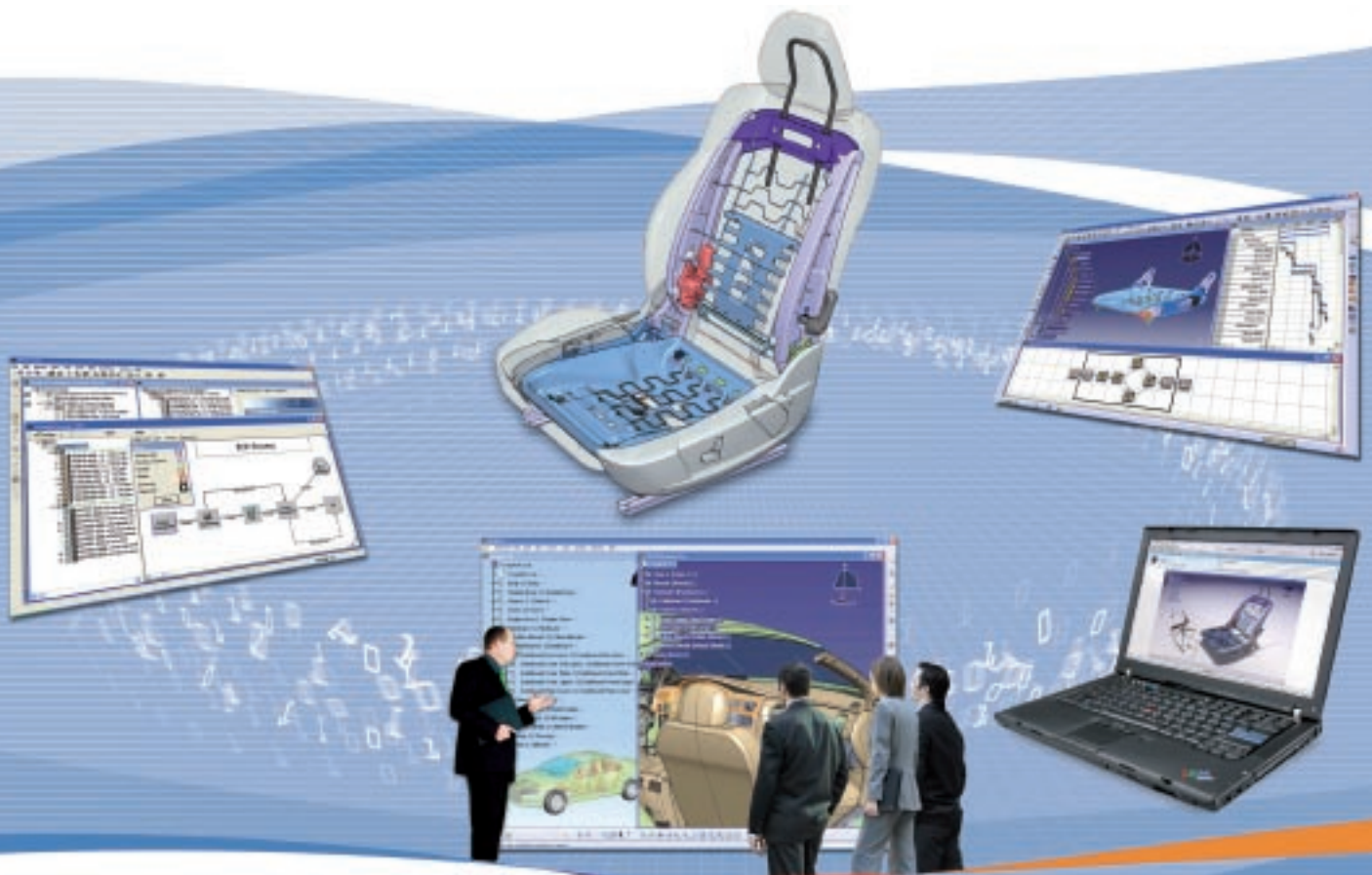


PLM Overview and what's new V5R17

Collaborative innovation from concept through manufacturing



PLM Version 5 Release 17 overview

PLM is a strategic business approach that applies collaborative business solutions to the creation, management, distribution, and use of product definition across the extended enterprise to enable an enterprise to effectively and efficiently innovate and manage its products and related services throughout the entire business lifecycle, from conception through recycling or disposal.

To achieve this, PLM helps companies realise many of the benefits of innovation:

- *Innovation permits a company to drive profitable growth in new ways, from new sources and customers*
- *It opens doors in emerging markets*
- *It lets large companies move more quickly and lets smaller companies compete on a global scale*
- *It lets an organisation differentiate itself and move up the value chain.*

Turning innovative ideas into market-leading products requires flexible business processes supported by integrated PLM solutions, all built on a strong technology foundation. PLM solutions advance the pursuit of innovation by integrating business environments with cutting-edge tools and synchronised processes. Both internally, and throughout your value chain, PLM solutions serve to enable innovation by bringing people and processes together and providing them with the resources they need to create – the keys to innovation.

IBM PLM is supported by a portfolio of interrelated software products developed by Dassault Systèmes and marketed through key brands. These products share product information with one another and with the outside world, offering groundbreaking capabilities for designing, manufacturing, maintaining, and servicing products.

The brands are:

- *CATIA offers virtual product definition to achieve product excellence*
- *ENOVIA provides collaborative Product Lifecycle Management with*
 - *ENOVIA VPLM – 3D collaborative virtual product lifecycle management of highly complex products in medium and large enterprises*
 - *ENOVIA SmarTeam – robust, out-of-the-box collaborative product data management.*

Manufacturing companies can gain many business benefits from Dassault Systèmes applications, including:

- *Richer design creativity*
- *Faster time to market*
- *Improved product quality*
- *Higher ROI.*

PLM Version 5 Release 17 allows you to:

- *Collaborate across the value chain and work as one with your customers and business partners to develop industry-leading products*
- *Optimise the end-to-end product development process to reach the market at the ideal time with products that customers demand*
- *Manage the relationships between products and their manufacturing processes and resources – helping you master product development complexity and increase understanding*
- *Capture, share and reuse your company-specific know-how to improve decision-making, optimise product designs, achieve regulatory compliance, and maximise product standardisation and quality*
- *Utilise the openness of PLM Solutions to leverage your existing investments and to extract and share information across your extended enterprise.*

CATIA V5R17

CATIA V5 is the leading solution for product excellence. It addresses all manufacturing organisations, from OEMs, through their supply chains, to small, independent producers. The range of CATIA V5 capabilities allows application in a wide variety of industries, such as aerospace, automotive, industrial machinery, electrical, electronics, shipbuilding, plant design, and consumer goods, including design for such diverse products as jewellery and clothing.

CATIA V5 is the only solution capable of addressing the complete product development process, from product concept specification through product-in-service, in a fully integrated and associative manner. Based on an open, scalable architecture, it facilitates true collaborative engineering across the multidisciplinary extended enterprise, including style and form design, mechanical design and equipment and systems engineering, managing digital mock-ups, machining, analysis and simulation. By enabling enterprises to reuse product design knowledge and accelerate development cycles, CATIA V5 helps companies speed-up their responses to market needs.

In conjunction with ENOVIA VPLM and ENOVIA SmarTeam for lifecycle management and decision support and DELMIA for manufacturing engineering, CATIA V5 is a key component of collaborative PLM. Much beyond pure CAD software packages, which provide geometry modelling features for design-centric companies, CATIA V5 delivers the keys to PLM for process-centric companies:

- **Product to market** – *CATIA is about product excellence. From the earliest product concept to production tooling, its concurrent engineering and design-in-context capabilities create value by enabling companies to create products and bring them to the market*

At a glance

CATIA V5R17 enhances 71 products to:

- *Extend end-to-end industry process coverage through major enhancements in 3D harness flattening and CATIA Machining NC programming and simulation efficiency*
- *Rapidly explore design ideas with new core styling enhancements*
- *Dramatically improve design productivity with breakthrough auto-filleting*
- *Improve the ability to work concurrently across the extended enterprise through enhanced ease-of-use in the Virtual Product Manager (VPM) Navigator and SmartTeam Reconciliator*
- *Maximise collaboration by exploiting 3D XML to share information beyond the design office.*

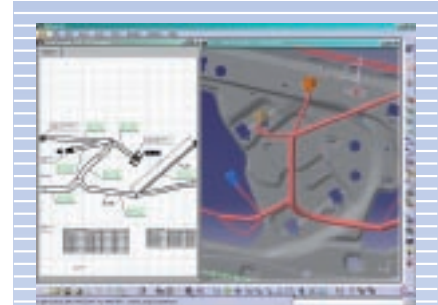
- **Time to market** – *The unequalled process coverage of CATIA, combined with the native associativity among all of its applications, gives CATIA customers the means to shorten the time to market*
- **Right to market** – *CATIA's integrated analysis, simulation, synthesis and optimisation applications provide product engineering validation at each design step to ensure product quality and market acceptance*
- **Lead the market** – *CATIA's advanced capabilities for collaborative engineering, knowledge capture, and re-use boost innovation and help customers to lead the market.*

The three CATIA V5 platforms (P1, P2 and P3) make it the most scalable solution for product creation. CATIA V5 P1 users benefit from PLM productivity in an affordable way with the security of potential growth. They can conduct associative product engineering based on CATIA V5 product design-in-context, product knowledge reuse, end-to-end associativity, product validation and collaborative change management capabilities.

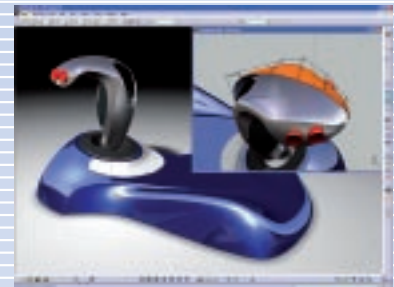
CATIA V5 P2 users can optimise their PLM processes through knowledge integration, process accelerators, and customised tools. They can drive generative product engineering based on the largest application portfolio. They can perform 'design-to-target', extensively capture and re-use knowledge, and stimulate collaborative innovation.

CATIA V5 P3 users access the highest productivity for specific advanced processes with focused solutions. They can lead expert engineering and advanced innovation, relying on unique and very specialised applications that integrate product and process expertise.

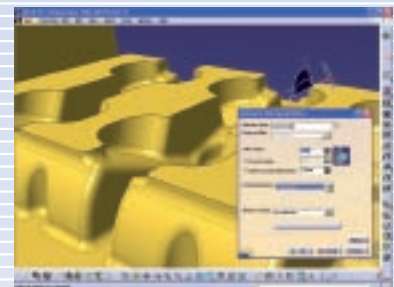
The CATIA V5 world is fully scalable because the P1, P2 and P3 platforms operate on the same data model, methodology and management schemes. By enabling users to install P2 applications on top of P1 seats and by standardising graphical user interfaces across platforms, P1 users can immediately do collaborative design within their extended enterprise with P2 users and later grow with P2 and P3 platforms as their business grows.



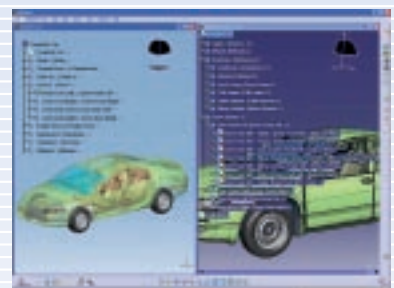
Extend end-to-end process in 3D harness flattening



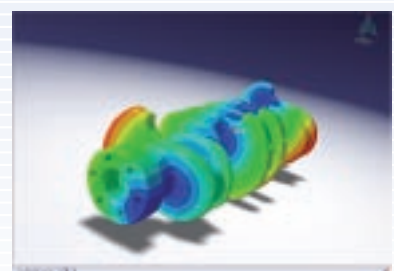
Rapidly explore design ideas



Improve design with auto-filleting



Work across the extended enterprise



Share information beyond the design office

Integrated portfolio supports seamless industry processes

CATIA V5R17 strengthens the integration between 3D electrical harness design and documentation, further reducing design to manufacturing cycle time for the automotive and aerospace industries. This release further increases CATIA Machining NC programming and simulation efficiency to significantly reduce overall manufacturing process time.

High-performance design with knowledge capture and reuse encourages innovation

CATIA V5R17 further facilitates design innovation with core styling capabilities that enable designers to explore product ideas more rapidly while permitting last-minute styling modifications. CATIA V5R17 extends the 3D master approach by enabling fast and convenient display of product information, such as tolerances and annotations, in a familiar drawing layout within the 3D environment.

Breakthrough technologies speed time to market

CATIA V5R17 delivers a unique auto-filleting capability that enables automotive powertrain and chassis designers to reduce the time required to fillet complex parts from hours or days to minutes. This release also accelerates adoption of CATIA V5's breakthrough functional modelling for the automotive powertrain process.

Integrated Product Lifecycle Management maximises collaboration

The V5R17 VPM Navigator boosts the use of relational design by making it easier for designers to work concurrently on different part versions and to manage advanced product effectivity and configuration. The SmartTeam Reconciliator further facilitates interaction among companies and concurrent engineering across the supply chain through ergonomic enhancements, such as batch capabilities and advanced queries.

A richer 3D XML format now includes finite element analysis output to widen the scope for the use of this lightweight format and makes it easier to reuse and share 3D outside the design office.

Open and scalable architecture increases flexibility

Key PLM market players are adopting the V5 architecture. Additional partner V5 applications launched since CATIA V5R16 extend the process coverage of V5 solutions with highly specialised applications that cover many disciplines, such as sheetmetal design-to-manufacturing and digital mock-up (DMU).

Integrated portfolio supports seamless industry processes

CATIA V5R17 increases the value of the CATIA – Electrical Harness Flattening product for harness drawing production by enabling reuse of existing flattening harnesses. This enhances productivity for faster layout editing of flattening harnesses and improves harness drafting quality with automatically generated dress-up. The flattening process becomes more robust and completes the layout process more efficiently. The enhanced CATIA – Electrical Harness Design offering reduces design-to-manufacturing cycle time, especially for CATIA V5 automotive and aerospace electrical design customers.

V5R17 widens the scope of the end-to-end collaborative composites solution to reduce overall design to manufacturing time. An automatic mirrored part generation function enables the designer to create a fully-associative opposite part of a design, such as wing, with a single click, saving low added value design time. The robust composites analysis and simulation tools (core sampling, nonstructural ply management, fibre direction indication) are improved to manage more complex geometries and to easily help the designer to validate the design early in the process.

In addition, V5R17 offers an interactive way to easily migrate CATIA V4 models (materials, geometry, data structure) to CATIA V5 and enables the user to define zones where a splice or an overlap is not allowed, such as for structural reasons. The cut pieces will be automatically generated according to these specifications.

The release improves composites manufacturing export capabilities for nesting and cutting processes and offers a new automatic ply book generation capability. This associative document enables the manufacturing operator to easily and accurately locate the ply on the mold to avoid incorrect draping. The book includes all information required to perform the process, such as 2D geometries, ply manufacturing annotations, ply group, sequence and material names, and ply thickness.

In conjunction with DELMIA, CATIA V5R17 reinforces the entry-level end-to-end process for shipbuilding. It performs manufacturing preparation of heavy structure parts directly on top of 3D design data in a semi-automatic way.

Release 17 further increases CATIA machining programming and simulation efficiency to significantly reduce overall manufacturing process time. It offers three new operations to significantly boost NC programming and to reduce machining time. For hard material machining, V5R17 introduces a comprehensive operation for managing plunge milling. Developed with tool makers, it features a process-oriented tool path style and fully takes into account residual stock for a collision-free tool path.

In addition, V5R17 adds the capability to automatically detect full-diameter engagement situations and manages tool overload (reducing the feed rate, adding extra machining planes, adding trochoidal paths) to greatly improve machining time and cutting tool life. A new 4-axis sweeping operation machines parts with a sweeping tool path style and a tool axis driven by a 2D curve.

Finally, V5R17 provides the NC programmer with a complete operation to support the machining of tubes and other parts that present an obvious central axis/curve. This availability of this operation leads to major productivity gains in NC programming for such parts.

V5R17 improves the breakthrough realistic integrated machine simulation capability released in CATIA V5R16. Simultaneous, synchronised simulation of material removal and machine motion enables realistic simulation of the complete machining environment, including collision detection between machine parts and in-process stock. The simulation can use NC code generated inside or outside of CATIA V5. This capability enables a final virtual buy-off of the NC program. Additionally, the user can now analyse machined stock during integrated material simulation by accessing the *Analyse*, *Video Measure*, and *Remove Chunks* commands to validate the accuracy of the machined part.

V5R17 greatly improves CATIA core and cavity design, especially for the stamping die process. The CATIA – Core and Cavity Design product uses rough offset technology to offer a new ‘light surface’. The die designer can use this light surface in place of the original during the die design phase, providing major capacity and performance gains for ultra large designs. In addition, designers can rapidly and easily identify and modify the fillet radii of the stamping dies prior to milling, leading to significant cycle time reduction. The enhanced associativity between the parting line and the design contribute to improved productivity.

Finally, V5R17 enhances mold tooling design efficiency and intuitiveness and makes it easier for the tooling designer to classify tooling elements more explicitly in the specification tree.

In parallel, designers can more easily manage the component replacement process and its possible impacts. V5R17 delivers major productivity gains to sheetmetal designers for complex designs. This release greatly improves wall-on-edge design by enabling the user to define a wall-on-edge in the assembly context. In addition, the user can intuitively define most of the attributes of the wall-on-edge and the bend properties directly in 3D. Combined with the sketch-based wall definition, these enhancements significantly reduce design time. The ability to create several corner reliefs in a single operation contributes to the unmatched efficiency of CATIA V5 sheetmetal design.

V5R17 also greatly simplifies the complex sheetmetal part prototyping and strip layout processes with the ability to locally fold or unfold bends with stamping features, making the design fully compliant with manufacturing processes.

V5R17 extends the reach of CATIA aerospace sheetmetal design by enabling the process to handle more complex designs. Sheetmetal designers can select a ruled surface for the Web and can design more complex joggles. In addition, V5R17 automates design validation and compliance with company standards, thanks to knowledge rules or checks based on characteristics curves or joggle parameters based on design tables.

CATIA V5R17 delivers high-end surface quality with the CATIA V5 reverse engineering portfolio. Dedicated to surface reconstruction, the new Deviation Analysis command lets the designer control the accuracy of generated surfaces. With advanced options, it performs distance analysis of a shape according to reference elements.

CATIA V5R17 ensures the 'manufacturability' of non-ruled surface shapes. This release embeds a new breakthrough technology to support complex non-ruled surface flattening operations, enabling accurate manufacturing preparation of any designed shape, from rough fabrics in the textile industry to raw materials in aerospace.

High-performance design with knowledge capture and reuse encourages innovation

CATIA V5R17 further facilitates design innovation with core styling capabilities that enable designers to explore product ideas more rapidly while permitting last-minute styling modifications.

- *There is no limit to complex styled surface creation, including shapes with sharp edges, thanks to unmatched offset technology*
- *Powerful symmetry technology helps to achieve major styling productivity while conserving G2 continuity*
- *Linking subdivision elements enables the user to perform accurate global deformation on the components of several models in a single operation*
- *Integrating Generative Shape Design advanced operators optimises the styling-to-design workflow.*

CATIA V5R17 extends the unique 2D/3D associative approach for conceptual design and extends the 3D master approach by enabling fast and convenient display of product information, such as tolerances and annotations, in a familiar drawing layout within the 3D environment. It boosts conceptual design within the 3D environment by enabling designers to easily create in-context 2D sketches from the automatic detection of existing 3D geometry displayed in the view background.

Efficient, comprehensive, and standards-compliant CATIA V5 drafting capabilities always guarantee high quality when realising drawing layout and dress-up, whether immersed in 3D or in a separate drawing document. It is continuously enhanced to cover specific needs, such as new support for customised symbols, strokes and open type fonts.

CATIA V5R17 further promotes 3D as the master representation for part and product definition. Designers can define and manage standards-compliant tolerance specifications and annotations linked to the 3D geometry so that they are directly reusable for manufacturing planners and can be shared throughout the enterprise.

Designers can easily present and share 3D tolerancing and annotation in a familiar drawing layout embedded in the 3D.

V5R17 enables the rapid creation of associative views from Functional Tolerancing and Annotation views or captures. Users can benefit from a more productive 3D annotation definition and layout process by realising specific operations in a single step, such as directly managing the view ratio property for 3D annotation. It also provides a new mode that allows assembly annotations to be created inside a dedicated CATPart document.

Breakthrough technologies speed time to market

CATIA V5R17 brings new cutting edge solutions to speed time to market. It delivers a unique capability in the marketplace for creating cast and forged fillets in a single operation instead of through repetitive, step-by-step manual operations. Only CATIA V5 auto-filleting enables automotive powertrain and chassis designers to reduce the time for filleting complex parts for manufacturing from hours or days to minutes.

This release contributes to the enhancement of CATIA powertrain solutions with a suite of unique software. Mechanical design applications, especially functional modelling, with its process-specific behaviours encapsulated in features, allow designers to develop parts with a higher level of productivity and flexibility. CATIA V5 considerably reduces the costly and time-consuming creation and modification of the design.

In the context of hybrid shape creation with components coming from heterogeneous environments, such as in the body design process, CATIA V5R17 offers a powerful geometrical visualisation option that enables engineers to perform accurate analysis of surface connections.

Integrated PLM maximises collaboration

CATIA V5R17, with the ENOVIA VPM Navigator, boosts relational design by making it easier for designers to work concurrently on different part versions and to manage advance product effectivity and configuration. Designers can easily develop their own study, relying on approved version of parts made by peers, when 'in-work' versions exist concurrently.

V5R17 enables designers to synchronise the links of their designs to other parts and to any versions of these parts. Designers can explore more cases for better understanding and can better anticipate changes, leading to faster time to manufacturing for more innovative products.

CATIA V5R17 broadens the scope of using the VPM Navigator for configuration management, with enhanced capabilities for the designer to filter and analyse configured products. Filters using a combination of date, range, milestones, or specifications can be defined, saved and modified. In addition, modification filters can be applied on top of these configuration filters.

CATIA V5R17 strengthens navigation and enhances user interface customisation to search, understand, and evaluate product and change impacts, improving ease of use and the ability to interpret relationships and changes. It provides a new software openness to make it easy to define the display names of ENOVIA VPLM V5 documents for all generic CATIA V5 menus and windows as well as customised icons for ENOVIA entities displayed in the VPM Navigator tree. In the impact graph, naming of nodes can now be managed through boxes with multiple lines for better layout and enhanced visibility.

The SmartTeam Reconciliator further facilitates interaction among companies and concurrent engineering across the supply chain through ergonomic enhancements, such as batch capabilities and advanced queries.

This release supports efficient collaboration with a richer 3D XML format throughout the product development cycle. Display of finite element analysis (FEA) output facilitates reuse and sharing 3D beyond the design office. In V5R17, 3D XML embeds in its format the FEA analysis output. This enables the analysis project manager or engineering specialist to benefit from this valuable information and to make the right product development decision without having an FEA seat.

More realistic viewing of 3D XML products makes possible efficient communication and marketing for the final product, thanks to rendering material support. Automation support, also new in this release, enables easy integration of the 3D XML player in custom applications, such as Web applications. It helps to optimise control over the 3D XML player for such functions as cross-highlight management and integrated multi-viewer representation.

Open and scalable architecture increases flexibility

Major new deliverables in CATIA V5R17 demonstrate the richness of the V5 PLM portfolio. New CAA V5 partners, and the addition of products from existing partners, continue to demonstrate the richness of the PLM portfolio:

- *IGE+XAO Group for full electrical PLM scenarios*
- *ESI Group's fibre simulation for composites, with CAA V5-based PAM-QUIKFORM*
- *A cost optimiser from Forming Technologies, Inc. for sheetmetal processes*
- *New partner Kineo CAM for improved technology for automatic motion and path planning on the V5 platform on top of DMU Fitting.*

In addition to Kineo, Theorem joins the CAA V5 community to deliver native V5 integration of external data (from ProE, UGS, Ideas) within a V5 session. Theorem integration leverages dedicated CAA V5 APIs and infrastructure to improve data quality and consistency.

CATIA V5R17 delivers a secured and robust way to integrate data management discipline with CATIA V5, thanks to CATIA-PDM Gateway. The gateway guarantees CATIA V5 behaviour and data in a product data management context, thanks to thorough checking mechanisms. Its open development interfaces ensure high-quality integration of all types of product data management. In V5R17, further improvements put the gateway at the interactive integration level.

Check-in and check-out status can be applied and visualised in the CATIA tree structure. Design rules checking, secures the data before saving it. The PDM Gateway also provides a way to actually display the links among the CATIA documents.

ENOVIA VPLM V5R17

ENOVIA VPLM addresses the management and exploitation of intellectual property accumulated during the complete product development process, from product specification and definition through manufacturing process and resource definition and simulation. The development of all products is based on observed industry best practices such as widespread use of 3D, interference management, relational design, early manufacturing involvement and target-based development. The best practices are based on Dassault Systèmes' V5 architecture and make extensive use of rich product, process and resource (PPR) information. There are four product lines available.

ENOVIA V5 VPM

ENOVIA V5 VPM helps enterprise users evaluate changes and improve decision making by leveraging real-time knowledge of the cause and effect relationships needed to optimise product quality, cost, and performance.

ENOVIA V5 VPM offers a comprehensive, streamlined approach to managing the creation and maturation of the virtual product definition from the highest level of product hierarchy (product lines) to the lowest level of feature usage (geometric substitutes and alternatives).

With ENOVIA V5 VPM, engineers are able to extend the power of CATIA V5 Knowledgeware and Relational Design with the assembly or entire portfolio in mind, eliminating part interference and increasing commonality across product lines and variants. Globally dispersed teams can engage in intense multidiscipline engineering collaboration 24/7, producing more designs in less time that are optimised for both manufacturability and market acceptance.

To increase the likelihood of market success, ENOVIA V5 VPM effectively allows development organisations to front load the design and validation of all possible product configurations and, if necessary, with-hold critical go-to-market decisions until late in the life cycle to deliver precisely the product the market expects and the margins the company requires.

At a glance

ENOVIA Virtual Product Lifecycle Management (VPLM) V5R17 delivers the following features and benefits:

- *Embeds advanced effectively and configuration management in a single immersive workspace, dramatically improving designer productivity*
- *Streamlines navigation and enhances GUI customisation to search, understand and evaluate product and change impacts, improving ease of use and the ability to interpret relationships and changes*
- *Deepens analysis and digital validation processes through more accurate and robust measurement and sectioning, and enhances the flexibility and reporting of the human builder*
- *Manages, optimises and standardises business processes, allowing the organisation to respond more rapidly to the demands of global collaboration and competition*
- *Provides additional collaboration and access through 3D XML data to leverage and extend the power of 3D across non-design activities.*

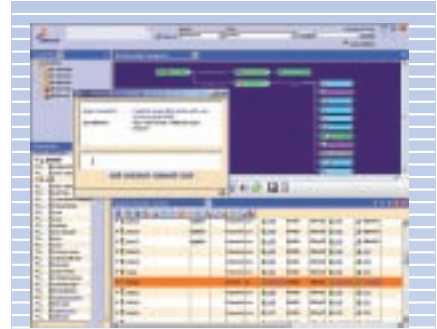
ENOVIA LCA

ENOVIA LCA helps global manufacturing organisations manage the complexity of product development processes across distributed value chains and the entire product life cycle – from concept to obsolescence.

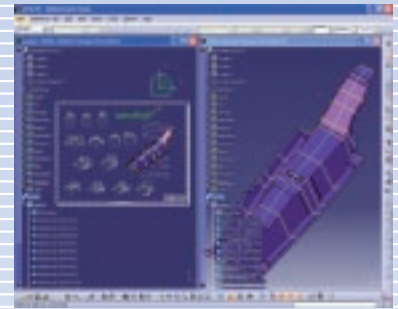
ENOVIA LCA delivers a unique set of integrated applications spanning engineering and manufacturing that supports the life-cycle management of the PPR definition in ENOVIA V5 VPM and DELMIA V5. The integrated development and validation of the virtual product and virtual factory helps manufacturing companies reduce design rework and costs, while significantly improving time-to-market.

Built upon flexible process-modelling middleware, that integrates data and processes across PLM, enterprise resource planning (ERP), legacy, and other critical enterprise systems, ENOVIA LCA supports unique and changing business requirements of global manufacturing organisations. Having a consolidated view that includes all these functional aspects is crucial to increasing business agility and optimising production schedules and development resources.

ENOVIA LCA helps development organisations meet shrinking market windows by placing the latest product and process information such as configurations, maturity, where-used, 3D representations, and so on in a collaborative, Web-based environment that is always open for business, enabling real-time decision making across global value-chains.



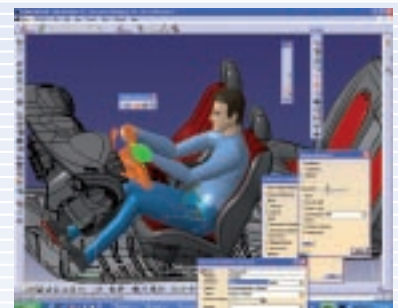
ENOVIA – Action Search



2D Layout Analysis with ENOVIA DMU



ENOVIA – DMU Navigator



ENOVIA – Occupant Packaging Study

ENOVIA DMU

ENOVIA DMU enables digital product simulation, analysis and validation. It improves product quality and accelerating decision making by providing real-time insight into real world product performance. ENOVIA DMU enables real-time visualisation and review of the 3D product as it evolves, streamlining collaborative review and decision-making. It allows design teams to digitally build the product mock-up and its environment, and then analyse it to gain early insight into key factors determining design quality, product performance, and ultimate market success.

Using ENOVIA DMU testing and analysis tools, engineers can reduce and even eliminate the time and cost invested in *build it, break it* scenarios requiring multiple physical prototypes. More importantly, it allows them to spend more time innovating. Seamlessly integrated within Dassault Systèmes PLM solutions and designed


for multi-CAD environments, ENOVIA DMU facilitates digital mock-up validation and simulation from detailed design to maintenance. It provides extensive support for engineering processes such as interference detection and analysis, hybrid mock-up review, packaging and product synthesis, human ergonomics analysis, engineering data visualisation and technical publication.

When ENOVIA DMU is used in conjunction with ENOVIA V5 VPM, the benefits and savings increase exponentially. It enables global organisations – from marketing to design to maintenance – to collaborate in real time using configurable 3D mock-ups, and to rapidly validate product variants during testing of design alternatives. With ENOVIA DMU, development teams can transform product information into business intelligence, improving decision making and product quality across the enterprise value chain.

ENOVIA 3d com

Leveraging both Web and 3D technologies, 3d com products are the ideal solution for anyone within a company who needs to have a single point of access federating all extended enterprise information to facilitate decision making, collaboration and access to the product life cycle pipeline. They target an extended enterprise-wide deployment level including those who are nonCAx users.

Alongside CATIA and DELMIA, ENOVIA is delivering an integrated and open PLM vision that is the cornerstone of product development for innovators throughout the world. ENOVIA customers are comprised of global leaders across an array of industry segments including aerospace, automotive, heavy machinery, industrial products, shipbuilding and petroleum, plant and chemical.



ENOVIA V5 VPM increases the flexibility and power of the collaborative PLM engineering desktop by delivering powerful new capabilities that allow engineers additional flexibility to define configuration filters on a combination of date, range, milestones or specifications. Engineers can rapidly build design context and display configuration information on parts to provide efficient design optimisation processes.

ENOVIA V5 VPM provides robust customisation options that maximise environment flexibility and ease of use to accelerate the ability of users to effectively leverage and optimise relational design processes.

ENOVIA Digital Mock-up (DMU) delivers enriched interference detection and analysis features to its real time Digital Mock-up and Decision Support capabilities. This ensures the spatial integrity of the mock-up and provides users with more accurate analysis on specific product configurations. Enhancements to ENOVIA DMU deliver a more natural and fluid human manikin to product and environment simulations to enable more efficient and more accurate studies.

ENOVIA LifeCycle Applications (LCA) provides more flexible business process support through real-time process optimisation via ad hoc review and dynamic participants with E-PM based processes. Additional Web services provided by ENOVIA LCA and ENOVIA V5 VPM enable deeper, process-based integrations, providing openness and scalability to optimise business agility. Additional collaboration and access through 3D XML data leverages and extends the power of 3D across non-design activities and helps customers extend their global 3D collaborative environment.

- *V5R17 provides robust product structure modification within ENOVIA V5 VPM allowing engineers to select and synchronise desired part versions to explore more design alternatives and achieve a fuller understanding of the impact of each design modification.*
 - *In V5R17, customers streamline with ENOVIA V5 VPM their product development process leveraging improved ergonomics and through environment customisations that accelerate user understanding, simplify ease of use, facilitate designer efficiency and consistently leverage and optimise relational design processes.*
 - *V5R17 utilises more precise minimum distance calculations to optimise interference detection and analysis within the ENOVIA DMU real time Digital Mockup and Decision Support environment to ensure accurate evaluation of shape and surface interaction.*
 - *With V5R17, users throughout the enterprise can open and use 2D layout sheets in DMU efficiently linking part design and manufacturing to streamline documentation activities and enhance decision making processes.*
 - *Enhancements to the DMU Human Builder product in V5R17 provides more natural and fluid manikin motion, automatically optimising posture while making it easier to use and control the manikin, increasing the accuracy of product and environment simulations and dramatically reducing the time it takes to build and run each study.*
 - *V5R17 provides more flexible PPR Lifecycle Business Process support through real-time process optimisation via ad hoc review and dynamic participants with ENOVIA E-PM based processes. Improvements have been added to provide more detailed server side error handling and additional application level feedback with user notification and error logs.*
- Navigation and accessibility for E-PM objects have been enhanced through the elimination of intermediate parts, navigation improvements to attach existing objects (or create new objects) which need to be attached to processes and activities, as well as sub process navigation using the properties sheet and the Relationship Navigator.*
- *New tools have been added to support migration from ENOVIA LCA Workflow process templates to E-PM templates along with additional workflow interoperability to support ENOVIA V4 VPM objects in E-PM. This includes interactively attaching VPM V4 parts, documents, or models to E-PM processes and activities. Users are also able to create VPM V4 Actions automatically from E-PM. And E-PM supports the creation of Child VPM V4 Actions. Additionally, the Relationship Navigator has been enhanced to support associated VPM V4 Objects.*

- *Enhancements supporting ad hoc reviews and dynamic approval activities as well as improvements to the dynamic process behaviours. This coupled with the updated E-PM graphical monitoring capabilities and more granular process and activity level reporting provides the user greater flexibility.*

ENOVIA LCA R17 provides multiple user interface enhancements to provide greater ease of use.

The Relationship Navigator now allows users to control zoom properties, save expansions and restore them in later sessions, and extends the capabilities of relationship knowledge provided to the user. Likewise, additional search capabilities are provided within the application allowing users to perform more detailed searches based on an object relationship. Functionality has been added to give users greater ease to attach and create multiple documents or copy and paste affected objects.

*The ENOVIA Web Viewer has been improved to allow all parts to be sent and viewed while maintaining correct positioning. Additionally, significant performance enhancements have been added which allow all *.cgr files to be sent to the viewer and allows users to send the configured expansion of assemblies.*

- *Additional Web services provided by LCA and V5 VPM enable deeper, process-based integrations providing the openness and scalability to optimise business agility. These include seven new services providing specific focus to deliver Change Management support and seven new services to better support Configuration and Modification authoring capabilities.*

- *Extensions to 3D XML allow users to open and save directional light sources of photo rendered objects to share key knowledge derived in appearance studies. New tools to generate 3D XML files in batch mode simplify the availability and automate the communication of CATProduct data.*



ENOVIA SmarTeam in V5R17

ENOVIA SmarTeam V5R17 is the leading solution for robust, out-of-the-box collaborative Product Data Management. It enables small to medium-sized businesses (SMBs), including supply chains, and engineering departments of larger organisations, to optimally integrate, manage and reuse their product knowledge and processes. ENOVIA SmarTeam helps organisations meet global challenges by accelerating time to market, reducing costs, promoting quality and standards compliance, and streamlining responsiveness to

market demands. ENOVIA SmarTeam customers enjoy immediate return on investment (ROI) through flexible, rapidly deployed, easily tailored solutions that provide 'a single version of the truth' for all product information, including multi-CAD, and drive Bills of Materials-centric processes across design, engineering, enterprise and value chain partners.

The V5R17 capabilities below are grouped by Dassault Systèmes and IBM's ENOVIA SmarTeam fundamentals, bringing value to the customer:

Flexible product structure management accelerates engineering processes

- *ENOVIA SmarTeam V5R17 adds depth and breakthrough flexibility to the product structure, accelerating the engineering process and PLM solution value through earliest possible access to design data. ENOVIA SmarTeam's new item-driven approach to managing data and processes, with business logic integrated, controls product maturity with unparalleled flexibility. Seamless 'design-to-configure' automates Bills of Materials generation, driving best-practice concurrent engineering across disciplines as early as possible in the design phase. Advanced filtering, multiple views and other work enablers further empower the user experience.*

At a glance

ENOVIA SmarTeam V5R17 allows you to:

- *Drive rapid PLM and ROI with scalable out-of-the-box Express packages*
- *Accelerate engineering processes through breakthrough product structure flexibility*
- *Optimise supplier interaction through robust CATIA V5 integration and reconciliation, and enhanced multi-CAD collaboration*
- *Extend remote collaboration facilitated by best-in-class usability*
- *Enrich knowledge sharing with digital mockup, viewing, 3D XML.*

Best-in-class CATIA V5 collaboration packages accelerate design

- ENOVIA SmarTeam V5R17 delivers 'Design Express for CATIA', an out-of-the-box package that rapidly deploys design collaboration, launching an organisation's first step toward fuller PLM and generating fast return on investment. V5R17 extends robustness in ENOVIA SmarTeam's best-in-class CATIA V5 collaboration environment, with new efficiencies in managing lifecycle operations and revision replacement. V5R17 enriches usability with redlining, measurement and other visualisation enhancements, promoting concurrent engineering.

Easy access boosts collaboration across the enterprise

- ENOVIA SmarTeam V5R17 simplifies collaborative process with a newly designed Web user interface that extends user productivity and ease of use. The visual makeover includes user cockpits, easy browsing and profile card viewing, deepening the remote experience
- V5R17 fosters enterprise collaboration with enriched, seamless V5 digital mockup and 3D XML support, and extended protection of knowledge assets.

Robust multi-CAD management and V5 exchange fortify supplier relationships

- ENOVIA SmarTeam V5R17 delivers latest CAD integrations and viewing, promoting collaborative engineering in a robust multi-CAD setting
- ENOVIA SmarTeam's powerful Reconciliator tool promotes concurrent engineering between companies through enhanced reconciliation of exchanged V5 engineering data. In V5R17, the tool is further industrialised with reporting, advanced queries, batch requests and tighter VPLM synchronisation, enhancing OEM-supplier scenarios.

Openness and flexibility extends solution integration value

- ENOVIA SmarTeam V5R17 extends value to customers and partners by ensuring the most up-to-date and certified technology infrastructure in a native Microsoft® environment, delivering a robust platform for integrated solutions. Web environment openness facilitates flexible tailoring of solutions to organisational needs. New physical packaging delivers PLM capabilities by business need (engineering, Web collaboration, enterprise...), consolidating installation.



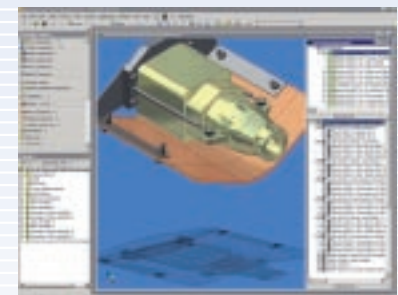
SMARTEAM Design Express for CATIA
Out-of-the-box package for collaborative CATIA design with built-in upgrade path to full PLM functionality



SMARTEAM – BOM
ENOVIA SmarTeam V5R17 leverages powerful BOM and workflow management to automate and drive enhanced engineering processes



SMARTEAM – Web Editor (WED)
Newly designed Web user interface extends productivity and visibility for enterprise users



Multi-CAD management
Certified multi-CAD environment manages and integrates the latest multi-CAD data, robustly supporting diverse collaborative engineering scenarios

Flexible product structure management accelerates engineering processes

ENOVIA SmarTeam V5R17 adds new depth and breakthrough flexibility to the product structure, accelerating the engineering process and PLM solution value through earliest possible access to design data.

Logic-driven item lifecycle management adds flexible control over the product structure, optimising management of a product's maturity and extending solution scope. V5R17 seamlessly integrates all business logic and lifecycle behaviours at the item level, providing a best practice for item lifecycle management and enabling item management as the backbone of an organisation's PLM solution. In V5R17, ENOVIA SmarTeam gives full control over an item's engineering state, applying go/no-go rules and allowing non-sequential routing, enabling a swift engineering response to ensure product quality. It integrates, configures and propagates an item's full business logic across the lifecycle. The robust capability supports diverse engineering configuration management and concurrent engineering scenarios.

Seamless 'design-to-configure' Bill of Materials generation and compare accelerates engineering processes by giving access to engineering data early in the design phase. By automating the creation of Bills of Materials, such as 'design-to-order' and 'build-to-order', V5R17 standardises and drives best-practice concurrent engineering, saving time and reducing errors. The new BOM capability seamlessly from ENOVIA SmarTeam's multi-CAD solutions. Accelerated E-BOM access enhances bidding, cost evaluation, and other business roles across the production process.

Advanced structure filtering according to lifecycle revision rules optimises visibility into the product structure. V5R17 adds value to engineering configuration management with a new layer of filtering on top of date and unit effectivity filtering. Users can monitor, filter and view the product structure in expanded depth, across lifecycle states and maturity phases (for example, Latest Revision, Active, Production), for enhanced knowledge sharing and collaboration.

Enhanced platform robustness, with multiple views, enriched copying/editing and greater usability, promotes BOM collaboration across disciplines. Multiple views management provides an out-of-the-box environment for managing cross-structural data flow throughout the product lifecycle. Generic structure copy and BOM compare promote the reuse and management of complex product structures, with configuration management rules applied. The embedded and intuitive BOM editor provides rich capabilities, including in-cell and multi-selection editing, highlighting and history tracking, enhancing productivity.

Best-in-class CATIA V5 collaboration packages accelerate design

V5R17 promotes rapid, scalable and successful PLM adoption and immediate return on investment (ROI) for small to mid-sized businesses through out-of-the-box Express packages that provide quickly deployed, optimised collaborative design, collaborative engineering, and data management. The packages serve users of CATIA and other CAD applications, and engineering teams across industries.

V5R17 delivers robust, out-of-the-box CATIA design collaboration through 'Design Express for CATIA', a rapidly deployed package that serves as an organisation's first step toward full PLM; includes a preconfigured, industrialised data model, best-in-class CATIA integration, an optimised structure, and a scalable, built-in, PLM upgrade path. SmarTeam Design Express packages deliver a structured repository, document history, full revision/version control, advanced search and query, controlled document sharing, embedded viewing and standard design use. They also provide a proven best practice for scenario implementation, with optimised CAD settings, and support for catalogues, business methods, title block and BOM management.

V5R17 extends robustness and usability in ENOVIA SmarTeam's best-in-class CATIA V5 collaboration environment, with new efficiencies in managing lifecycle operations and revision replacement, and expanded visualisation. Streamlined CATIA file transfer between vault and work area dramatically improves response time

on multi-site database requests (up to 50 percent). A new mechanism for activating lifecycle operations from CATIA or ENOVIA SmarTeam keeps data integrity intact, helping users work more efficiently and promoting seamless design processes. Revision management now unloads outdated CATPart documents during file modification and propagates the change to the entire CATIA structure, enhancing concurrent engineering.

V5 visualisation enhancements bring redlining, measurement and 2D, 3D and multiple page viewing to the CATIA collaboration environment, promoting concurrent engineering. ENOVIA SmarTeam provides support for simultaneous CATIA V5 versions (V5R17, V5R16, V5R15) optimising business opportunities with OEMs and value chain partners.

Easy access boosts collaboration across the enterprise

V5R17 fosters collaboration across engineering and the enterprise with enhanced remote usability and seamless digital mock-up, and expanded project security.

ENOVIA SmarTeam V5R17 simplifies collaborative process with a newly designed Web user interface that extends user productivity and ease of use. The visual makeover includes user cockpits, easy browsing and profile card viewing, providing an intuitive, friendly remote environment that streamlines work processes. ENOVIA SmarTeam's seamless 3D XML capability intuitively represents SmarTeam-managed data, for a further enhanced user experience.

ENOVIA SmarTeam's seamless plug-in to V5 Digital Mock-up (DMU) delivers enhanced DMU functionality in a multi-CAD environment, enabling SMBs to enjoy the benefits of design review. Within ENOVIA SmarTeam, engineering users open the DMU window, retrieve the necessary CATIA V5 product data, perform mockup, analysis and validation tasks, and capture, store, manage and access the results, improving decision-making.

R17 enables the securing of data by project, extending collaboration while protecting knowledge assets. Security definitions (user authorisations) associated with the project are applied automatically to the data. Engineers can leverage this capability to ensure exposure to relevant parties only. The enhancement adheres to recommended models for enterprise-level security.

Robust multi-CAD management and V5 reconciliation fortify supplier relationships

In R17, ENOVIA SmarTeam extends collaboration in a robust multi-CAD environment with latest certifications, including for viewing, across the leading CADs. ENOVIA SmarTeam provides SolidWorks users with robust PLM solution scenarios through advanced integration usability and performance, and support for latest SolidWorks capabilities, including check-out on the fly and save-as-type.

ENOVIA SmarTeam's powerful Reconciliator tool for rapidly synchronising exchanged CATIA engineering data is further industrialised with improved ergonomics, reporting, advanced queries, batch capabilities. Tighter synchronisation with ENOVIA VPLM further facilitates interaction between companies, including OEMs and suppliers, and across suppliers:

- *Generation of printed reconciliation reports enhances decision-making*
- *Advanced, predefined, rules-based queries reduce reconciliation time*
- *Native reconciliation of ENOVIA VPLM V5 (or STEP) documents, including CATProduct documents, speeds collaboration.*

Openness and flexibility extends solution integration value

R17 extends solution value to customers and partners by ensuring the most up-to-date and certified technology infrastructure in an advanced and native Microsoft environment, delivering a robust platform for integrated solutions. Web environment openness facilitates flexible tailoring of solutions to organisational needs.

V5R17 provides latest certifications across ENOVIA SmarTeam infrastructure components, as well as Web clients, EAI middleware, LDAP and Web servers, and ongoing Microsoft® Windows® 64-bit support, delivering a robust technology platform for integrated PLM solutions. Certifications include: the latest Microsoft Servers; Microsoft Word 2003 SP1 or SP2 and Outlook 2003 SP1 or SP2; Lotus Notes 6.5 and 7 (e-mail); and Java® Runtime Environment and plug-in 1.5 (also called 5).

New physical packaging delivers PLM capabilities by business need (engineering, Web collaboration, enterprise...), consolidating and accelerating installation. ENOVIA SmarTeam provides key customer value by scaling from basic document management to full collaborative Product Data Management on the same platform, enabled by a highly flexible data model that is rapidly adapted to growing PLM scenarios.

WLS overview

CATIA V5, ENOVIA VPLM and ENOVIA SmarTeam Web-based Learning Solutions (WLS) make up an easy-to-use learning and support system. This system provides all the required information and training from one source for maximum assured productivity of the user community.

Extending the knowledge of CATIA, ENOVIA VPLM and ENOVIA SmarTeam with an everyday 'companion', provides a set of learning resources, known as 'skillets', which are carefully designed to acquire or enhance a given skill in a short time. These skillets provide an interactive experience that includes different learning components such as 'show me', 'do it', 'monitored practice' and 'quiz'. The variety of components makes skillets highly adaptive to the user's learning style and preferences.

Skillets are packaged as full courses but are equally accessible via the companion desktop individually.

Among them, the 'update' courses provided with each new release are an efficient way to keep the user community up-to-date with the new product capabilities, thereby insuring the most efficient usage of CATIA, ENOVIA VPLM and ENOVIA SmarTeam products.

The tracking mechanism and icon-based codification features of companion, allow the user to quickly select the most relevant component while maintaining a global view of learning resources available.

The companion can also be configured with several collaborative tools such as frequently asked questions (FAQs), forums and e-mail to the support desk or local tutor.

Combining Internet/intranet standards and client/server architecture on Windows and UNIX®, WLS is very easily deployed and administered within a company, and may also be easily installed as stand alone.

WLS is easily customisable according to a company's needs. As companies have their own specifications, the Companion Development Studio provides the capability to fully customise WLS products.



CAA RADE V5

CAA RADE V5 delivers an integrated set of tools and resources to support the development process from initial specification to final product packaging. For CATIA and ENOVIA VPLM, CAA RADE is positioned as next-generation middleware for implementing 3D PLM best practices and business processes through process-centric applications.

CAA RADE V5 stands alone as the only system addressing the customisation of these applications using a unified architecture. Unlike competitive products, which currently only address part of their respective portfolios for customisation, CAA RADE V5 covers the broad line of both CATIA and ENOVIA VPLM products.

CAA RADE V5 with its advanced development tools, significantly extends the capabilities natively included, to customise V5 products (for example, CATIA Virtual Basic Automation (VBA) (CATIA Automation API referencing CATIA Journaling, VBA, Virtual Basic Script (VB Script) and Java Script/HTML languages)). CAA RADE V5 takes advantage of the V5 native architecture for the highest level of openness within CATIA and ENOVIA VPLM, including both productivity and capability tools.

Product differentiators

Completeness: CAA RADE V5 allows the user to seamlessly integrate with both CATIA and ENOVIA VPLM products.

Unified V5 architecture: Rather than separately targeting CAD/CAM/CAE market or PDM/II market, CAA RADE V5 offers a unique environment to develop highly integrated programs across all. Component reusability helps improve code quality and reduce development time.

Scalability across different platforms: CAA RADE V5 tools provide a single build environment from which to generate run-time applications for both UNIX and Microsoft Windows. True cross-platform portability is assured.

Full process coverage for application development: CAA RADE V5 delivers a set of products that covers the broad range of tasks associated with a world-class development process.

At a glance

Component Application Architecture Rapid Application Development Environment (CAA RADE) V5R17 includes the following features and benefits:

- *Supports 64-bit V5 application for the Interactive Development Environment on Microsoft Windows platform*
- *Exposes platform and language independent ENOVIA Web Services APIs to enable service-oriented architecture (SOA) and support integration of ENOVIA VPLM with other Dassault Systèmes products and third-party enterprise applications*
- *Enables 64-bit compilation with Microsoft Visual Studio 2005 (VC 8.0) on Microsoft Windows platform*
- *Leverages ENOVIA VPLM customisation with IBM Rational Software Modeller (RSM) in place of Rational Rose*
- *Delivers unprecedented openness to facilitate PLM portfolio extension.*

Component Application Architecture Rapid Application Development Environment (CAA RADE) delivers:

- *Unprecedented openness*
– Access to more than 22,000 component-based APIs across the range of PLM solutions
- *Unequaled value – Integration of customer know-how and added value applications*
- *Enablement of third-party application development to expand PLM solutions*
- *Fast development of robust and durable applications with open-standard architecture*
- *Productivity-driven, standard-compliant toolkits to produce Microsoft Windows and UNIX V5 applications.*

For V5R17, Microsoft Visual Studio 2005 (VC 8.0) is a new prerequisite to the Interactive Development Environment on Microsoft Windows 64-bit platform. The RADE add-ins integration into Visual Studio 2005 provides the CAA developer an equivalent development environment on a 32-bit or 64-bit machine. Because of this integration, the developer on a 64-bit machine is directly immersed in the interactive environment offered by Microsoft Visual Studio 2005 and can avoid using CAA – Multi-Workspace Application Builder (MAB), CAA – Source Code Manager (SCM), and CAA – C++ Unit Test Manager (CUT) commands in the command line.

This release exposes platform and language-independent ENOVIA Web Services APIs to enable service-oriented architecture (SOA) and support integration of ENOVIA VPLM with other Dassault Systèmes products and third-party enterprise applications. These ENOVIA Web Services are published for the following products:

- *ENOVIA – EBOM Detailing and Configuration (PAS)*
- *ENOVIA – LCA Change Management (CGM).*

Also in this release, MAB provides Microsoft Visual Studio 2005 (VC 8.0) as a new prerequisite compiler on Microsoft Windows 64-bit platform for building 64-bit applications.

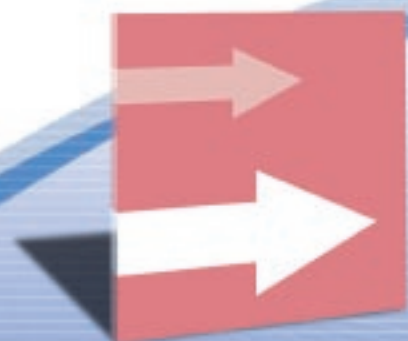
IBM Rational Software Modeller (RSM) V6 is a new prerequisite to the Data Model Customiser product of the Interactive Development Environment. It enables customisation of the ENOVIA datamodel.

This release delivers:

- *CAA – Multi-Workspace Application Builder (MAB) updates*
 - *Microsoft Platform SDK compiler support withdrawn on Microsoft Windows 64-bit platform*
 - *Microsoft Visual Studio 2005 (VC 8.0) specified as a prerequisite compiler on Microsoft Windows 64-bit platform to build 64-bit applications*
 - *Java Development Kit 1.3 compiler support withdrawn on AIX, HP-UX, SGI IRIX, Sun Solaris, and Windows 32-bit platforms*
 - *Java Development Kit 1.5 compiler specified as a prerequisite compiler on AIX, HP-UX, Sun Solaris, and Windows 32-bit platforms*
 - *Java Development Kit 1.4 compiler specified as a prerequisite compiler on SGI IRIX*
- *CAA – C++ Interactive Dashboard (CID) update*
 - *Microsoft Visual Studio 2005 (VC 8.0) is a prerequisite Interactive Development Environment on Microsoft Windows 64-bit platform. The RADE add-ins integration into Visual Studio 2005 allows the CAA developer to have an equivalent development environment on a 32-bit or 64-bit machine. Because of this integration, the developer on a 64-bit machine is directly immersed in the interactive environment offered by Microsoft Visual Studio 2005 and can avoid use of MAB, SCM, and CUT commands on the command line. The RADE add-ins are:*
 - *CAA Enovia Addin*
 - *CAA V5 Code Generator Addin*
 - *CAA V5 FeatureBuilder Addin*
 - *CAAV5 Mkmk Addin*
 - *CAA V5 Source Code Manager Addin.*
- *mkodt edition/creation wizards is enhanced to deliver new settings in the existing wizard to the developer for a better match between the mkodt command and the associated wizard*
- *CAA – Web Application Composer (WAC) update: Support for IBM WebSphere Application Server V6.0.2*
- *CAA – Data Model Customiser Product (DMC)*
 - *IBM Rational Rose 2003 IDE support is withdrawn*
 - *IBM Rational Software Modeller (RSM) V6 is a prerequisite to Interactive Development Environment.*

It enables the following operation on ENOVIA VPLM customisation:

- *Create/open workspace in RSM product*
 - *Define prerequisite in RSM*
 - *Create an ENOVIA VPLM Customisation (new metadata)*
 - *Create new class, new attribute, and new index*
 - *Generate metadata*
 - *Publish metadata in database*
 - *State Chart Builder capability is withdrawn*
 - *Feature builder capability is withdrawn*
 - *Support of update customise attribute during migration step is provided.*
- *New CATIA, ENOVIA VPLM, and DELMIA APIs*
 - *CATIA*
 - *FEM Surface*
 - *PX1*
 - *DELMIA*
 - *DPM Structure Lofting*
 - *Device Building*
 - *Device Task Definition*
 - *ENOVIA VPLM – VPM Navigator.*





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