



## DELMIA V5R18 - FACT SHEET

### *Excellence for Manufacturing Production Performance*

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#### INTRODUCTION

DELMIA allows manufacturers in any industry to virtually define, plan, create, monitor, and control all production processes. It provides an array of dedicated applications for industries, combined with an environment for knowledge-sharing, process and resource management, and the ability to capture and implement best practices for manufacturing.

DELMIA PLM technology allows manufacturers to interact with factory processes early in the design stage and months before actual production commitment. Engineers, management, and stakeholders can have a 3D visualization of the real world with the ability to evaluate “what-if scenarios,” make changes, optimize shop floor operations, and identify and eliminate costly errors and design mistakes. This allows any enterprise to facilitate higher quality and foster greater innovation. DELMIA also extends its PLM technology to smaller businesses within the supply chain to allow smaller companies to better connect and collaborate with larger manufacturers.

#### WHAT'S NEW AT A GLANCE

##### **DELMIA V5R18:**

- **DS introduces DELMIA PLM Express** role-based solutions for the small to medium supplier / manufacturer.
- Enhancements in V5R18 deliver a **seamless end-to-end final assembly process planning solution**
- Further developments delivered in V5R18 extend the production-ready solutions for the automotive **body-in-white** domain.
- Enhancements to the **DELMIA DPM Structure 2** configuration provide production-ready solutions for the **shipbuilding** domain.
- **Expanding partnerships** to deliver powerful solutions for robotic painting and predictive weld cable deformation built on DS V5 technology.

- **DS announces the availability of DELMIA 3DLive Shopfloor Review**, an easy-to-use shop floor work instruction viewer based on DS's 3DLive technology.

## OVERVIEW:

**DELMIA V5R18's products and features listed below bring value to the customer, reinforcing Dassault Systèmes' and IBM's DELMIA fundamentals:**

### **DELMIA PLM for Your Industry, Designed digital manufacturing solutions built for you**

- V5R18 delivers extended capabilities for work instruction authoring that will significantly benefit the **aerospace** domain providing a mechanism for unique Process FTA annotations that are not dependant on design datasets.
- In the **automotive** domain, V5R18 provides enhancements for automatic line balancing that will benefit the **final assembly** domain as well as a series of enhancements for the **body-in-white** domain that extend its capabilities in production implementation.
- DELMIA announces the general availability of the DELMIA – DPM Structure configuration; a process planning solution for the **shipbuilding** domain.

### **Solutions Suited to Meet Your Needs, Role-based solutions for companies of all sizes**

- Introducing the **DELMIA PLM Express**, a suite of role-based solutions that deliver V5 tools to users in the small and medium-sized manufacturing enterprises.
  - **DELMIA Workcell Builder** delivers V5 capabilities to the **resource planner** concerned with line layout tasks.
  - **DELMIA Robot Simulation** delivers V5 robotic capabilities for the **robotics programmer**
  - **DELMIA Human Workplace Simulation** delivers V5 human factors capabilities for the **ergonomist**.
  - **DELMIA Assembly Work Instructions** delivers shop floor work instruction authoring capabilities to the **planner**.
  - **DELMIA Automation Virtual Control Validation** delivers V5 virtual commissioning capabilities to the **controls engineer**.

### **Collaborative PLM, leveraging knowledge and expertise across your enterprise**

- Significant enhancements regarding interoperability between the Manufacturing Hub and DELMIA's V5 solutions.
- Increased usability exploiting V5 fundamentals to a powerful 3-D Model Based Definition (MBD) manufacturing process planning including engineering requirements.
- New support for manufacturing assembly and manufacturing kit definition based on V5 "Black-Box" workpackages.
- Enhanced capabilities in **manufacturing change management** to support a wider range of business process scenarios, like reducing constraints for end-users.

### **Breakthrough Technologies, helping you gain productivity**

- Introduction of DELMIA 3DLive ShopFloor Review; a work instruction viewer based on DS's 3DLive technology.
- Significant usability enhancements/breakthroughs regarding 3D simulation for assembly and **human factors**.
- New significant workflow breakthrough from **resource planning** to **virtual commissioning**.

### Easy, Open and Smart, Adaptable to you

- New **CAA Partner** offerings provide breakthrough capabilities for your resource planning, simulation, validation and integration with manufacturing execution systems.

## DETAILED DESCRIPTION

### DELMIA PLM for your industry

#### **AEROSPACE INDUSTRY:**

DELMIA V5R18 provides a new option for rendering **work instruction** text using Process FTA ("PTA") as opposed to the pre-existing capability utilizing 2D standard text windows. Such PTA, combined with user-definable visualization of engineering requirements FTA, provides a flexible mechanism for manufacturing to define explicit immersive visualization to support work instructions *independent* of design-engineering content and/or data management. As a result, manufacturing planners can define 3D work instructions with unique visualization characteristics without requiring any changes to design-engineering datasets, thus enabling lower-costs to support such authoring and related change activity. Moreover, the independent control of the 3D definition to support uniquely manufacturing oriented authoring scenarios increases the value proposition in general since otherwise, the required design/manufacturing coordination might be viewed as an undue burden.

#### **AUTOMTIVE INDUSTRY:**

**Final Assembly:** DELMIA V5R18 provides a seamless end-to-end final assembly solution from process planning to 3D validation. Benefiting from the V5 resource-centric approach, **Automatic Line Balancing** results can be automatically viewed and edited in 3D. As a result manufacturing planners can easily see and check the tasks performed by workers at each station or each workplace of the assembly line. It also allows them to validate the assembly line layout and do fine tuning of operations between stations using 3D. Additionally, Automatic Line Balancing now supports both "Green Field" (new factory) and "Brown Field" (existing factory with established lines and processes) scenarios.

**Body-in-White:** For the body-in-white domain, V5 R18 delivers a new Assembly Specification Tree; replacing the Product Flow Viewer. This capability allows the user to define assemblies and sub-assembly BOM derived from the manufacturing process plan.

Additionally, DELMIA is delivering new capabilities for the user to define **Manufacturing Line Concepts** in 2D – independent of the resource layout. This includes the capability to define input parts, assemblies and sub-assemblies as well as output assemblies for each line. Furthermore, new **Simulation Roll-up** capabilities provide the mechanism to combine simulation data from multiple stations for multi-station/line level simulation.

These resource-centric capabilities and views of the Product – Process – Resource data provide the automotive planner with essential capabilities for production implementation of DELMIA’s Body-in-White and Final Assembly solutions.

## **SHIPBUILDING INDUSTRY:**

With the release of V5R18, DELMIA announces the general availability of DELMIA DMP Structure 2, a process planning solution for the shipbuilding domain. This configuration provides the shipbuilding planner with a wide variety of structure lofting (large sheet-metal layouts) tools, process planning and validation, in-process model generation, and shop floor documentation capabilities. This solution delivers the power of V5 collaborative 3D technology to a domain that is presently moving from 2D technology to advanced 3D design and planning capabilities.

## **Your DELMIA PLM Express**

**DELMIA PLM Express**, is a suite of role-based solutions that deliver V5 tools to users in the small and medium-sized manufacturing enterprises.

- **DELMIA Workcell Builder** provides a complete solution for the resource planner with capabilities to model in 3D and validate the tooling and complete manufacturing workcells. It includes features for geometric modeling, kinematics modeling, and reachability studies for flexible manufacturing resources (e.g. robots). Models built with this solution can be directly re-used by the Robot Simulation, Human Workplace Design and Virtual Commissioning solutions. With this solution companies can cut significant costs due to production stoppage for set-up validation in reality and eliminate rework costs.
- **DELMIA Robot Simulation** delivers comprehensive robotic workcell simulation capabilities to the robot programmer. It provides an environment for teaching and simulating robot tasks as well as the complete workcell cycle to validate the mechanical process. When combined with the optional Arc or Spot programming extensions it provides a complete offline programming solution for those robotic welding processes. This solution enables companies to eliminate production stoppage costs due to manual teach of robots task motions and validation of the complete process. It also cuts the time taken for new processes, as data can be re-used.

- **DELMIA Human Workplace Simulation** delivers the capability for an ergonomist to build kinematic human models and teach various Human tasks, simulate process and to optimize human workplace. With the analysis options, users will be able to analyze the human postures, vision, reachability and biomechanics with compliance to the national standards such as NIOSH, RULA algorithms.. Additional option such as the human posture Catalogs will shorten the time taken to set up workcells. With workplace simulation and analysis, companies can benefit from improved worker efficiency and lower health related costs.
- **DELMIA Assembly Work Instructions** delivers process authoring with automatic assembly work instruction generation capability for the planner or the design engineer. It includes assembly process sequence, simulation, static verification of assemble process, creation of work instruction annotations, automatic generation and instant update of work instruction following any changes. This saves significant time and cost to companies that follow traditional manual creation and instructions process updates.
- **DELMIA Automation Virtual Control Validation** delivers the capability for control engineers to debug the PLC code that will be in the factory weeks before the integration of the physical equipment occurs on the shop floor. The virtual equipment used for virtual control validation enables users to simulate all kinds of defects that can occur with physical equipment and explore all the “what if?” scenarios that are otherwise difficult to validate on the shop floor. By catching design errors in the PLC program through simulation, control engineers can also reduce the risk to damage the physical equipment controlled by the PLC. Virtual control validation prior to physical commissioning on the shop floor enables users to significantly reduce the ramp-up time of manufacturing systems and costs for maintenance operations.

### Collaborative PLM

DELMIA V5R18 delivers new capabilities to perform **volume filtering** when loading arbitrary product data from the **DELMIA – ENOVIA Manufacturing Hub** into DELMIA’s V5 session. Such volume filtering will significantly reduce the complexity of datasets and also improve overall system performance for general usage. The net result and value to the end-user is that they can complete their authoring tasks in much less time since the system will provide faster performance. Moreover, they will be able to make better decisions within their planning activities due to the decreased complexity and thus the overall quality of the plan will be higher, resulting in decreased problems and changes driven from the shop-floor, all leading to decreased production cost and reduced time-to-market at the required quality/cost targets.

DELMIA V5R18 now supports all possible types of FTA and linked geometries for use as **engineering requirements** within design and for use during manufacturing process planning. This enhanced support is mandatory to enable a “full 3D-only” business process.

DELMIA V5R18 expands the support of V5 “Black-Box” workpackages for use when defining manufacturing kits and assemblies. This capability further enables a “3D-only” business process across the design-manufacturing disciplines.

DELMIA V5R18 provides additional features within the **manufacturing change management** module to allow flexibility on the applied constraints. For example, one can now specify if specific attributes within a process object should be **excluded** from change control, even while the rest of the metadata in the same object is subject to change control. The key benefit is to reduce the complexity for end-users, thus increasing their efficiency in completing their tasks. Ultimately this leads to reduced time and cost for completing the required manufacturing planning activities.

### Breakthrough Technologies

DS announces the availability of **DELMIA Live ShopFloor Review** product. Using this solution, users can view automated simulations of step-through processes and cross-highlighted activities to better understand assembly and maintenance processes. Additionally, the DELMIA Live ShopFloor Review product provides support for the simulation of work instruction buy-off, change notification and data collection. DELMIA Live ShopFloor Review is an easy-to-deploy and easy-to-use solution for delivering the most current and relevant product, process, and resource data to the fingertips of the shop floor technician.

Four new human factors catalogs deliver significant usability enhancements to DELMIA’s **Human Factors** suite. These catalogs include hundreds of pre-defined postures, preferred angles, various sized manikins, and tasks. Through the use of these richly populated catalogs, the ergonomist will be able to reduce simulation model build time by as much as 70%.

New significant workflow breakthrough from **resource planning to virtual commissioning**. DELMIA V5R18SP3 coupled with DELMIA Automation V5R18SP3 provides a first collaborative solution between process planners, robotics engineers and control engineers. A new workflow enables users to design the control of a manufacturing system (that can include robots) based on the process specifications (list of resources involved in the process, sequencing of operations, resources synchronization).

DELMIA V5R18 provides an additional capability for process verification using **3D state management**. A simplified definition of 3D states and positions combined with new commands such as “synchronize position” or “redefine reference object” allows simulation engineers to significantly reduce the set-up time of their 3D environment.

### Easy, Open and Smart

DELMIA continues to cultivate and expand innovative solutions for manufacturing process planning, detailing, simulation and validation delivered on top of DS’s V5 technology by our business partners’ add-ons. With the release of V5R18, DELMIA announces the availability of **DELMIA CENIT FastSurf** robotic painting product. Built on top of the DELMIA V5 Robotics technology, CENIT FastSurf provides the robotic

programmer with a rich set of capabilities for creating, simulating, and validating robotic coatings paths and programs.

Additionally, DELMIA announces the availability of **DELMIA Realistic Cable Simulation**; a V5 option for DELMIA Robotics Simulation and DELMIA Electrical Harness Process Simulation configurations developed by DELMIA partner **IC:IDO**. This V5 product allows the DELMIA Robotics Simulation or DELMIA Electrical Harness Process Simulation user to simulate the impact of motion on deformable cables in the robotic workcell or during assembly process involving wire harnesses. Simulations of deformable cables will allow the user to ensure the robotic tooling cables interference-free paths as the robot moves to complete painting or welding operations.

**Visiprise** provides increased capabilities for **automated shop order data extraction/integration** between the Manufacturing Hub and shop floor production systems. This integration delivers 3D PPR contents along with work instructions to the shop floor and leverages the design, product data management, process instruction and analysis capabilities of CATIA, ENOVIA and DELMIA family of solutions. It empowers the user with all the knowledge and data that has been created during the concept and detailed manufacturing planning and work instructions phases. It helps users to utilize the highly accurate, error-free and up-to-date work instructions in shop floor execution with complete model-based instructions.