CATIA V5R14 - FACT SHEET

CATIA V5R14 DETAILED DESCRIPTION

In the **Product, Process, Resource Model (PPR)** category (integrating product development, manufacturing processes, and resources) CATIA V5R14 widens the scope of next-generation VPM (Virtual Product Modeling), leveraging the V5 PLM leading solution for product engineering:

- V5R14 extends the depth of capability of VPM Navigator with powerful product-impact evaluation, fostering Relational Design best practices and new 3D representation for unmatchable navigation in configured product reference.
  - VPM Navigator is a breakthrough for engineering in a PLM context. It delivers immersive navigation within the familiar CATIA V5 engineering desktop and direct access to all product reference information in the ENOVIA Engineering Hub for easy work-environment building.
- V5R14 encourages designers to share engineering intent and CATIA technological information within the ENOVIA Engineering Hub. This leverages concurrent engineering from formalized project exchanges to virtual co-engineering, increasing knowledge reuse and extending lifecycle management across global teams.

In the **Collaborative Workspaces** category (delivering a shared, real-time, 3D working environment), CATIA V5R14 further broadens collaborative engineering for the extended enterprise:

- V5R14 extends the scalable suite of products for collaborative working with capabilities ranging from collaborative review for real-time decision support to a new way for teams to conduct rapid product design.
  - The new ENOVIA - VPM Instant Collaboration (VIC) product supports OEM-supplier communication around the rich 3D product definition in a virtual product development platform. VIC enables management of the two phases of integrated communication: connectivity (managing communities, awareness, meeting invitations and data sharing) and co-review (sharing and synchronizing information around the 3D product definition).
  - The new CATIA - Instant Collaborative Design 1 product enables designers to informally work together on the same design either in real-time or in asynchronous mode. This new product covers three main activities: connectivity, co-review and co-design (enable export/import of briefcases, analyze received features, merge with existing design).
- V5R14 reinforces co-development across the supply chain with advanced capacities for exchanging and reconciling engineering packages, thus promoting unique Relational Design PLM practices throughout the extended enterprise.

These capabilities are supported through a streamlined user interface that helps the end-user make the best decision on how to reconcile data from the supplier.

- V5R14 extends PLM concurrent engineering practices to Finite Element Analysis modeling by enabling a user to assemble and consolidate analysis meshes of individual parts, including those generated from different sources. The user responsible for overall assembly pieces together the meshes related to the different parts through connections, applies pre-processing specifications (constraints, loads), solves the problem, and views the results.
- V5R14 enhances the Body in White engineering process with a new product dedicated to the validation and documentation of fasteners. *DMU Fastening Review 2* (FAR) suits OEM teams—such as DMU, Product Synthesis, and Structural Analysis teams – as well as product design suppliers, including part designers and prototype makers.
- V5R14 continues to improve the PLM collaborative environment by enabling users to save 3D annotations in the CATIA Graphical Representation (CGR) light format. This improves extended enterprise design-in-context, ensures IP protection and facilitates design review with the *ENOVIA – DMU Dimensioning & Tolerancing Review 1* (DT1).

In the **Knowledge** category (capturing, sharing, and reusing information) CATIA V5R14 strengthens Knowledge across PLM for capture, sharing and re-use of corporate intellectual capital, and for product optimization:

- V5R14 bolsters CATIA's revolutionary functional modeling approach—the cornerstone of real-time collaborative design—in order to address casting parts modeling for the automotive and F&A industries and further support its adoption by industry leaders. It delivers new capabilities such as multi-bodies operation (divide, lip) and functional fillet and hole.
- V5R14 leverages structural analysis optimization with a new dedicated algorithm relying on critical information (meshing derivatives) from finite element models, further enriching the *CATIA - Product Engineering Optimizer* product. It also enables users to use local sensors as objectives and constraints to perform advanced optimizations.
- V5R14 sees Noesis Solutions endorsing the V5 architecture to deliver best-in-class Multi-Disciplinary Design Optimization (MDO) capabilities. CATIA V5 and CAA partners deliver a wide variety of methods, from design alternatives exploration to Six Sigma technology, for decision support and improved product quality.
- improves quality assurance achievement and best practices validation by delivering enhancements in knowledge language to better handle electrical rules.

In the **Process-Centric** category (basing customer solutions on industry-specific processes):

CATIA V5R14 delivers modeling breakthroughs to unleash and facilitate product innovation:

- V5R14 enables industrial designers to embrace styling creation at the speed of imagination thanks to the new CATIA - Imagine & Shape product.
  - Through a unique, 3D, artistic way of working, based on subdivisions surface technology commonly used for 3D animated movies, this new product reinforces the V5 solution by providing a seamless styling-to-manufacturing process, especially relevant for the electronics and consumer goods industries.
- V5R14 provides a market-leading range of complex surface offsets (exact, rough, variable*)* and drastically accelerates the design of plastic parts and tooling in all industries. In particular, the rough offset technology introduces a flexible function that can produce global offset surfaces, even when the starting surface is very complex.

CATIA V5R14 further strengthens and transforms industry-specific processes, a result of working in partnership with industry leaders:

- V5R14 enriches the design-to-simulation solution for composites parts, which are used in the design of a majority of the structures of next-generation aircraft and vehicles.
  - V5R14 further supports staggering configurations and 2D section drawing for complex composites parts.
  - The CATIA - ELFINI Structural Analysis product automatically retrieves composites part design specifications to enrich finite element models.
  - These enhancements reinforce the end-to-end composites parts design process, enabling customers to seamlessly simulate the physical behavior of their composites parts within the V5 FE Analysis solution.
  - In addition, improvements in the fiber simulation process drastically improve composite parts producibility.
- V5R14 extends the machining solution with multi-cavity parts manufacturing and multi-slide lathe machines programming, enabling engineers to easily take full advantage of complex machine tools.
  - The CATIA - Multi-Slide Lathe Machining 2 (MLG) product enables users to easily define NC programs dedicated to machine parts on multi-slide lathe machining centers with multiple turrets and spindles.
  - In addition, the CATIA - Multi Pocket Machining 2 (MPG) product provides users with highly productive global rough-to-finish machining strategies for structural multi-cavity parts in the aerospace industry**.**
- V5R14 strengthens the electrical harness CATIA/DELMIA design-to-manufacturing solution by enabling the simulation of electrical systems installation within the digital mock-up of the product.

Improving Performances and Capacity Planning continues to be a key guiding principle behind the development of CATIA:

- V5R14 delivers several breakthroughs in the Electrical domain:
  - 3D electrical harness design benefits from the selective loading mechanism, with automatic loading of required data using up to 60 percent less memory when modifying bundle segments (measurement based on a significant automotive dashboard harness design session involving 352 parts, 131 context parts, 121 electrical components, and 100 bundle segments).

    - V5R14 delivers significant performance gains in the process of synchronizing the flattened harness. As a result, 3D design modifications of electrical harnesses can be made up to two times faster than in previous versions (based upon a significant automotive dashboard scenario involving 230 electrical components, 150 bundle segments, and 174 protections).
- V5R14 enhances solutions in the Drafting domain:
    - Cuts the time to generate a V4 assembly drawings by 50 percent (based on a typical powertrain scenario: 340 models; data size = 450Mb).
    - The new version cuts the time needed to create approximate views by 35 percent (based upon a benchmark assembly of 10,000 instances with 100 references).
    - V5R14 reduces data size up to 68 percent for disk space and 41 percent for memory (based on a typical industrial scenario involving 30,000 components, 30,300 constraints, and 100 references).
- V5R14 empowers the Finite Element Analysis and DMU review processes with 64-bit technology, enabling more rapid computation of larger models.
    - For instance, in the Analysis area, users can compute models with up to 11 MDOF and can compute large models up to 3 times faster (based upon industrial and test scenarios).
- V5R14 provides, in the Machining solution, dramatic performance, scalability and capacity gains, such as:
    - faster program creation and modification (up to five times faster on a typical aerospace part).
    - management of larger machining programs (up to 30 percent less memory used on a typical aerospace part).
    - better toolpath quality in surface machining (particularly on Mold and Dies machining).
- V5R14 enables users to manage larger assemblies (up to 20 percent larger for a typical Body in White assembly) with selective loading of relevant data stored in the CATIA Graphical Representation format (CGR) for DMU review.

V5R14 speeds deployment of entry PLM solutions for SMBs by delivering:

- an enhanced CATIA eXtended Integration (CIX) product, a scalable solution providing an easy-to-use thin client for CATIA V5 users in a SMARTEAM environment.
- a new toolset enabling mold makers to support the end-to-end tooling design process. CATIA - Tooling Design 1 (TG1) provides automotive suppliers and users in the E&E and Consumers Goods industries with huge productivity gains.
- advanced capabilities for surface stamp feature creation and a new hopper feature in the CATIA –Sheetmetal Design product, especially relevant for the F&A and electronics industries.

In the **CAA V5 - Component Application Architecture** category (promoting openness and extension through a component-based architecture and a community of independent software vendors):

- V5R14 signals the inclusion of Lattice Technology as a Gold member in the CAA V5 SCP (Software Community Program) to provide a suite of next-generation

technical publication applications enhanced with a comprehensive 3D XML (Extensible Markup Language) open format. 3D XML for PLM is designed to enable users to create and share live 3D data quickly and easily in a lightweight XML-based format.
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- V5R14 enables CAA partners to integrate expert applications and deliver unique extended PLM solutions. CATIA V5R14 further transforms traditional CAE into integrated PLM simulation by enabling partners to manage their Finite Element Analysis models within the ENOVIA Engineering Hub.
    - Moreover, nonlinear analysis simulation technologies provided by market leaders, including ABAQUS, MSC and Samtech, expand the CATIA V5 Simulation solution.
    - Since V5R13, 34 additional partners' V5 applications have been launched, extending the process coverage of V5 solutions with highly specialized applications.

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