CATIA V5-6R2018

Added Values summary
CATIA V5-6R2018 Release Value Synthesis – Key Messages

1. Global collaborative innovation
   Improved 3D Master & Drafting Solutions
   Improved Usability & Productivity, Support of ISO 2553:2013 standard allowing to define two different systems for welding symbols
   2D Layout for 3D Design
   Callout size and position enhancement
   Position and orientation view links
   3D Functional Tolerancing
   Copy/Paste as result with link of FTA features
   Annotation sketch

2. Lifelike experience
   CATIA Imagine & Shape leap forward
   - New capabilities: Manipulation Laws, Matching, Selection

3. Single PLM platform for IP management
   V5-6R2018 and 3DEXPERIENCE R2018x compatibility
   Enable co-design from interactive session between V5 and 3DEXPERIENCE across the supply chain

4. Ready to use PLM business processes
   Mechanical Domain:
   Improved Part Design capabilities; Chamfer, Hole, Sketcher, User Pattern
   New Product: Stamping Die Face Design
   Design die surfaces in the context of stamping die tooling design process

   Shape Domain:
   Improved Generative Shape Design Capabilities: Diablo, Silhouette, Healing, Remove Face,…

5. Lower Cost of ownership
   Composite Engineering extended capabilities to support composite processes: Limit Contour, Stacking Management, Producability,…
   New Product: Composites Forming Part
   Accelerates the design of formed Composites parts with scalable validation levels

   Manufacturing process:
   Adaptive Concentric Milling

   V5-6R2018 and 3DEXPERIENCE R2018x coexistence enhancements
   - Part Design, Generative Shape Design, Composites, Interactive Drafting, Stamping Die Face,…

   Enhanced Products: 21 | Extended Highlights: 91
Portfolios evolution | CATIA V5 & CATIA V5 PLM Express

▲ Summary of targeted highlights

# Enhanced Products: 21
# GA External Highlights: 91

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Portfolios evolution | CATIA V5 & CATIA V5 PLM Express

Packaging update

► New CATIA V5 Products
  ▶ TDF - CATIA - STAMPING DIE FACE DESIGN 2 Product – GA (General Availability)
  ▶ CCF - CATIA - COMPOSITES FORMING PART 2 Product – CA (Controlled Availability)

► Product added to CATIA V5 Configuration
  ▶ TDF - CATIA - STAMPING DIE FACE DESIGN 2 Product added to XL2 - CATIA - All-in-One Marketing EAR 2 Configuration
  ▶ CCF - CATIA - COMPOSITES FORMING PART 2 Product added to XL2 - CATIA - All-in-One Marketing EAR 2 Configuration

► Product / Package withdrawn
  ▶ CAT3DX-P - CATIA V5 PLM Express on 3D Experience Extended
3D Master & Drafting Solutions

V5-6R2018 candidate Added Values
Specify the product

Define the product

Present/Review the product

Conceptual & preliminary design
2D Layout for 3D Design – LO1

2D Master product definition
Drafting – ID1, GDR

3D Master product definition
→ 2D Layout for 3D Design – LO1
→ 3D Functional Tolerancing & Annotation – FTA

Product 2D presentation
→ Drafting – ID1, GDR
→ 2D Layout Browser – LO0

Product 3D review
→ Power by 3DEXperience review
→ DMU Tolerancing review – DT1
→ 3D Insight & CATIA (free) Players
→ 3D Insight – I3D
Interactive Drafting | V5-6R2018 Added Values

► Annotation move Undo-Redo log
  ▶ Additional support of Undo/Redo steps creation during particular annotation manipulations

► Annotation placement
  ▶ Capability to avoid Annotation placement controlled by hot points (default attachment points)

► Table auto-flip
  ▶ Support of Table mirroring for automatic Table text content flip:

► Scaling of arrows
  ▶ Support of Arrow extremities scaling

► Support of ISO 2553:2013 (welding symbols)
  ▶ Support of ISO 2553:2013 standard allowing to define two different systems for welding symbols Line normal to curve constraint
  ▶ New standard entry (with illustration) to specify the system to display welding symbols.
  ▶ Full support of standard switch.
2D Layout for 3D Design | V5-6R2018 Added Values

- **Annotation move Undo-Redo log**
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- **3DTags integration**
  - 2D Layout new support of 3DTag feature

- **Rendering style per view**
  - Homogeneous customize rendering style panel with direct apply
2D Layout for 3D Design | V5-6R2018 Added Values

- **Callout size and position**
  - Improved callout size default computation

- **View from planar face reference**
  - Creation of a view with associative behavior to a planar face

- **View from profile**
  - Auxiliary and Section Views from Profile creation
  - Selection of existing profile to initialize the profile of the view
  - New entries in the dedicated tools palette

- **Position and orientation view links**
  - Full alignment and orientation management of a view from reference
  - New persistent position link to manage alignment
  - New persistent angle applied between the frame around the view background
  - Positioning link management after view creation

- **View scaling**
  - Initialization of view from reference scale, regards to active view scale

- **Clipping outline edition**
  - Homogeneous customize rendering style panel with direct apply
3D Functional Tolerancing & Annotation | V5-6R2018 Added Values

- Semantic dimension between 2 geometrical elements
  - Enhanced Tolerancing Advisor
    - proposes Linear Size and Oriented Linear dimension creation between two prismatic or complex faces with constant distance

- Semantic support of ISO 1101:2012
  - Collection plane
    - proposed for “Profile any line” and “Profile any surface” tolerances when applied in common zone to several features
  - Intersection plane
    - proposed for the “Toleranced Lines Definition”
  - Orientation plane
    - proposed for the “Two Parallel Planes Tolerance Zone” definition

- Numerical format management of datum target
  - Default numerical display parameters for datum target creation are defined in the “Tolerances” tab page of the FTA settings.

- Customization of size general tolerances
  - Size general tolerances are defined in the dedicated excel sheet
3D Functional Tolerancing & Annotation | V5-6R2018 Added Values

► Annotation placement
  ▶ Capability to avoid Annotation placement controlled by hot points (default attachment points)

► Annotation Sketch
  ▶ Add sketches to annotations, so as to make design intent crisper

► Copy/Paste as result with link of FTA features
  ▶ A FTA annotation can be copied-pasted as result annotation with the link to the original one

► Support of ISO 2553:2013 (welding symbols)
  ▶ Support of ISO 2553:2013 standard allowing to define two different systems for welding symbols Line normal to curve constraint
  ▶ New standard entry (with illustration) to specify the system to display welding symbols.
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Mechnanical Domain | V5-6R2018 Added Values

- **Defeature**
  - Remove logos from existing parts using automatic defeaturing feature.

- **Sketcher**
  - Curvilinear constraint on periodic curve
  - Boolean Operations
  - Line normal to curve constraint

- **Chamfer**
  - Chamfer with hold curve

- **Hole**
  - Counterdrilled hole with countersunk diameter.

- **User Pattern**
  - User pattern associative to Geometrical Set
CATIA Portfolio | STAMPING DIE FACE DESIGN

**Item ID**

CATIA – STAMPING DIE FACE DESIGN 2 Product - TDF

**Item Type**

Product

**Prerequisite (s)**

CATIA - GENERATIVE SHAPE DESIGN 1 Product – GS1

**Item Description**

Design die surfaces in the context of stamping die tooling design process

**Key Values:**

- Early evaluation of stamped part KPIs
- High Productivity with specialized wizard & features
- Easy to learn process oriented application (no need to be a CATIA Surface expert)
- Method planning definition & evaluation based on part geometry
- Conceptual die surface design to enable quick validation based on simulation
- High quality Surface design (from GSD)
- Reduce cost of design change (highly automated design change management)

**Key Functions:**

- Stamping Direction evaluation
- Process definition
- Geometry generator for each process operation
- Automated Hole Filling
- Addenda Surface concept & detailed design
- Trim line
- Pivot flange
- Binder Design (command from core apps)
- Fillet Radius management
- Key GSD features

**Competition**

- NX Stamping die design
- Omnicad Die Surface Design
- Delcam Powershape Pro
- Autoform process designer (stand alone)
Stamping Die Face Design | V5-6R2018 Added Values

Key Added value

What

Delivery of a new workbench, dedicated to the Stamping Die Industry, including new surface design and analysis tools, as well as a conceptual process definition command.
Stamping Die Face Design | V5-6R2018 Added Values

- Reduce lead time, cost and increase quality
  - Up to 50% gain in geometries design time
    - Very productive from concept to detailed design of additional geometries (draw direction analysis, addenda, unfold trim lines…)
  - Quick ramp-up
    - Fully compatible solution with CATIA Generative Shape Design - GSD, easy to learn
  - Reduce cost of design changes
    - Full associativity with design part
  - Proven high quality surface result (CATIA Modeler)
    - Model can be directly used for CAM
  - Stamping Process engineering driven tool
    - CATIA from early cost estimation to design for manufacturing
“Stamping Die Designer” process workflow

0. **Sheet metal part**
   - Start with a Stamped sheet metal design
   - Mechanical & Shape Designer (MES)

1. **Sheet metal checkers**
   - Geometric & Formability analysis
   - Formability
   - Geometry
   - Cost

2. **Conceptual process & Die additional geometries**
   - Operations
   - Addendum surfaces & trim lines

3. **Forming simulation**
   - Compute spring back

4. **Compensate spring back**
   - Apply inverse spring back deformation to the tooling part

5. **Stamping die Tool Structure**
   - Generate tool assembly structure with standard components & templates

6. **Validate the Tooling press line**
   - kinematic & clash validation
   - Structural analysis

7. **Production try out**
   - produce prototype parts
   - Reverse Shape Optimizer (VSO)

Roles and Partners:
- Sheetmetal designer
- Tooling face designer
- Simulation expert
- Tooling structure designer

CATIA New Role Coverage
- SIMULIA Roles and Partners

Cost

TG1

Roles

Reverse Shape Optimizer (VSO)

Mechanical & Shape Designer (MES)
“Stamping Die Designer” targeted process workflow

Facilitate design for manufacturing collaboration with early process engineering

Design 50% faster

High quality surfaces for manufacturing

Specialized & global deformation features

Reduce cost of design change from part to stamping tool structure

Design 50% faster

High quality surfaces for manufacturing

Specialized & global deformation features

Reduce cost of design change from part to stamping tool structure
STAMPING DIE FACE DESIGN (TDF) - Process

0. Sheet metal surface
   Start with a Stamped sheet metal design

1. Geometry Check
   Draft, Depth and Cut analysis

2. Blank estimation
   Unfold flanges

3. Fill Holes
   Automated & manual hole filling

4. Binder
   Design binder with embedded surface Tools

5. Clean Contour
   Enhanced Untrim & Extrapolate capabilities

6. Addenda Design
   Profile based wizard

7. Trim lines
   Generate & check trim lines

8. Compensate spring back
   Pivot Flange, Fillet reduction

Define a conceptual stamping process and generate associated geometries

OP10 ➔ OP20 ➔ OP30 ➔ OP40
Mold Tooling Design | V5-6R2018 Added Values

► Update content of Meusburger supplier

► What
  ▶ Update Meusburger components and Moldbase delivered with Mold and Tooling Design workbench.

► Meusburger Content Update:
  ▶ 1 new Moldbase F-Vertical Normal with OverL and OverW
  ▶ 118 new references of component
  ▶ 172 components updated
Shape Domain | V5-6R2018 Added Values

- **Diabolo**
  - Only selected faces are modified by diabolo creation

- **Plane - Planes Between**
  - New mode to create a plane between two elements

- **Points Repetition**
  - Repetitions of Axis with specified direction

- **Extrapolate**
  - Option “Assemble Result” kept as default

- **Porcupine curvature analysis**
  - Optimal screen display using variable auto scaling

- **Silhouette**
  - Silhouette can now select multiple inputs

- **Healing**
  - Specify either frozen or free elements in Healing definition

- **Remove Face**
  - Remove Edge is integrated in the « Remove Face » command
Shape Domain | V5-6R2018 Added Values

- **Unified Patch**
  - Improved workflow improvements.

- **Matching Constraint**
  - New capability to match a single source to 2 target edges
  - Improved graphical feedback when inverting Source & Target

- **Control Points - Diffusion Law**
  - Improved behaviors.

- **Styling Fillet – Approximation**
  - Improved default settings

- **Porcupine curvature analysis**
  - Optimal screen display using variable auto scaling

- **New command – Parallel Commands**
  - Native ICEM Shape Design capability “Parallel Command Session” added

- **New command – Display Lists**
  - Native ICEM Shape Design capability Display Lists added to App options panel
Shape Domain | V5-6R2018 Added Values

- **New command - Unified Patch**
  - Native Freestyle Shape Design command
    “Unified Patch” added to ICEM Shape Design

- **Matching Constraint**
  - New capability to match a single source to 2 target edges
  - Improved graphical feedback when inverting Source & Target

- **Control Points - Diffusion Law**
  - Improved behaviors.

- **Styling Fillet – Approximation**
  - Improved default settings

- **Porcupine curvature analysis**
  - Optimal screen display using variable auto scaling

- **3D Curve**
  - Parallel Command support

- **Replace behavior - Aggregated Inverse**

- **Patch from Curves**
  - Support of Symmetry Plane

- **Ruler**
  - Stores its current position
Shape Domain | V5-6R2018 Added Values

► **Manipulation Laws**
  ▶ Provide a new widget in the modification tool to propagate the deformation to direct neighbouring
  ▶ Customize the law thanks to an immersive widget
  ▶ Set the propagation rank in the same widget

► **Matching Constraints**
  ▶ Match a SubD surface on any kind of surface or curve
  ▶ Tune the connexion continuity, the propagation, …
  ▶ Modify surfaces and see the match recomputed as a constraint

► **Face selection feedbacks**
  ▶ Better feedback on faces for a better ease of use
Composites Domain

V5-6R2018 Added Values
Composites Domain | V5-6R2018 Added Values

- **Limit Contour**
  - Modify orientation of input curves
  - Create user defined assemble curve
  - Ability to modify relimiting side of user assemble curves
  - User defined matter area
  - Gap Fill / Extrapolation Mode
  - Upgrade legacy Limit contour
  - Additional functionalities

- **Stacking Management**
  - New user interface
  - Review Mode

- **Custom Grid Ramp**
  - Additional functionalities

- **Sub Staggering**
  - Simpler and more efficient GUI
  - Grid panel now takes advantage of new 3D preview of ramp
Composites Domain | V5-6R2018 Added Values

- **Multi Parallel**
  - Curve Multi-Selection in list and in 3D
  - Multi-edition of offset value

- **MultiSplice From Producibility**
  - New command for the construction of cut-pieces from the fiber mesh propagation simulation

- **Producibility for Hand Layup**
  - Two new producibility simulations are added
    - Geodesic & Energy:
  - Extended Smooth Regions capabilities
  - Animate Producibility
  - Producibility UI improvements

- **Edit Producibility and Multi-Producibility**
  - New ability to choose a category in Producibility “geometry Creation” tab
  - New ability to set up default category that will be applied to all new created transfer added.
## CATIA Portfolio | Composites Forming Part

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<th>Item Type</th>
<th>Prerequisite(s)</th>
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<td>CATIA – COMPOSITES FORMING PART 2 Product (CCF)</td>
<td>Product</td>
<td>CPE OR CPM OR CPD</td>
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### Item Description

Accelerates the design of formed Composites parts with scalable validation levels

### Key Values:

- Accelerate the design of composites parts by validating the forming manufacturing process
- Usable by designers new to composites
- Support typical processes (matched die & diaphragm) and typical materials (directional & general)
- Provide a scalable simulation, quick in real time, detailed within hours, with comparison capabilities
- Unmatched integration with Structural Analysis

### Key Functions:

- Quick forming simulation to verify producibility in principle
- Detailed simulation to optimize forming process using blank holders, punches, grippers and membranes

### Competition

- NX Stamping die design
- Omnicad Die Surface Design
- Delcam Powershape Pro
- Autoform process designer (stand alone)
Composites Forming Part (CCF)

Accelerates the design of formed Composites parts with scalable validation

- Accelerates the design of Composites parts
  - By validating the forming manufacturing process
  - Editable associative parts with GSD tools
- Usable by designers new to composites
  - Fully integrated in CATIA
  - Extremely efficient workflow
- Supports typical processes and materials
  - Matched Die & Diaphragm
  - Directional & General materials
- Provides Scaled Quick and Detailed Validations
  - Quick in real time, Detailed within hours
  - Comparison between results
- Unmatched Integration with Structural Analysis
Adaptive concentric milling

► What

► Several enhancements in pocketing operation with concentric strategy:
  ► Capacity to mix closed and open pocket strategy with a slider (reduce machining time)
  ► Specific linking motions to avoid retract and plunge: Stay on bottom
  ► Add UI parameters to drive the strategy (Auto, Circular, Dynamic) and the max discretization step

Expected benefit

► Reduce programming time thanks to more flexibility with new parameters & reduce machining time thanks to the capacity to mix strategies
Infrastructure Domain

V5-6R2018 Added Values
Key Added value – GDR

- Import DXF with new PDELIB7.x
- User can export with 2 new settings in the upper level of Autocad