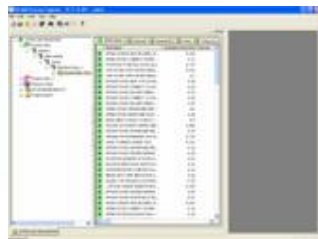
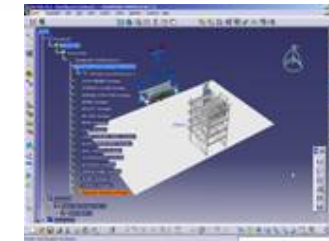
Time Measurement



Layout Planning



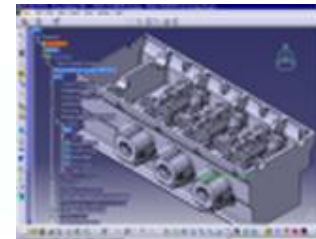
Ergonomics



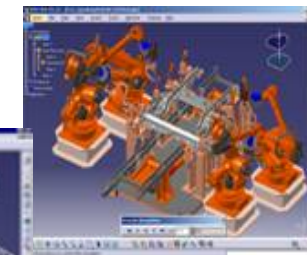
Production Management



Factory Flow Simulation



Machining & Quality Control



Robotics & PLC

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Conclusion

Virtual Manufacturing will bring you:

- A good PLM ROI
- Innovation in production development
- Business transformation to concurrent engineering

Keep in mind...

The IBM logo, consisting of the letters 'IBM' in a blue, horizontally-striped font.The Dassault Systèmes logo, featuring a stylized 'DS' in blue and orange above the text 'DASSAULT SYSTEMES' in blue, italicized capital letters.