COLLABORATIVE INNOVATION

OBJECTIVE

Collaborative Innovation provides engineering teams with a scalable, online environment for managing product design, multi-physics simulation and manufacturing process planning with maximum traceability and flexibility. The environment is scalable from small engineering companies to globally distributed enterprises and their supply chain(s).

OVERVIEW

Collaborative Innovation is based upon a common data management architecture for design/engineering-centric, manufacturing/production-centric and simulation-centric processes. Its online environment helps medium to large companies bring more innovative products to market faster. Importantly, it has migration and coexistence capabilities to leverage legacy data while pursuing new projects.

Collaborative Innovation's sophisticated technology enables design reuse through access to a part library and the exchange of information with partners. Users of **Collaborative Innovation** can work on predefined design tasks and perform design impact analysis to evaluate potential alternatives or changes. Capabilities can be further expanded with a wide range of optional licenses to work on configured products, manage and track design changes, perform complete digital validation processes and execute comprehensive interferences-analysis.

When used for **CATIA**® **3D**EXPERIENCE®, **Collaborative Innovation** is the only technology in the market that supports "data-driven design:"

- Designers can author and manage design directly online with the **3D**EXPERIENCE platform instead of locally on checked-out data that is potentially outdated.
- Designers confidently access the real-time virtual prototype from anywhere anytime, which helps improve their productivity and leverage global engineering talent to develop innovative products.
- Designers can pursue improved "concurrent engineering" by enabling teams to simultaneously design a product assembly, enabled by the unique capability of managing assemblies in the "database" and not in "files." This helps converge on the targeted design much faster reducing overall cycle time.

When **Collaborative Innovation** is expanded with **Configuration Management**, the following is possible when managing CATIA **3D**EXPERIENCE:

- Designers can define all product variants within a single configured product structure considering global market needs through its "design in a configured context" capability, which enables companies to achieve the simultaneous launch of products.
- Designers retrieve parts from impacted variants in real-time in a "max case" or "overloaded" design session to converge on the most optimum design significantly faster. This encourages design reuse enabling companies to offer more variants at lower costs.

Collaborative Innovation is not limited to managing **CATIA 3D**EXPERIENCE. It also manages content created with MCAD applications including CATIA® V5, SOLIDWORKS® V1, NX™, Creo, Pro/ENGINEER, AutoCAD, Solid Edge and Inventor as well as ECAD applications from Cadence® Allegro, Mentor Graphics and Zuken. Connectors for CATIA V5 and SolidWorks are included with **Collaborative Innovation** while other connectors are add-on licenses.

Regardless of the CAD tool used, the design information is available to all complimentary processes either directly or through synchronization with the engineering bill-of-material. As such, the latest design status and information is reviewable as part of processes such as requirements management, program management, sourcing, materials compliancy, and product quality.

HIGHLIGHTS

Key features and capabilities include:

CATIA, DELMIA, SIMULIA **3D**EXPERIENCE Data Management

Collaborative Innovation manages all authoring content created using **3D**EXPERIENCE CATIA, DELMIA®, SIMULIA® apps in one unique environment and one single database. It promotes collaboration across different teams and disciplines (design, manufacturing, simulation) using similar content management tools (versioning, maturity, lock / unlock, etc.). **Collaborative Innovation** automatically determines assembly components that are out-of-date, delivering the right context quickly for accurate and fast updates.

With **Collaborative Innovation**, users can navigate the entire product structure in 3D regardless of size. Users can filter the product structure based on diverse criteria to find the needed parts quickly. This includes attribute criteria and various visual 3D query methods such as proximity, bounding box, sphere, pick, and zone query to establish design context in seconds for products of any size and complexity. The used criteria for filtering can be saved for reuse. Owing to the common data model and data-driven architecture, users can identify dependencies inside one domain and between domains (CATIA, DELMIA and SIMULIA). They can navigate between design components and related items such as other designs, simulations, drawings, manufacturing processes, functional and logical views, etc. Better decision-making occurs when a user can determine the impact of design modifications.

Collaborative Innovation uses the 3D index for both 3D representations and product structure navigation. This enables fast loading of a lightweight 3D session for extremely large products. In addition, from the 3D of the root node, users are able to access any component down to the leaf node without needing to navigate the structure. The 3D index provides the benefit of fast 3D navigation while still making it possible to deliver accurate information from the **3D**EXPERIENCE platform.

With the use of CATIA **3D**EXPERIENCE "Shape Healing" capabilities in **Shape Designer** or any other license containing it, **Collaborative Innovation** now allows users to compare the 3D geometry of two components to understand the differences and make intelligent design decisions. For example, designers can compare the design from the supplier with the original design to clearly identify what is being proposed.

Multi-CAD Data Management

Collaborative Innovation manages content created with MCAD applications including CATIA V5, SolidWorks, NX, Creo, Pro/ENGINEER, AutoCAD, Solid Edge and Inventor as well as ECAD applications from Cadence Allegro, Mentor Graphics and Zuken. Parts and assemblies created with these CAD tools are directly published to the **3D**EXPERIENCE platform using dedicated connectors. Multi-CAD designs can be referenced in real-time within 3DEXPRIENCE product structure for DMU validation or for using as reference against new design being authored in CATIA **3D**EXPERIENCE.

The CATIA V5 and SolidWorks connectors are included with **Collaborative Innovation**. All others require additional licenses. The CATIA V5 and SolidWorks connectors provides a multi-site design data management solution for the extended enterprise which allows designers to access and share each other's designs from within the native CAD user interface.

Key Benefits:

- Common data model between CATIA, DELMIA, and SIMULIA **3D**EXPERIENCE allows concurrent manufacturing validation to reduce design-to-manufacturing lead-time as well as concurrent simulation validation.
- Collaborative design management of content created with MCAD applications including CATIA V5, SolidWorks, NX, Creo, Pro/ENGINEER, AutoCAD, Solid Edge and Inventor as well as ECAD applications from Cadence Allegro, Mentor Graphics and Zuken. Multiple disciplines, regardless of location, can confidently access and manage the virtual product through the entire product development cycle.
- Simple and immersive user experience improves designer productivity and creativity.
- Align engineering work-in-progress and enterprise business processes to improve communication for faster results.
- Data-driven design management enables CATIA **3D**EXPERIENCE designers to collaborate in real-time by designing directly on the database versus locally checked out data, helping improve design quality and productivity.
- Leverages global knowledge pool to accelerate evaluation of CATIA **3D**EXPERIENCE alternatives and develop innovative products quicker.
- Minimize disruptions by having the flexibility to migrate to CATIA **3D**EXPERIENCE gradually with coexistence to legacy CATIA environments.

It offers the added benefits of allowing designers to effortlessly access, manage, share, and store design data without leaving their preferred environment. It facilitates process workflow, increases data integrity and improves configuration management. Users can perform **3D**EXPERIENCE system operations directly inside the CAD interface to take advantage of the power of the core system when they need it. It also provides the ability to securely distribute and manage the design process to the supply chain and customers, whether local or around the world, from one point of reference, synchronously and asynchronously.

Manage Content Lifecycle for Precise Staged Engineering Process

Content goes through a lifecycle that captures the states of its creation, review, release, and obsolescence. In order to go from one state of a lifecycle to another, electronic signature approvals are needed often. Signatures are either part of the lifecycle definition or supplemented by end-users as part of defining the approval process for a given object. Dynamic signatures defined by end-users are done using routes. A route contains several steps of approval that must occur. Each step can contain one or more signatures for specific individuals or roles. The route must be completed before the business object is promoted to its next lifecycle state.

Manage Changes and Monitor Execution Accurately

Issues can be identified against any content in order to facilitate the change and formally raise and track product gaps and concerns. Users can raise an issue for analysis and resolution. Issues are classified in order for an "issue manager" to be assigned to manage its lifecycle and determine its validity and resolution. **Collaborative Innovation** helps companies become more agile because changes are executed faster when tasks are defined explicitly, fully-documented and all affected components are attached. Accurate progress assessment occurs because tasks are linked directly to projects and programs, which makes design activity directly visible to the project leader. Leaders can assign tasks to different designers, reviewers, etc., as project responsibilities change. **Collaborative Innovation** manages change scenarios to form-fit-function through major and minor revisions.

Seamless Collaboration with Legacy CATIA Data Management Systems

Collaborative Innovation provides a tight integration between the **3D**EXPERIENCE platform and ENOVIA® VPM V4, ENOVIA® VPM V5 and ENOVIA® SmarTeam, allowing seamless collaboration between heterogeneous user communities. All product IP, including metadata (product structure, part definition, lifecycle information, attributes, etc.) and geometrical specifications (CATIA® V4 and V5 formats), can be efficiently exchanged and converted between systems. Engineering teams can collaborate on product designs efficiently using various versions of CATIA.

Collaborative Innovation also manages the ownership of data between CATIA V4/V5 and CATIA **3D**EXPERIENCE to support both approaches — one shot migration to start a new program entirely on **3D**EXPERIENCE platform or co-existence of both environments for incremental adoption of the 3DEXPRIENCE platform. In addition to design collaboration scenarios, **Collaborative Innovation** also enables CATIA V4 and CATIA V5 users to migrate design data to the **3D**EXPERIENCE platform for manufacturing, simulation, and design review processes with ENOVIA, DELMIA, and SIMULIA apps.

Common View between Physical Product and Engineering BOM

Using **Collaborative Innovation**, customers can explore the Engineering Bill of Materials (EBOM). EBOM part properties can be browsed directly from the associated physical product properties. **Collaborative Innovation** keeps a consistent and updated view between engineering and enterprise disciplines. Throughout the design process, **Collaborative Innovation** synchronizes the physical product structure to EBOM. At any time, the physical product structure and the EBOM can be compared using dedicated tools.

Add Structured Workspaces for Global Collaboration

Users can create a collaborative digital workplace of global team members called a "workspace." A workspace can be used by geographically distributed team members who offer expertise from various disciplines such as design, engineering, manufacturing, procurement, and finance. Within the secure workspace, members can create folders — organize, view, review, mark-up and approve content, subscribe to event notifications, schedule meetings, keep track of decision-making process and initiate discussions.

Promote IP Reuse

Unstructured classification can be done with "user defined" tags. In addition, **Collaborative Innovation** provides a "Windows" like folder functionality to organize content. Content can also be classified in libraries using an appropriate taxonomy. With each of these approaches, users can access design components for reuse. For CATIA **3D**EXPERIENCE, **Collaborative Innovation** provides the design catalog directly in the designer's UX.

Evaluate CATIA 3DEXPERIENCE Design Alternatives

Collaborative Innovation can manage design alternatives and snapshots during the conceptual design phase. This gives designers full freedom to investigate new ideas with the flexibility to choose the best design that meets objectives. Designers can create parallel branches to investigate multiple ideas simultaneously and review them with others. Additionally snapshots can be captured within any branch at points in time, giving a designer the flexibility to go back to a prior snapshot. Comments from users are captured against the branches or snapshots to help make the right design. An intuitive graphical map provides complete traceability of design progression from the ideas that were explored to the final design.

Our **3D**EXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 190,000 customers of all sizes in all industries in more than 140 countries. For more information, visit **www.3ds.com**.

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