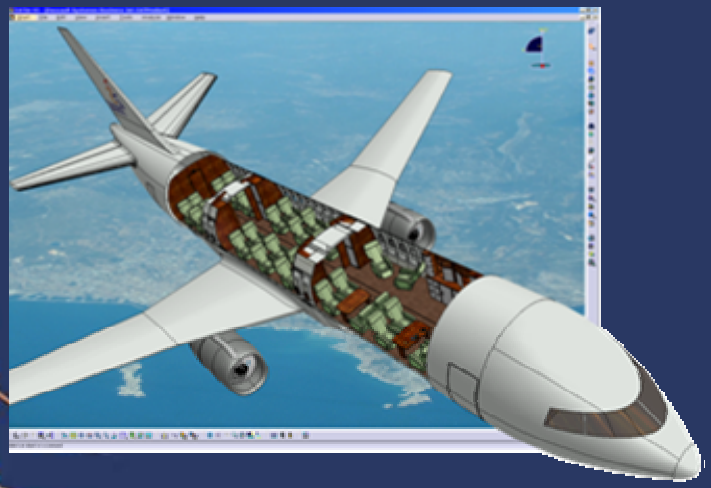
Aerospace Industry V5R12 Sales Channel Package



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September 2003
i512_aero_scp

Summary

- 1. DS PLM Practices delivered in V5R12
- 2. DS PLM Practices Portfolio
- 3. New & Updated V5R12 DS PLM Practices
- 4. DS PLM Practices available from previous SMARTClass Kits

DS PLM Practices delivered in V5R12

- **New DS PLM Practices**
  - Engineer to buyer Collaborative Cabin Completion
  - Configuration Management of Aerospace Product
- **New functional demonstration**
  - Blade Machining With Helix
- **Updated DS PLM Practices**
  - Tubing System Installation
  - Aero Shape Machined Part Design to Manufacturing
  - Composite Part Design to Manufacturing

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Aerospace DS PLM Practices Portfolio

V5R12 DS AERO PLM Practices Portfolio	V5R8	V5R9	V5R10	V5R11	V5R12
AIRCRAFT					
Aero Shape Machined Part Design to Manufacturing	D/V	V			V
Composite Part Design to Manufacturing				D/V	D/V
Virtual_Cockpit_Airworthiness_simulation				V	
Aerospace_Sheet_Metal_Design_to_Manufacturing		D/V	D/V	D/V	
Large assembly update				D/V	
In_Process_CAE_for_Airframe_Stuctures	V	D/V	D/V	D/V	
Associative_Jigs_&_Fixtures_Design	D/V			D/V	
Airframe_Space_Allocation_Mockup_Windows	D/V	D/V	D/V	D/V	
Generative Hybrid Meshing			D/V		
Digital_Pre-Assembly_Validation	D/V	D/V	D/V		
Configured_Airframe_Component_Reuse	D/V	D/V	D/V		
Airframe_Space_Allocation_Mockup_UNIX	D/V	D/V	D/V		
Specification_Driven_Lofting_&_Preliminary_Structures	V	D/V			
Specification_Driven_Design_in_Assembly_Context	V				
Landing_Gear_Analysis_in_Assembly_Context	D/V				
Generative_Stretching_Tool_Design	D/V				
Engineer to Buyer Collaborative Cabin Completion					V
Configuration management of Aerospace product					V
AERO ENGINE					
Blade Machining With Helix					D/V
Component_Reuse_In_Configured_Aeroengine				D/V	
Knowledge_Based_Analysis_of_Engine_Components	D/V	D/V	D/V	D/V	
Tubing System Installation	D/V	D/V	D/V		D/V
Specification_Driven_Engine_Architecture_Design	V				
Constraints_Based_Design_of_Engine_Wiring	V				
Integrated_Engine_Casing_Machining	D/V				
Relational_Engine_Pre-Design	V				

D=Data
V=Video

2 New DS PLM Practices

1 new functional demonstration

3 Updated DS PLM Practices

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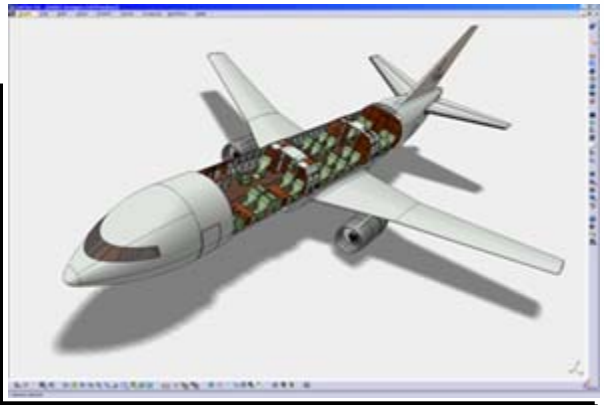
New & Updated DS PLM Practices delivered in V5R12

Customer support : Engineer to Buyer Collaborative Cabin Completion



Abstract

During sales negociation with the buyer, decision and specifications are mostly based on static and non accurate representations of aircraft cabins. These representations are disconnected from the engineering world and often lead to misunderstanding and unnecessary iteration loops.
This best practice is dedicated to 'aircraft sales department' who wants to implement a sales configuration tool based on engineering interactive 3D mockups.It helps customers to choose and view in real time their cabin configuration and options.

3D PLM Value

Innovation	↗		
Cycle Time	↗		
Quality	↗	++	Improve perception, collaboration and decision support
Cost	↘	+++	Less iteration and late modifications with the client

Key Messages

- Runing on laptop thanks to optimized data
- Realistic 3D cabin mockups (textures, lights, ..)
- Interactive components customization through hyperlinks
- Set of predefined cabin configurations

3D PLM Scope

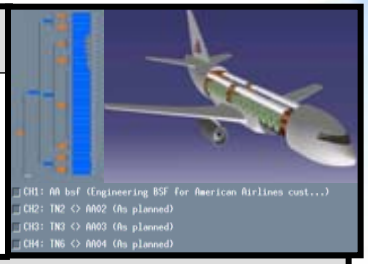
New

Brand	CATIA: mandatory **or** ENOVIA: mandatory
Configurations/ Products Covered	CATIA Add-on products: DMN, DMO and RTR mandatory FIT, KIN, HBR and HME optional ENOVIA Configurations: ENOVIA DMU Review 2 (DM2) mandatory, ENOVIA DMU Human Simulation 2 (DH2) optional ENOVIA Add-on products: DMO & RTR mandatory, FIT, KIN and DM3 optional

Integrated Lifecycle management : Configuration Management of Aerospace Product

Abstract

Aerospace Products Configuration traditionally focus on Manufacturing Configuration, using criteria which do not meet engineers needs. This Best Practice describes how to manage engineering baselines in a modular way. It allows to use engineering specifications to build up the product structure whilst ensuring and maintaining a consistent and optimised 'as designed' definition of the product ready to be transferred to Industrialisation and Manufacturing communities.



3D PLM VALUE

Innovation	↗	++	Easier variant Management in Digital Mock up by using engineering natural variant criteria
Cycle Time	↘	+++	Configured Digital Mock up is a key enabler for aircraft co development process Program schedule management enable overlapping development phases to shrink complete development life cycle
Quality	↗	++	Reduce time effort to retrieve the right data for all actors Baseline to promote continuous improvement process Capitalize engineering rules to ensure consistency of all variants
Cost	↘	+++	Maximize product components commonality amongst product variants Better assessment and control of costs induced by specific customer request.

Key Messages

- Option management
- Rule based configuration
- Project milestone management
- Configuration analysis tools

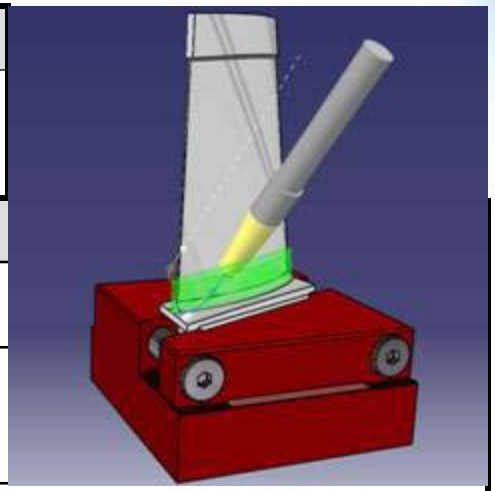
3D PLM Scope

Brand	ENOVIAVPM : Mandatory
Products / Configuration	Configurations: VPD, V3C mandatory

Functional demonstration : Blade machining with multi-axis helix

Abstract

We will see :
How to define a multi-axis Helix machining operation and validate NC tool path.



3D PLM VALUE

Innovation	↗	+++	Brand-new NC cycle
Cycle Time	↘	++	Reduce programming time : -Using pre-defined Machining processes -Flexible NC cycle
Quality	↗	++	Entire blade machined with one single path (to avoid marks) using 4 or 5 axis strategies
Cost	↘	++	Reduce risk errors programming thanks to integrated simulation tool

Key Messages

- New and unique NC cycle on the market dedicated to blade and disk machining

3D PLM Scope

Brand	CATIA V5
Products Covered	AMG : Advanced Machining & NVG : NC Manufacturing Verification & KW : Knowledge

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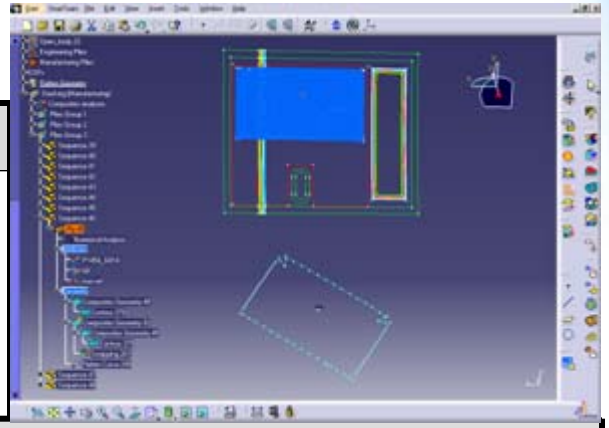
Best of Breed Aircraft Structure Engineering :

Composite Part Design to Manufacturing



Abstract

The design of composite parts relies traditionally mostly on 2D definition. Furthermore, this design requires several tools, leading to maturity loss in the information flow.
This best practice demonstrates the ability to drive the process with a single 3D definition of the laminates, from the preliminary design based on a FEA simulation to the manufacturing preparation. The best practice illustrates how to quickly analyse the fibre deformations and flatten the plies.

3D PLM VALUE

Innovation	↗		
Cycle Time	↗		
Quality	↗	++	Early composite constraints integration Single 3D representation for preliminary design to manufacturing preparation
Cost	↘		

Key Messages

- Integrated fibre deformation analysis
- Support of specific geometrical configuration: multipart management, self overlapping plies

updated

3D PLM Scope

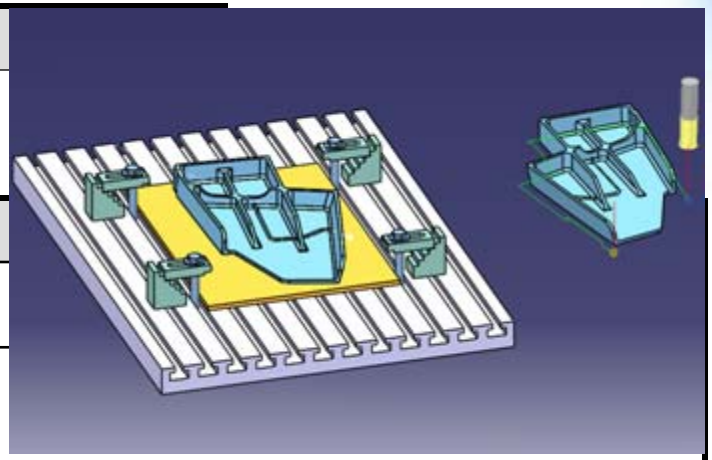
Brand	CATIA: Mandatory
Products Covered	CPD : Composites Preliminary Design / GSD : Generative Shape Design

Best of Breed Aircraft Structure Engineering :

Aero Shape Machined Part Design to Manufacturing

Abstract

We will see :
How to define NC program on symmetrical part using opposite hand programming.



3D PLM VALUE

Innovation	↗	++	**New opposite capability.**
Cycle Time	↘	++	**Reduce programming time :** -**Define quickly NC program for symmetrical part**
Quality	↗	++	**Keep machining cutting conditions automated process.**
Cost	↘		**Re-use already validated tool path.**

Key Messages

- **Easily and quickly define the entire machining program of a symmetrical part relative to one already machined.**

3D PLM Scope

Brand	**CATIA V5**
Products Covered	**AMG : Advanced Machining**

updated

opposite hand programming

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BoB Aerospace systems : Tubing System Installation

Abstract

The definition of fluidic systems in Aeroengine is constrained by a very narrow environment, the influence of others systems, safety and company rules.

Based on a tubing line diagram and with respect to the 3D mock-up engine constraints, the best practice goes through all the process steps to the tubing line documentation for the manufacturing: equipment placement, optimized route definition, support and tubing parts placement, report generation and drawing production.

3D PLM VALUE

Innovation	↗		
Cycle Time	↘	++	Cycle Time reduced to seamless schematics integration with CATIA Drafting products.
Quality	↗	+++	Specifications Driven capability provides a lot of checks automatically done by the software, what drastically reduces errors when inserting equipments and fittings compliant to the rules and specifications previously attributed to the tube's definition. Integration and utilization of company standards as specifications avoids errors : manufacturability is guaranteed. Tubing design is facilitated by an interactive propagation of the 3D routing from Schematic Diagrams in context of the 3D mock-up engine, and the positioning of all related components, reducing errors when installing equipment systems.
Cost	↘		

updated

Key Messages

- Process coverage from schematic definition to installation and report generation.
- Associativity between Schema and 3D : - ensures the quality of the design by reducing errors and time for modification.
  - makes the re-use of Schematic Diagrams leading to a considerable cycle time reduction.
- Specification driven capability : - allows to customize the application in order to integrate company rules for manufacturability.
  - makes Automatic Parts Placement functionality a master reference for design and control, allowing "one shot" fittings dressing between tubes and equipments according to their specifications.

3D PLM Scope

Brand	CATIA
Products Covered	Tubing Diagram (TUD), Equipment Arrangement (EQT), Tubing Design (TUB), Drawing Production (DP2)

DS PLM Practices available from previous SMARTClass Kits

New Aircraft concept : Virtual Cockpit Airworthiness Simulation

Abstract

This best practice is dedicated to ergonomists/designers who have to optimize and validate the detailed definition of the airframe cockpit, according to ergonomics concepts and rules applied on pilots

3D PLM Value

Innovation	↗		
Cycle Time	↘		
Quality	↗	++	Product is perfectly adapted to all human configurations and operations
Cost	↘	+++	Late modifications are dramatically reduced due to upstream problem solution Introduce early in the process accurate 3D manikins for direct manipulations and studies **decrease the number of physical prototypes**

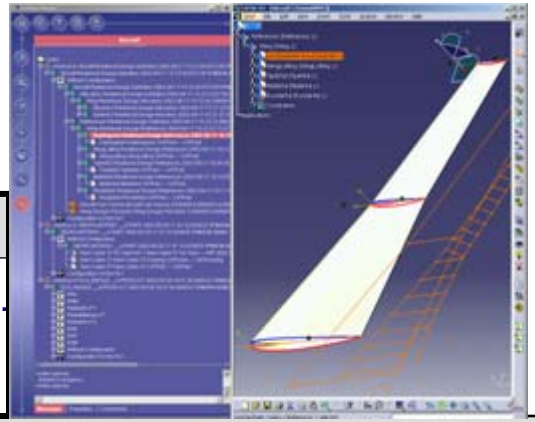
Key Messages

- Detailed design and ergonomics studies are overlaped for better associativity between the two process
- Complete digital manikin definition for fast and reliable ergonomic studies

3D PLM Scope

Brand	CATIA or ENOVIA	mandatory	
Configuration/Products	Configuration ENOVIA: DH2 DMU Human Simulation 2 + RTR, FIT product Product CATIA : HBR, HME, HAA, HPA, DMN, SPA, RTR, FIT Partners: OPTIS		

New Aircraft concept : Airframe Space Allocation Mock-up on Windows



Abstract

During the preliminary design phase of a new aircraft the objective is to shorten iteration loops and quickly produce new versions of the space allocation mockup. In this phase, it is critical to ensure consistency between the master geometry and the space allocation mockup.
Relational design in a configured digital mockup environment becomes key to enable fast and controlled propagation of the modifications.

3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Enable to evaluate more concepts on critical components in the preliminary design phase by shortening iteration loops
Quality	↗	+++	Increased consistency between specification and design and greater number of iterations
Cost	↘		

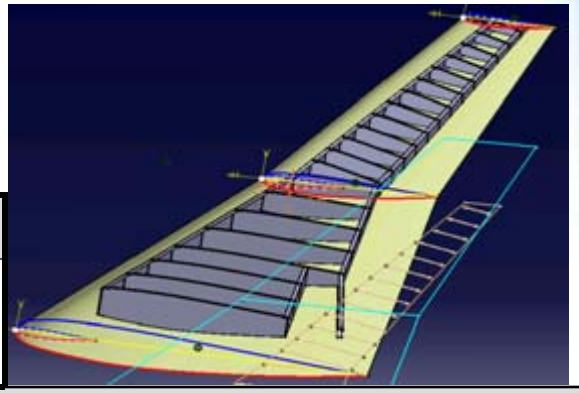
Key Messages

- Know-how collected on architecture definition
- Associativity between concept and space allocation design

3D PLM Scope

Brand	CATIA: Mandatory / ENOVIA: Mandatory
Products / Configurations Covered	Configurations: ENOVIA - W3C, CATIA - MD2

New Aircraft concept : Space Allocation Mock-up UNIX



Abstract

Space Allocation : Space reservation for equipment installation and system routing, based on the aircraft master geometry

3D PLM VALUE

Innovation	↗	+	Enable to evaluate more concepts on critical components in the preliminary design phase by shortening evaluation loops
Cycle Time	↘	+++	Shorten engineering cycle from conceptual to space allocation design for each concept.
Quality	↗		
Cost	↘	++	Reduce effort to propagate modification (mainly coming from aerodynamic, space allocation optimisation, routing) with the relational design capabilities.

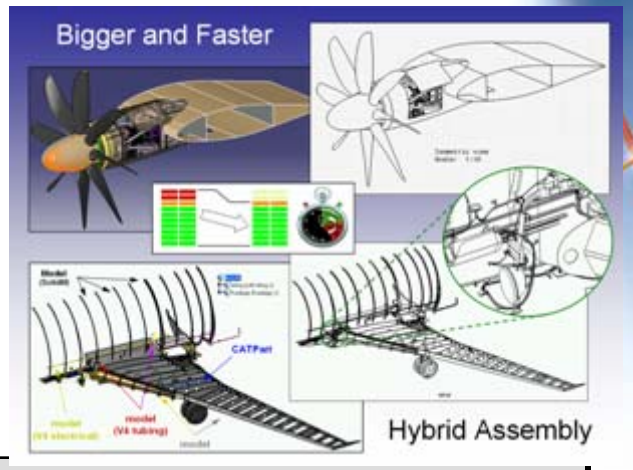
Key Messages

- Space allocation design targets specifications
- Know-how collected on architecture definition
- Associativity between concept and space allocation design

3D PLM Scope

Brand	CATIA : Mandatory / ENOVIA : Mandatory
Products Covered	ENOVIA VPM

Functional demonstration :
Large Assembly Update



Abstract

The purpose of this presentation is to illustrate the performance enhancements for large assembly drawing generation and capability to generate drawings from an hybrid assembly

3D PLM VALUE

Cycle Time	↘	+++	Reduce time necessary for large assembly drawing generation
Cost	↘	+++	Increase the capacity to work with larger hybrid assemblies with the same hardware.

Key Messages

- Large Assembly, hybrid assembly , Drafting & 2D views generation.

3D PLM Scope

Brand	CATIA
Products Covered	PDG: Part Design DRA: Drafting

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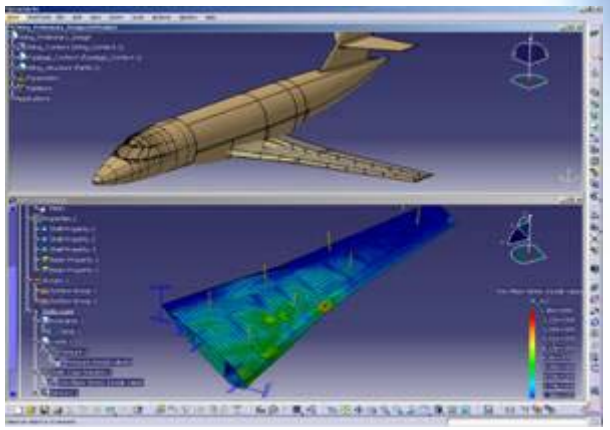
Best of Breed Aircraft Structure engineering :
In Process CAE for Airframe Structures



Abstract

In the preliminary design phase, the validation of the design data needs a high number of iterations between design engineers and simulation engineers. Simulation engineers have to deal with work in progress data from design. It leads to repeat the same sequence of operations (meshing, pre-processing, processing, post–processing) for each iteration.
The associativity between complex geometry and Analysis specifications allows to re-use transparently most of the sequence defined in the previous iteration.
With the local sensors the simulation engineers get results on selected areas to validate the specifications.

3D PLM VALUE

Innovation	↗	++	Enable to explore more design intents in a shorter period of time.
Cycle Time	↘	+++	Shorter mesh preparation time Reduce repetitive task for meshing and pre-processing
Quality	↗		
Cost	↘		

Key Messages

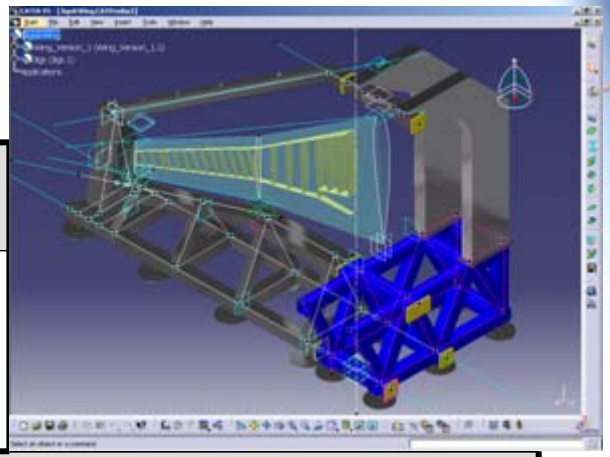
- Automatic capture of nodes distribution
- Associativity between design and analysis specifications.
- Bridge to knowledgeware through Local sensors

3D PLM Scope

Brand	CATIA mandatory
Configuration / Products	CATIA Configuration: CATIA Product: FMS, GPS, EST, KWE

Best of Breed Aircraft Structure Engineering :

Associative Jigs Design



Abstract

In parallel with detailed design of aircraft structure, this Best Practice accelerates Assembly Jigs structure creation process through new ways to design a structure machine base. Allowing full associativity with Aircraft Manufacturers legacy data, the use of this technology automates the creation and the modification of the design.

3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Parallelise Jigs creation and product design Accelerate design and modification using skeleton methodology Allow re-use of Jigs over aircraft programs using Relational Design methodology (Publication and Replace mechanism)
Quality	↗	++	Improve Product Quality using concurrent analysis at the structural modeling phase level
Cost	↘	+	**Facilitate re-use of standard jigs**

Key Messages

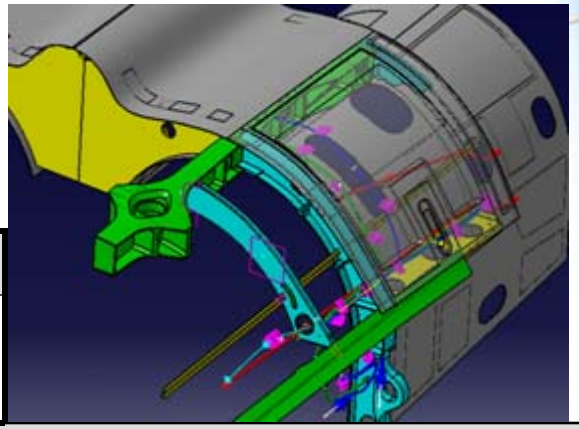
- **Trade oriented application (**Fast Structures Modeling – Using quick placement and structure catalogs)
- Close integration with aircraft data (A/c Part and Assembly) – Reduce construction errors
- Structures and Equipment Catalog Driven
- Quick & Easy Structural Analysis – ***Early beginnings of integration*** (Automatic mesh generation, automatic input of member properties)
- Integrated and Automated BOM – Reduce structural wastage
- Powerful Drawing Extraction – Associative drawings
- Optional Simulation Sequencing

3D PLM Scope

Brand	CATIA (mandatory) – SMARTEAM (optional)
Configuration/ Products	MD2 configuration +product ESS & GAS for OEM XM1 configuration + SR1, GAS(optional) product for suppliers

Best of Breed Aircraft Structure Engineering :

Configured Airframe Component Reuse



Abstract

Configured: Consistent environment defined by effectivity criteria
Airframe: Complete airframe including all interdependent systems
Component Reuse: Maximize the product communality between product versions

3D PLM VALUE

Innovation	↗	++	Enable a product hub to collaborate and to federate product knowledge
Cycle Time	↘	++	Shorten design cycle time by enabling concurrent work among multiple product versions
Quality	↗	+++	Share data and design in context Trace modifications affecting product
Cost	↘	+++	Reduce effort to manage program variant Develop components for a given applicability enabling component reuse in other configurations and in others aircrafts

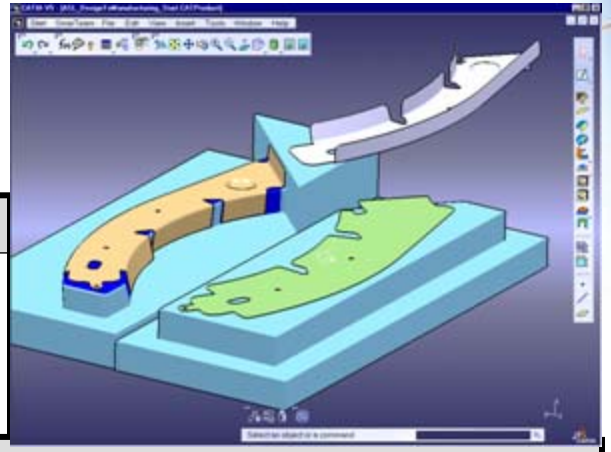
Key Messages

- Promote innovation and collaboration by putting the product hub at the heart of the product development process
- Accelerate product synthesis and design process optimization

3D PLM Scope

Brand	CATIA : Mandatory / ENOVIA : Mandatory
Products Covered	ENOVIA VPM

Best of Breed Aircraft Structure Engineering :
Sheet Metal Design to Manufacturing



Abstract

Once section space allocation mockup is completed and technology for aerostructure design has been chosen, the best practice enable to design the sheetmetal part and its associative forming tool.
Native associativity together with a well tuned methodology speed up hydroforming tool design process.

3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Smart organization of dependencies and linked copies, make Initial Part and Manufacturing parameters the driving specifications of Tooling Part. This avoids the complete creation of tooling part from scratch and consequently speeds up the overall process.
Quality	↗	+++	Utilization of company Standards avoids errors. Manufacturability is guaranteed
Cost	↘		

Key Messages

- Sheet metal dedicated features, Dual folded / flattened representation management
- Design in Assembly context, complete associativity between part and tooling (multimodel links, External references and parameters allow specifications propagation from Part to Tooling).
- Company Standards management

3D PLM Scope

Brand	CATIA (mandatory) – ENOVIA VPM V4 (Optional)
Configuration/ Product	SL3 Configuration + PDG (Add on product)

Integrated Aeroengine development :

Component Reuse in Configured Aeroengine

Abstract

In detail design phase, it is critical to maximize the commonality of the external equipments across multiple product variants.
The configured digital mockup helps to manage engineering changes through impact analysis , change management , and rule based configuration.

3D PLM VALUE

Innovation	↗		
Cycle Time	↘	++	Reduce iteration cycle between concurrent engineering disciplines: Mechanical and Electrical Develop components for a given applicability enabling component re-use in other configurations
Quality	↗	+++	Trace and optimize modifications in each impacted configurations
Cost	↘		

Key Messages

- Integration of multi-disciplinary design within a configured DMU
- Implementation of best modification strategy across product variants

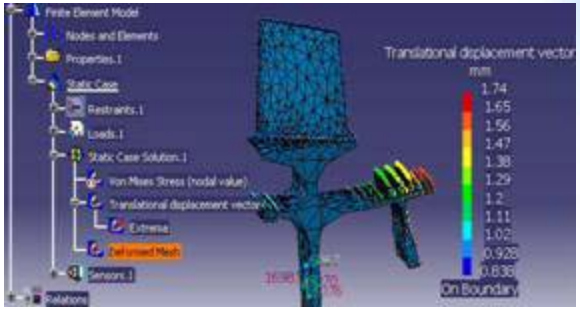
3D PLM Scope

Brand	ENOVIA (mandatory) , CATIA (mandatory)
Products Covered	ENOVIA VPM

Integrated Aeroengine Development : Knowledge Based Analysis of Engine components

Abstract

In the preliminary design phase, the validation of the design data needs a high number of iterations between design engineers and simulation engineers. Simulation engineers have to deal with work in progress data from design. It leads to repeat the same sequence of operations (meshing, pre-processing, processing, post–processing) for each iteration.
The associativity between complex geometry and Analysis specifications allows to re-use transparently most of the sequence defined in the previous iteration.
With 3D cyclic meshes, thermo-mechanical loads and local sensors, the simulation engineer is offered with a complete and efficient set of tools to validate the design specifications.



3D PLM VALUE

Innovation	↗		
Cycle Time	↘	+++	Associativity between CAD and multi-physics solutions (partners or in-house software) reduces time cycle for each iteration. Multidisciplinary knowledge rules (manufacturing, cost, materials, …) integrated in CAE model to reduce the number of process iterations.
Quality	↗	+++	Software infrastructure that minimizes the data translation to various CAE systems, reducing loss of data quality and maturity.
Cost	↘		

Key Messages

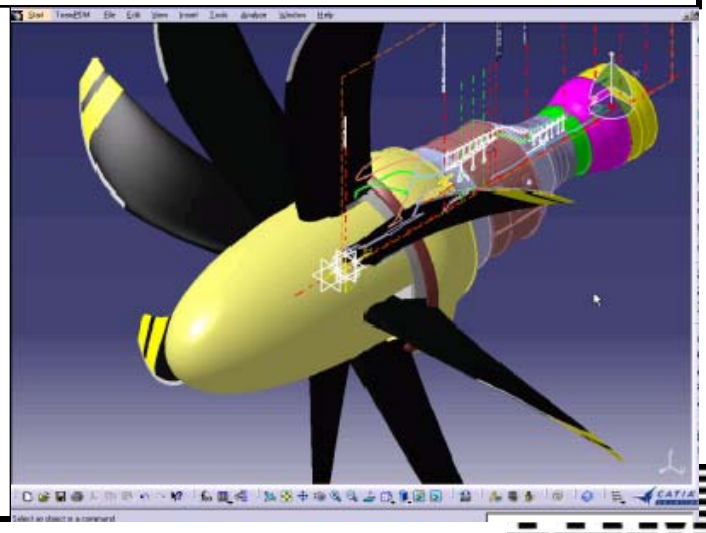
- **Associativity, new meshing capabilities, direct communication with many other solvers, knowledge as input and output to respect company process, native optimization solution, aero engine analysis features.**

3D PLM Scope

Brand	**CATIA**
Products Covered	**GPS, GAS, EST, KWA**

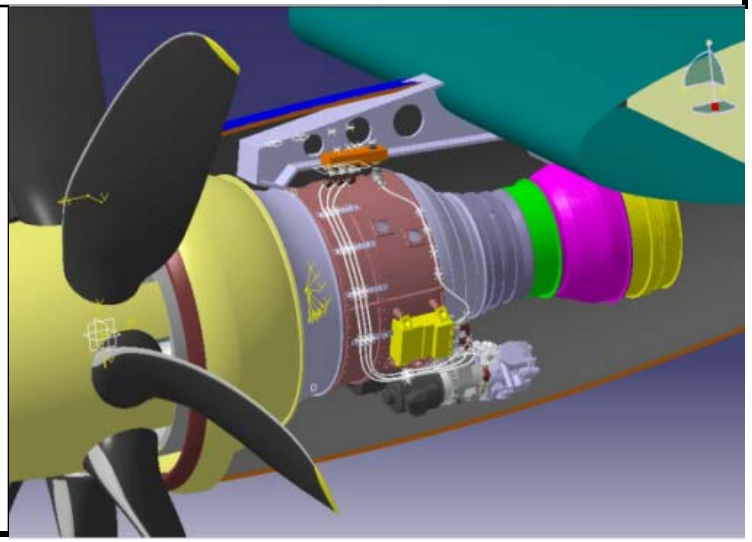
Integrated Aeroengine development :
Specification driven engine architecture design

Abstract	Process Oriented Associativity : Preliminary Design Phase for an Aero Engine. Representing at most 3% of the total program cost, 80% of the technical solutions are validated there.
Key Messages	Process Oriented Associativity
Product Covered	PDG,ASD,GSD, KWO, SPA



Integrated Aeroengine development :
Constraint based design of engine wiring

Abstract	This demonstration illustrates the cabling of an engine. The focus is the Integration of mechanical and electrical. - Use electrical constraint - Use mechanical constraint - Use standard compass to modify electrical installation
Key Messages	Full Digital Mock-up
Product Covered	EHI, ELB, EFD, EWR



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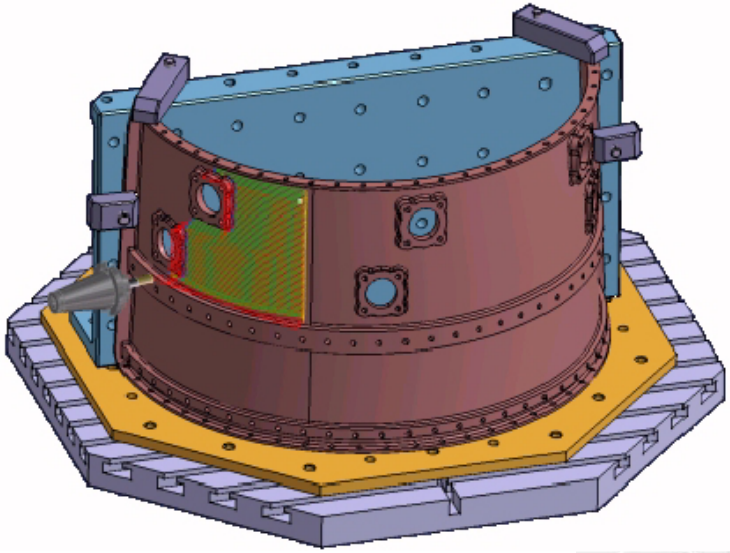
Integrated Aeroengine development :

Integrated engine casing machining

Abstract	The V5R9 release includes some capabilities such as the 5 axis surface and curve machining, but also the capability to store axial and surface processes. It is possible to define, within CATIA V5, programs for engine casings, but also to define mold or simple prismatic parts. It can be considered as an interesting and safe entry point in digital enterprises as it is an end-of-chain application.
Key Messages	End to end process complete functional coverage for casing parts
Product Covered	PMG,SMG, MMG



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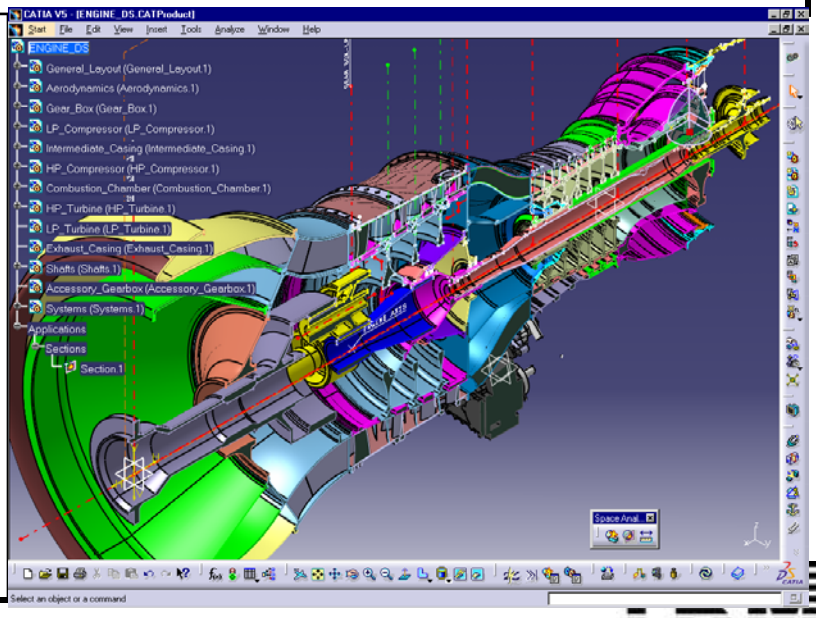
Integrated Aeroengine development :
Relational engine pre-design

Abstract	Process Oriented Associativity : Preliminary Design Phase for an Aero Engine. Representing at most 3% of the total program cost, 80% of the technical solutions are validated there.
Key Messages	Data integrity and management Change control and propagation, Process Oriented, Managed Associativity Architecture driven approach
Product Covered	ENOVIA-VPM,PDG,ASD,GSD, KWO, SPA



Digital Pre-Assembly Validation

Process : Digital Mockup Review

Abstract

During a mockup review session, the latest helicopter mockup version will be presented to the teams involved. Then a new landing gear version will be reviewed, analysed, simulated and validated, first in a standalone representation, and then in the context of the whole helicopter mockup. Further analysis will be reviewed, such as ergonomics.

3D PLM VALUE

Innovation	↗	+	**Realtime realistic rendering is taken into account very early in the process**
Cycle Time	↘	+++	**No data translation : up-to-date and native data** **Same tool for design process and review process** **Problems early identified and corrected** **Decisions and validations are discussed immediately**
Quality	↗	++	**Quality of the digital mockup is guaranteed at any stage**

Key Messages

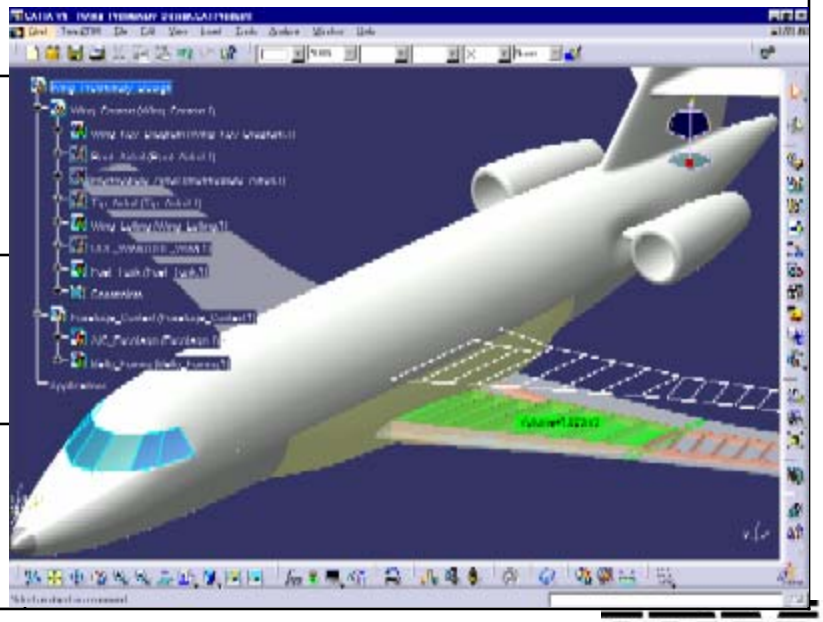
Collaborative work in context around a realtime view of work-in-progress
Design validation graphically and with simulations and analysis
Faster & earlier problem detection and communication

3D PLM Scope

Brand	**CATIA**
Products Covered	DMN, SPA, FIT, KIN, DMO, HBR, RTR, DUL

Specification Driven Lofting & Preliminary Structures

Abstract		Based on a Business Jet wing Architecture, the demonstration shows how “specification driven approach” is valuable at a very early stage in the design of airframe structures. It will illustrate a combination of tools fully dedicated to Aerospace Lofting Process and Relational Design.
Key Messages		Process Oriented , Early Design Intent Capture, Dependency Propagation throughout the Process, Set of Tools fully dedicated to Aerospace Surfacing activity, Productivity improvement thanks to Company Templates.
Product Covered		GSD, GSO, FSS, FSO, PDG, ASD, KWA, PKT
3D PLM Scope	**Process Centric**	Aero Structure Preliminary Design Process
	Collaborative Workspace	Working in Assembly context allows work sharing approach
	Knowledge	Capturing sharing and re-applying company knowledge and templates

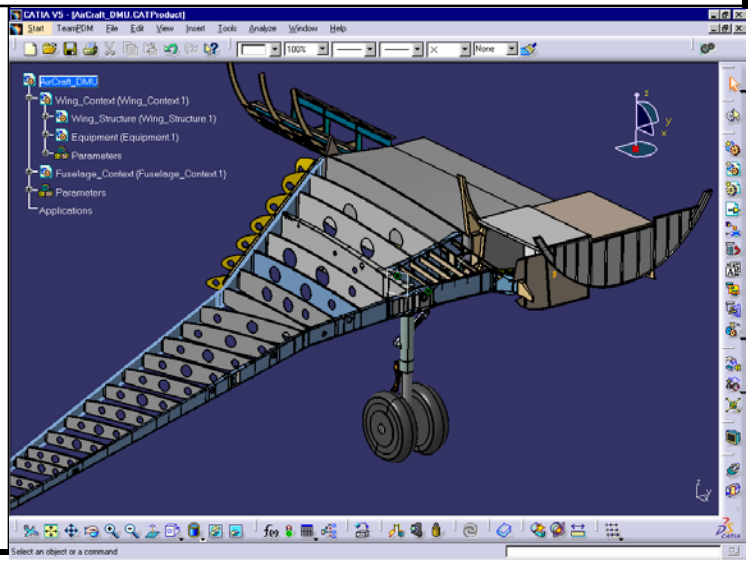


DASSAULT SYSTEMES

IBM

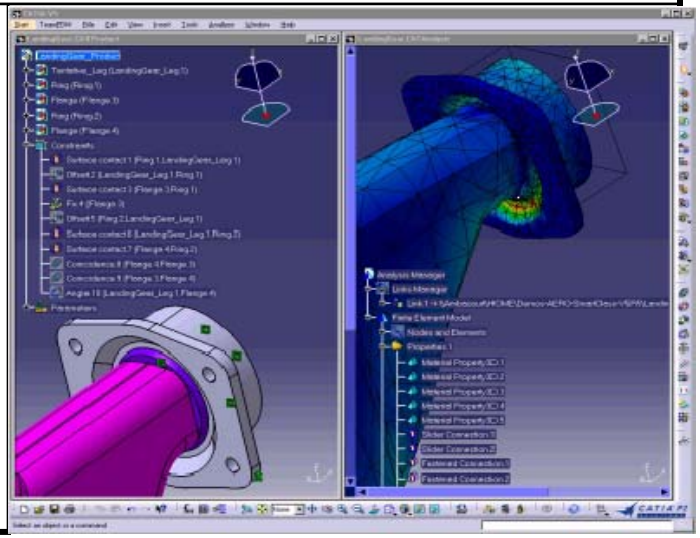
Specification driven design in assembly context

Abstract	Based on a Business Jet wing Architecture, the demonstration shows how “specification driven approach” is valuable even at detail design stage . It illustrates Design in Context of the mockup of the wing and immediate resolution of clashes.
Key Messages	Check Mechanism Kinematic, Interference checking, Structures Engineering Changes, Clashes Resolution through Specification Change.
Product Covered	KIN, SPA, ASD, PDG



Landing gear analysis in assembly context

Abstract	Based on a Business Jet wing Architecture, this demonstration illustrates how CATIA can perform the updating of an analysis on an assembly. It's a Unique technology for analyzing an assembly. There is associativity between Mechanical connections and assembly constraints . Analysis update is driven by Knowledge .
Key Messages	Generative Analysis Integration
Product Covered	GSD, PDG, ASD, GAS, DMN, SPA, KBE, EST

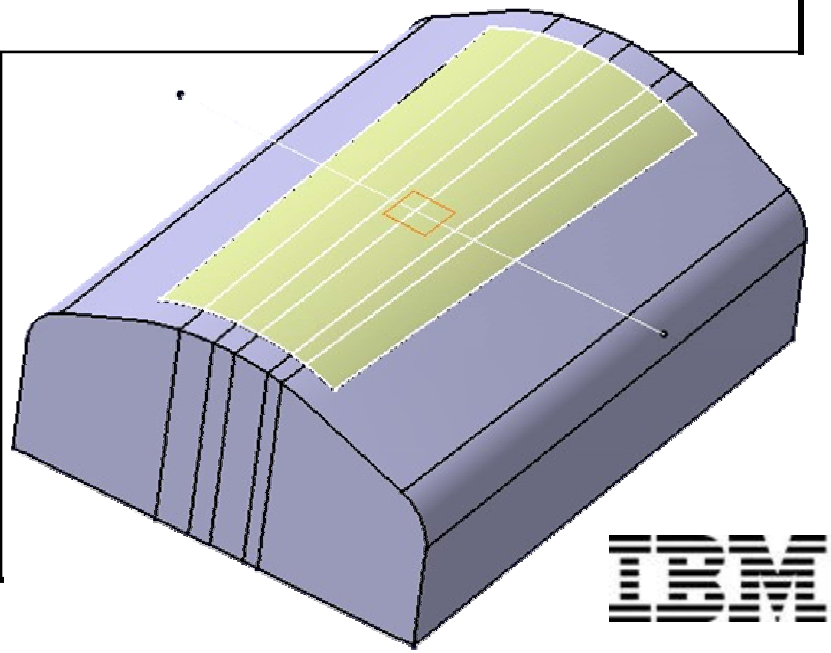


DASSAULT SYSTEMES

IBM

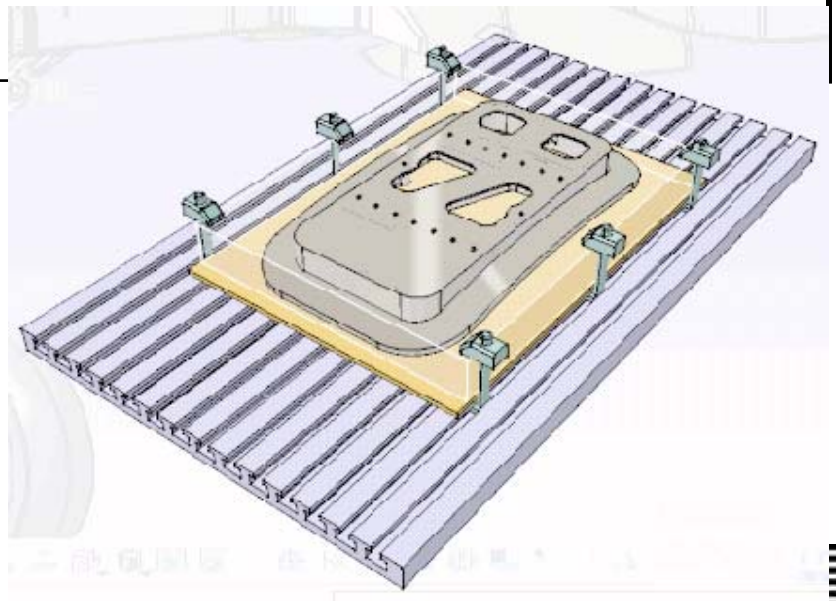
Generative Stretching Tool design

Abstract	A Knowledge-based Engineering application that captures a design process and the knowledge it is based on, and allow re-using it for many variation of the design. The knowledge used is easy to create or modify : realize only with CATIA workbenches (no need to know a specific language)
Key Messages	End to end process for stretch tools, Knowledgeware application
Product Covered	PDG, GSD, KWA, PKT, PEO



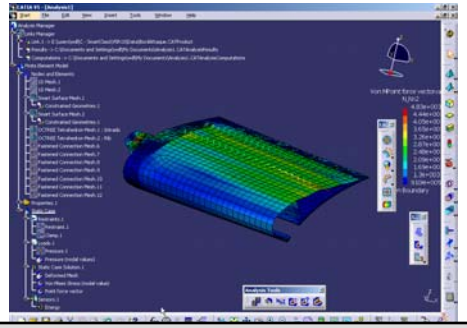
Generative Stretching Tool design

Abstract	This demonstration aims to browse the functionnality coverage brought by CATIA manufacturing which can be applied in tooling areas. It emphasizes the ease of use and benefits you can get out of V5 interface and V5 structure as well as the advantages of the integrate simulation tool.
Key Messages	End to end process, Complete functionnal coverage for tooling parts
Product Covered	PMG, SMG



Generative Hybrid Meshing / Analysis

Aerospace Community: Generative Hybrid Meshing



Abstract

Based on a Flap Design, this demonstration illustrates how CATIA can perform a complex analysis, including a 3D, 2D, and 1D parts using compatible and incompatible meshes.

3D PLM VALUE

Innovation	↗	++	The ability to deal with complex assemblies including parts of several dimension using compatible and incompatible mesh technologies allows fast and easy analysis.
Cycle Time	↘	++	The connection between two parts can be ensure either with compatible meshes using automatic capture of node distributions or with incompatible meshes using connection technology like welding spot connection, contact ...
Quality	↗	+	The complete redesign occurring automatically, including a new finite element analysis.
Cost	↘	++	A large number of iterations can be performed on a single part or assembly in a short period of time, providing the user with the ability to explore different design intent.

Key Messages

- **Design / analysis integration, associativity between design specs and analysis specs, ease of use.**

3D PLM Scope

Brand	**CATIA: Mandatory**
Products Covered	**FMS, GPS, EST.**