

# Product Lifecycle Management

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F&A and Consumer Goods demonstrations available



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# Demonstrations delivered in V5R12

# Functional molded part design

## Abstract

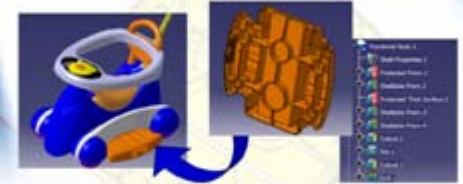
Dealing with changes is the most common activity in the molded part design discipline, for OEMs and suppliers working in low-margin markets.

Current market solutions, history-based, request high knowledgeable CAD users. Users become efficient only after a too long learning curve, increasing the cost of 3D design of molded parts. With current CAD solutions, it is difficult for users to understand other design intends because it is feature order dependent. Users often end up re-designing from scratch instead of applying changes, thus increasing cost, and extending time to market.

V5 revolutionary technology built by ImpactXoft & DS joined forces, leads to:

- faster concurrent design process,
- simplified management of design specifications,
- intuitive plastic parts design for manufacturing.

## Functional Molded Part Design



Design molded parts with great productivity and flexibility through advanced functional features. Dedicated to the design of molded and plastic parts.

## 3D PLM VALUE

Innovation	↗	+++	Increase the number of design alternative design studies through faster design changes Higher level of design behavior captured in design features facilitate understanding and what-ifs
Cycle Time	↘	+	Reduce time to market - Faster bidding process Lower number of features required – Easier to apply changes
Quality	↗		Embedded Design and knowledgeware for manufacturing to avoid error
Cost	↘	+++	Reduced Learning curve – designer more focused on function than CAD issues Less re-design from scratch

## Key Messages

- Ultra fast and robust design changes
- Ultra fast and simple preliminary design (native skeleton approach)
- Ultra fast detailed design for molded parts through process-oriented features: Lower number of features
- No more need to master the magic of feature re-ordering (no history-based design): design changes flexibility
- Promotes parallel design methodologies
- Easiest 2D to 3D learning curve (Design from top approach): less sophisticated users can be involved
- End-to-end process coverage through V5 integration (all CATIA workbenches)
- Re-use previous design easier through an intuitive functional description
- Low cost of ownership

## 3D PLM Scope

Brand	CATIA V5R12
Products Covered	FM1, PDG

# Collaborative styled design from conceptual to rendering

- Consumer Goods
- Styled Packaging, Styling & Plastic Products

## Abstract

In this demonstration we illustrate the creation process of a toy from an artist picture or cloud of points to solid part. We show the powerful capacities of styled design and how speeding-up design and increasing quality with knowledgeware tools. We illustrate how SMARTEAM products can be used to increase communication and data exchange between designers, suppliers, sales and managers. This demonstration is based on the new EY1 configuration with some adds on and CAA Partners products.



## 3D PLM VALUE

Innovation	↗	++	Free stylists imagination with powerful style design tools.
Cycle Time	↘	+++	Reduction of cycle time thanks to reverse engineering, Sketch Tracer and Shape Sculptor tools that allow to avoid the gap between style and mechanical designers.
Quality	↗	+++	The quality is increased with the integration of knowledgeware rules and checks to validate the design during the creation.
Cost	↘		

## Key Messages

- Shape Sculptor provides designers easy to use sculpting tools allowing to model shapes from digitised skins or digitised physical models.
- Power copy speeds up the design allowing the designers to reuse existing templates in new projects.
- Knowledgeware checks and rules assure design quality and compliancy to corporate standards.
- DMU validates the packaging.

## 3D PLM Scope

Brand	CATIA V5, TeamPDM, Web editor
Configuration / Product	EY1, DSE, QSR, DSS, GPS, EST, FMS, PEO

# Reverse engineering for industrial design

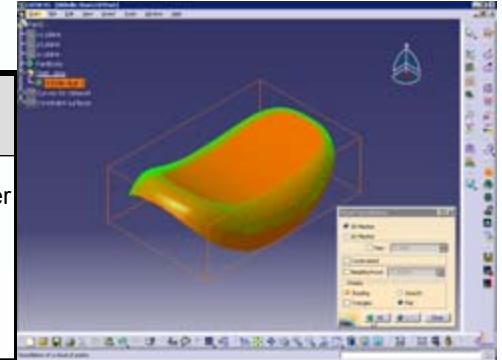
## ■ Consumer Goods: Reverse Engineering and Rapid Prototyping

General presentation of the industrial context and needs

## ■ Styled Packaging, Styling & Plastic Products

### Abstract

This document will present you the reverse engineering world applied to the consumer goods area. The first part defines the meaning of reverse engineering. The second part describes the basic needs in the consumer goods industries and the third one gives information on the various digitizing devices and techniques available.  
A short video shows the latest improvement of CATIA V5 for surfaces reconstruction  
For further information have a look at the Reverse Engineering and Rapid Prototyping community DVD.



### 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Start downstream processes (ergonomic studies, ....) before design freeze Avoid surface reconstruction in some cases, faster reconstruction of surfaces when needed
Quality	↗	++	Physical mock-up is important to check and evaluate ergonomics and or aesthetics
Cost	↘	+++	Re-use existing components even with no CAD definition It is often cheaper and quicker to carve a mock-up in wood or foam than design it on the tube

### Key Messages

- Avoid data flow rupture between industrial design and mechanical design
- Time reduction for all tasks based on the mock-up use
- Large variety of industrial processes supported by CATIA V5

### 3D PLM Scope

Brand	CATIA: Mandatory
Products Covered	DSE: Digitized Shape Editor. QSR : Quick Surface Reconstruction, STL : STL Rapid Prototyping



# Collaborative assembly line derivation

## ■ Machinery : Build To Order

### Abstract

This demonstration goes through a global Build To Order process from Order (bidding process) to delivering process. It includes multidisciplinary concurrent engineering, project review with customer, and manufacturing (with supplier involvement). Web based collaboration, PLM environment, and knowledge driven design are key factors for success.



### 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Easy propagation of engineering changes throughout the complete process chain. Easy late order change thanks to Knowledge-driven assemblies.
Quality	↗	+++	Collaborative work between CAD Designer, Manufacturing Programmer and Analysis Engineer leads to a common understanding of the project: same level of data, same level of information, ...
Cost	↘		

### Key Messages

- Use of the power of SMARTEAM and CATIA together leads to a great increase of reactivity while building a proposal.
- Capture and re-use of company experience via derivative approach.
- Easy and efficient simultaneous and collaborative work with customers and suppliers through WEB based platform.

### 3D PLM Scope

Brand	CATIA mandatory / SMARTEAM mandatory
Products Covered	CATIA Configuration: EE1 & ES1 + Add-on products LMG, WED, BOM, WFL XM1 / SR1 : <b>Structure Design 1</b> / KT1 & KE1 : <b>Knowledge</b> / FT1 : <b>3D Functional Tolerancing &amp; Annotation 1</b> / PLO : <b>Plant Layout</b> / DN1 : <b>DMU Navigator</b> / SRT : <b>System Routing</b> / GP1 : <b>Generative Part Structural Analysis 1</b> / KIN : <b>DMU Kinematics Simulator</b> / DDM : <b>MSC Dynamic Designer Motion (CAA partner)</b>

# Demonstrations delivered in V5R11



# Associative assembly line design re-using components

## ■ Machinery : Build To Order

### Abstract

This demonstration goes through a global Build To Order process from Order (bidding process) to delivering process .

It includes multidisciplinary concurrent engineering, project review with customer, and manufacturing ( with supplier involvement).

Web based collaboration, PLM environment, and knowledge driven design are key factors for success.

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Cost	↘		

### Key Messages

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- Capture and re-use of company experience via derivative approach.
- Easy and efficient simultaneous and collaborative work with customers and suppliers through WEB based platform.

### 3D PLM Scope

Brand	CATIA mandatory / SMARTEAM mandatory
Products Covered	SMARTEAM Community Workspace / SMARTEAM BOM PDG : <b>Part Design</b> / ASD : <b>Assembly Design</b> / KWA : <b>Knowledge Advisor</b> / FTA : <b>3D Functional Tolerancing &amp; Annotation</b> / PLO : <b>Plant Layout</b> / DMN : <b>DMU Navigator</b> / GAS : <b>Generative Assembly Structural Analysis</b> CATIA Configuration: MD2+ Addon products FTA, PKT, PLO, GAS, KIN

# Shipping and after sales support

## ■ Collaborative Product Derivation & Delivery

### Abstract

The ability to keep connection between the Design data and As Built data is key in shipping and after sales process.  
Before the shipping we illustrate the serialization of components and product manuals creation.  
Then we proceed to on site installation and service, recording all installation specificities for maintenance purposes.

### 3D PLM VALUE

Innovation	↗	+++	Using BOM package as a container for the product related information on delivery. On line connection with company engineering production site during install and service operation.
Cycle Time	↘		
Quality	↗	++	Tracking all customer installation specificities with link to design data during install and service. All product related information inside electronic package, instead of paper distribution.
Cost	↘		

### Key Messages

- Identifying components by using serial numbers
- Capturing all relevant product information into a BOM package
- Easy web mechanism to access information and feed back changes

### 3D PLM Scope

Brand	SMARTEAM
Products Covered	SMARTEAM Editor Configuration, SMARTEAM Web Editor configuration, SMARTEAM Community workspace, SMARTEAM BOM

# Bidding process for Build-to-order

## ■ Collaborative Product Derivation & Delivery

### Abstract

Responding to a RFQ is a challenge for companies that follow the BTO process. With a minimum of engineering effort they want to reuse design information to reply to a bid with high quality and low risk within ever more challenging response time.  
The bidding process shows a optimised solution for these requirements.

### 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Reuse of data and streamlined process. Early involvement of the procurement in the bidding phase.
Quality	↗	+++	Controlled process using uniformed templates/ reducing the
Cost	↘	++	Higher possibility for reuse / Procurement management optimization.

### Key Messages

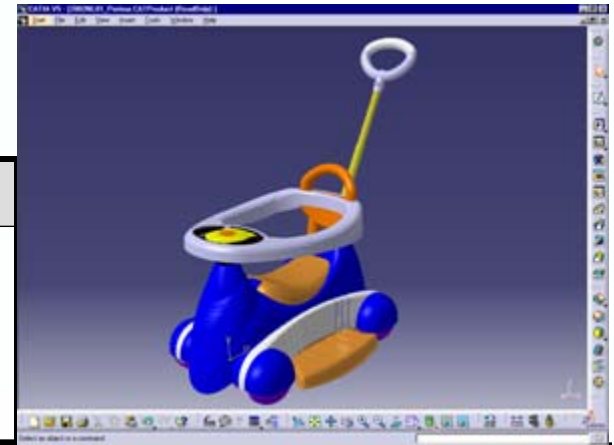
- Standard capturing of requirements
- Product oriented knowledge storage/re-use based on both product families and projects.
- Controlled respond process

### 3D PLM Scope

Brand	SMARTEAM (mandatory) , CATIA (mandatory)
Products Covered	SMARTEAM Editor Configuration, SMARTEAM BOM, SMARTEAM CATIA V5 INTEGRATION, MD2

# Collaborative styled design from conceptual to rendering

- Consumer Goods
- Styled Packaging, Styling & Plastic Products



## Abstract

In this demonstration we illustrate the design process of a plastic product starting from an artist picture or cloud of points. Then we show how standard components, template driven design and integrated styling design tools help to speed up the process and increase the quality. We illustrate the collaborative work between designers, suppliers, sales and managers in terms of communication and data exchange (SMARTEAM)

## 3D PLM VALUE

Innovation	↗	++	Free stylists imagination with powerful style design tools.
Cycle Time	↘	+++	Reduction of cycle time thanks to reverse engineering, Sketch Tracer and Shape Sculptor tools to avoid the gap between style and mechanical designers.
Quality	↗	+++	The quality is increased with the integration of knowledgeware rules to check the design during the creation.
Cost	↘		

## Key Messages

- New product Shape Sculptor provides designers easy to use sculpting tools allowing to model shapes from digitised skins or digitised physical models.
- Power copy to speed-up design.
- Check rules to insure design quality.
- Web collaboration between customer and OEM

## 3D PLM Scope

Brand	CATIA V5, TeamPDM, Web editor, SMARTEAM Community Workspace.
Configuration / Product	Configuration: YM2+ RE2+ Products FSS, FSK, KWA, DN1, GPS, EST, FMS

# Product delivery for Build-to-order

## ■ Collaborative Product Derivation & Delivery

### Abstract

During the engineering phase of a project, the resources optimization and workflow management are key issues.

To optimize the development of customer specific products, it is essential to support multidisciplinary concurrent engineering, customer involvement and outsourcing.

### 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Less iteration loops (including suppliers) due to centralized up to date information.
Quality	↗	+++	Less mistakes by providing procurement accurate latest data. Easy way to report changes done between status review. Managing all BOM related data.
Cost	↘		

### Key Messages

- Methodology to bind consistently project management information and all related data
- Resources integration and management
- Centralized up to date Bill of Material, as source of all decisions
- Design collaboration

### 3D PLM Scope

Brand	SMARTEAM, CATIA
Products Covered	SMARTEAM Editor Configuration, SMARTEAM Web Editor configuration, SMARTEAM Community workspace, SMARTEAM BOM, SMARTEAM CATIA V5 INTEGRATION, MD2

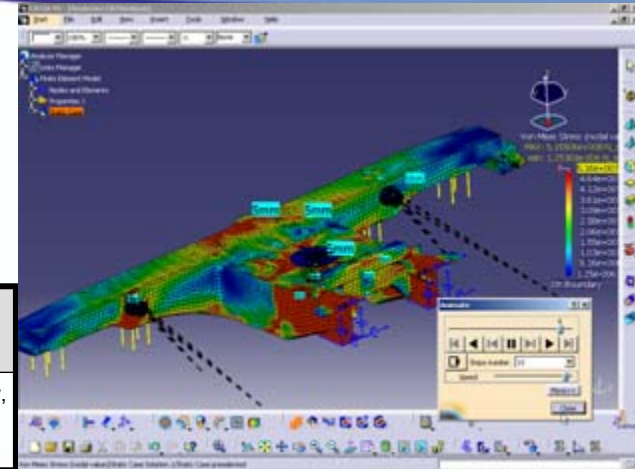
# Demonstrations delivered in V5R10

# Hybrid meshing and analysis of a frame assembly

- Specific industries
- Train

## Abstract

This demonstration shows a static stress analysis on a train bogie. It illustrates how to simplify the assembly, how to mesh and how to apply the boundary conditions and the loads.



## 3D PLM VALUE

Innovation	↗	+++	Low cost virtual prototypes testing allows multiple design options to be checked. As a consequence it gives the designer the opportunity to investigate new design concept.
Cycle Time	↘	+++	Design associativity of CATIA V5 Generative Analysis ensure the automatic propagation of design changes to analysis results avoiding time-costly file transfers and no value repeated tasks.
Quality	↗		
Cost	↘	++	Save resources by conducting tests on virtual prototypes thus reducing the use of expensive real-life test. CATIA V5 Generative Analysis can be successfully used by non expert thus reducing out-sourcing costs.

## Key Messages

- Hybrid (solid, surface and wireframe) meshing
- Integrated structural analysis compared to competitors allows to speed up the design/analysis loops

## 3D PLM Scope

Brand	CATIA V5
Products Covered	GAS : Generative Assembly Structural Analysis / FEM : FEM Surface



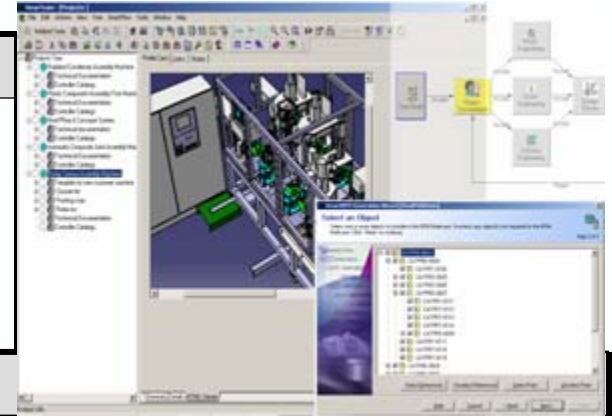
# Collaborative product derivation for Build-to-order optimization

## ■ F&A: Collaborative design in BTO scenarios

Streamlining enterprise critical processes

### Abstract

Based upon typical F&A requirements, this demo deals with three major processes within the context of a Build to Order (BTO) scenario. The first scenario deals with the product ordering, configuration and pricing process, the second with collaborative design of the ordered machine and the third scenario deals with after sales and delivery of the machine to the customer with related serialized BOM and documentation.



### 3D PLM VALUE

Innovation	↗	+++	By building upon existing and proven designs, customers are better able to visualize and submit new ideas, and engineers can efficiently retrieve or morph existing data into new designs.
Cycle Time	↘	+++	Reuse of existing data and files is facilitated through standard tools intended to quickly find and modify data. Standard F&A processes provide easy access to the accurate information by all relevant parties.
Quality	↗	++	Subject matter experts are leveraged across the organization, and product is continuously validated by proven acceptance processes implemented in standard F&A templates.
Cost	↘	+++	Building upon and morphing existing data, new projects are error free and proven by automated and streamlined enterprise critical processes managed electronically.

### Key Messages

**Streamlining and automation of enterprise critical processes. Flexibility and rapid response to Build to Order situations through product morphing. Collaborative design. Efficient management of after sales and maintenance scenarios.**

### 3D PLM Scope

Brand	SMARTEAM
Products Covered	EDR, WFL, BOM, WED, CAI, CMT

# Specification driven design for prismatic machining

- Industrial Components
- Machined Components



## Abstract

In this Best Practice, we will see the integration of CATIA NC Manufacturing and SmarTeam through 2.5 axis part programming based on machining feature recognition; This programming drives the predefined Knowledge /Design/Manufacturing based NC processes

## 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	++	<u>Reduce programming time</u> : by automatic build-up of all geometric areas that must be machined with Prismatic Machining operations, decreasing time spent in geometry selection
Quality	↗	++	<u>Re use of Know-how is facilitated</u> through predefined Machining Processes stored in catalogs
Cost	↘	++	<u>Rapid modification propagation</u> due to : - relational design capabilities. - simulation for early detection of possible collision, inaccessible area ...etc.

## Key Messages

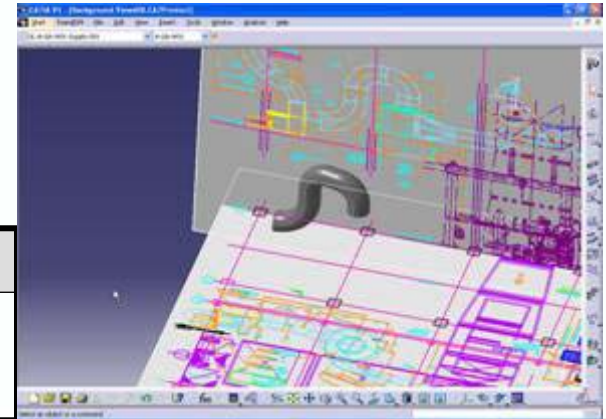
- Efficient Programming think task automation and for easy and effective NC Manufacturing data Management think a full integration with SmarTeam

## 3D PLM Scope

Brand	CATIA V5 / Smarteam: Optional
Products Covered	PMG : Prismatic Machining Portfolio / MPA : Prismatic Machining Assistant / KW : Knowledge Portfolio

# 2D to 3D Transition for HVAC and ducting design

- HVAC Design: Background Routing
  - Leverage 2D drawings to generate 3D
  - Specification driven model



## Abstract

HVAC Design:  
Create accurate intelligent HVAC design using existing legacy 2D drawings.

## 3D PLM VALUE

Innovation	↗	++	Leverage 2D legacy data and benefit from an accurate, intelligent 3D HVAC design. Allows integration of industrial equipment/ machinery with the plant environment.
Cycle Time	↘	++	Modify the 3D elements once, and update all associated drawings in a fraction of the time. Dramatic improvements over typical 2D manual process.
Quality	↗	+++	Much easier to manage interferences with other components, which often can't be identified in a 2D drawing. Accurate and fast creation of BOM, as well as fabrication and manufacturing details.
Cost	↘	+++	Better control of BOM. Less material waste, less re-work and less field modifications.

## Key Messages

- 3D HVAC design enables intelligent smart object modeling and customization for efficient, accurate, and detailed planning.
- Integration of HVAC Systems with industrial equipment/ machinery designs.

## 3D PLM Scope

Brand	CATIA V5
Products Covered	HVAC Design

# Specification driven equipment design and plant integration

- Collaborative automated equipment design.
- Plant/ systems integration.
- Improved sales to order process.



## Abstract

Sales & Marketing: Search product data base. Improved bid-proposal development. Improved and collaborative sales order process.

Design & Fabrication: Rule, knowledge based design and drawing production managed by PDM system.

System Integration: Equipment integration with Plant environment. Plant Layout, 2D P&ID with 3D physical integration. Piping design.

## 3D PLM VALUE

Innovation	↗	+++	<u>Mechanical with Plant integration</u> on a single platform improves design, fabrication and installation time.
Cycle Time	↘	+++	Faster time to market. Sales group has direct access to engineering data via a web based collaborative environment. Automated design and re-use of corporate know-how allows for faster bid-proposal development.
Quality	↗	++	<u>Process managed by PDM system</u> . Template driven design and modifications. Automatic change propagation to downstream applications. Less room for errors. Accurate BOM. Precise planning of systems integration.
Cost	↘	+++	<u>Reuse of corporate know-how</u> . Reduce time to order. Automated design allows fast creation of customized products. Single solution for mechanical and systems engineering/ plant integration.

## Key Messages

- Collaborative Sales activities to drive automated process equipment engineering incl. Mechanical plus Plant integration.
- Reuse of corporate know-how using design templates. Easily incorporate customer specifications.

## 3D PLM Scope

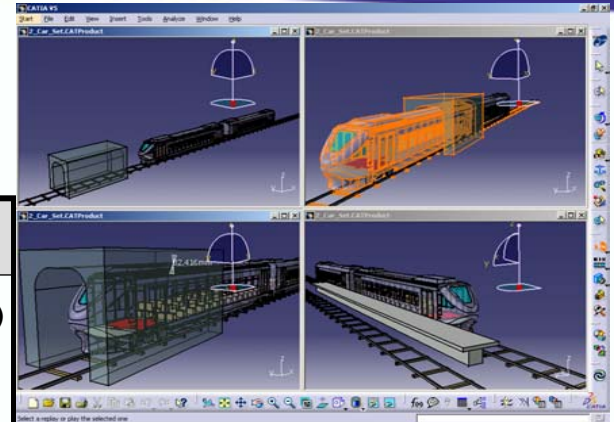
Brand	ENOVIA, SMARTEAM, CATIA V5
Products Covered	3DCOM Portal, TEAMPDM, Mechanical configuration with knowledge template product, Equipment & Systems products (Piping, P&ID) with Plant Layout.

# Virtual validation of rolling stock behavior

- Specific Industries
- Train

## Abstract

This Best Practice explains how to evaluate the behaviour of the rolling stock in its real environment. It enables the upfront validation of different scenarios (Clashes, distance,...) without the development of a dedicated physical mockup.



## 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	A real test program is really costly in term of time. Virtual validation reduces this time dramatically.
Quality	↗		
Cost	↘	+++	Virtual validation is the way to reduce or even avoid expensive real test programs.

## Key Messages

### ■ Virtual simulation and maintenance enables:

- Coupled with the “Knowledge Based Iterative Conceptual Design” best practice, the conceptual train is available for virtual validation of rolling stock behavior allowing dramatic reduction in time and cost of train development.
- Using the Digital Mockup in this phase of a project helps reduce the number of late modifications and allows interactive model modifications.

## 3D PLM Scope

Brand	CATIA V5
Products Covered	KIN : DMU Kinematics

# Virtual validation of driver cab ergonomics

- Specific Industry
- Train



## Abstract

This Best Practice explains the design validation of a driver cab taking account of human parameters and anthropometrics characteristics.

## 3D PLM VALUE

Innovation			
Cycle Time	↘	++	Reduce the cycle time by reducing the need for physical mock-ups
Quality	↗	+	Usability is a key aspect of quality. Designing taking into account human parameters ensures high quality
Cost	↘	++	By evaluating human parameters during concept design allows right the first time and so reduces the need for physical mock-ups

## Key Messages

- Virtual Simulation and Maintenance
- Enhanced safety for the users.
- Possibility for an ergonomic validation of comfort and usability.

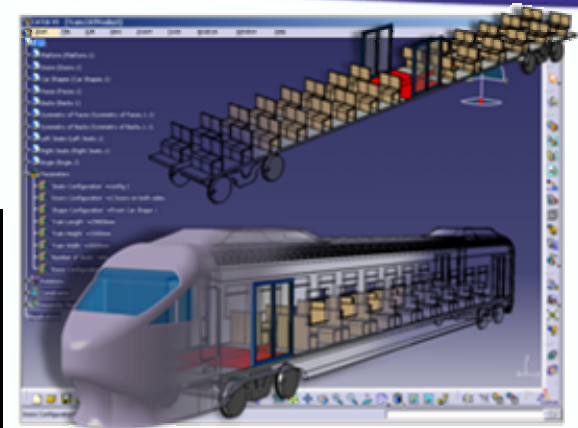
## 3D PLM Scope

Brand	CATIA V5
Products Covered	HBR : Human Builder / HPA: Human Posture Analysis / HME : Human Measurements Editor / SPA : DMU Space Analysis / ASD : Assembly Design / DMN : DMU Navigator



# Knowledge based iterative conceptual design

- Specific Industries
- Train



## Abstract

This Best Practice explains how to obtain a quick and accurate 3D definition of the conceptual rolling stock using knowledgware capability. Evaluations on multiple configurations are now possible early in the rolling stock life cycle.

## 3D PLM VALUE

Innovation	↗	++	Reduction of research time + Innovative solutions = New competitive product on market
Cycle Time	↘	+++	The high level of automation provides several realistic configurations based on the know-how of the company
Quality	↗	+	Rules in Knowledge ensure an immediate and constant consistency with company rules (Manufacturing) and industry standards (Safety regulations)
Cost	↘	+++	Modifications could be simulated to quickly estimate the benefits and take the right decisions earlier. Reduce the number of late modifications.

## Key Messages

- Knowledge driven morphing for fast reuse enables:
  - Rapid evaluation of alternatives in the early design phases.
  - Increase design office performance developing the right-first-time accuracy in every project.

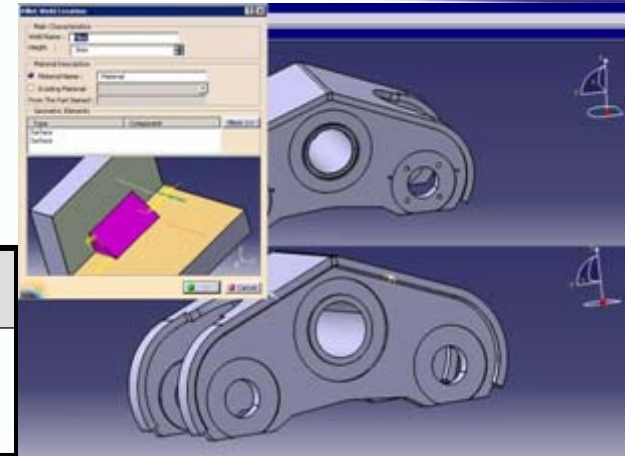
## 3D PLM Scope

Brand	CATIA V5
Products Covered	KW : Knowledge Portfolio / ASD : Assembly Design / GDR : Generative Drafting



# Collaborative configured welded assembly design

- Industrial Machinery
- All Segments



## Abstract

This Best Practice explains how to support the entire welding process (finished and raw configurations, welding operations). It shows how to create the welds and how to switch from finished parts to raw parts. It also shows how to extract drawings and all information from both configurations

## 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	<ul style="list-style-type: none"> <li>■ Modifications either on finished or raw are taken into account, no need to redesign parts. Significant improvement in the cycle time</li> <li>■ Associativity between finished and raw configurations, process oriented, collaborative work between design and manufacturing</li> </ul>
Quality			
Cost			

## Key Messages

- Manufacturing Driven Engineering
- Knowledgeware will ensure an automatic activation/deactivation of features
- Associative multi configuration management

## 3D PLM Scope

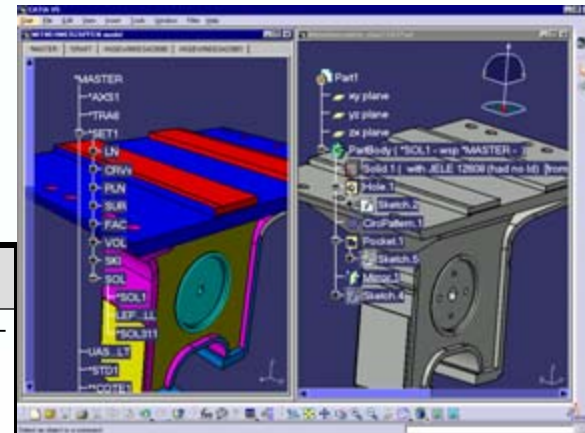
Brand	CATIA V5
Products Covered	WD1 : Welding / KWA : Knowledge Advisor / ASM : Assembly Design / PD1/PDG : Part Design / GDR : Generative Drafting

# V5 product design through V4 product derivation

- Industrial Machinery
- All segments

## Abstract

This Best Practice explains how to take advantage of V5 advanced technologies while reusing V4-designed parts.



## 3D PLM VALUE

Innovation			
Cycle Time	↘	+++	Shortened design duration due to extensive re-use of existing V4 designs.
Quality	↗	++	V4 data preservation and seamless integration in V5 context.
Cost			

## Key Messages

- V4 data preservation and integration
- Easy V5 product design using seamless display of V4 data

## 3D PLM Scope

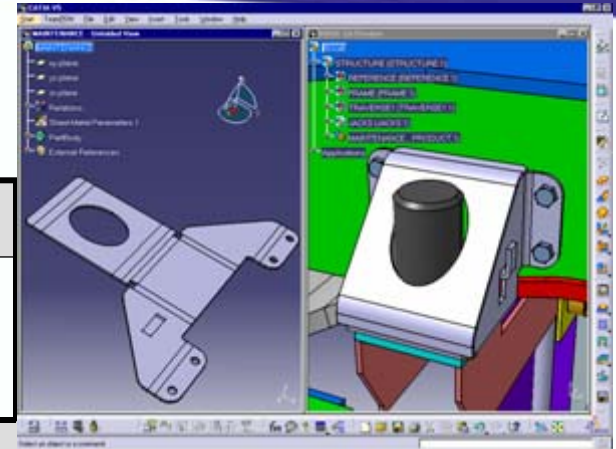
Brand	CATIA V5
Products Covered	PDG : Part Design / GDR : Generative Drafting / ASD : Assembly Design

# Knowledge based sheetmetal design to target

- Industrial Machinery
- All Segments

## Abstract

This Best Practice explains how to design, optimize and validate a sheetmetal part in context of an assembly.



## 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Design to target is simplified by the use of rules, checks and parameterised standard part and assembly catalogues. The easy use of the analysis tools allows the designers to decide the design orientation. It reduce the iterations between designers and mechanical analysis engineer.
Quality	↗	++	Integration of Manufacturing rules enables to ensure quality targets are met.
Cost	↘	++	Increase gains optimizing engineering constraints such as thickness, maximum Von Mises value, cost, etc..... Use of rules based on cost parameters.

## Key Messages

- Define and optimize Product Build Process through a panel of catalogs and rules.
- Provide a flexible environment and integrated simulation solutions to test and pre-validate the optimized design.
- Knowledgeware capabilities drive the Sheetmetal design transparently taking into account corporate know-how.
- Powerful capabilities and easy of use of the Optimizer to reduce the part weight.

## 3D PLM Scope

Brand	CATIA V5
Products Covered	SMD : Sheetmetal Design / PEO : Product Engineering Optimizer / GPS : Generative Part Structural Analysis GDR : Generative Drafting

# Generative maintenance documentation

- Industrial Machinery
- All segments



## Abstract

This Best Practice shows how to integrate a set of meaningful of 3D materials in documentation of downstream processes : Shop floor, Maintenance, Marketing....

## 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	++	It is easier to understand how to unmount a part when a fitting simulation shows it. The responsiveness is also improved. Quick access to all the up-to-date documentation.
Quality	↗	++	Following the exact sequence of the simulation, checking information with technical hyperlinks or virtually manipulating a model to better see the hidden parts improves quality. 3D information can reduce errors.
Cost			

## Key Messages

- Paperless Engineering across Life Cycle
- Communication throughout the company teams is improved

## 3D PLM Scope

Brand	CATIA V5 & Enovia Portal Mandatory
Products Covered	GDR : Generative Drafting / FIT : DMU Fitting Simulator / DMN : DMU Navigator

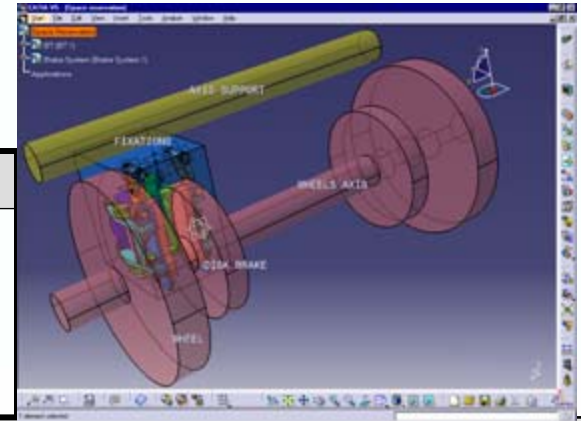
# Collaborative DMU design from conceptual to detail

- Specific Industry
- Train

## Abstract

This Best Practice shows:

- OEM preparation of context for supplier exchange
- Mechanical system design at supplier office from conceptual to detail in a multicad context
- Integration of detail design in the digital mockup by the OEM
- 3 axis surface machining



## 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Kinematics re-usability on the final design decreases the global cycle time and avoids the impact of late modifications. Reduce design time using skeleton methodology
Quality	↗		
Cost	↘	+++	Reuse of know how through skeleton design, eliminates redundancy and costs.

## Key Messages

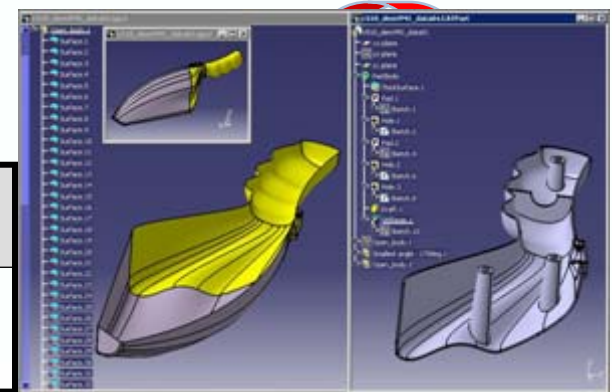
- Virtual Simulation and Maintenance.
- Increase the communication between the OEM and suppliers using SMARTEAM solutions.
- Manage data exchange in the supplier teams using SmartFlow.
- Design in context with MultiCad data

## 3D PLM Scope

Brand	CATIA V5 – SMARTEAM – MySmarTeam - SmartFlow
Products Covered	PDG : Part Design / ASD : Assembly Design / KIN : DMU Kinematics / DMN : DMU Navigator / SPA : DMU Space Analysis / SMG : 3 axisSurface Machining

# From IGES shape to part design

- Consumers Goods
- Home Appliance



## Abstract

This demonstration explains how to run a complete design process from a basic design surface up to the final solid parts to assemble and produce.

## 3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Product development time reduction thanks to the complete integration of all design stages, from conceptual design to final assembly design
Quality	↗	++	High level design tools to control shape aesthetic and numeric quality at each stage of the design cycle
Cost	↘		

## Key Messages

**Customers in the consumer goods design area need a full design solution at a low cost; the YM1 package provides a innovative P1 solution which covers the entire design cycle, from early design studies to final part production definition**

## 3D PLM Scope

Brand	CATIA V5
Products Covered	HA1 : Healing Assistant / FS1 : FreeStyle Shaper, GS1 : Generative Shape Design / PD1 : Part Design

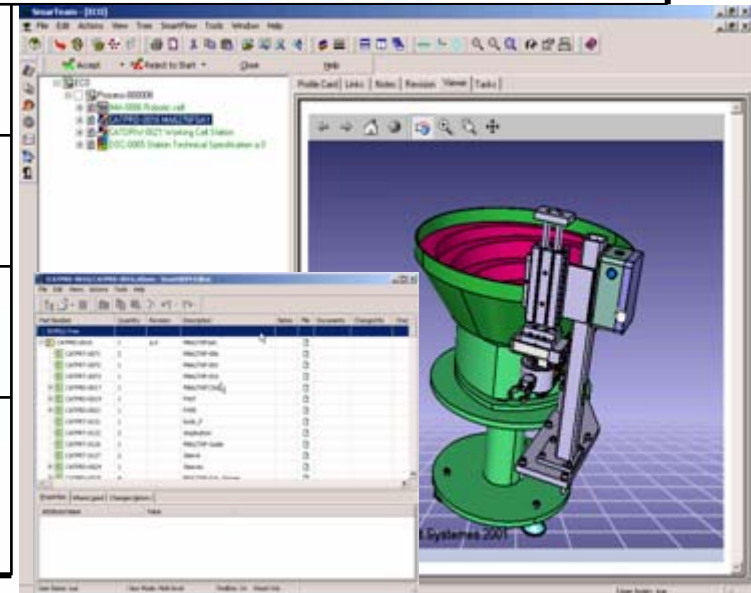
# Demonstrations delivered in V5R9



# IM-CG Demonstrations

## ■ TeamPDM Support of Collaborative Engineering Change

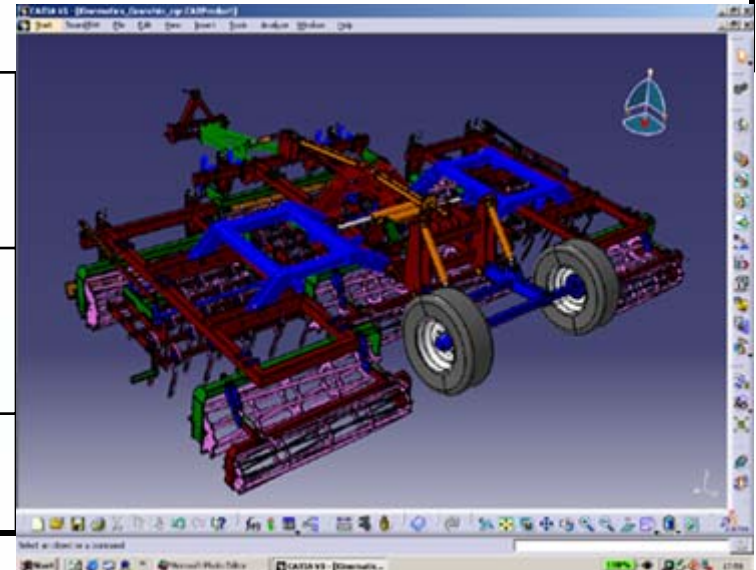
<b>Abstract</b>		Covering the tasks of three engineers participating in an ECO, this demo shows how Team PDM can be used to manage CATIA design tables and catalogues. Utilizing SmartWeb, engineers have access to all the data over the web. In this scenario, SmartBOM is used by manufacturers for creating and submitting a proposed cost for the change of the product. The Excel costing sheet is managed through the SmartTeam integration into MS Office.
<b>Key Messages</b>		ECO management, BOM Creation, Life Cycle management, CATIA Catalog management with Team PDM, Web access to ECO and engineering data through SmartWeb Pro, BOM costing, MS Office integration to SmartTeam.
<b>Product Covered</b>		TD1, SmartBOM, SmartWeb Pro, SmartFlow, MS Office Integration.
<b>3D PLM Scope</b>	Process Centric	Managing the various processes such as release and ECO processes in the enterprise and extended enterprise over the web.
	Collaborative Workspace	SmartTeam's suite of web and briefcasing products, brings up to date information directly to the enterprise and extended enterprise users.
	Knowledge	Design date and enterprise standards and rules are managed within the SmartTeam suite of products.
	CAA V5	SmartTeam Products have open API based upon the COM API and using standards such as XML, customizations can be performed in VB, C++, ASP with J script, C# or VB Script.



# IM-CG Demonstrations

## ■ Collaborative Farming Equipment Assembly Design

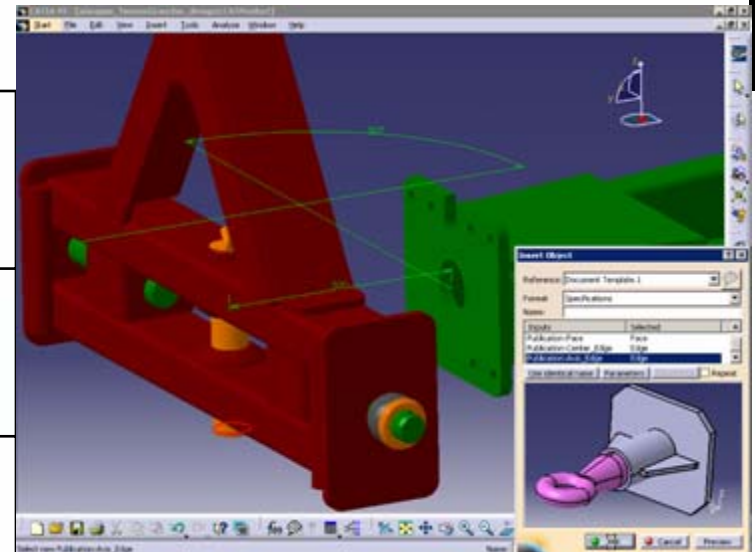
<b>Abstract</b>		This demonstration illustrates the whole process creation coverage with CATIA V5 products and the use of Knowledgeware to improve the productivity and adapt an farming machine to the customer needs.
<b>Key Messages</b>		Conceptual design and detailed design process can be done consistently and progressively with SmarTeam. Knowledgeware is a key advantages for assisted design. 3D DMU provides competitive advantages for early error detection
<b>Product Covered</b>		PDG, ASD, GDR, KWG, KIN, SPA , FIT, KBA, PKT, DMN
<b>3D PLM Scope</b>	Process Centric	Complete modification of an existing farming machine from conceptual design to full detailed design including review, documentation and innovation
	Collaborative Workspace	Benefit from collaborative environment allowing automatic propagation of all modifications
	Knowledge	Reuse the corporate know-how when designing or modifying parts



# IM-CG Best Practice

## ■ Collaborative Mechanically-Welded Assembly Morphing in Context

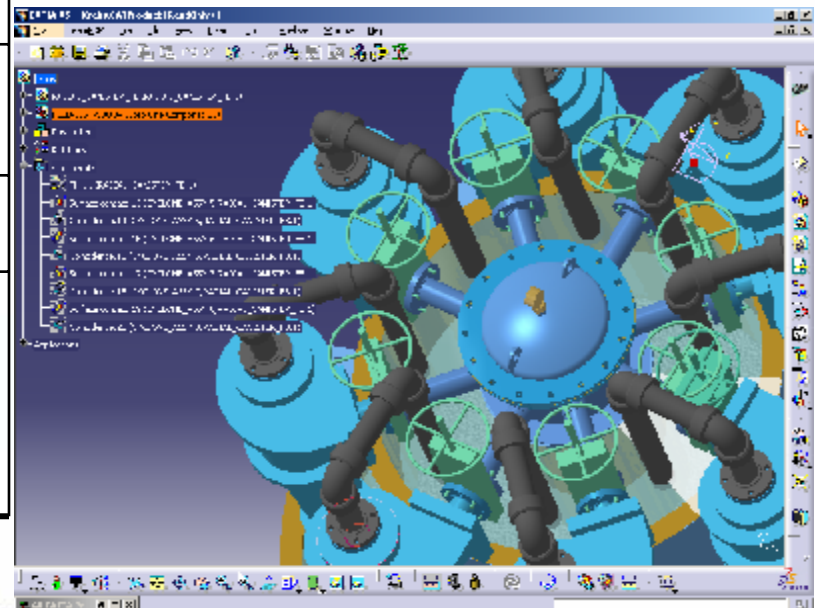
<b>Abstract</b>		This Best Practice illustrates the creation and reuse of an assembly template (Tow-Hook of a Gaspardo farming machine) in order to fit a new and full associative environment. Whatever the modification, the whole sub-assembly will morph to be adapted.
<b>Key Messages</b>		<b>Whole integrated solution</b> <b>Reduce development time by reusing captured knowledge. It allows you to anticipate customer changes and offer customer more options</b> <b>Collaborative environment to consistently manage data coming from the extended design team</b>
<b>Product Covered</b>		PDG, WSF, GSD, ASD, PKT, KWA
<b>3D PLM Scope</b>	Process Centric	<b>Design in context of the assembly then capitalization of the geometry in order to reuse it as an assembly template for further studies</b>
	Collaborative Workspace	<b>Benefit from collaborative environment allowing automatic propagation of all modifications</b>
	Knowledge	<b>Reuse the corporate know-how when designing or modifying parts</b>



# IM-CG Demonstrations

## ■ Knowledge Based Generation of Cyclones

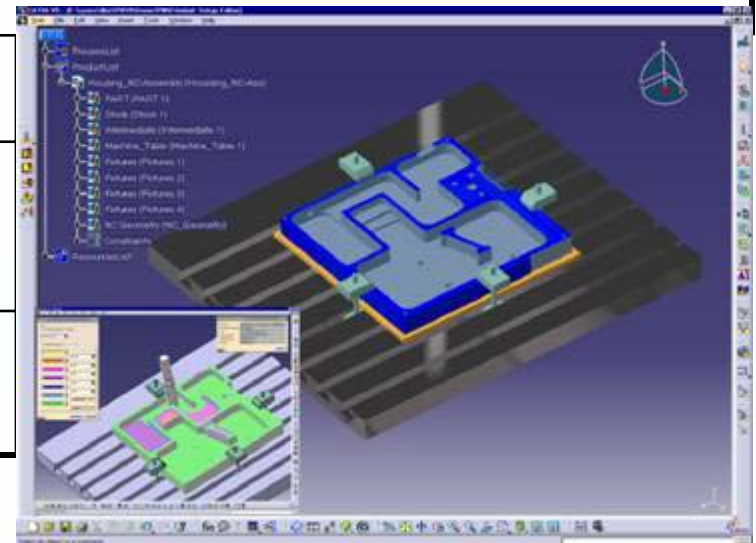
<b>Abstract</b>		This demonstration illustrates the integration of the Part design by capturing and reusing legacy data along with the Knowledgware, Drafting, TeamPDM and DMU capabilities.
<b>Key Messages</b>		Design parts in a highly productive and intuitive environment Easily establish mechanical assembly constraints, automatically position parts and check assembly consistency. Perform optimum DMU verification using advanced interference detection and analy
<b>Product Covered</b>		PDG, ASD, WSF, GSD, DMU, Portal, GDR, SHE, KBA, STD, GPS, GAS, SmarTeam
<b>3D PLM Scope</b>	Process Centric	New design of a cyclone from 2D to 3D covering the corporate standard processes
	Collaborative Workspace	Using SmarTeam and Enovia Portal, the collaborative environment ensure legacy data at any time
	PPR	The Products depend on the corporate standard processes
	Knowledge	Rules and checks at both assembly and part levels take care about the design intent



# IM-CG Demonstrations

## ■ Specifications Driven Prismatic Machining

<b>Abstract</b>		Based on a standard electrical housing, this demonstration illustrates the new functionalities (using Machining processes, pocket rework, UDF ...) in 2.5 Axis NC Programation and simulation .
<b>Key Messages</b>		<b>Provides intuitive and easy-to-learn user interface</b> <b>Allows automation of machining processes for efficient NC programming</b> <b>Generates tool path with visual feedback allowing quick verification</b> <b>Allows visualization and analysis of the in-process part and simulation of material removal</b> <b>Generates NC data thanks to an integrated postprocessor execution engine</b> <b>Automatically generates useful shop floor documentation in HTML format</b>
<b>Product Covered</b>		PMG, NVG
<b>3D PLM Scope</b>	Process Centric	NC machining definition, simulation and review of multi-pocket part
	PPR	In a single environment, you can manage the Product definition, the Process operations and the corresponding needed Ressources
	Knowledge	use of machining processes stored in Catalog for automation (User Define Features, Machining Operations)

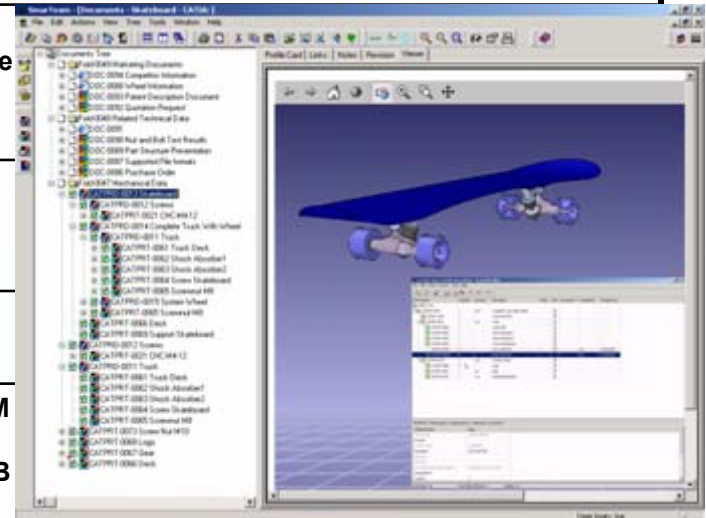




# IM-CG Demonstrations

## ■ Relational Engineering Change of a Skateboard

<b>Abstract</b>		Based upon the requirement to make an engineering change on a skateboard, this demo shows how an ECO is initiated and managed. During this typical engineering scenario, both enterprise and extended enterprise users participate in one process designed to quickly and efficiently release a changed product whilst insuring a consistency of data throughout the process. Design changes are made in CATIA with the aid of Team PDM, additional work is outsourced to the supply chain with the aid of mySmarTeam and SmartBOM.
<b>Key Messages</b>		Collaborate on design and engineering change process throughout the enterprise and supply chain.
<b>Product Covered</b>		TD1, SmartBOM, SmartWeb Pro, SmartFlow, MS Office Integration.
<b>3D PLM Scope</b>	Process Centric	Managing the various processes such as release and ECO processes in the enterprise and extended enterprise over the web.
	Collaborative Workspace	SmarTeam's suite of web and briefcasing products, brings up to date information directly to the enterprise and extended enterprise users.
	Knowledge	Design date and enterprise standards and rules are managed within the SmarTeam suite of products.
	CAA V5	SmarTeam Products have open API based upon the COM API and using standards such as XML, customizations can be performed in VB, C++, ASP with J script, C# or VB Script.



## ■ Associative Design to Target of Sheetmetal Parts