

CATIA V6R2010x - FACT SHEET VIRTUAL DESIGN FOR PRODUCT EXCELLENCE



VALUE AT A GLANCE
CATIA V6 AND V6R2010x OVERVIEW
CATIA V6 DOMAINS AND V6R2010x ENHANCEMENTS

VALUE AT A GLANCE

CATIA V6 LEVERAGES THE CAPACITY OF INNOVATION FOR COMPANIES OF ALL SIZES IN ALL INDUSTRIES BY DELIVERING BREAK-THROUGH PRODUCTIVITY DESIGN SOLUTIONS POWERED BY A HIGHLY COLLABORATIVE PLATFORM.

CATIA V6 redefines CAD from the purely physical product definition and expands it to requirement, functional and logical views where it also combines dynamic behaviour modelling of systems engineering. Designed to operate on a PLM 2.0 platform, CATIA V6 is a 3D collaborative solution linking designers and non-CAD specialists. CATIA V6R2010x reinforces systems engineering by allowing the replay and review of previously simulated experiments' behavior. Today's release also delivers enhancements to CATIA Live Shape, introducing a new paradigm for non-CAD specialists to easily compose assemblies in 3D. In addition, the new CATIA Live Distiller application enables online communities to benefit from 3D repurposing from CAD models.

CATIA V6 OVERVIEW

GLOBAL COLLABORATIVE INNOVATION

Broaden CATIA usage beyond designers to casual users within and outside the engineering department. Ground-breaking collaboration tools enable 3D brainstorming within the community of PLM users, to reach a new level of innovation.

LIFELIKE EXPERIENCE

CATIA introduces a paradigm shift to enable first-life experience and bring 3D product design to life with unmatched realism. In addition, CATIA V6 offers compelling simplicity and efficiency with in-context 3D manipulators and natural 3D operations.

SINGLE PLM PLATFORM FOR IP MANAGEMENT

Harnesses collective intelligence, making the always up-to-date product definition accessible to the various

communities from anywhere, at any time. Facilitates multi-discipline collaboration among designers, engineering users, and manufacturing users from one unique IP repository, making the company knowledgeware assets available for all participants.

ONLINE CREATION AND COLLABORATION

Reaches new disciplines with CATIA Systems and widens the traditional scope of CATIA to the requirements, functional, and logical views of the physical product in a collaborative manner. This allows for direct traceability of the product, from the beginning to end phases of creation. CATIA V6 delivers PLM objects that match collaborative design innovation, eliminating heavy assembly files, enabling true concurrent design, and eliminating the needs for high references management between part, drawing, and products.

READY TO USE PLM BUSINESS PROCESSES

Opens new opportunities for new industries such as consumer packaged goods, consumer goods, and high tech. The CATIA product portfolio continues to cover more industry processes.

LOWER COST OF OWNERSHIP

Protects the V5 investment; as a natural extension to V5, CATIA V6 ensures a smooth upgrade and short ramp-up from V5 to V6. There is an easy transition to V6 with the use of the same modeler and ready-to-use migration path.



V6R2010x OVERVIEW

GLOBAL COLLABORATIVE INNOVATION

CATIA Live Shape and Compose Meets the Needs of Casual Users

CATIA V6 empowers the communities of casual users to benefit from a live 3D portfolio that brings forth major changes in 3D modeling. V6R2010x now allows users to compose new assemblies naturally and directly in a 3D environment as easily as drag-and-drop.

LIFELIKE EXPERIENCE

Lifelike User Experience to Revolutionize the Virtual Design Experience



- CATIA V6R2010x continues to improve the lifelike user experience while providing the CATIA community full immersion into 3D design. Reaching beyond mechanical and surfaces design, CATIA now extends the usage of live 3D manipulators to the CATIA equipment domain, which includes piping and tubing, as well as electrical flattening.
- Application of realistic effects for casual users working with CATIA Live Shape. It now becomes child's play to apply different realistic rendering effects and textures onto



any surface of a 3D model.

SINGLE PLM PLATFORM FOR IP MANAGEMENT

CATIA Studio API for the DS Developer Community

V6R2010x releases the CATIA Studio APIs across the DS developer community, the largest of its kind. Now more than 6,500 developers can build PLM 2.0 online applications to the benefit of the CATIA user community.

ONLINE CREATION AND COLLABORATION



CATIA V6R2010x delivers system engineering integration to V6 simulation hub

- CATIA V6 has further improved its collaborative RFLP approach along with modeling and simulation of multi-discipline systems. The new System Experiment Manager now allows you to replay stored results from previous ex-

periments, including plotting and 3D animations.

CATIA Live Distiller for Repurposing 3D Content Online



CATIA V6R2010x Live Distiller now makes it possible to repurpose products from CATIA or 3DLive. Users can easily publish their CAD models to online communities such as 3DVIA.com, enriching the virtual 3D warehouse to provide user friendly content for all.

CATIA V6R2010x provides dedicated path to 3D master for 2D design offices

The New product CATIA 3D Drafting and Annotation (TDA) provides a smooth crossover from 2D to 3D Master, helping companies to easily migrate their 2D drawings and specifications right into the 3D representation,



which becomes the de facto reference.

CATIA V6R2010x adds more usability to surfacing detailed design tools

- A new Silhouette feature is provided to automotive designers who need to design new parts from the projected contours of existing parts. Among many usages, this helps



for ergonomic studies of car interiors.

- The Sew functionality, already existing in Part Design workbench, provides part optimization of the Tooling / Die process for the Body in White solution, by enabling local rework of surfaces to achieve better quality.
- The Autofillet command in the Generative Shape Design workbench fully applies to the Body in White process that uses thin sheet metal and therefore needs different filleting radius values for concave and convex edges.

CATIA V6R2010X delivers new CATIA Generative Piping & Tubing product

CATIA V6R2010x delivers advanced process-driven



authoring capabilities for piping and tubing, improving productivity and quality for the design of large scale installations across different industries, including aeronautical and shipbuilding.

High tech industry benefits from improved collaboration between ECAD and MCAD

Now Electrical and Mechanical CAD can collaborate dramatically better with a new automatic design change management tool. CATIA Circuit Board Design allows a flexible update monitoring of the physical mock-up of a board assembly with a real-time visual feedback.



READY TO USE PLM BUSINESS PROCESSES

V6R2010x offers mid-market customers the ability to easily transition their V5 ENOVIA SmarTeam data management functionality to V6 PLM Express implementations.

V6R2010x PLM Express enriches its portfolio to the shop floor with a full-featured machining CAD/CAM solution and adds interactive 3D technical illustration capabilities



CATIA V6 DOMAINS AND V6R2010x ENHANCEMENTS

CATIA SYSTEMS

Across industries, products are getting increasingly complex, involving many more engineering disciplines, with the value shifting from the products themselves to the actual services demanding customers expect from these products.

SYSTEMS ENGINEERING

A collaborative system engineering methodology is critical to address these transformations. CATIA Systems uniquely captures, manages, and tracks product requirements with full traceability, ensuring that these early requirements are met accurately all along the product development cycle, from functional architecture and logical breakdown to physical design and testing.

BEHAVIOR MODELING & SIMULATION

With CATIA Systems, the components from multiple disciplines (such as mechanics, thermodynamics, and electricity including electronics) as well as the numerous interactions between them are modeled on a unique common platform to enable dynamic simulation of the complete system via a virtual prototype. The behavior of the product in operation is assessed while various design alternatives can be tested very early on.

Key V6R2010x ENHANCEMENT FOR CATIA SYSTEMS:

CATIA V6 Delivers System Engineering Integration to the V6 Simulation Hub

The new System Experiment Manager allows users to replay 3D animation from experiments. A specific probe can be added to a scenario specification in order to record the position of all 3D parts in the model during the execution of the scenario. The 3D positions are saved into the scenario results, so the 3D animation can be replayed afterwards, without re-executing the model.

CATIA SHAPE

CATIA Shape provides industrial designers, Class A modelers, and mechanical engineers with a full suite of surfacing, reverse engineering, and visualization solutions to create, modify, and validate any type of complex innovative shapes and help streamline the transition and collaboration between Design, Class A and Engineering departments. From subdivision, styling, and Class A surfaces to mechanical functional surfaces, CATIA Shape covers all the surface creation and modification needs. It also supports the complete reverse engineering process from the import of digitized data to the recovering and finalization/completion of high quality surfaces.

INDUSTRIAL DESIGN

Combining a unique and intuitive virtual clay modeling approach with free-form surfaces, CATIA Shape is at the service of industrial designers and their creativity. Starting 3D ideation from scratch or from 2D sketches, industrial

designers can manipulate shapes with unrivaled freedom, but also take full advantage of a true creativity accelerator to quickly explore and test many more ideas in the early conceptual phase. CATIA Shape also provides real-time visualization for instant evaluation and photorealistic Mental Ray rendering, allowing designers to make better and faster decisions

MECHANICAL SURFACES

CATIA Shape provides advanced technologies for mechanical surfacing, based on a powerful specification-driven modeling approach. This solution brings high-end quality surface modeling for detailed designers and promotes efficient concurrent engineering between styling and engineering worlds in order to optimize the product design workflow.

COMPOSITES

Spanning from preliminary to engineering detailed design and manufacturing preparation, CATIA Shape provides unique capabilities for designers of composites structures to work in dedicated design in-context environments to integrate structural, assembly, and manufacturing requirements early in the composites design process and thereby anticipate and avoid problems.

Key V6R2010x ENHANCEMENTS FOR CATIA SHAPE:

New Silhouette Functionality

Designers occasionally need to design objects while referring to projected contours of other objects. For example, inside a car, designers need



to take into account the vision cones of objects, from the view point of the passengers, to design the car interior. With the new Silhouette function, you can project the visible contours of geometry on a plane or a planar surface, from a particular viewpoint, or along a direction. The process is now reduced to a very few steps, providing significant productivity gains.

Sew Surface on Surfacing Input

The Sew functionality, which has been extended from the Part Design workbench, advances the process of Body in White, especially by optimizing parts for the tooling/die process. You can now rework the surfaces locally in order to enhance their quality and fulfill manufacturing requests. Sewing is an operation combining a surface upon an existing element. This capability adds or removes surface by modifying the existing element. A new feature will sew a given surface on an existing support. The output will be a new skin. This approach eliminates the need to create auxiliary geometries.

Autofillet for Body in White

The Autofillet command in the Generative Shape Design workbench has been adapted to the Body in White process that uses thin sheet metal. It now provides a way to specify different filleting radius values for concave and convex edges. Whether a particular edge is concave or convex is decided by the virtual material side. The user now has the option to specify the virtual material side and

to change it by clicking on the 3D manipulator or by clicking on the Invert Material Side button of the Autofillet panel.

Drag and Drop of a Picture from Windows Explorer to the Sketch Tracer Workbench

The Sketch Tracer product provides a way for designers to import some image files into CATIA in order to use them as visual supports to create their shapes. With V6R2010x, you can now simply drag and drop images directly from Windows Explorer to automatically create FSK paintings. This enhances productivity and ergonomics by reducing the number of clicks and dialog boxes.

User Interface Evolution for Reverse Engineering Products

CATIA V6R2010x offers a redesign of some commands of CATIA Reverse Engineering products. It introduces new and improved user interface concepts, like the ruler for the mesh offset command, a new look for the simple sphere function, and new labels for many commands, improving productivity, and proposing a logical user-friendly follow-up of the processes.

CATIA MECHANICAL

Finding ways to reduce design-to-manufacturing cycles and improving productivity are key priorities. CATIA Mechanical delivers a highly collaborative and flexible design environment with full concurrent engineering and high performance change management through rela-

tional design to enable the efficient definition and engineering of any type of 3D parts and assemblies, from the simplest to the most advanced. In V6, CATIA expands 3D design to user communities outside of the design office, addressing each profile with the right modeler capabilities: direct 3D modeling, geometrical surfaces handling, feature-based design and history-free functional modeling.

CONCEPTUAL DESIGN

Breakthrough direct 3D modeling technology opens the doors of creation and 3D experience to new contributors who can quickly and easily sketch any idea in 3D. These new design ideas can then be reused as preliminary shapes by designers further down the process.

DETAILED DESIGN

Highly integrated tools automate the detailed design process and provide a smart management of complex assemblies, from part positioning through mechanical assembly constraints definition to drawing generation and assembly consistency checks thanks to mechanisms simulation.

MANUFACTURING PREPARATION

Advanced process-driven functionalities, such as the automatic definition of complex drafts and fillets to optimize foundry and forge tooling design of forged and complex cast parts, ensure that manufacturing intent is captured in the early stages of design to avoid manual, lengthy operations, as well as improve manufacturability and productivity.



Key V6R2010x ENHANCEMENTS FOR CATIA MECHANICAL:

CATIA Live Shape Easy Rendering Effects Application

Through a new painter command available in CATIA Live Shape, you can now easily apply a rendering effect from a predefined effect library onto every geometrical element of CATIA Live Shape (body, solid, surface, face, etc.). This meets the needs of designers and occasional users expecting to get easy access to visualization tuning in order to give realistic effects to products.

Introduction of CATIA Live Compose

CATIA V6 introduces CATIA Live Compose, enabling you to structure any assembly directly in 3D. With CATIA Live Compose, you can reuse products and assemblies that already exist in the PLM reference, and intuitively compose new ones. First, you can collect products and assemblies from 3D Live and place them into a basket by positioning them dynamically in 3D; it's as easy as drag and drop. You can then structure this new assembly directly in the turntable view, with standard operations such as cut, copy, paste, drag and drop, group and ungroup, making it very simple and rapid.

Smart Positioning on Parts and Assemblies

This feature makes it possible to snap parts together based

on their positioning interfaces definition or on their geometric publications. In the command of constraints creation, sub-assemblies may be positioned by a simple drag and drop, which benefits from the snapping based on publications.

Pre-set of Impacted Representations at Assembly Feature Creation

When defining an assembly hole or another assembly feature (protected, added, split), it is necessary to declare the list of representations that need to be impacted by this hole. As it is sometimes very time consuming to select all the impacted representations, a clash computation is run to propose a pre-defined list of potentially impacted representations.

Drafting and 3D Master Evolution

Display, navigation, drawing generation, and printing of 2D layout data is made possible without a 2D-layout-for-3D-design authoring license, thanks to a new Layout Viewing workbench embedded in major V6 products (IDE, MDE, TDD).

Drafting and 3D Master – New DS ISO 1 Open Type Font Now Fully Compliant with the ISO 3098 Standard

A new Open Type Font DS ISO 1 now represents annotations in compliance with the various ISO norms defining text representation (ISO 3098 norms). The level of compliancy to the ISO norms has been enhanced, such as the compliancy to the JIS norms, when drawings contain annotations including western

characters. It's also easier to make sure that any partner will be able to identically display such drawings on his/her machine, without the need for exchanging and installing a specific font, since DS ISO 1 is provided by default.

View Filter on Assembly Layout

When displaying the background of a layout's views, it is now possible to filter 3D parts or sub-assemblies located in the same layout assembly. This can be done by applying either a Display or Mask filter on these views. It is even possible to filter down to the 3D shape representation level. Of course, such a filtering is taken into account while generating drawing views from filtered layout views.

Global Copy of FTA Data

This feature allows users to reuse annotation set specifications and presentations of a part representation by complete duplication into another part representation, which is a variant of the first one. The copied annotations are automatically rerouted to geometric elements that have the exact same geometric characteristics as those in the original part. These dimensioning, tolerancing and annotations template capabilities increase user productivity.

Tooling completeness: tooling anchors enhancements to manage easily associativity between tooling and the impacted part.

To place typed Tooling component on dedicated typed Tooling anchors: In Tooling Design, Tooling components are placed on tooling anchors to ensure associativity (by using engineering connections) with the mold. A Tooling anchor is typed: it contains the type of tooling components to place on it. To increase productivity, when inserting a Tooling component of a given type on a equivalent typed Tooling anchor, all same typed Tooling anchors in a sub-structure are gathered with this Tooling component.

Dynamic Sectioning in Part, Generative Shape, and Functional Plastic Part Design

This new command offers a sectioning view in the Part, Generative Shape and Functional Plastic Part Design workbenches as previously available in Cast & Forge Design for parts or in Digital Mock-up for assemblies. To define the sectioning plane, either a face or a canonical geometry is selected, which will define a plane tangent to its surface, or normal to its axis. This sectioning view provides a better understanding of the different thicknesses of a part.

Automatic Filleting in Functional Plastic Part Design

The rounding and filleting of the sharp edges of a solid part can be processed in one shot, dramatically increasing productivity. Now parting elements can be taken into account on the whole.

CATIA EQUIPMENT

CATIA Equipment provides an integrated environment that enables the collaborative detailed design of electronic, electrical, and fluidic systems in context of a virtual product. While design is driven by the system logical definition to ensure conformity with product specifications, full traceability, and configuration management, knowledge rules are integrated to enable the automatic compliance to standards throughout the design process, all the way to the production of associative documentation for manufacturing. Such an integrated environment improves design quality, drastically reduces time needed for modifications, and minimizes errors.

ELECTRICAL

CATIA Equipment delivers a dedicated electro-mechanical end-to-end solution for designing and documenting electrical modules in all industries that design electric, electronic and electro-mechanic components.

PIPING & TUBING

CATIA Equipment also provides general layout tools for intelligent placement of parts as well as a full set of routing and parts placement methods.

Key V6R2010x ENHANCEMENTS FOR CATIA EQUIPMENT:

3D Live Manipulators for Harness Flattening

With CATIA V6 you can now manipulate an electrical flattening layout directly within 3D, as productively as working with a 2D application like Harness drawing. Just click

on a segment of the bundle to Rotate, Roll, or Arrange junctions. There is no more need to go through panels; you can now intuitively arrange the layout of your flattening model in just a few clicks.

Printed Circuit Board Design Change Management

Collaboration between Electrical and Mechanical CAD is dramatically improved with a new automatic design change management tool. CATIA Circuit Board Design allows a flexible update monitoring of the physical mock-up of a board assembly with real-time visual feedback. You can now update a board assembly from an .IDF file and its content (board outline, components, constraints, etc.). Thanks to a previsualization, you can individually choose to accept or refuse any update.

CATIA Piping & Tubing Design UI Improvements

CATIA V6 introduces a new context-driven user interface for all required design needs during pipe routing, part placement, or to analyze/modify pipes and parts. You will now be guided with context-specific balloons. All manipulations are integrated with the V6 Robot. This enhancement improves efficiency of the design process.

New CATIA Generative Piping & Tubing

CATIA V6 introduces new advanced capabilities for the design of Piping & Tubing, through a new dedicated product. CATIA Advanced Piping & Tubing completes CATIA Piping & Tubing De-



sign by providing advanced authoring and editing capabilities that improve productivity and quality for the design of Piping & Tubing. It offers specifications-driven design, rule-driven automatic part placement, and the management of logical lines, enabling the user to efficiently handle a lot more complex Piping & Tubing design.

CATIA Electrical V6 CAA Openness

CATIA V6 opens the CAA API's for electrical applications. This will enable partners to develop their own V6 applications, whether by interfacing directly with the V6 structure or through applications integrated within the V6 PLM environment. The goal is to ensure the continuity of the complete V6 electrical process from 2D schematics up to manufacturing.

CATIA Systems Logical 3D Architecture – Relational Navigation with East Compass

East Compass integration has been extended, and now enables the user, through integration of smart immersive panels, to navigate through relations he has set between the Logical System items (2D) and the associated 3D Space Reservation. Thanks to the East compass, the user is able to quickly focus on the signal he wants to route. Once the signal is routed, the East compass provides the capability to review the achieved routing by navigating on the pathway segments.

CATIA Systems Logical 3D Architecture – Improves Pathway Ergonomics

Improve ergonomics with the use of the 3D live manipulators, such as 3D robot and contextual command, to design pathways directly within 3D. All operations are available through intuitive contextual commands. This significantly improves usability and the user's experience of pathway creation.

DESIGN KNOWLEDGE & REUSE

Design Knowledge & Re-use enables companies to model, capitalize and re-use the full complexity of their engineering knowledge in order to accelerate and secure drastically their product development processes. Design Knowledge and Re-use accelerates a company's business processes while ensuring compliance with its best practices and taking advantage of its collective know-how. It provides an access to advanced design parameterization, knowledge capture as well as optimization tools, and enables the definition of standard rules and checks for design quality assessment.