

CATIA V5-6R2014

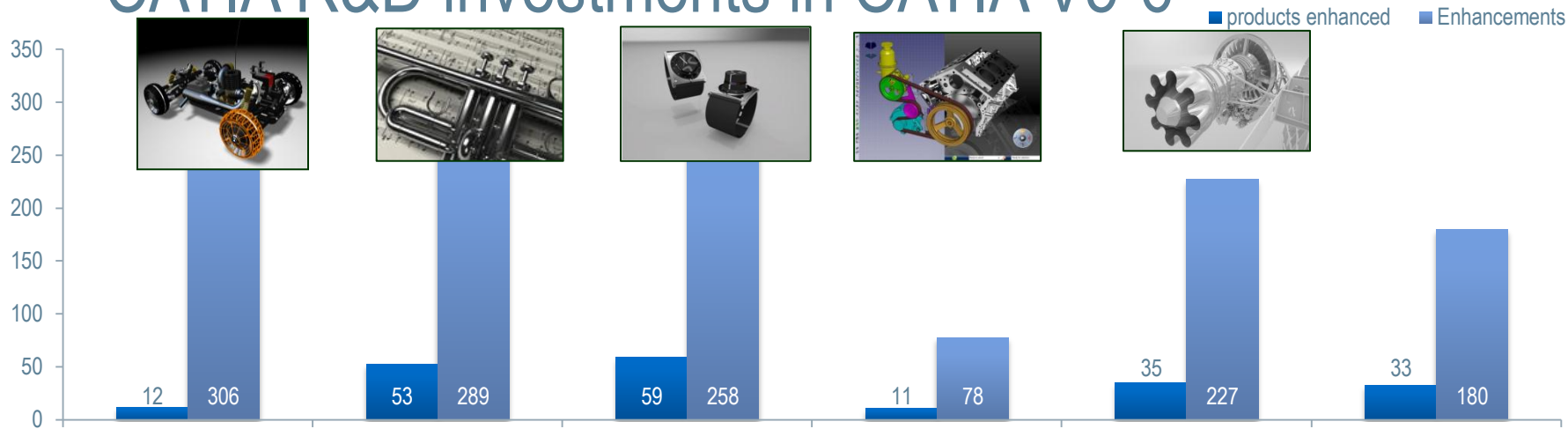
CATIA Day



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Daniel Pyzak, Dassault Systèmes
dpk@3ds.com
Bucharest – June 11th 2014
13:30 – 14:00

CATIA R&D investments in CATIA V5-6



- Plastic part design
- New terrain modeling process
- Composite Design for optimizing the definition of large composites parts.
- Outstanding productivity gain for machining
- Add Designer Central for CATIA, a global collaboration environment tailored to CATIA V5 designers

- Native Class A Automotive Surfacing Within V5
- Deliver top requirement for the AD industry on STEP

- Reach functional completeness for CATIA ICEM Design products
- Ensure easy transition to CATIA Version6
- Best in class machining strategies

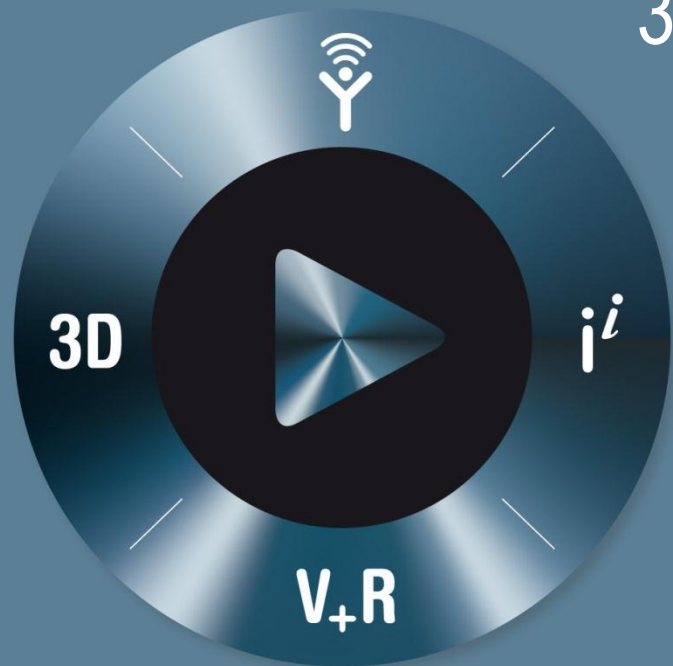
- Delivers unique V5-V6 collaboration
- Allows V5 users to experience V6 core modeling technology.
- Enriches Industry Experience through enhancements

- Enrichment of V5 with V6 Technology
- New Composites Product : CATIA Fiber Modeler
- New FT&A browser Product
- STEP AP242 Support

- New surfacing product : CATIA Mechanical Shape Refinement
- New Data Exchange product: ICEM Surf to CATIA Interface
- Enriches Industry Experience through enhancements
- Allows V5 users to experience V6 core modeling technology.

CATIA V5-6R2014 – Key Highlights

- ▶ **Key highlights per domain**
 - ▷ 3D Master & Drafting Solutions
 - ▷ CATIA Sheet metal Solutions
 - ▷ CATIA Tooling Solutions
 - ▷ CATIA 3D Modeling Solutions
 - ▷ CATIA Interfaces



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3D Master & Drafting Solutions

V5-6R2014 Added Values





CATIA 3D Master & Drafting Solutions

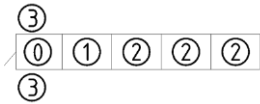
Interactive Drafting / 2D Layout for 3D Design / 3D Functional Tolerancing & Annotation - V5-6R2014 key highlights

▶ Geometrical Tolerance Symbols Customization

- ▶ Enforce application of standards ISO 1101:2012, ISO 5459:2011, ASME Y14.5-2009

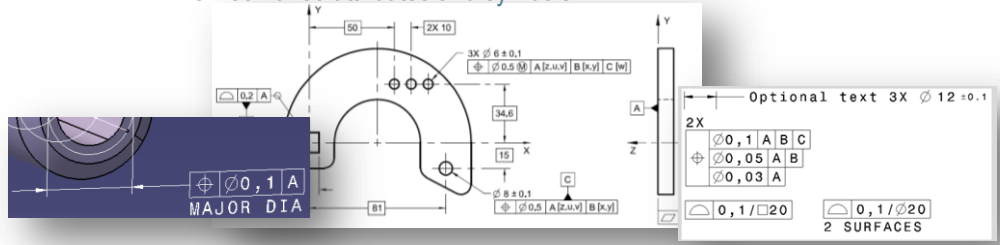


- ▶ Define in standard what symbols are available for each kind of field for geometrical tolerances



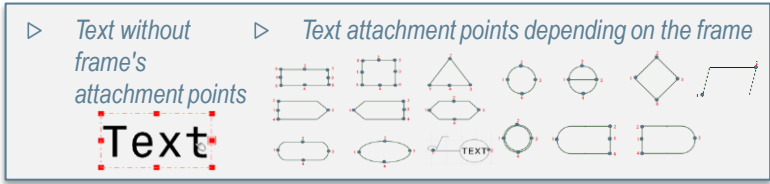
▶ Support of ASME Y14.5-2009

- ▶ New semantic attributes and symbols:

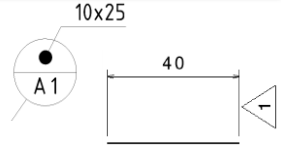


▶ Annotation Placement Enhancements

- ▶ Place annotation on annotation right the first time

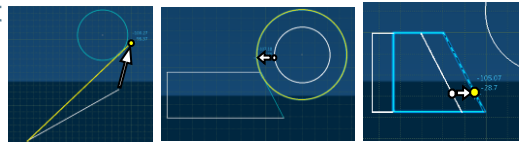


- ▶ Create a text leader extremity on the center of a Datum Target upper compartment
- ▶ Create a text on a dimension extension line



▶ Drag with SmartPick

- ▶ Move existing geometries with the help of SmartPick Assistant





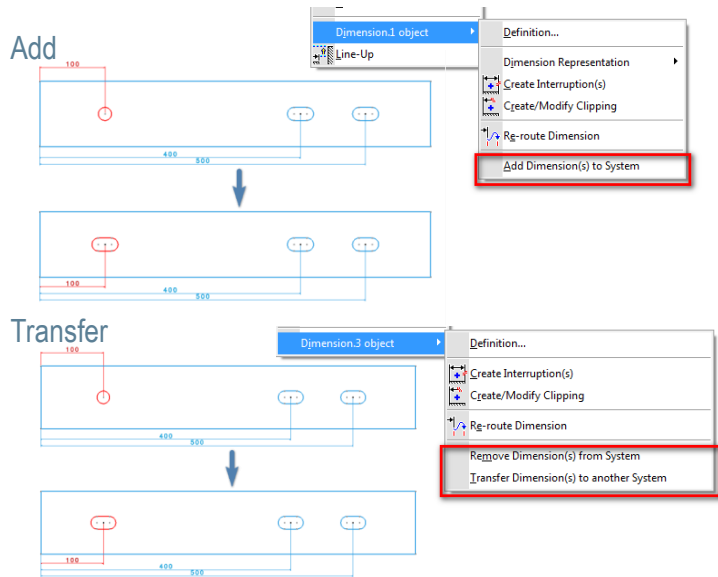
CATIA 3D Master & Drafting Solutions

Interactive Drafting / 2D Layout for 3D Design - V5-6R2014 key highlights

LO1_ID1

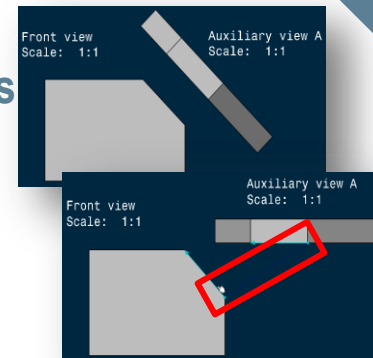
► Dimension System Management

- Dimensions from or to a dimension system



► Align views using elements

- Adjust view position, fitting specific point
- Adjust view orientation



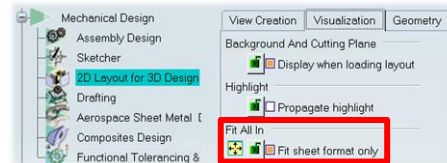
► Instantiate 2D Geometry Blocks

- Reuse Geometry Blocks defined locally
- Geometry Blocks are defined by FixTogether constraints
- Blocks can be defined and instantiated in 2DLayout and Drafting (and also in Sketcher)
- Complementary function with



► Layout Management

- Geometry Layout Deletion
- Customized behavior for "Fit all in" command
- Customization available through a dedicated option



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CATIA 3D Master & Drafting Solutions



3D Functional Tolerancing & Annotation - V5-6R2014 key highlights

Support of ISO 1101:2004

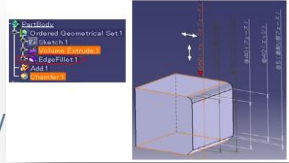
- ▷ New semantic attributes and symbols:



Improved Behaviors

Dynamic geometrical link

- ▷ FTA annotations follow the geometry changes and update the status dynamically



Integration to Delete useless elements capability

- ▷ The Delete Useless Elements command takes into account FTA features



Constructed Geometry creation command

- ▷ The FTA features referencing the constructed geometry remain associative to it.



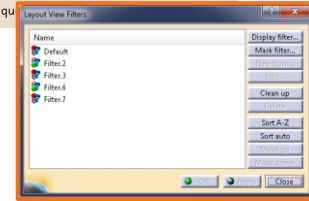
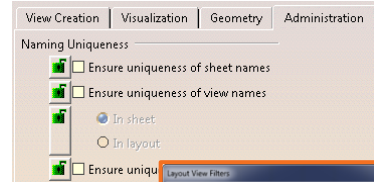
Presentation improvements

Unique Names

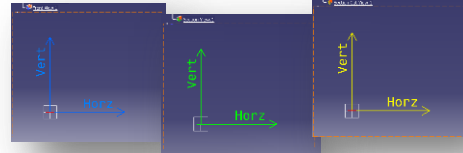
- ▷ Avoid misunderstandings by ensuring uniqueness of structuring element naming

Reorder Filters

- ▷ Easily change the default filter and reorder filters according to their usage

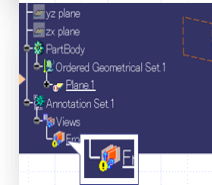


Text display for X and Y axes of FTA view



FTA view associativity improvement

- ▷ FTA view is no more automatically isolated when the referenced geometry is unresolved.



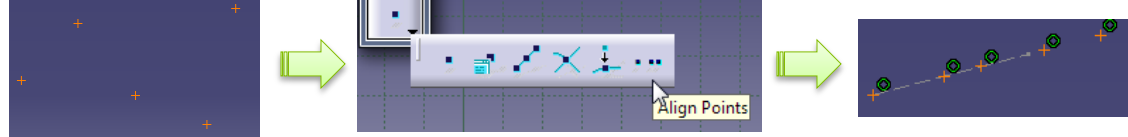


CATIA 3D Master & Drafting Solutions

Sketcher Enhancements

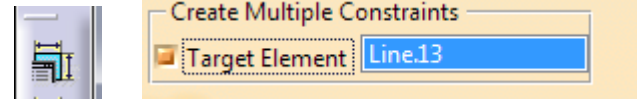
▶ Align Points Command

- ▷ Align existing points



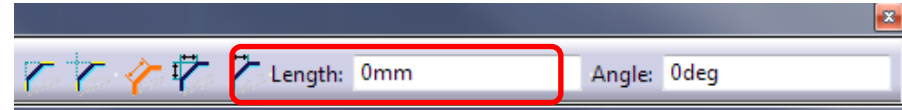
▶ Apply same Constraint to a Set of Elements

- ▷ Allows creation of the same constraints for several elements at once



▶ Tools Palette inputs order for Chamfer

- ▷ *Length* first in tools/palette input fields



V5-6R2014

CATIA Sheetmetal Solutions Main highlights

ASL, SMD



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CATIA Sheetmetal Solutions

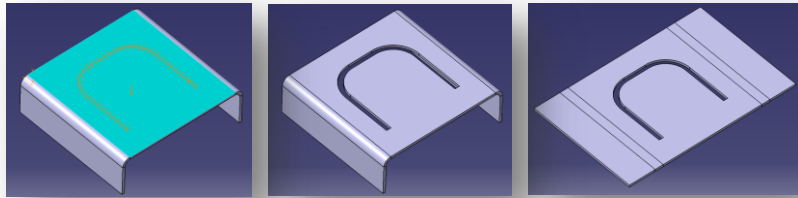
- ▶ Offset from reference face



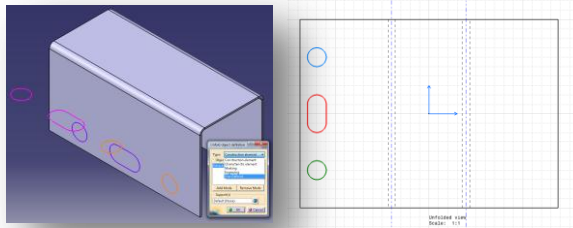
Generative Sheet Metal Design - V5-6R2014 key highlights

- ▶ **Thick profile for cutouts**

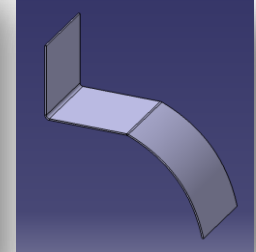
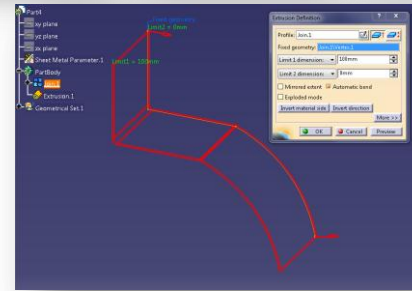
- ▶ New thick option for sheet metal cutouts



- ▶ **User defined unfolded curve types**

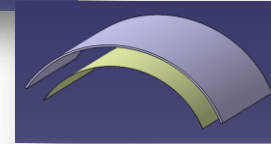
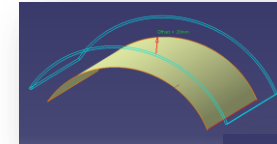
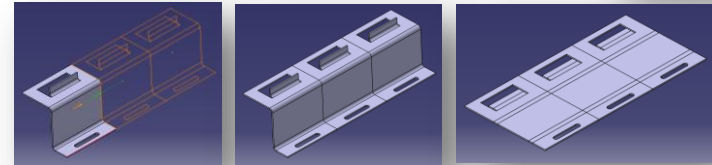


- ▶ **Extrusion for non sketched profile**



- ▶ **Pattern of body**

- ▶ Sheet metal pattern feature can now be applied to current solid



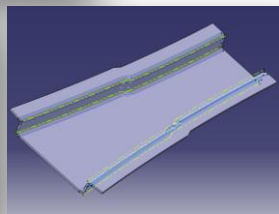
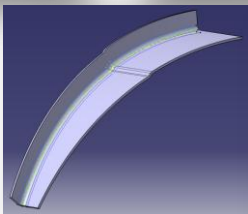
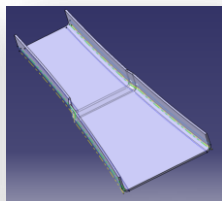
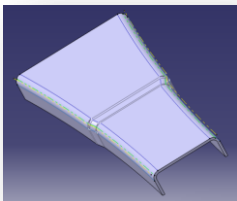
CATIA Sheetmetal Solutions



Aerospace Sheet Metal Design - V5-6R2014 key highlights

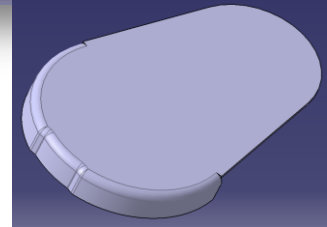
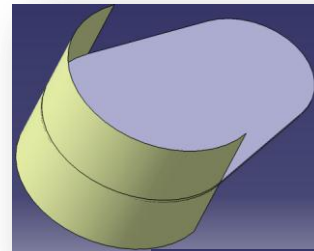
► Joggle enhancements

- ▷ Same joggles on web and surfacic flange
- ▷ Joggle on surfacic web
- ▷ Surfacic flange on surfacic flange with joggle

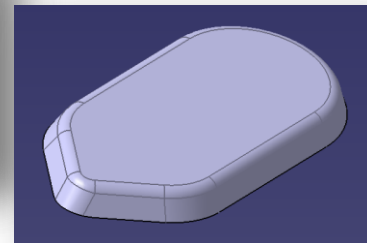
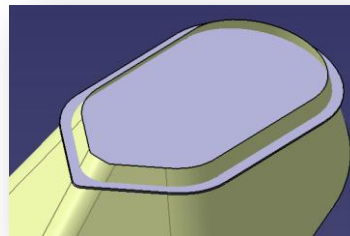


► Surfacic flanges

- ▷ Surfacic flange with minimum extremities



- ▷ Closed surfacic flange



V5-6R2014

CATIA Tooling Solutions Main highlights

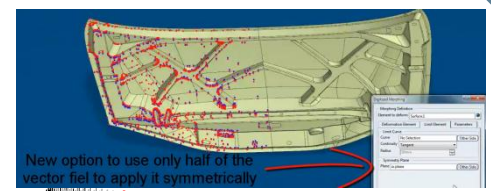
RSO



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CATIA Tooling Solutions

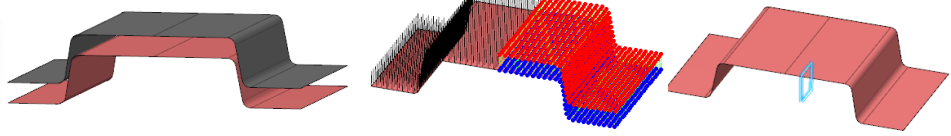
Realistic Shape Optimizer - V5-6R2014 key highlights



Symmetry

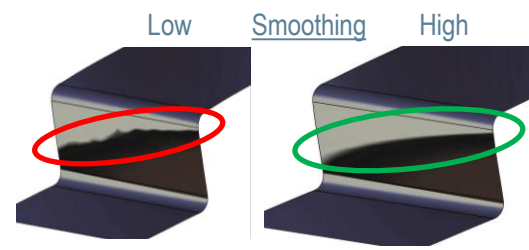


- Optimized management of morphing for symmetric parts



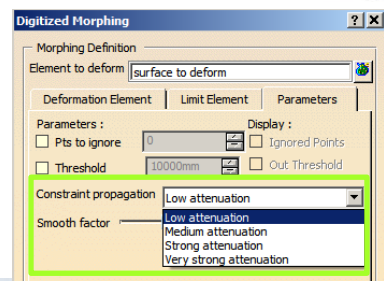
Smoothing

- New smoothing option to provide the user with Surface quality or Deviation tolerance alternatives



Constraint Propagation

- Attenuation option to better manage morphing when the deviation vector is partially available





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V5-6R2014

CATIA 3D Modeling Solutions

Main highlights

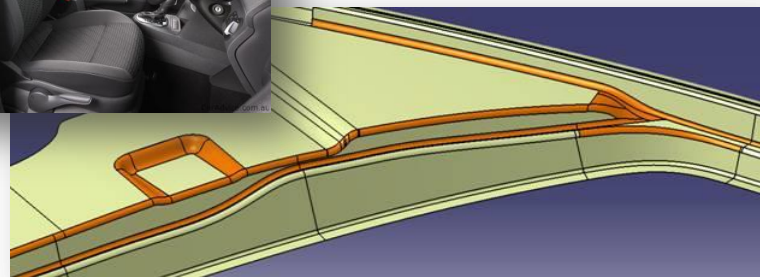
PD1/PDG, FR1, GS1/GSD, GSO, IMA, FSS/ICM, IEX, DSE/STL
SRF

CATIA 3D Modeling Solutions

New Product - CATIA Mechanical Surface Refinement 2 - SRF



- ▶ New Surface Refinement solution targeting GSD users predominately in Transport & Mobility domain.
 - ▶ Targeted process: visible mechanical parts requiring higher quality surfaces
 - ▶ Included technologies:
 - ▶ Approximation
 - ▶ Tolerancing
 - ▶ G3 Continuity
 - ▶ Feature Modeling
 - ▶ Matching
 - ▶ Highlights Analysis
 - ▶ I/O ICEMDB (ICEM Surf) data models
 - ▶ Perquisite GSD

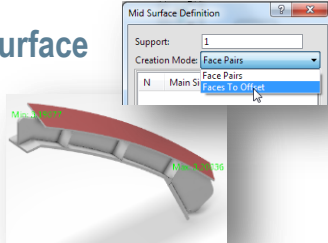


CATIA 3D Modeling Solutions

Generative Shape Design - V5-6R2014 key highlights

Multiple highlights to ease mid surface extraction for industrial parts

- ▷ Mid surface in offset mode (GSD)
- ▷ Trim Pieces : select all and keep all
- ▷ Check manifold option in surface Join



Feature extended capabilities

- ▷ Split with extrapolate up to volume
- ▷ Helix modes for pitch and loops number control
- ▷ Mode « spacing only » for Points and Planes repetition command
- ▷ Knowledge language: Extract sub-elements
- ▷ Chamfer integration with C0/C1 toolbar
- ▷ Explicit Sweep : Canonical Shape Detection



```

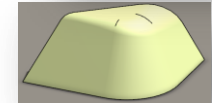
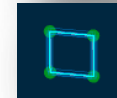
1 let f (GeometricFeature)
2 set f = PartBody\Pad.1
3
4 l = f->GetSubElements(0)
5 set PartBody\Point.1 = extract(1[1],3)
6

```



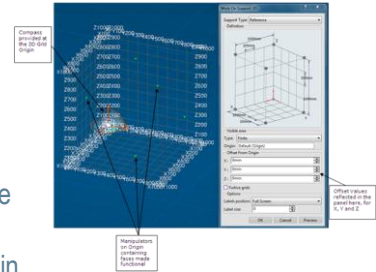
UI evolutions

- ▷ Resizable representation of infinite geometry features
- ▷ Use work on support for sketcher grid parameters (GSD)
- ▷ Accurate sharpness detection rendering mode



User Interface enhancements

- ▷ Working Support 3D Manipulators improvement (GSD)
- ▷ Better multi-result management for Line normal/angle
- ▷ Better management of reference point in Point on curve along direction
- ▷ Multi-outputs Intersect - reset deleted outputs

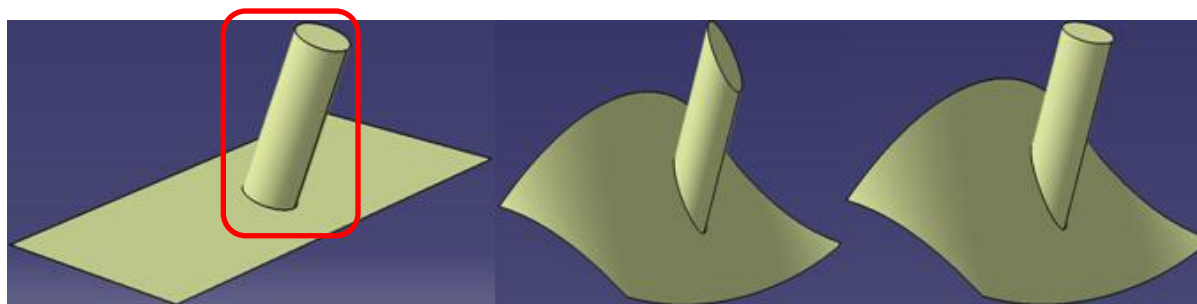


CATIA 3D Modeling Solutions

Generative Shape Optimizer - V5-6R2014 key highlights

► Rigid zones in Shape Morphing

- ▷ Morphs a surface without modifying the shape of specific geometric features (group of faces)



Rigid geometric feature

Without rigid zone

With rigid zone



CATIA 3D Modeling Solutions

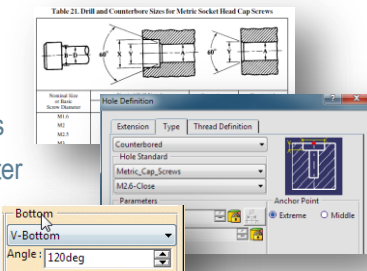
PD1, PDG



Part Design - V5-6R2014 key highlights

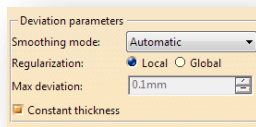
▶ Holes & Threads

- ▷ Holes standard
- ▷ Migrate thread standards from .txt to .xml files
- ▷ Use threads diameter as nominal hole diameter
- ▷ Hole blind type default bottom to v-bottom



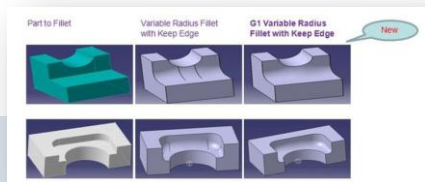
▶ Boolean operations

- ▷ Improved update performances



▶ Feature extended capabilities

- ▷ Tolerant modeling : local smoothing in Shell, ThickSurface and Thickness (PDG)
- ▷ Interrupt update capability in Shell, ThickSurface, and Thickness
- ▷ Variable Fillet G1 with keep edge (PDG)



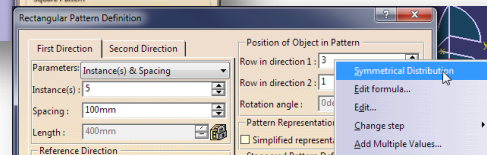
▶ Technological Results cross-highlight

- ▷ Highlighting geometrical cells & tree



▶ Pattern usability

- ▷ Switch from pattern of list to pattern of single feature
- ▷ Identical instances option, staggered step default value, symmetrical instances option



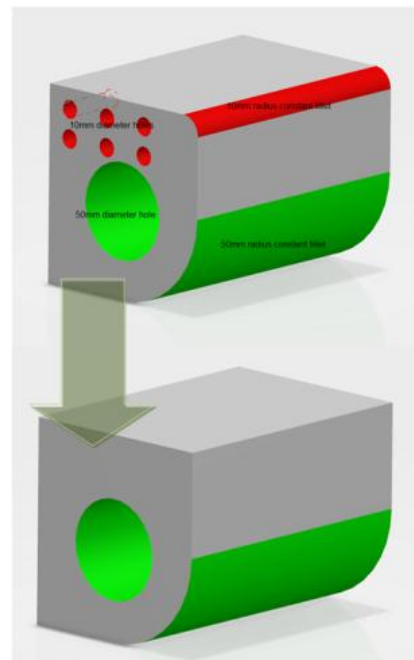
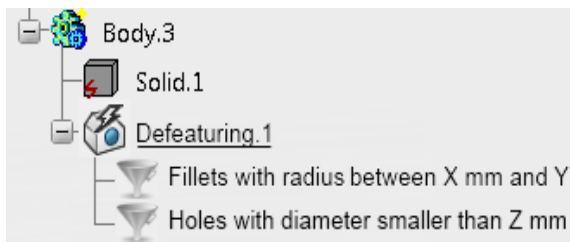
CATIA 3D Modeling Solutions



Part Design - Features Recognition - V5-6R2014 key highlights

► Automatic Feature Recognition feature

- Feature integrated in update, that automatically removes holes and fillets
- Holes and fillets are filtered according to their radius



V5-6R2014 CATIA Interfaces Main highlights



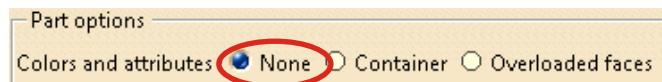
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CATIA Interfaces & MultiCAD Solutions



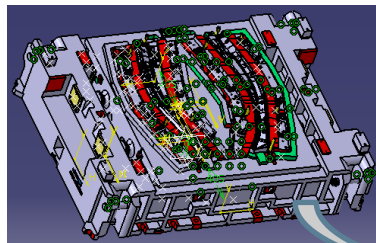
Product Data Filtering - V5-6R2014 key highlights

- o New option to remove completely the color of the Parts

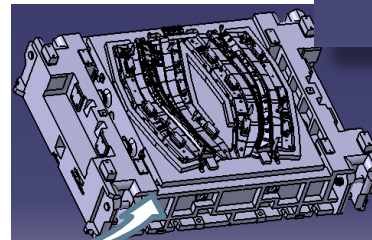


▶ Available for all DF1 commands:

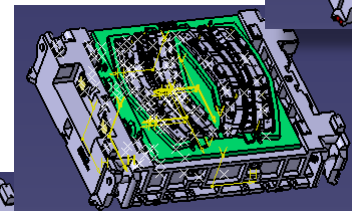
- ▷ Part to Part
- ▷ Product to Product
- ▷ Product to Part



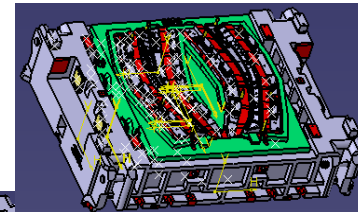
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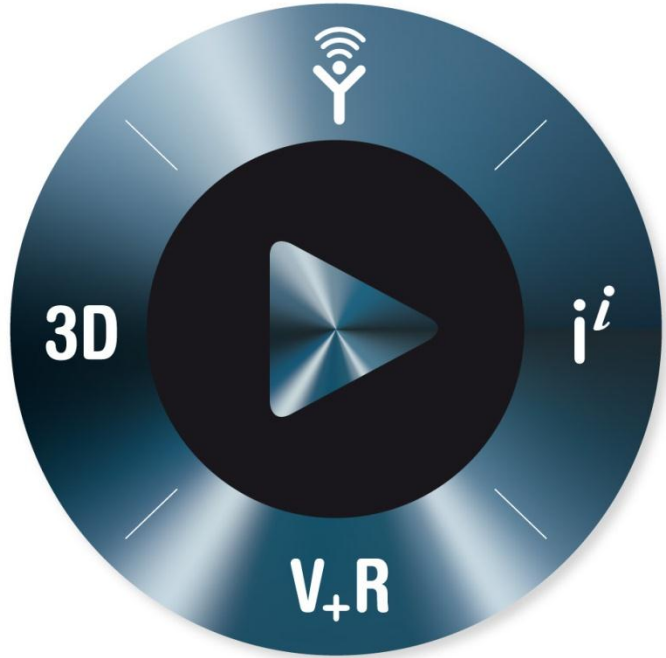


Container



Overloaded faces





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Thanks for your attention,

Any questions?

