![Dassault Systèmes logo]

3DEXPERIENCE® FOR ACADEMIA
DIGITAL PLATFORM
TO PREPARE THE WORKFORCE
OF THE FUTURE

3DEXPERIENCE®

3DEXPERIENCE®
FOR ACADEMIA

"The **3D**EXPERIENCE platform in the cloud changes several educational paradigms. Data is stored on a single platform, and students can access CAD designs anytime, anywhere, for engineering as well as manufacturing planning work. Our students are excited by the interactive working universe offered by this collaborative tool, just as they are by social networks. For them, it's natural and intuitive."

Frédéric XERRI, Louis Armand Technical College, France

"Manufacturing businesses have advanced the growth of Japan for decades, whereas today, they are about to change drastically, facing trends such as IoT, a network with unprecedented scalability, and artificial intelligence that are edging into workplaces. For that, the University of Tokyo's School of Engineering adoption of the **3D**EXPERIENCE platform paves the way for educational innovation for the future."

Shuichi ROKUGAWA, Professor, University of Tokyo, Japan

"The seamless digital engineering processes, combined with cyber-physical production systems, made possible thanks to the app- and cloud-based tools in the **3D**EXPERIENCE for Academia platform offers huge potential in education and research. Students learn all about the strengths of integrated data management, cross-functional collaboration and innovative digital and virtual factory capabilities for developing hybrid work systems and managing smart products based on highly diverse customer requirements in self-steering production systems."

Prof. Vera HUMMEL, ESB Reutlingen, Germany

3DEXPERIENCE for Academia, the most advanced software for product and learning innovation, is available in the cloud or on-premises, within your own operating environment. Both options bring new capabilities to educators and students who want to experience the engineering practices of industry leaders for increased employment opportunities in the new global economy. Years of collaboration with educators and students across a wide variety of institutions and disciplines has led to a flexible, tailored set of learning solutions. **3D**EXPERIENCE for Academia encompasses a suite of world-class integrated applications:

- CATIA® for product design
- DELMIA® for digital manufacturing
- SIMULIA® for realistic simulation
- ENOVIA® for collaborative innovation
- 3DEXCITE® for high-precision rendering and interactive immersion

PREPARING THE WORKFORCE OF THE FUTURE

3DEXPERIENCE for Academia is an advanced platform designed for a variety of industries, enabling the new practices of the industry renaissance. It offers the ideal infrastructure for bringing industry practices into learning. Encompassing comprehensive CAD, CAM and CAE capabilities, the platform provides powerful solutions for managing collaborative work and joint innovation. Modular, it can be adopted either in full, or just a specific component.

3DEXPERIENCE for Academia comes as a multidisciplinary social collaboration baseline. It can be extended with dedicated packages supporting educational, research and organizational processes in Design and Engineering, Systems Engineering, Manufacturing and Production, Architecture and Civil Engineering, and Project Management. New packages address advanced simulation and create high-quality VR content for digital marketing and procedural learning.

Via an intuitive, web-based user interface, educators can easily create local or international collaborative environments, such as student projects or exams, and assign roles to participants. Students can start projects on campus, continue at home and discuss issues over online communities or screen-sharing. The platform ensures that they always access the latest version of their work.

FASTER PROJECT-CENTRIC LEARNING AND LAB VIRTUALIZATION

3DEXPERIENCE for Academia is the ideal platform for project-centric learning, providing an integrated, distributed universe for methods such as Conceive – Design – Implement – Operate (CDIO®) or Project (Problem) Based Learning (PBL). At any time, educators can remotely monitor projects, manage idea maturity and assign grades. Collaboration is made easy and intuitive for teachers, researchers, students and industry mentors. Project mentors can facilitate more projects without compromising on the attention needed by students.

3DEXPERIENCE for Academia provides a proven environment for deploying digital labs involving realistic virtual 3D equipment, coupled with two-way interaction with real remote devices. The platform opens up new horizons for innovative educational practices, such as distant learning, MOOCs and flipped learning.
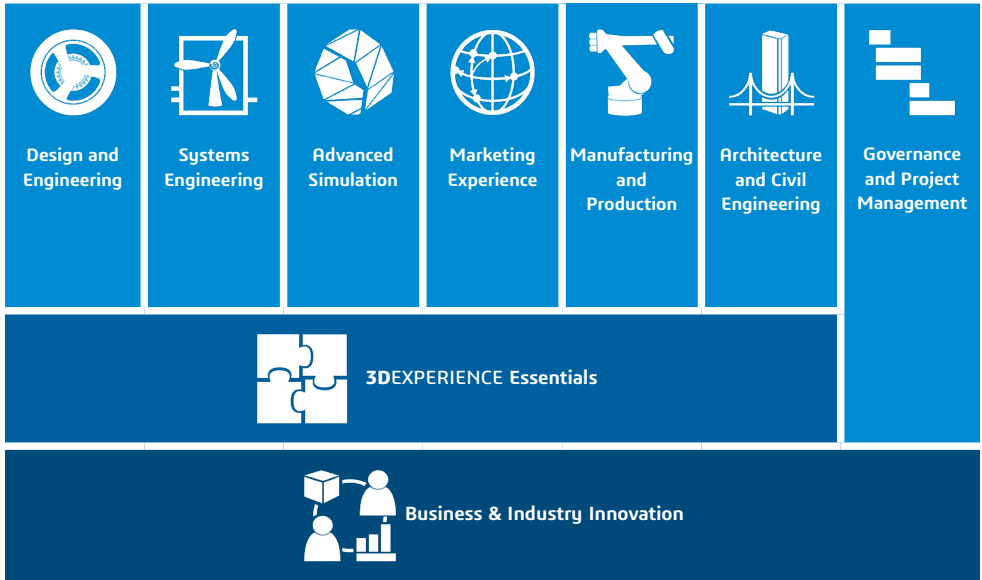
A GATEWAY TO THE INDUSTRY RENAISSANCE

3DEXPERIENCE for Academia is constantly evolving to support national manufacturing initiatives with enhanced capabilities for teaching, learning and advancing the most promising industry practices — from the Internet of Things (IoT) to digital value chains, additive manufacturing, smart buildings and intelligent farms. It provides institutions with a credible up-to-date universe to support applications for educational research grants.

A NATURAL BREAKTHROUGH

Current users of CATIA and DELMIA V5 or V6 will find all the features they are familiar with in the **3D**EXPERIENCE for Academia on a single navigational interface, together with a host of new capabilities, enabling students to contribute to the ongoing transition by employers to experience-based innovation. Special offers and various instruments are available to facilitate gradual migration, quick learning and updating of existing educational content.

3DEXPERIENCE®
FOR ACADEMIA

Design and Engineering	Systems Engineering	Advanced Simulation	Marketing Experience	Manufacturing and Production	Architecture and Civil Engineering	Governance and Project Management

3DEXPERIENCE Essentials

Business & Industry Innovation

NEW FLEXIBLE OPTIONS

The **3D**EXPERIENCE platform is structured as sets of roles corresponding to typical industry activity profiles. The specific 'academia' package builds on packages that combine broad sets of the same roles.

All packages are available in four sizes (S, M, L, XL) to meet the needs of diverse secondary and higher education institutions:

- **Small** – up to 30 users

- **Medium** – up to 100 users

- **Large** – up to 300 users

- **Extra Large** – up to 900 users

The **3D**EXPERIENCE platform is available in the cloud or on premise. Both options offer equivalent functionality, including social and collaborative capabilities. And both provide the same scope for scaling from focused to multi-purpose use.

With the cloud option, pricing includes all use and service costs, and any configuration is easily scalable. Suitable storage capacity is available depending on customer needs.

BUSINESS AND INDUSTRY INNOVATION

ENTRY POINT FOR ALL LEARNING ACTIVITIES

Business and Industry Innovation is the base-line block designed for institutions interested in social collaboration and research.

ENGINEERING AND MUCH MORE

With its dashboard capabilities, **Business and Industry Innovation** enables project follow-up, hands-on exercises and technology watch via RSS feeds. Engineering and non-engineering disciplines can access a set of professional-grade platform capabilities to connect their activity through a private social network, regardless of the nature of their deliverables, from reports to essays, multimedia documents to design or simulation files.

COLLABORATION AT THE HEART OF TEACHING AND PEER LEARNING

- Integrated online communities: blogs, Q&As, surveys, idea maturity management

- Instant collaboration enablement: chat, mockup co-design and co-review

- Definition of digital workspaces tailored to teaching strategies: hands-on sessions, student projects, parts library, access list management

- Collaborative management capabilities to control and synchronize assemblies, resources and teamwork

ADVANCED SEARCH ENGINE

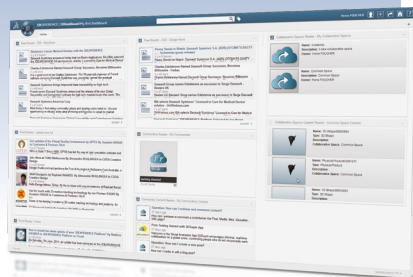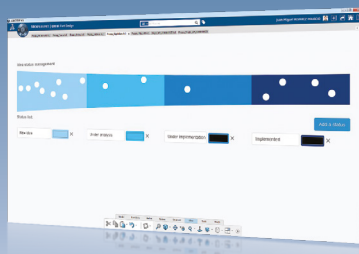Find parts, community posts or documents, whatever their type and wherever they are located.

CLOUD ACCESS

The platform is accessible from anywhere, anytime, inside and outside the institution: in the lab, at home and on the go.

EMBEDDED ROLES

Industry Innovation
Business Innovation

3DEXPERIENCE ESSENTIALS

3DEXPERIENCE **Essentials** is a broad application set built on the **Business and Industry Innovation** baseline, encompassing a vast set of Dassault Systèmes solutions.

The ideal basis for universities or technical colleges to support their transition to project-based or student-centered learning, **3D**EXPERIENCE **Essentials** provides a complete digital framework for team-based ideation, contextual learning, collective innovation, solution creation and various methods for project evaluation.

3DEXPERIENCE **Essentials** includes advanced ENOVIA capabilities for configuration management, requirements management, change management and compliance processes.

The **Essentials** package bundles a large subset of CATIA design functions and enables conceptualization and detailing of virtually **any type of object.**

Using DELMIA **digital manufacturing tools** makes machining, robotics and rapid prototyping an integrated exercise, ensuring manufacturability of designs and streamlining of manufacturing programming.

Right-first-time practices are reinforced through mechanism simulation and associative stress analysis using SIMULIA and ergonomics simulation.

The fundamental capabilities of **additive manufacturing** are built-in for powder-bed fusion additive manufacturing, including nesting, automated support design and laser path optimization.

Converters to and from other applications, as well as 3D printing output formats, are available for exchanging data with various partners and devices.
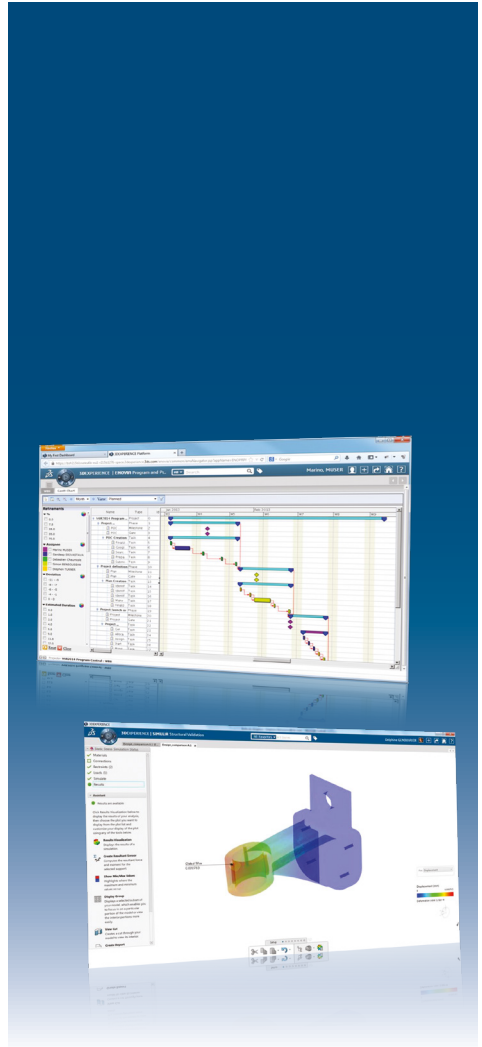
Users of CATIA V5 enjoy a smooth transition to the **3D**EXPERIENCE and can upgrade their courses gradually through a built-in connector.
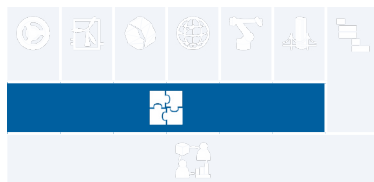
EMBEDDED ROLES

Requirements Manager
Manufacturing BOM Manager
Product Engineer
Project Team Member
Classification Manager
Change Management
Configuration Management
Simulation Foundation
Multiple converters to and from other applications
Design Review Manager
Volume Computation
Manufacturing Engineer
Shopfloor Equipment Engineer
NC Prismatic Programmer
NC Prismatic and Turning Programmer
NC Milling Machining Programmer
Process Simulation Analyst
Plant Layout Designer
Ergonomics Specialist
Additive Manufacturing Engineer
Robotics Offline Programmer
Robotics Engineer
Cutting Tool Technologist
Mechanical Designer
Mechanism Simulation Designer
Creative Designer
3DMaster Conceptual Designer
Stress Engineer
Experience Reviewer **(NEW)**
Packaging Copy and Artwork Manager **(NEW)**
3D Component Designer **(NEW)**
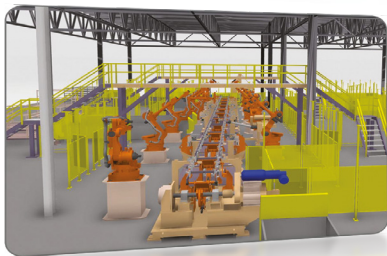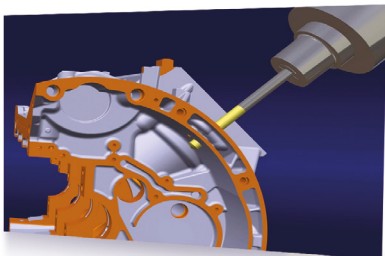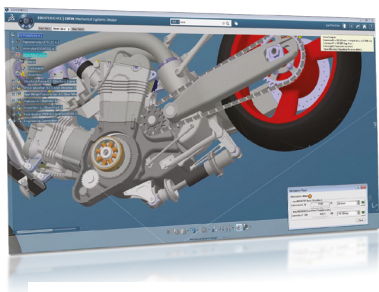
# DESIGN AND ENGINEERING

Design and Engineering extends **3D**EXPERIENCE **Essentials** with the capability to automate the modeling of parts produced using specific manufacturing processes, such as sheet metal, stamping, composites and molding or routed systems comprising pipes, tubes and wires. In addition, **Design and Engineering** automates the associative design of tooling, which is required to actually produce such parts and systems.

Essential to teaching modern development practices in industries such as foundries, automotive and aerospace, **Design and Engineering** is also an ideal solution for learning and teaching industrial design and styling, including realistic on-the-fly rendering and ambiance control. It brings advanced capabilities in support of processes that are critical in several national manufacturing initiatives: topological optimization in support of additive manufacturing, an end-to-end packaging solution and various simulation capabilities for plastic injection parts, fluid dynamics, composite optimization and static, frequency, thermal, buckling and modal dynamics analysis of fabricated structures.

Powerful process automation tools are provided to template routine work and reuse design expertise.
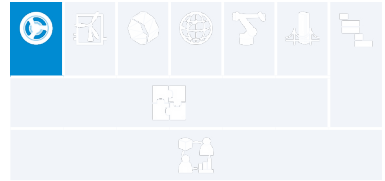
EMBEDDED ROLES

3DMaster Designer
Mechanical and Shape Designer
Sheetmetal Designer
Plastic Mechanical Designer
Reverse Shape Optimizer
Product Industrial Designer
Virtual and Physical Prototyper
Product Optimization Designer
Template Designer
Composites Engineer
Mold and Tooling Designer
Mechanical Design and Tooling
Best Practices Designer
Electrical 3D Systems Designer
Electrical Harness Manufacturing Engineer
Fluid 3D Systems Designer
Class A Modeler
Class A Expert
Esthetical Shape Modeler
Fasteners Designer
Hydroformed Sheetmetal Designer
Composites Braiding Designer
Structural Package Designer
Function Driven Generative Designer
Car Design Ergonomist
Ergonomist
Structural Analysis Engineer
Composites Simulation Engineer
Plastic Injection Analyst Engineer
Fluid Dynamics Engineer
Structure Functional Analysis Engineer **(NEW)**
Visual Experience Content Collection **(NEW)**
Stamping Die Face Designer **(NEW)**

SYSTEMS ENGINEERING

Systems Engineering combines a rich set of functions essential for concurrently designing and simulating various types of objects using models simultaneously optimized for geometry and function. Indispensable for modeling modern electromechanical systems, simulating their behavior and optimizing smart products, **Systems Engineering** comes with numerous libraries representing the physics of diverse technologies and phenomena. Open to other simulation systems through standard interfaces, it provides a comprehensive multi-physics design, simulation and optimization framework for any mechatronic or systems engineering course.

Real electromechanical systems, whether programmable or not, can be completely virtualized, connected and controlled using the solution, reflecting software-in-the-loop and hardware-in-the-loop methodologies and enabling a 'virtual twin' approach, a central practice of the fourth industrial revolution.

These features open up the immense field of virtual labs, teleoperated learning devices and 'flip lab' practices.

Capabilities are provided to increase integration across the different levels of system representations (requirements, functional, logical, physical). This structured environment creates an ideal framework for learning the principles and practices of systems architecture and tradeoffs.
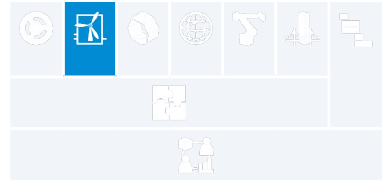
EMBEDDED ROLES

Dynamic Systems Designer
Systems Schematic Designer
Mechatronic Systems Designer
Systems Behavior Optimization
Systems Flexible Bodies Library
Systems Flight Dynamics Library
Systems Simulink Export
Systems Real Time Execution Export
Systems FMU Export
Systems Human Comfort Library
Systems Battery Library
Systems Engines Library
Systems HVAC Library
Systems Electrified Power Train Library
Systems ClaRa Plus Library **(NEW)**
Systems Brushless DC Drives Library **(NEW)**
Systems Electric Power Library **(NEW)**
Systems Fluid Power Library **(NEW)**
Systems Hydrogen Library **(NEW)**
Systems Thermal Library **(NEW)**
Systems VeSyMA Library **(NEW)**
Systems VeSyMA Suspensions Library **(NEW)**
Systems VeSyMA Powertrain Library **(NEW)**
Systems Wind Power Library **(NEW)**

ADVANCED SIMULATION

The **Advanced Simulation** role extends the simulation capabilities within domain-specific roles, such as design and engineering, providing engineers, students and educators with the ability to collaboratively solve complex engineering problems spanning multiple scales and disciplines.

Use feature-based parametric modeling tools to quickly iterate on designs or direct modeling tools to modify and repair geometry without CAD expertise. Create large and complex finite element assemblies with automated modeling techniques.

Perform realistic simulations using multi-step structural and fluid scenarios, including static, frequency, thermal, buckling, implicit/explicit dynamics, linear dynamics and heat transfer. Improve designs and understand natural phenomena by simulating steady-state and transient, laminar, turbulent and non-Newtonian flows.

Assemble executable subsystems with hybrid physics domains, including fluid structural interaction, coupled logical (0D) and physical (3D) models.

The **Advanced Simulation** role provides access to the advanced tools used by simulation experts across all industries, in a format that is aligned with student needs and skill levels.
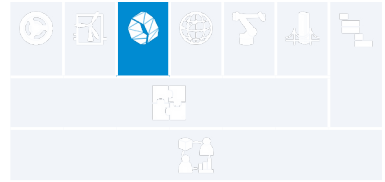
EMBEDDED ROLES

Fluid Mechanics Analyst **(NEW)**
Mechanical Analyst **(NEW)**
Assembly Modeling Specialist **(NEW)**
Simulation Geometry Modeler **(NEW)**
Structural Analysis Engineer **(NEW)**
Multiscale Systems Analyst **(NEW)**
Results Data Analyst **(NEW)**
Multiscale Experiment Creator **(NEW)**
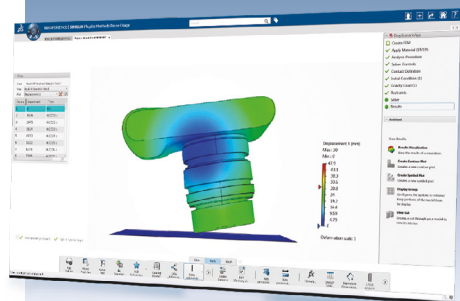
MARKETING EXPERIENCE

The **Marketing Experience** package brings virtual product and process models into real, interactive experiences for test users, marketing targets, product users and various types of learners.

The package offers a complete pipeline to simplify and IP-protect engineering data, animate it on scripts, contextualize it in a realistic universe, enrich it with physical behaviors, compose it into interaction scenarios and disseminate it on a variety of devices, including HTC® VR headsets.

The package also provides HPC-enabled high-definition and high-precision rendering capabilities to generate emotionally intense renderings from design data.

By creating a digital continuum between designs created by engineering students and interactive consumers of those designs, the **Marketing Experience** package opens up powerful perspectives in various disciplines:

- **Design students** can quickly submit their innovations to users, experience engineers and judging panels

- **Engineering students** can place their designs in usage situations and interact online with users or project supervisors

- **Marketing students** can learn and apply numerous aspects of digital marketing

- **Manufacturing and industrial engineering students** can produce interactive procedural learning for operators

- **Any types of learners** can benefit from interactive 3D educational productions
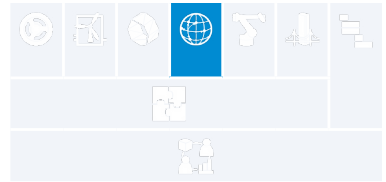
EMBEDDED ROLES

Marketing Model Processor **(NEW)**
Marketing Experience Artist **(NEW)**
Marketing Content Animator **(NEW)**
Marketing Experience Scripter **(NEW)**
Marketing Media Producer **(NEW)**
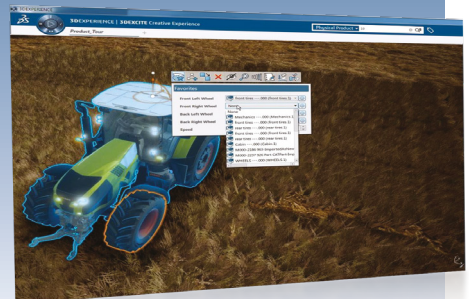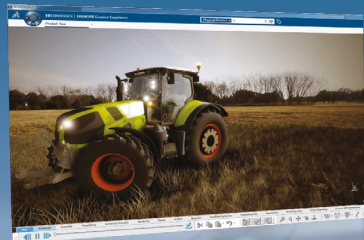
MANUFACTURING AND PRODUCTION

Manufacturing and Production extends **3D**EXPERIENCE **Essentials** to digital manufacturing for industrial or manufacturing engineering programs.

This extended set of functions enables the design, simulation, automation and control of part production as well as assembly-level production. From offline robot programming to production of ergonomic operator instructions, optimization of automated production cells and balancing of complete lines, **Manufacturing and Production** provides students with an ideal environment for experiencing the methods practiced and required by various industries, from small facilities to large multi-plant configurations.

Essential in any **curriculum targeting smart manufacturing,** the package brings powerful functions to further automate the design of assembly processes, especially in heavy industry, shipbuilding, construction, automotive and aerospace, where large numbers of assembly points must be managed seamlessly, robot work cells must be optimized and routed systems must be optimally configured.

Additive manufacturing preparation is strongly supported at various stages, helping optimize manufacturing strategies and communication with actual powder-bed fusion manufacturing machines.
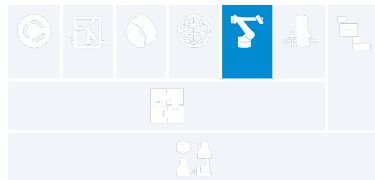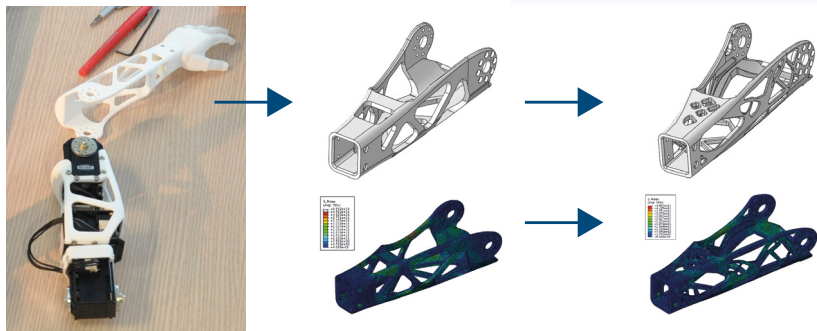
EMBEDDED ROLES

Time Study Analyst
Assembly Simulation Expert
NC Multi-Axis Milling & Turning Programmer
Process Planner
Work Instructions Designer
Robotic Native Program Validation Specialist
NC Machine Code Validation Specialist
Ergonomist
Work Safety Engineer
NC Multi-Axis Milling Programmer
Industrial Engineer
Drill & Fill Engineer
Fastener Process Planner
Heavy Industry Assembly Planner
Heavy Industry Process Planner
Additive Manufacturing Programmer
Robotics Arc Engineer
Robotics Surface Engineer
Robotics Spot Engineer
Heavy Industry Structure Manufacturer
Heavy Industry Fluidic Manufacturer

ARCHITECTURE AND CIVIL ENGINEERING

Architecture and Civil Engineering is a set of capabilities that further expand the powerful collaborative framework of **3D**EXPERIENCE **Essentials** for the construction and offshore and shipbuilding industries.

Especially targeting the early project stages, it provides architecture schools and civil engineering departments with an integrative building information modeling (BIM) environment to harmonize interactions between creative architects, architectural engineers and fabrication and construction engineers. It now provides a range of automation tools for rapid building concept design.

Powerful methods for conducting multi-disciplinary trade studies help automate the design and optimization of the overall structure of ships, buildings, dams, stadiums and bridges. Enhanced steel structure analysis and routed systems modeling capabilities further facilitate structure, HVAC, MEP, fluid and electrical engineering.

Architecture and Civil Engineering uses proven clash management and design automation functionality to produce highly valid designs. It familiarizes students with essential practices, such as template-based reuse methodologies and weight and cost management, promoting compliance with environmental regulation and building and fabrication requirements.

Architecture, shipbuilding and civil engineering educators will benefit from the application's 2D and 3D capabilities, together with a range of data conversion tools, to engage students with the collaborative methods needed by the often fragmented, multi-stakeholder organizations encountered in their industries.
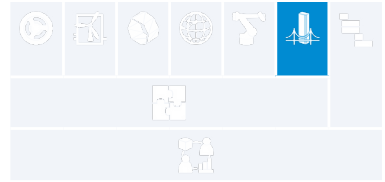
EMBEDDED ROLES

Civil Engineer
Template Designer
Architectural Detail Designer
3DMaster Designer
Steel and Equipment Layout Designer
Space Allocation Architect
Accommodation Designer
Structure Designer
Structural Analysis Engineer
Concept Building Designer **(NEW)**
Building Structures Designer **(NEW)**
3D MEP Designer **(NEW)**
Structure Functional Analysis Engineer **(NEW)**
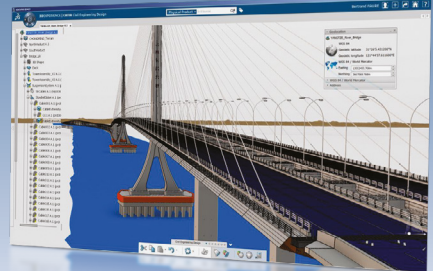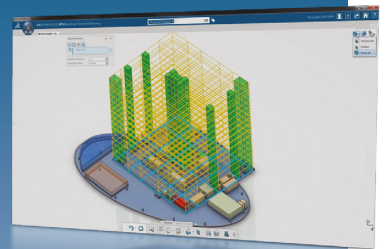
GOVERNANCE AND PROJECT MANAGEMENT

Governance and Project Management extends **Business and Industry Innovation** with numerous organizational and work process-related tools. It targets any educational activity where the development of technical management skills is a desired learning outcome. It also provides educators with powerful tools to control and manage their teaching and research processes.

A groupwork and deliverable management framework is provided to automate academic work processes, conduct multidisciplinary and potentially multi-year projects, such as engineering student competitions, or to teach typical engineering management procedures.

A classification management application is included to enable smart libraries, structuring the discovery and practice of the rigorous "build-or-buy" methods that drive critical behaviors in modern engineering.

Governance and Project Management also provides a non-geometric option for modeling systems requirements, similar to the one available in the **Systems Engineering** solution, reflecting the role of systems architects who do not need to model the functional, logical or physical aspects of a system.
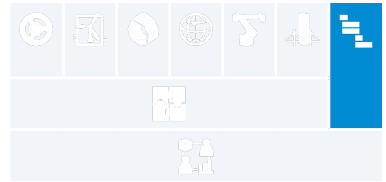
EMBEDDED ROLES

Project Manager
Classification Manager
Requirements Manager
Product Architect
Change Management
Configuration Management for BOM

A FULL RANGE OF PROGRAMS AND INSTRUMENTS TO ACCELERATE IMPLEMENTATION

In addition to the **3D**EXPERIENCE platform itself, various services are available for institutions, educators and students to accelerate adoption, increase learning efficiency and improve employability.

1 **3DS ACADEMY WEBSITE**

The universal entry point for becoming a member of the Dassault Systèmes community and benefiting from a broad array of additional services to enrich the software experience.

The website offers students and educators access to wide-ranging content, such as online training materials, innovative educational experiences, news, contests and more.

2 **PEER LEARNING EXPERIENCE**

Peer Learning EXPERIENCE is an innovative online learning solution where you can learn engineering, design and project management efficiently. Learning courses are co-developed by an international community of educators working in expert committees. The **Peer Learning EXPERIENCE** immerses participants together with peers in an interactive journey along learning paths and reproduces classroom-style co-learning techniques. It is now directly accessible by any user of the **3D**EXPERIENCE.

3 **PROJECT—CENTRIC LEARNING**

ILICE (Inspire, Learn, Innovate, Create, Evaluate) is a free downloadable, customizable pre-configuration for the **3D**EXPERIENCE to quick-start project-centric learning by taking immediate benefit of the platform's social capabilities and deploying it in project activities. **ILICE** makes it easy for project supervisors to give teams all the attention they need, promote ideation activities, ensure student use of modern project management and design methods and rationalize competence-based evaluation.
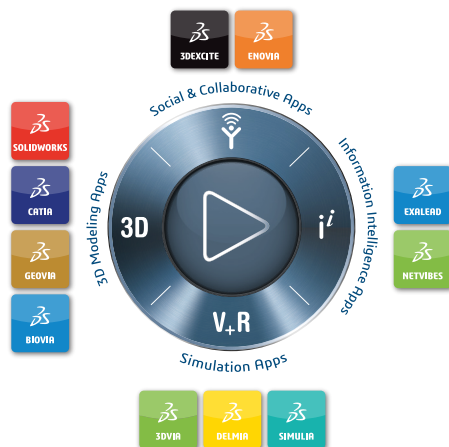
4 **CERTIFICATION**

As the rate of technological change accelerates, the Dassault Systèmes Certification Program is fast becoming a key benchmark for customers and partners who want to make smarter recruitment and employee engagement decisions. Dassault Systèmes certified resources help drive business success for customers by optimizing the deployment of Dassault Systèmes solutions.

To learn more, visit ACADEMY.3DS.COM

ACADEMY.3DS.COM

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 220,000 customers of all sizes in all industries in more than 140 countries. For more information, visit **www.3ds.com**.

SOLIDWORKS
CATIA
GEOVIA
BIOVIA

3DEXCITE
ENOVIA

Social & Collaborative Apps
Information Intelligence Apps
3D Modeling Apps
Simulation Apps

3D
i
V+R

EXALEAD
NETVIBES

3DVIA
DELMIA
SIMULIA

DASSAULT SYSTEMES

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