

3DEXPERIENCE Release 2017x GA Overview



3DEXPERIENCE®

Abstract

On November 22th, 2016, the **3DEXPERIENCE** Release 2017x is General Available. Specifically:

- The Release dramatically **extends 3DS cloud offerings** - already the largest Product Innovation Platform offering available on the cloud.
 - As a reminder:
 - 3DS cloud portfolio represents the largest cloud offering of the ‘PLM’ industry by far. The cloud portfolio is appropriate for businesses of any size: it includes a dedicated portfolio of Industry Solution Experiences, with hundreds of roles on the cloud. The roles cover extensive 3D Modeling (e.g. design and engineering, 3D design), Content and Simulation (e.g. manufacturing and production, simulation), Information Intelligence (e.g. data intelligence, search, etc.), and Social and Collaboration applications (e.g. governance and lifecycle). In other words, *virtually the whole portfolio of the #1 PLM provider in the on-premise market (per CIMdata) is available on the cloud today*, on the single, unified architecture of the 3DEXPERIENCE Platform.
 - The **3DEXPERIENCE** on the cloud offerings bring the benefits of Software-as-a-Service (SaaS) and cloud to all customers. *A one-stop shop approach* with Dassault Systèmes as single point of contact whatever the deployment mode, ensures that each cloud offer is deployed fast and turnkey, and includes the associated optimized cloud provisioning and support.
 - Release 2017x brings a dramatic increase in the number of roles available on the cloud, as well as enhancements in their capabilities. For instance, on GA date, the cloud offering now includes more than 87% of 3DS exhaustive design and engineering portfolio, with 6 new roles at GA. In other words 87+% of the most advanced and comprehensive design & engineering portfolio on the market today, is available on the cloud. The release also features 4 new digital manufacturing & production roles, and 5 new simulation roles.
 - Importantly, the release introduces new pricing and licensing options for simplicity, flexibility and cost efficiency. It features a new pricing option, PSC/ASC (Primary Service Charge / Annual Service Charge), which is analogous to the PLC/ALC option available on premise. This new option may speed existing customers’ transition to the cloud. In addition, in the simulation domain, there are now 3 licensing models which lower the barriers to entry for simulation on the cloud and better match customer needs for routine simulation (e.g. from designers or engineers), sustained/HPC simulation (e.g. from experts), and burst simulation with cost-efficient access for crunch time needs thanks to simulation ‘credits’ (that are consumed by each simulation job).
- **The release transforms design, simulation and manufacturing thanks to the unmatched level of integration of the 3DEXPERIENCE Platform.**
 - The marriage of design and simulation on one platform allows each to go much further than is possible on its own. With the new Function Generative Designer role, the designer simply provides the functional specification (including the 3D envelope, the loading scenario, materials, weight reduction targets, *desired manufacturing*

process), and a push of the button runs a simulation and generates the *optimized concept shape*. This truly unique capability allows designers and engineers to take advantage of the flexibility of additive manufacturing, or of more traditional manufacturing processes such as milling, casting and forging.

- Two new digital manufacturing and production roles for additive manufacturing prolong this capability with the ability to define and optimize the setup and process for powder bed fusion and industrial 3D printing, and to program the laser path.
- **Business decision making is significantly extended with Release 2017x.** Among the many highlights supporting business decision making:
 - Business Analytics is significantly extended with enhancements and 5 new roles at GA across standardization & sourcing, PLM analytics, and analytics customization.
 - The **3DEXPERIENCE** has offered PLM Analytics to reveal, measure, and analyze actual PLM data to deeply understand and improve product innovation processes thanks to advanced project/issue/ change or quality intelligence. R2017x brings a new role dedicated to Issue Intelligence, with pre-built analytics to perform diagnostic analysis on various issues – e.g. product defect occurrences, supplier on-time delivery, etc. – with trend analysis, root-cause analysis, and impact analysis.
 - The release also enables the customization of pre-packaged business analytics applications, as well as easy design and development of advanced custom applications with the new Business Analytics Developer role.
 - Also, the **3DEXPERIENCE** Platform benefits new users with the Business Innovation role. Now, any stakeholder involved in the innovation process can benefit from the power of **3DEXPERIENCE** at an affordable price on the web with any device, including V5 users, other CAD users and business users. They can use 3DSwym, 3DPlay, 3DMessaging, and 3DDrive. 3DDrive is a new a cloud-only service, allowing users to securely store their documents on the cloud, access them from any device, visualize them with 3DPlay (including exploring, measuring, etc.), and share documents with co-workers and collaborators across the value chain.
 - Brand new Dashboard Intelligence roles allow decision makers to aggregate and analyze business metrics in the context of the social web, and drive faster decision-making with automated alerts and actions.
 - Noteworthy, the new Scientific Decision Maker brings to R&D scientists involved in a “discovery” process (whether it is for a new drug compound, or a new material) a Discovery Cockpit, i.e. a full collaborative decision making environment to select and investigate those drugs/materials.
- **In 3DEXPERIENCE R2017x, user experience leaps forward as it leverages state of the art technologies.**
 - The release brings a whole new design experience to designers who are now able to work in a stunningly realistic environment. This major enhancement to real-time visualization quality and performance allows any CATIA/SOLIDWORKS user to bring their work to life, even on the largest assemblies.
 - Enterprise change management leverages widgets for streamlined collaboration between design, engineering, and manufacturing. It orchestrates changes from issues to requests to change orders to the actions that accomplish the desired change.
 - Product Engineers can mature eBOMs leveraging 3DPlay (i.e. visualization, review, and measurement), and Requirement Managers can leverage 3DDashboards/ widgets to structure and edit requirements in context of other 3DEXPERIENCE work.

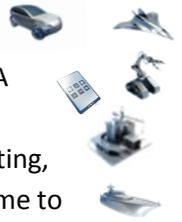
- Also, the new CATIA Photo-to-shape App creates 3D surface models from a selection of 2D Digital Photos.

3D Modeling Apps' Select Enhancements

- **With 3DEXPERIENCE Release 2017x (R2017x), users can benefit from many new and enhanced DESIGN/ENGINEERING roles.** The release features 79 roles on premise, and 68 roles on cloud on November 22. Overall, there are 7 New Roles and 643 new or enhanced functions.
- CATIA brings the new Function Driven Generative Designer (GDE) role, which allows non-specialist designers to automatically generate conceptual parts from a functional specification. *The designer simply provides the functional specification, including the 3D envelope, connections, the loading scenario, material, weight reduction target and desired manufacturing process. A push of the button runs a simulation and generates the optimized concept shape.* The part can then be comprehensively validated using full loading conditions such as frequency and buckling. The designer can quickly create multiple variants for comparison and trade-off studies by varying the inputs, such as different weight reduction targets, load cases, constraints etc. So doing:
 - This unique capability allows the creation of organic shapes which could not be imagined using a conventional design approach, while respecting the designer's specification and dramatically reducing weight .
 - This results in fully usable 3D geometry which can be directly refined and shared on the 3DEXperience Platform by all disciplines, from detailed design through analysis and manufacturing.
 - It frees the designer to take advantage of the flexibility of additive manufacturing, or of more traditional manufacturing processes such as milling, casting and forging.
- The release offers a whole new design experience to designers who are now able to *work in a stunningly realistic environment.* This major enhancement to real-time visualization quality and performance allows any CATIA user to bring their work to life, *even on the largest assemblies.* This release also integrates the STELLAR rendering engine, from 3DEXCITE, to further improve realism and performance. This will tremendously enhance the design process and delight users by delivering the next level of visual excellence
- Creative Designers can now “capture reality” with a digital camera and very quickly create *real 3D models.* *The new CATIA Photo-to-shape App creates 3D surface models from a selection of 2D Digital Photos.* Designers can now rapidly compare, rebuild, restyle & get inspired by existing objects. The resultant CATIA surface models can be further refined, detailed and modified.
- With R2017x, 3DEXPERIENCE platform users can plug and play their HTC Vive head mounted display (HMD) and *enjoy immersive virtual reality directly.* For example, a CATIA user can simply put on his head mounted display and continue to work in a stereoscopic virtual reality environment. No specialized viewer is required. The truly immersive experience and natural navigation brings an enhanced spatial impression of a product design, available to all with an inexpensive consumer device.



- The release also delivers *multiple advances in systems engineering*, the multi-disciplinary design methodology which integrates RFLP product definitions.
 - Four new model libraries, based on the Modelica standard, are added to CATIA Systems. Providing a comprehensive set of libraries to model and simulate Electrified Powertrains, Brushless DC Motors, Cooling Systems and HVAC (Heating, Ventilation, and Air Conditioning), improves product design and accelerates time to market.
 - R2017x also introduces a new role, Systems Multi-Views Architect. This role delivers all necessary systems views (eg static, state, dynamic and requirements) allowing all stakeholders to collaborate and accelerate the definition of complex systems and products through a comprehensive model based systems engineering approach.



- **3DEXPERIENCE R2017x enhances the CONCEPTUAL DESIGN roles** in the **SOLIDWORKS** portfolio.
- The *SOLIDWORKS Conceptual Designer* role provides complementary design tools that augment existing CAD solutions for engineers creating conceptual mechanical designs. With Conceptual Designer, engineers can now: rapidly capture ideas digitally; quickly create 2D and 3D concept models; receive timely feedback from internal and external stakeholders; and collaborate and manage data on the cloud



In **3DEXPERIENCE R2017x**, Conceptual Designer enhances assembly creation and analysis, with 3D sketch motion, enhanced path motion and new motion results comparison tools.

- The *SOLIDWORKS Industrial Designer* role enables users to create multiple 2D and 3D industrial design concepts, where product aesthetics are being evolved and assessed. With Industrial Designer, users can:
 - Quickly capture their ideas in a natural, instinctive way using the screen as a virtual sketchpad;
 - Expand their ideas in 3D with freeform sculpting techniques – simply push and pull geometry onscreen like virtual clay until you achieve the desired result
 - Easily snapshot multiple design ideas in Concept Archives and then share them throughout your design community to gauge customers’ reactions
 - Leverage collaboration capabilities of the platform so that ideas can be reviewed quickly by internal and external stakeholders, before investigating further and refining the best designs.



In **3DEXPERIENCE R2017x**, Industrial Designer allows fast design of symmetrical models, and the evaluation of the curvature of designs with curvature combs. In addition, the release enhances zebra and draft analysis.

- Also *both Conceptual Designer and Industrial Design now allow users to build animations* of their designs, and users can benefit from the **SOLIDWORKS Connection** package to leverage the **3DEXPERIENCE Platform** for collaboration with peers and external stakeholders during the product development process.

- **With 3DEXPERIENCE R2017x, users can benefit from enhanced BIODESIGN roles** in the **BIOVIA** portfolio. The release now features 5 roles (vs. 3 in R2016x) and 7 apps.

- The new *Scientific Decision Maker* role (BDV) brings to R&D scientists involved in a “discovery” process (whether it is for a new drug compound, or a new material) a *Discovery Cockpit*, i.e. a full collaborative decision making environment to select and investigate those drugs/materials:
 - First, they can define the desired “Target Product Profile”, which could specify, for instance, the ability to bind to a specific target and not to other similar targets.
 - Then they can specify the “Discovery Decision Path”, that is, the specific experiments to be run, and the thresholds (i.e. the decision criteria) to be reached by the drug candidates to be eligible, or promoted to the next R&D phase/experiment.
 - As each drug goes through the experiments defined in the “Discovery Decision Path”, the experimental results are collected into “Result Packages” that are managed within the Discovery Cockpit. For instance, scientists can annotate, qualify, validate Result packages collaboratively, based on the decision criteria of the “Discovery Decision Path”.



At each step, scientists benefit from widgets displaying key indicators on the quality/quantity of scientific results. All the views provided by the BIOVIA Discovery Cockpit allow the scientist to decide collaboratively about the advancement stage of each drug candidate.

- The new *Clinical Outcome Modeler* role (BPH) enables the prediction of drug efficacy and safety at the population level, and the design of *more informative clinical trials* through pharmacokinetics & pharmacodynamics simulations. The user experience has been designed to be extremely intuitive and to democratize such modeling approaches and simulations as a result. The role is aimed at pharmacometricians and clinicians to build and share graphical drug-disease models, build populations and samples of patients to simulate the effect of the drug on specific populations, test several administration protocols to find the best clinical trial design. They can then perform clinical trials simulations to assess the response of populations to new drugs. Again, the role has been designed to ease project reviews e.g. through the ability to compare several simulation results across patients or administration protocols, and to navigate through results graphically.
- The existing *Therapeutics Knowledge Scientist* role allows users to leverage and collaborate on global scientific knowledge. The role includes connectors to reference databases of biological entities, interactions, and pathways, and it presents a *unified semantic view of all internal and external scientific knowledge* necessary for the discovery and development activities in life sciences. In **3DEXPERIENCE R2017x**, the role was further enhanced in terms of performance, user experience, and number of databases.
- The existing *Therapeutics Efficacy Modeler* role is a complete suite for R&D biologists to research & develop biological pathways. They can *design pathways* according to evidence-based biological hypotheses for drug mechanisms of action: for instance users can create their own pathway or modify an existing one; define interactions and behaviors in a pathway; import pathways in standard formats. *Importantly, they can also simulate those pathways* with virtual experiments. **3DEXPERIENCE R2017x** delivers many productivity and user experience enhancements, and new export capabilities for simulation results.



- The existing *Therapeutics Safety Modeler* role targets two usages: the immunogenicity assessment of candidate drug biomolecules, and their optimization by reducing risk. The immunogenicity assessment is based on modeling the humoral response elicited by the immune system (presentation of peptide fragments by the human leukocyte antigen (HLA) proteins). In **3DEXPERIENCE R2017x**, the role was further enhanced in terms of performance and user experience.



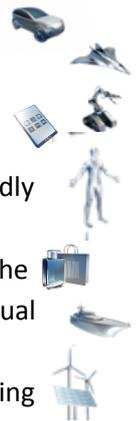
Content and Simulation Apps' Select Enhancements

- **In 3DEXPERIENCE R2017x, users can benefit from many powerful SIMULATION roles:** there are now 26 roles on premise, and 20 roles on public cloud – that is, 3 new powerful simulation roles. The release now features 39 **SIMULIA** applications, that is, 9 new apps. Noteworthy, the release delivers true simulation-driven design with simulation technology embedded directly into design to allow the functional nature of parts and their loading environments to determine the optimal shape, as explained in the new CATIA Functional Generative Design. The marriage of design and simulation on one platform allows each to go much further than is possible on its own.
- Importantly, the release *delivers exciting new licensing models* for simulation. Customer requirements for simulation are evolving to include both On Premise and On Cloud computing, by all user profiles (from designer/engineers, to analysts, to management and any enterprise function), for all usage habits (from occasional usage to heavy usage), covering all levels of simulation complexity (from the simplest part to the most complex assembly), on all available computing platforms (local, enterprise, and cloud). 3DEXPERIENCE R2017x on the cloud meets these requirements by *providing an On Cloud simulation portfolio matching the existing On Premise lineup, and by incorporating a new comprehensive licensing model that enables routine, sustained, and burst computing.*
 - For routine simulation needs, that is to say occasional needs from non-simulation experts, the simulation license has always been embedded into roles (hence the term 'embedded licensing') for designers and engineers who can use simulation during design.
 - For sustained simulation needs, i.e. from simulation analysts, companies can procure a corporate simulation capability in the form of a pool of shareable simulation tokens (hence the term 'token licensing'). Each simulation job will borrow a number of simulation tokens depending on the complexity of the simulation. This capability has been offered on premise and is new on the cloud in this release.
 - For burst simulation, when 'peaks' of simulation computing are occasionally needed, companies can procure simulation 'credits' (hence the term 'credit licensing') to be consumed by each simulation job. This licensing model provides cost-efficient access for crunch time needs that exceed the sustained licensing capacity. This new capability is offered on the Cloud only in R2017x.



Together, these three modes of licensing available in R2017x provide scalability, efficiency, flexibility, and value to all corporate users.

- The release features also a unique generative simulation modeling capability. Customers traditionally build simulation models of complex assemblies using single-user tools, then manually combine the resulting models into a global assembly. The process is time-consuming, error prone, and is disconnected from the PLM model. The **3DEXPERIENCE** Platform is a game changer. In **3DEXPERIENCE R2017x**, many roles have been enhanced so that the simulation modeling framework is automatically and rapidly *generated* from and linked with the underlying PLM data, giving birth to a true Generative Simulation Modeling capability. The Generative Simulation Modeling Capability provides the solution to *build complex simulation models collaboratively* - for any size of model (individual part all the way up to the largest assembly models) with any level abstraction (full vehicle, system, sub-system, or component), at any level of detail, and leveraging customers' existing solvers – and remain linked to the PLM data.



Now, customers can employ distributed workgroups to efficiently create, manage, and update complex models that would overwhelm a single analyst or workgroup. Benefits are reduced model generation time (weeks to days and days to hours), including re-generation time when the PLM design data is updated. Virtual results are traceable directly through their construction history back to requirements. Knowledge (including PLM details, connections, modeling methods and best-practices, and simulation details) is maintained. With Generative Simulation Modeling, customers can better move simulation earlier into design (since it is now tied directly to assembly design), leverage simulation for enhanced decision making, and power innovation through dramatically reduced cycle and turn-around time.

- In **3DEXPERIENCE R2017x** also illustrates Dassault Systemes' "Power By" strategy with the new **3DEXPERIENCE** Abaqus/CAE role (SXA). Users of Abaqus/CAE – and of third-party simulation tools - can benefit from the power of the **3DEXPERIENCE** Platform to manage all their simulation assets and IP and to connect these assets to other disciplines (design, manufacturing, etc.). The capability of the **3DEXPERIENCE** platform to manage data, workflows/methods, and third-party tools brings huge benefits to simulation experts as it allows them to capture, search for, re-use, add to, and leverage day-to-day unstructured and unmanaged simulation tasks. Most of this simulation IP today is lost as it is performed manually by the expert using one tool after another. While the simulation result is kept once it is achieved, the simulation workflow itself is often lost.



The new **3DEXPERIENCE** Abaqus/CAE (SXA) role allow users to start, work with, build models, execute simulation jobs, and post-process results using the familiar interfaces of Abaqus/CAE, all while benefiting from the process and data management capabilities of **3DEXPERIENCE**. Simulation Asset Management (ASG) provides the same capability for users of 3rd party tools. Captured and managed in this way, previously uncaptured methods, workflows, and results increase the value of a customer's investment in simulation tools and staff.

- The well-known Living Heart Project from Dassault Systemes has transformed the vision of simulation in the cardiovascular community by building – for the first time – a truly functional virtual model of the heart for medical research, diagnostics, and device development purposes. In **3DEXPERIENCE R2017x**, the Living Heart Human Model role provides access to the living heart model with the full power of the **3DEXPERIENCE** platform. This role enables clinical researchers and medical device analysts to not only virtually test



the effectiveness and durability of their devices (such as a pace maker) inside the Living Heart model but also to collaborate and share workflow tasks and methods with colleagues and partners worldwide.

- **3DEXPERIENCE R2017x includes many advances in MANUFACTURING & PRODUCTION:** users can benefit from 5 new roles plus many enhancements to manufacturing & production roles from **DELMIA** both on premise and on the cloud. Noteworthy also, enhanced governance tools for manufacturing provide users with unprecedented clarity of change management, impact analysis, and approvals.

- *Additive manufacturing* is a disruptive and fast growing manufacturing segment. **3DEXPERIENCE** platform release 2017x brings the latest innovation in this segment with 2 new roles for 3D printing and additive manufacturing, Additive Manufacturing Engineer (AMR) and Additive Manufacturing Programmer (AMP), *to optimize the setup, process, and programming of powder bed fusion manufacturing machines or industrial 3D printers:*



- Additive Manufacturing Engineer (AMR) defines and optimizes the setup and process for powder bed fusion manufacturing and industrial 3D printing. The role allows the user to user to optimally and efficiently place the workpieces on the build tray, using advanced 3D nesting algorithm. It further provides an intuitive interface to modify the nesting results and provides the possibility for manual adjustment of the positions and orientations.

The role is also a comprehensive environment for defining, visualizing, optimizing the actual manufacturing process including material/powder selection, thickness of layer, identification or engineering of appropriate supports, type of machine needed, etc. Importantly, it is a template-based based system which provides for the storage and retrieval of best practices. Users can search templates, apply them to various parts, and create templates of their own parameters for capitalization and reuse. The user can also visualize the layers, slice by slice.

- Additive Manufacturing Programmer (AMP) extends the capabilities of AMR by providing the additional capabilities to generate the laser path based on the slices of the 3D designed part. The user can visualize the slices with an intuitive user interface, account for thermal deformation or spring back, for validation/optimization, waste reduction, and quality improvement. Once a laser path has been decided upon, it can be output as a program.

- Manufacturing and Production is increasing its coverage of the robotics domain by introducing a *new robotics role for processes that require the robot to follow the surface of a part - such as painting, polishing, and flaming*. Robotics Surface Engineer (RSF) offers capabilities to simulate, validate, and optimize industrial robot surface processes in a virtual 3D environment. The automatic path generation tools make it easy to define surface trajectories from the product geometry, using parameters that include approach, spacing (or overlap between material sprays), and departure to find the most optimum strategy for a given process. The user can input the number of passes, the direction of the robot motion, and the overlap of each pass. Spray gun-specific attributes such as nozzle shapes and pressure can be customized to the process to allow the user to visualize the deposition of coating materials on a surface. This helps the user optimize robot motions and



validate uniform material deposition across the surface in applications such as spray painting.

- To author a process plan, the Manufacturing Engineer needs to build the proper manufacturing context. That is to say that the proper product (or resource) version, configuration, and variants, as well as the proper resources and plant layout need to be loaded into the authoring session. To do so effectively the Manufacturing Engineer needs to sort, organize, compare and analyze manufacturing assets. *3DEXPERIENCE R2017x introduces new tools and methods for comparing all assets (process, product, resource) at various levels (tree structure, 3D, metadata), to understand impacts on manufacturing planning, and build the proper manufacturing context as a result.*
- *Fabrication roles now support robots performing milling operations.* The new Robot Milling functionality allows the user to implement a robot in the manufacturing cell to do milling operations. Once the milling operations are created, the user can then select the robot from over 1500 industrial robot models and then simulate the milling process using the robot. After validation, the user can then export the APT code to the robot NC controller. This new functionality allows users to address a wider variety of manufacturing cell configurations, leveraging NC milling machine and/or an industrial robot.
- Programming production robots is challenging, especially when there are cables on the end-of-arm tooling that can interfere with the robot motion. *New Manufacturing and Production functionality in the Robotics domain allows users to easily create, validate and simulate robot cables.* This dedicated solution for robot cable simulation makes it easy for Robot Engineers to create cables with only a few clicks. When the user defines the length, diameter and bend radius for the cable, a 'sphere-based' cable definition is created and is based on the robot kinematic specifications. Users can validate cable length and routing and visualize the cable flexing and wrapping around the robot wrist in the simulation.
- *3DEXPERIENCE R2017x introduces the new Cutting Tool Technologist role (NTT).* The NC (Numerical Control) world is full of cutting tools. Hundreds of manufacturers create thousands of cutters to create a sea of cutting tools. Many manufacturers keep the 3D data and parameter data of their cutting tools on their website to make them available to their customers. Most adhere to the ISO13399 standard, which allows them to store cutting tools and assembly design data along with the cutting parameters. This standard helps NC machinists use a common language to describe cutting tools. The Manufacturing and Production release 2017x utilizes this standard with the NTT role. The Cutting Tool Technologist role lets users easily create cutting tools and tool assemblies from the tool manufacturers design data. When the tool manufacturer adheres to the ISO13399 standard, the 3D data as well as the tool parameters (cutting length, speed, feed, etc.) are automatically inserted into the model on the 3DEXPERIENCE platform. Once the data is loaded, the user can store the tool data in Catalogs to be used to simulate the production of 3D parts.
- When designing a building, ship, or power plant, part of the scope includes piping, conduit, and HVAC systems, however designers often don't/can't account for all of the detailed 'fabrication' (e.g. mounting, installation equipment and methods) of those systems even though they are an important part of the production process. *3DEXPERIENCE R2017x*



introduces the Heavy Industry Fluidic Manufacturer (MPO) for engineers to generate process plans manually or automatically for the fabrication of pipe, HVAC and raceway parts. Every step in the fabrication process -from cutting parts to installation - is fully visualized in the immersive 3DEXPERIENCE environment. Production administrators can set production rules that specify standard requirements and special manufacturing features. MPO automatically incorporates them into the production plan. For pipe fabrication, MPO performs a comprehensive quality check to ensure that all aspects of production will function as required. Once the details of the installation are complete, the Planner can extract 2D and XML workshop documents.

Information Intelligence Apps' Select Enhancements

- **3DEXPERIENCE R2017x delivers enhanced BUSINESS ANALYTICS functionalities and 3 new roles**, leveraging the **EXALEAD** capabilities directly into the 3DEXPERIENCE Platform:
- In the area of *Sourcing and Standardization Intelligence*, the enhanced Preferred Part Consumer (S1X) role allows any user to quickly find and decide on the right part for their need, by searching and comparing a huge number of parts from *inside* or *outside* the enterprise, including in the **3DEXPERIENCE** Platform. As a result, it enables and promotes part reuse, and part standardization.

Users gain *immediate* access and visibility into all their part-related content within the 3DEXPERIENCE context – without the need to migrate over any data. Connectivity to DS sources such as 3DEXPERIENCE, SMARTEAM and SOLIDWORKS PDM Professional (EPDM) are included with the role. Connectors to all major third-party data sources are available (SAP, TeamCenter, Windchill, Oracle, and file systems including many CAD formats). S1X truly extends the **3DEXPERIENCE** value in powerful new ways including, intelligent/guided search based on part metadata extraction, 3D similarity comparison of CAD formats, and data on-the-fly consolidation from other non-3DS systems - including ERP.

In **3DEXPERIENCE** R2017x, the Role has been renamed to “Preferred Part Consumer” (previously “Part Reuse Analyst”), and the major enhancements are an improved User Experience, better leveraging of the 6W tagging capability of the **3DEXPERIENCE** Platform and a more precise part similarity feature, integrating customer feedbacks from the field. In further R2017x functional deliveries, 3DS plans to release capabilities tailored to standard part analysts, so that they can leverage advanced machine learning classification capabilities to automatically cluster existing parts, identify similar parts, and select a preferred parts. In addition, 3DS plans to release a cloud service for access to 50 million commercial parts.
- The **3DEXPERIENCE** offers *PLM Analytics to reveal, measure, and analyze actual PLM data to deeply understand and improve product innovation processes* thanks to advanced project / issue / change / or quality intelligence. For instance, one can see at once how product defect occurrences per severity evolve over time, or get an analysis of which manufacturing processes are most impacted by ECO/ECR/ECA. PLM Analytics leverages 3DS' data intelligence capabilities in analysis of complex product structures and data models, aided



by strong semantics and machine learning. It extends the promise and collaborative power of the 3DEXPERIENCE Platform, by giving everybody direct visibility and deep understanding of the *actual* PLM data and activities.

The 3DEXPERIENCE R2017x brings a *new Issue Intelligence User Role*. Out of the box, it brings pre-built analytics to perform diagnostic analysis on engineering issues (e.g. product defect occurrences, supplier on-time delivery or performance, etc.) with trend analysis, root-cause analysis (e.g. drill-down, classification, etc.), and impact analysis (e.g. see what other processes/products may be impacted by this issue). In further R2017x functional deliveries, 3DS plans to release other pre-packaged PLM Analytics capabilities tailored to change intelligence and project intelligence.

- The release also enables *customization of pre-packaged business analytics applications, as well as easy design and development of advanced custom applications* with the new Business Analytics Developer (BAD) role. Users can also customize their analytics widgets on their own and share them with others with the Business Analytics Manager (BAM) role. 
- **In 3DEXPERIENCE R2017x, users can benefit from brand new NETVIBES Dashboard Intelligence roles** to aggregate and analyze business metrics in the context of the social web. Drive faster decision-making with automated alerts and actions. There are 3 roles on public cloud: Watcher, Social Analyst, and Social Business Analyst (NSA). 
- *The Watcher role (NSW) delivers an all-in-one dashboard view, enabling you to read and monitor information from across the social web.* You can choose the sources you want to monitor, save searches as Tracked Topics, and drive faster decision-making by automating actions triggered by events and data. On November 22, Watch includes 2 apps:
 - *NETVIBES Tracked Topics:* Automatically monitor your favorite topics. Benefit from faceted filters. Save any search queries to easily follow topics that matter to you. Netvibes will keep on watching and updating automatically so you don't miss anything.
 - *NETVIBES Potions:* Netvibes Potions make it simple to program your dashboard (e.g., *when A or B triggers happen, then do X and Y actions; otherwise do Z*) to act for you, automatically. You choose the trigger(s) that will activate the Potion, along with the action(s) that you want Netvibes to do, and your dashboard does the rest. For instance, a product manager detecting that positive sentiment on his product declines by more than 10% over the past week, can get a summary of negative articles/posts.

One month of 'AutoSave' is included with the Watcher role, meaning that all content which transited in your feed reader or in the sources of your library can be accessed, searched and analyzed.

- *The Social Analyst role (NSA) includes all the capabilities of the Watcher role and adds the ability to analyze content from across the social web with the Social Analytics app.* Users can analyze social data (e.g. a feed, a library, a tracked topic) along each of the 4W dimensions (When, What, Where, HoW), including with customizable charts or unlimited pivoting. With just a click, discover what is being most said, who the main influencers are, how your topic is perceived and where the conversations are most happening. Three months of 'AutoSave' are included with the Social Analyst role. 

- *The Social Business Analyst role (NBA)* includes all the capabilities of the Social Analyst role and adds the ability to correlate and analyze the impact of social data on your business metrics. Users can chart any dataset in their Dashboard, including external files and cloud-based data, crawled automatically. You can compare datasets and find correlations by simply Drag-and-drop charts. Customizable charts allow you to identify trends and visualize ROI. Three months of AutoSave are included with the Social Business Analyst role.



Social and Collaboration Apps' Select Enhancements

- In **3DEXPERIENCE R2017x**, users can benefit from a number of powerful **GOVERNANCE/LIFECYCLE roles**, as well as options on top of these **ENOVIA** roles.
- ENOVIA has significantly improved the functionality and experience of *enterprise change management* in R2017x. Changes can be planned and orchestrated from issues to requests to change orders and finally to the actions that accomplish the desired change. In addition to working on change actions in the native environment, roles across engineering, manufacturing and governance can now leverage widgets from the user's 3DDashboards to view, prioritize and manage those changes. These enhancements and extensions of enterprise change management better connect and govern design, engineering and manufacturing innovation (e.g. collaborative change on product, e/mBOM, factory layout, etc.), reducing risk and accelerating release.
- Also, a significant *step forward in user experience has been taken with several key roles such as requirements managers, product engineers, and collection developers*, by leveraging state of the art technologies. Two new 3DDashboard widgets provide a modern experience for requirements managers for editing the specification structures and editing requirements in context of other relevant 3DEXPERIENCE work. Similarly, product engineers benefit from 3DPlay visualization, review, and measurement while maturing the engineering bill-of-material (EBOM). In addition, collection developers and planners now benefit from sample reviews and collaboration leveraging mobile devices and web applications, with abilities to comment and leverage photographs taken from mobile devices while on the go.
- For many years, the **3DEXPERIENCE** has provided a *project management* solution with an on-line centralized view that all stakeholders contribute to in real time. Our ENOVIA users have recognized that along with the benefits of this centralized governance comes the need to *capture and manage baselines or snapshots of the project for historical comparison and decision support*. ENOVIA's R2017x release introduces baseline and comparison capabilities that allow teams to create and manage any number of project baselines to compare to the current state of the project, or to compare between two different baselines. This allows project managers to better identify risks and take advantage of potential opportunities.
- With **3DEXPERIENCE R2017x**, *document management and controls are improved with capabilities to better manage hard-copies* in concert with the data-driven 3DEXPERIENCE Platform. Specifically, risk with distributed hard-copies can be reduced by adding watermarks to generated PDF's and serializing watermarks for individual hardcopies. This enhancement of ENOVIA's Quality Document Manager reduces risk and increases



compliance for users that need to generate and manage hardcopies as part of their business process.

- Merchandising in the release 2017x *streamlines the connection between designers that are creating packaged goods, and the 3DMerchandisers* that are virtually defining the point of sale experience. The designers themselves are able to publish packaging representations directly to the 3DMerchandisers from within designer's environment in CATIA Live Rendering. This process automatically generates the needed photorealistic images needed for the virtual shelf. This connection ensures that the merchandisers are using the latest available content to design the merchandising experience for their customers. 
- Users of ENOVIA in R2017x will benefit from *various user experience enhancements throughout the portfolio*. For instance, users can search for parts of interest across the enterprise, and highlight them within a product structure by simply dragging and dropping the search result onto that product structure. The search experience has been improved in the web environment with the use of the same 3DSearch that was used in the authoring and 3DDashboard context. Similarly, the use of the popular "My Desk" tool, providing direct access to common utilities in the web environment, has been made available throughout the web experience. These and many other improvements will increase ENOVIA users' productivity and satisfaction. 

3DEXPERIENCE Platform' Select Enhancements

- In 3DEXPERIENCE R2017x, *the new Business Innovation role (IFW) allows any stakeholder involved in the innovation process to benefit from the power of 3DEXPERIENCE* at an affordable price on the web with any device, including V5 users, Solidworks Desktop users, other CAD users and business users: 
 - With 3DSwym, users can form social communities for innovation. For instance, to gather valuable feedback from consumers early in the innovation process. CAD users can involve business users across the enterprise. 3DComments enrich the collaboration.
 - 3DPlay, which provides an immersive visualization experience on the 3DDashboard in the browser in context of other 3DEXPERIENCE tasks, has been enhanced to support visualization of kinematics.
 - With the enhanced 3DMessaging, any user can instantly engage in 3D collaborative experiences.
 - *With the introduction of 3DDrive*, a cloud-only service, users securely store their documents on the cloud, access them from any device, visualize them with 3DPlay (including exploring, measuring, etc.), and share documents with co-workers and collaborators across the value chain.
- The overall user experience continues to be enhanced to be more real-time, reactive. For instance, instant notifications keeps you informed real time about events, which you care about in the innovation process. 3DSwym communities benefit from a brand new user experience. 