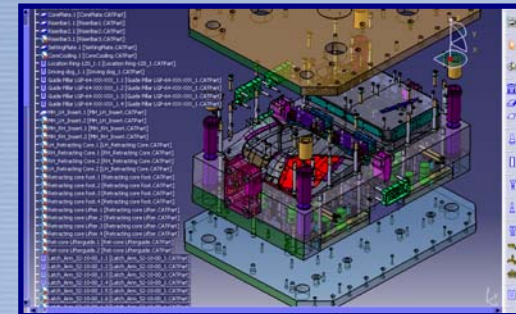
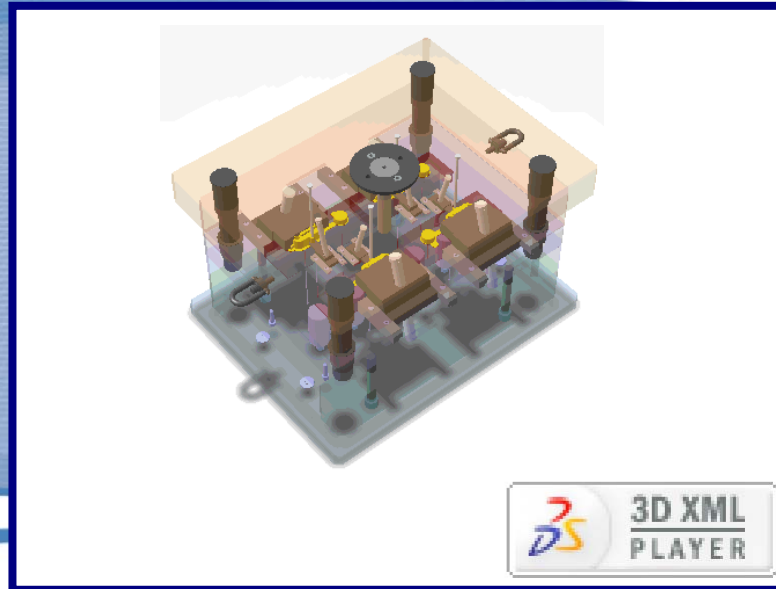
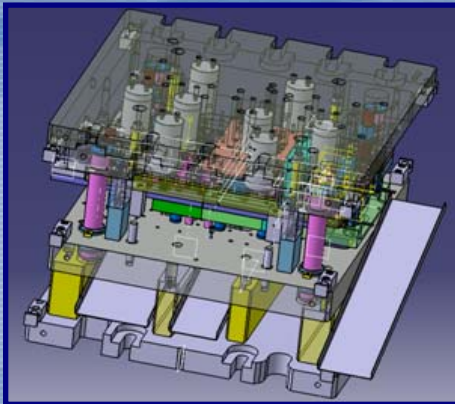


# What's New in Tooling V5R16

– Powerful Solutions for Mold & Die Customers –



IBM

DS  
DASSAULT  
SYSTEMES

Rose-Marie Estebe  
Dassault Systèmes Provence  
ree@ds-fr.com

# Driving What's New in Tooling V5R16...

## Fulfill high-priority Customer Requirements :

- Enable collaborative design for complex tools
- Provide tight integration between Design and Manufacturing
- Break new grounds in dealing with large-sized tooling assemblies



DAIMLERCHRYSLER

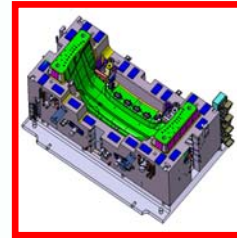


**Increase Customer's productivity in an ultra-competitive Market**

# Mold & Die V5R16 : Highlights in TG1 / MTD

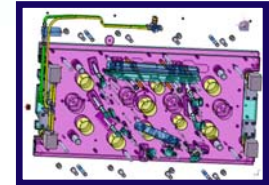
## ■ Concurrent Engineering :

- ◆ Automatic Context Management
- ◆ Tool Structure Analysis



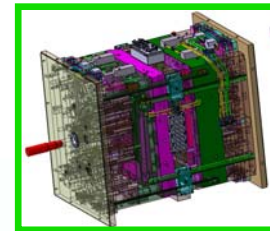
## ■ Tightly integrating Design with Manufacturing & Drafting :

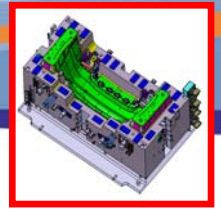
- ◆ Technological Results
- ◆ Tooling Components : User-defined associations to add/remove material



## ■ Enabling Large Assembly Management :

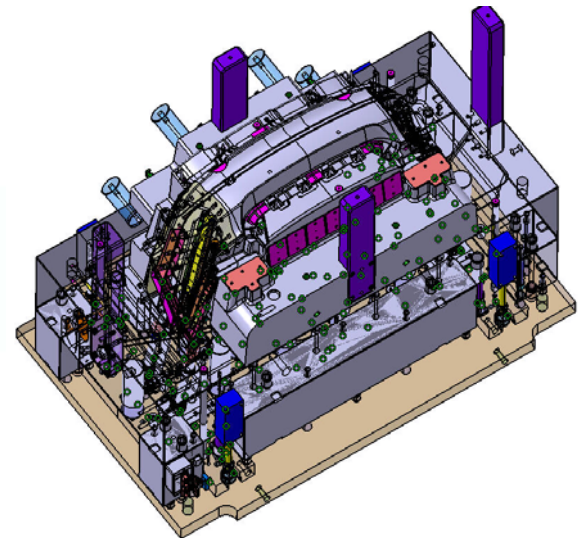
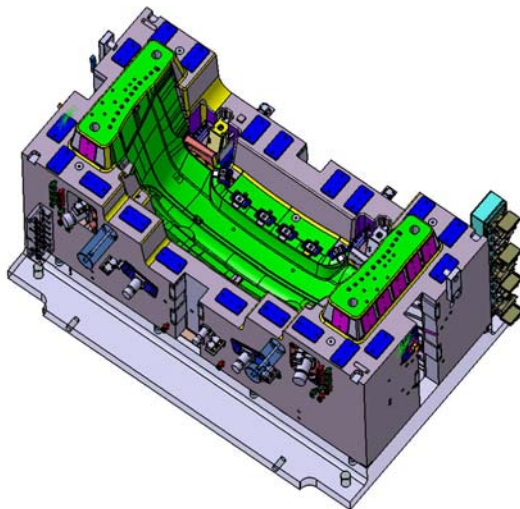
- ◆ Restricted Form Surface
- ◆ Deactivate/Activate Tooling Components





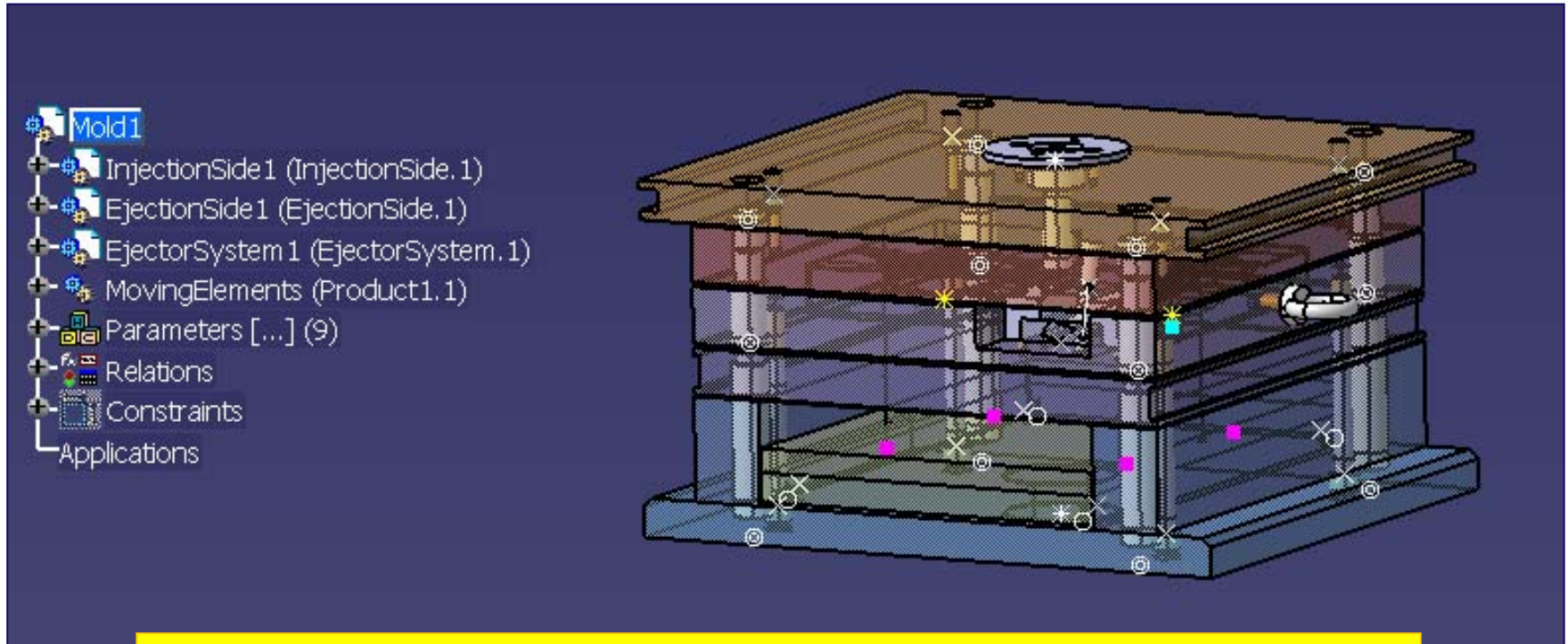
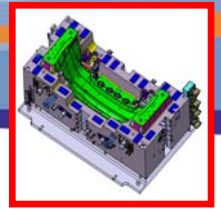
# Concurrent Engineering

- **Enable users to work independently on sub-assemblies of the Mold or Die without having to manage contexts :**
  - ◆ Tooling Components contain the geometrical definition of material automatically removed or added when these Components are instantiated in the Tool (drill a plate, create an overthickness on an insert...)
  - ◆ This means that affected elements have context dependencies on these Components
  - ◆ Depending on the complexity of the assembly, there can be hundreds of such links : this is virtually impossible to manage with standard CATIA capabilities



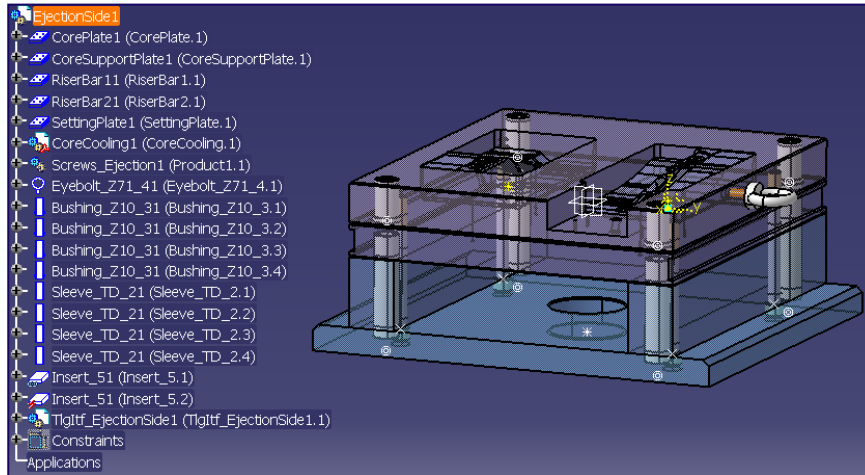
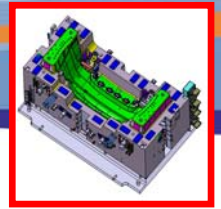


# Concurrent Engineering : Start



**Full Mold : made up of several sub-assemblies with mutual context impacts**

# Concurrent Engineering : Designer 1



1

**Open only sub-assembly *Ejection Side* :**

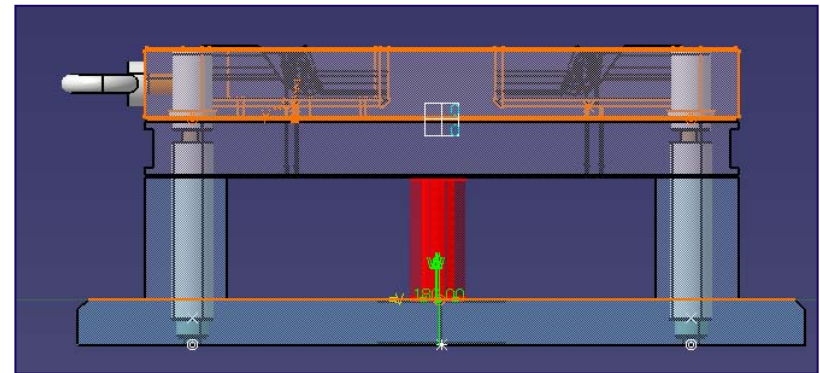
Drillings from *Ejector* Components create context dependency on sub-assembly *Ejector System*

2

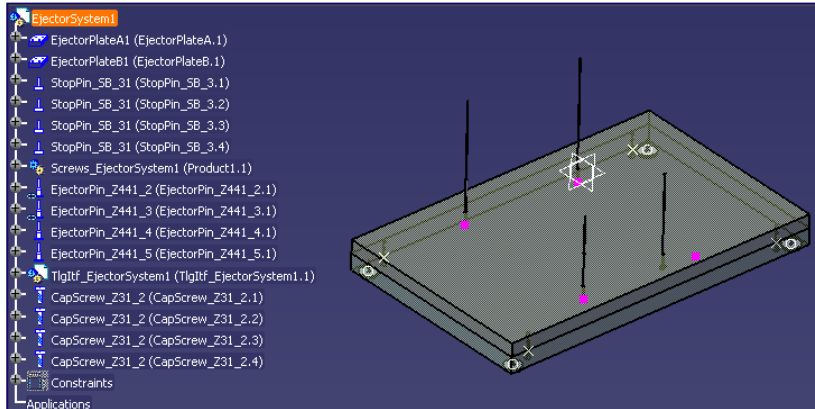
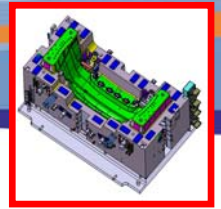
**Designer 1 can work independently despite external dependency.**

**Potential impact on other sub-assemblies will be resolved later, once the full assembly is available.**

For example, add Component *Support Pillar*. Its drillings will also impact *Ejector Plates* in sub-assembly *Ejector System*.

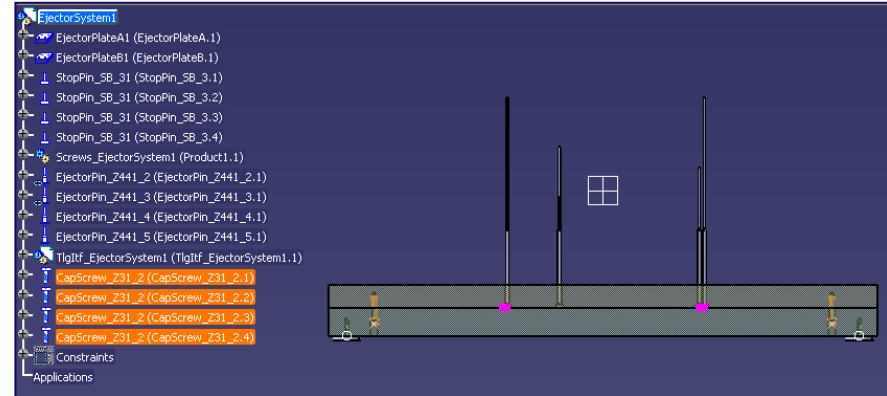


# Concurrent Engineering : Designer 2



1

Open only sub-assembly *Ejector System*

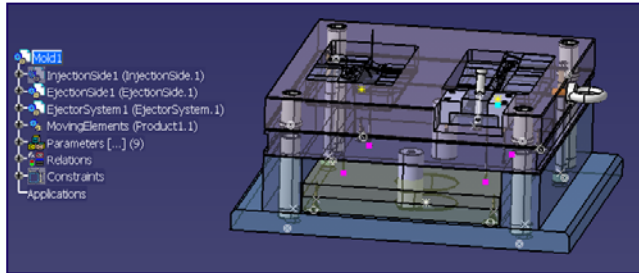
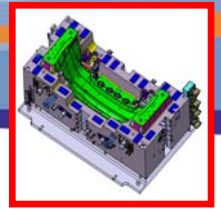


2

Designer 2 can work independently, without needing to consider potential impacts due to work by Designer 1

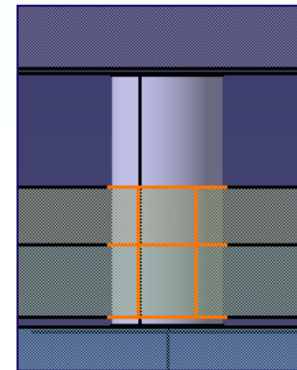
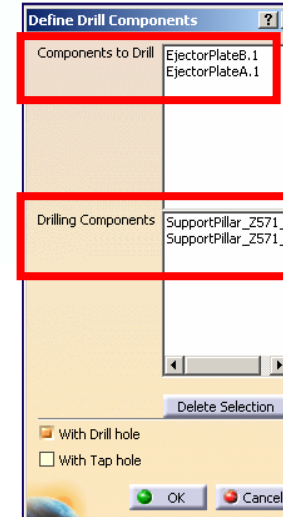
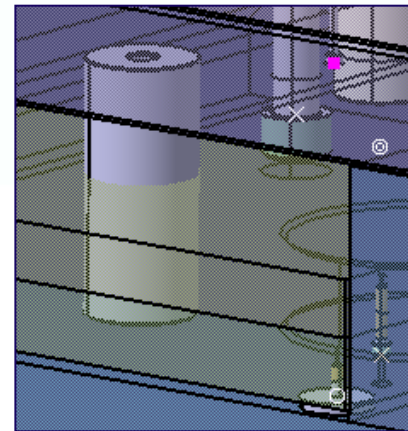


# Concurrent Engineering : Reconcile Sub-Assemblies



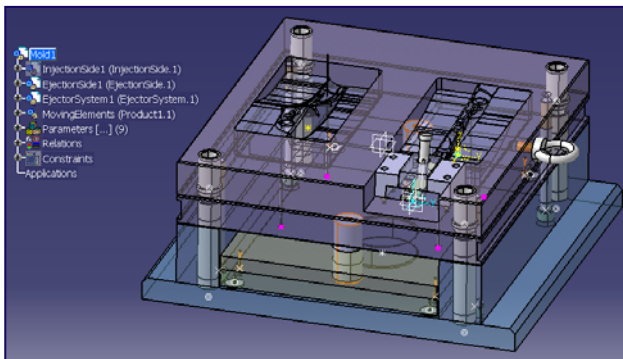
1

Open Full assembly containing sub-assemblies modified in parallel



2

Define mutual drilling impacts :  
Define *Support Pillar* drillings in *Ejector Plates*

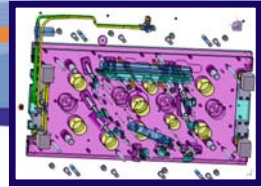


3

Final Result : Full Mold integrating concurrent updates



# Integration Design/Manufacturing : Technological Results



## Purpose :

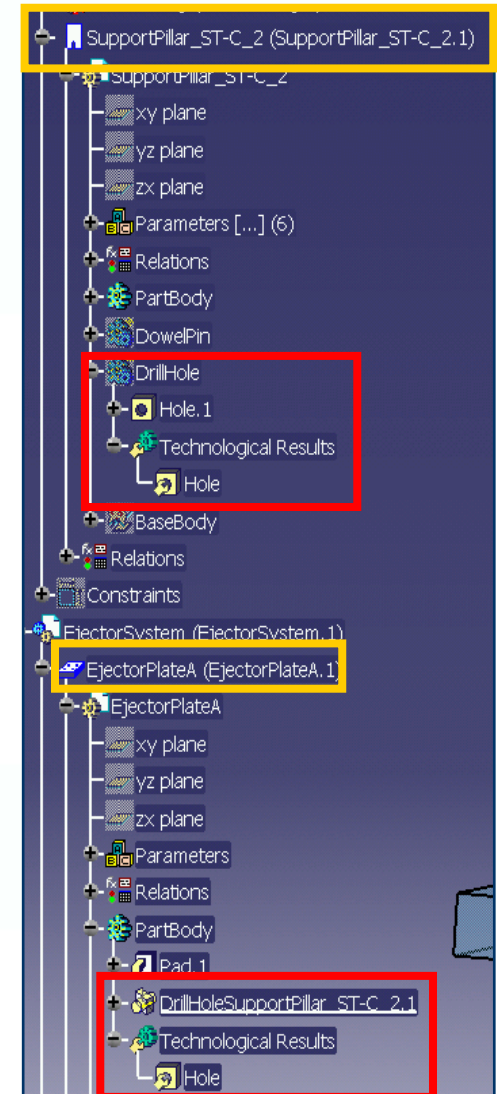
Automate the transfer of technological information from design to drafting and manufacturing.

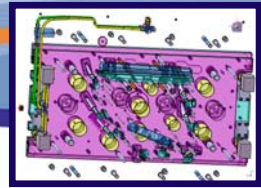
## New capability in V5R16 :

- ◆ New CATIA V5 Infrastructure element : Technological Results
- ◆ Integrated in Part Design, Tooling Design, Drafting, Manufacturing

## Benefits in Tooling Design :

- ◆ Propagate with associativity the attributes of features (typically Holes) through Multi-Model Links
- ◆ Allow to use Pattern, Symmetry, ... in the definition of Tooling Components
- ◆ Keep associativity between the plate to be machined and the Tooling Assembly
- ◆ No more need for function *Explode Holes*

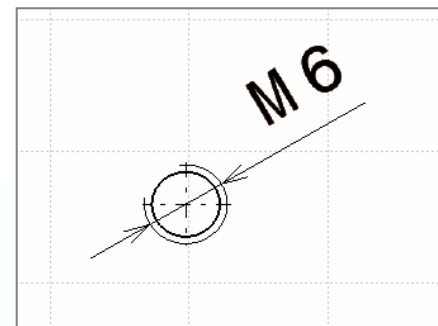
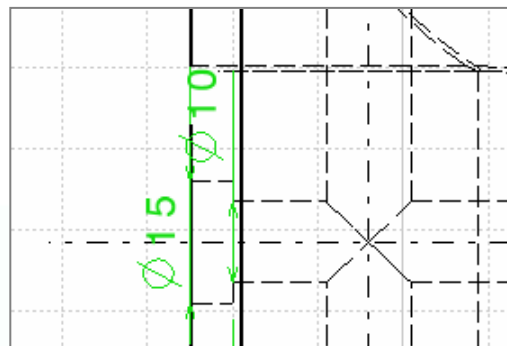
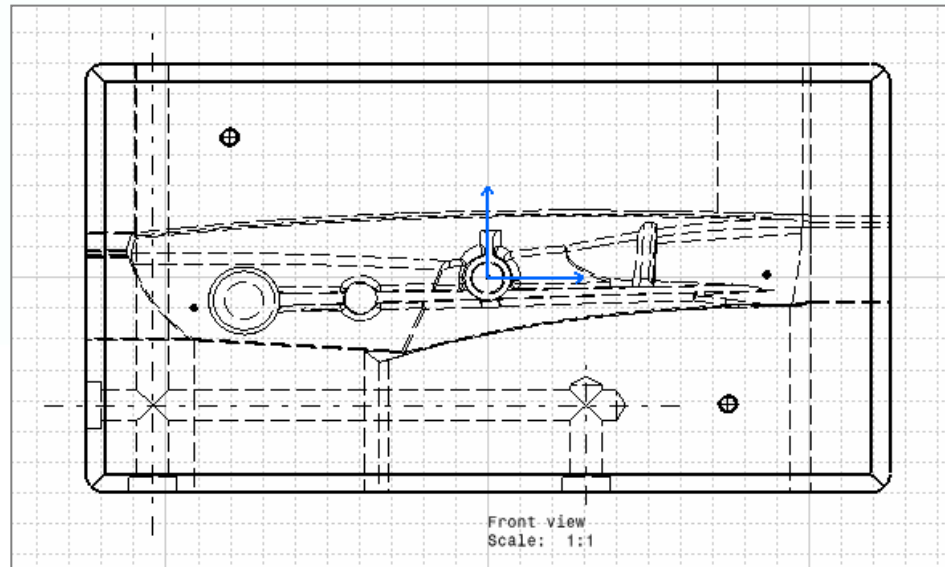
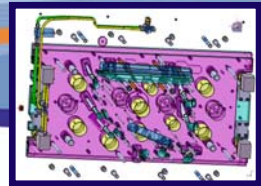




# TR : Integration in Downstream Applications

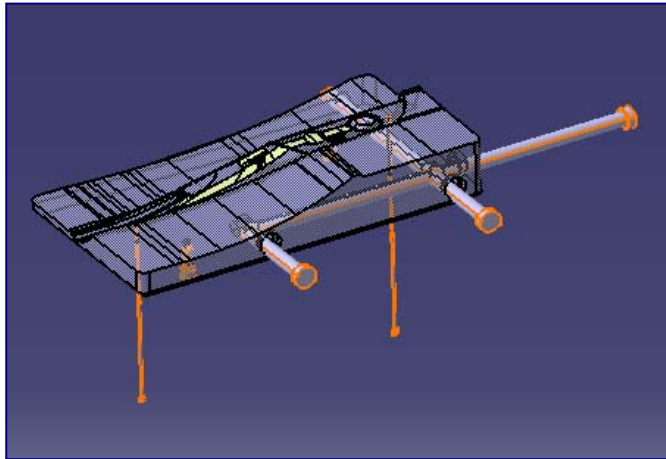
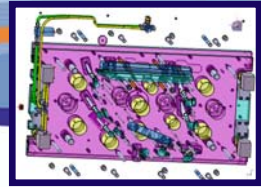
- **Multi-Model methodology is now able to propagate technological information applied to geometry**
- **In V5R16, Technological Results allow :**
  - **Drafting** : Thread extraction on MML Parts
  - **Manufacturing (via MPA - Machining Preparation Assistant) :**
    - ◆ MML Parts : Hole Thread and Tolerance extraction
    - ◆ MML Parts: No need to load all assembly documents.
    - ◆ Transformed (Translation, Rotation, Mirror, Pattern, ...) Hole and Thread features convey technological information => No more dependency on design methodology
  - **Part Design Thread analysis** : Display Thread and Tap on MML Parts
  - **Tooling Design** : Full TR information propagated to elements where Component is inserted
  - **V5R16 limitation** : No propagation of semantic tolerance
- **More capabilities to come in the next releases**

# Technological Results : Drafting



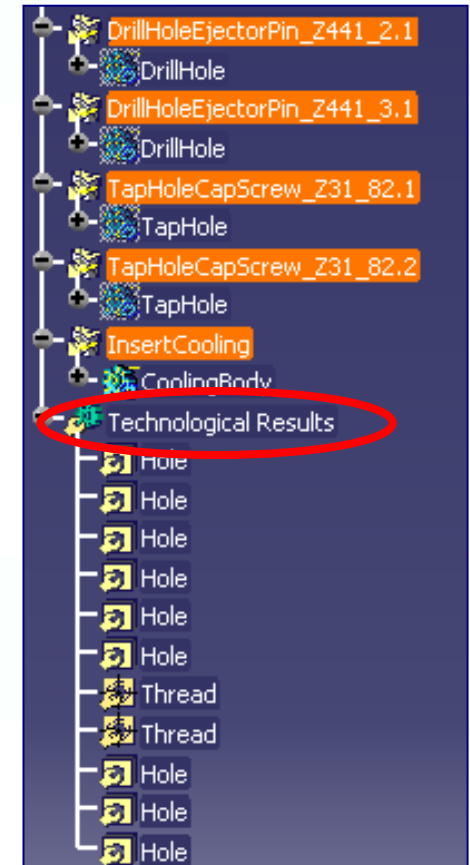
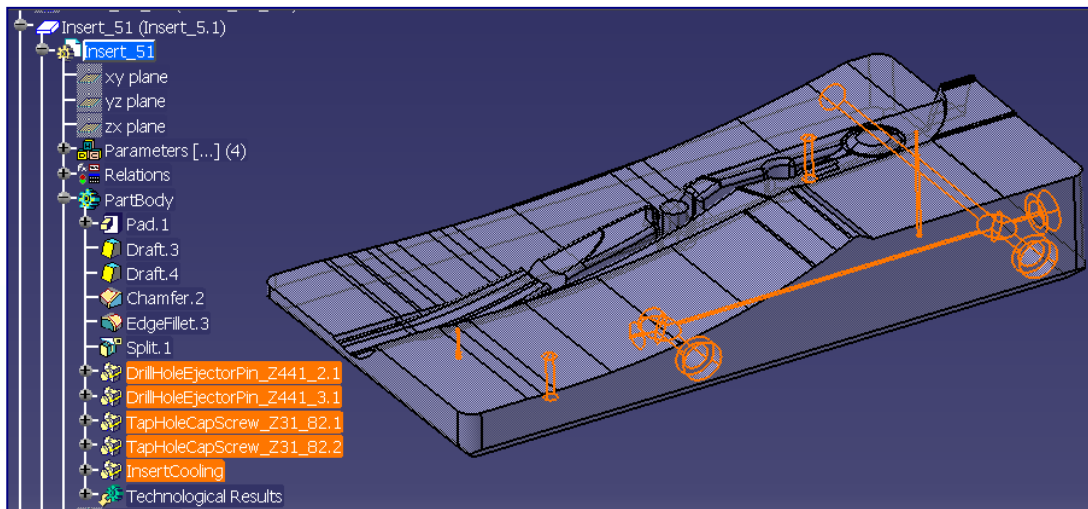
Technological information can be generated in Drawing : Diameters, Thread, ...

# Technological Results in Drilled Elements



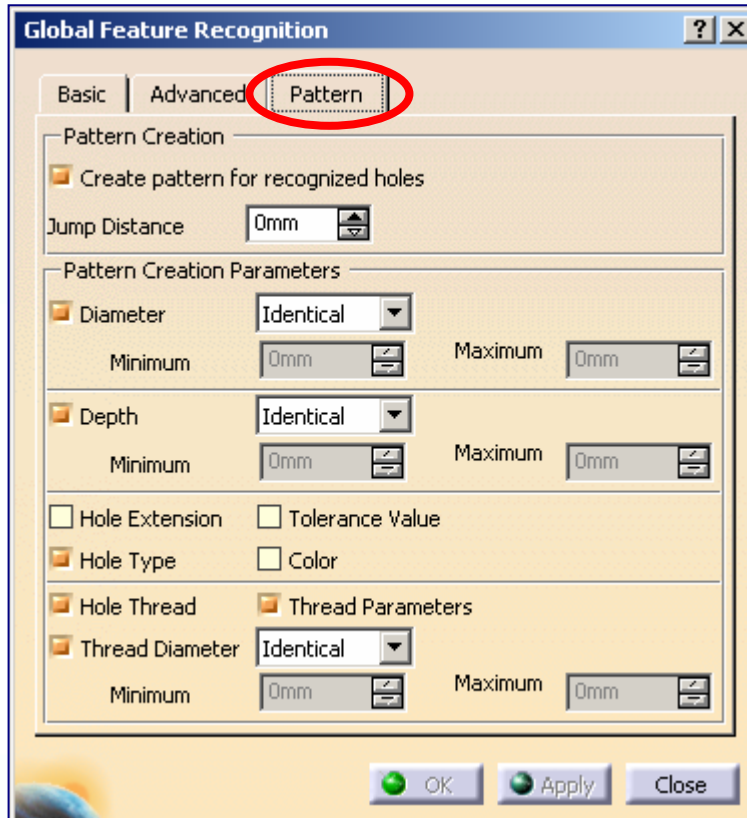
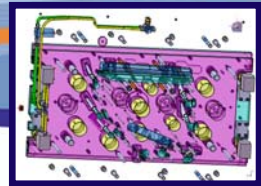
**Insert is impacted by Cooling Channels, Ejectors, CapScrews**

**TR in *Insert* are automatically created when Tooling Components are instantiated**



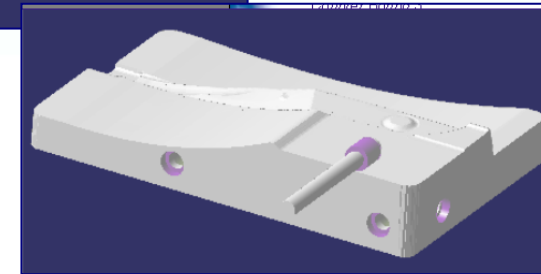
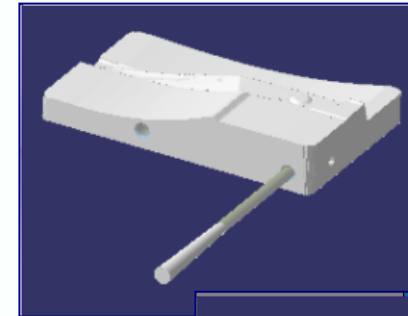
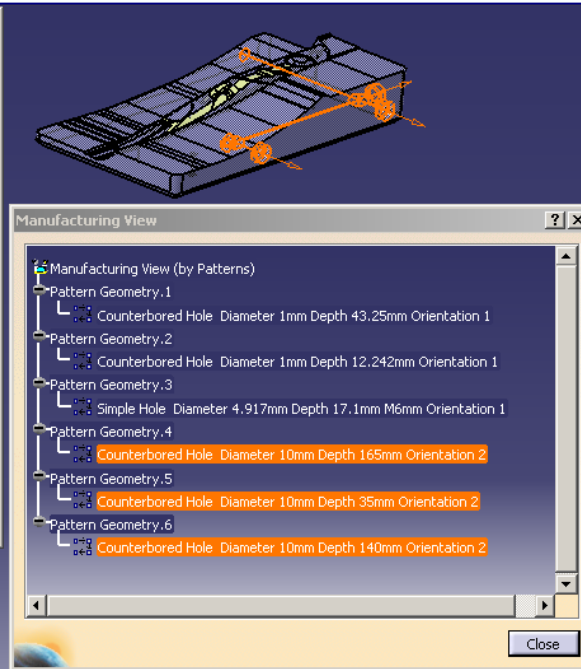
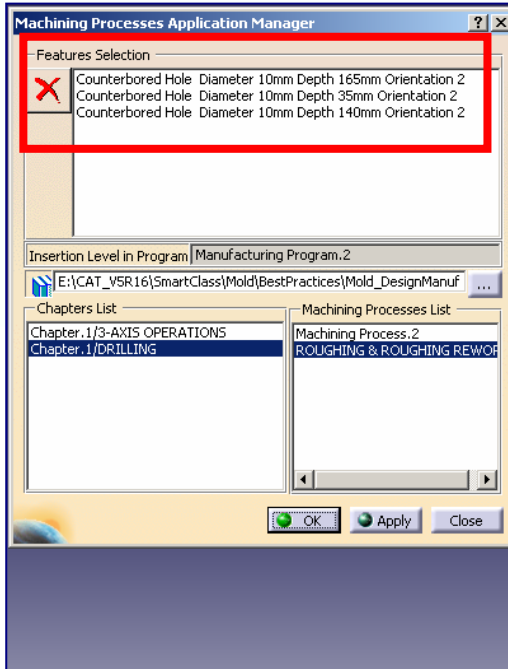
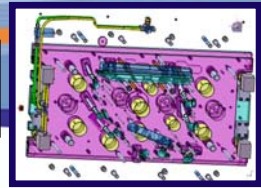


# Technological Results : Define Machining Patterns with MPA...

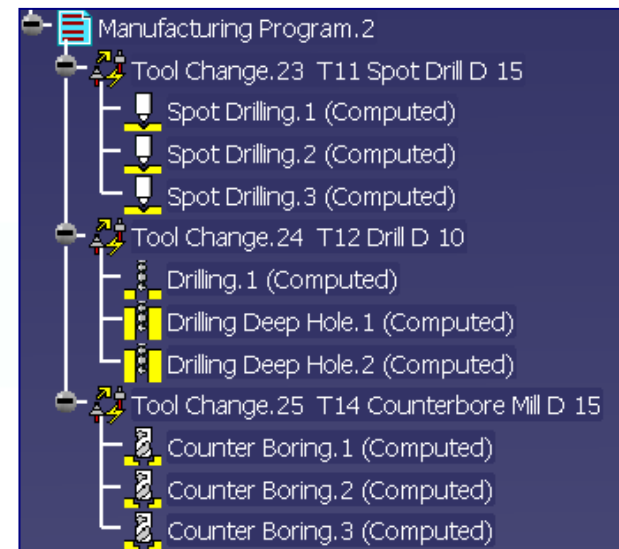


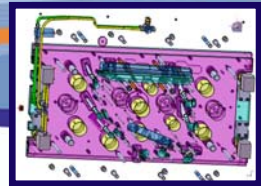
**Parameters to create Patterns are user-defined**

# ... Then Define Machining Operations and Simulation



**Define Machining Operations, e.g. from existing CATProcess**

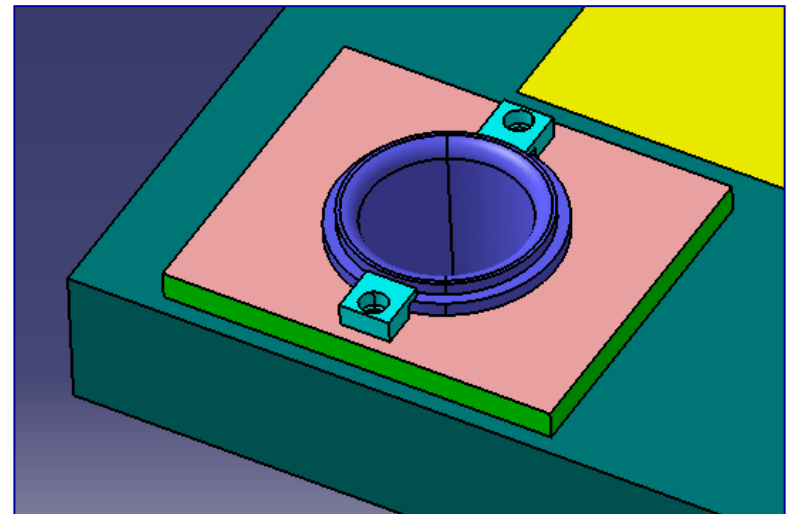
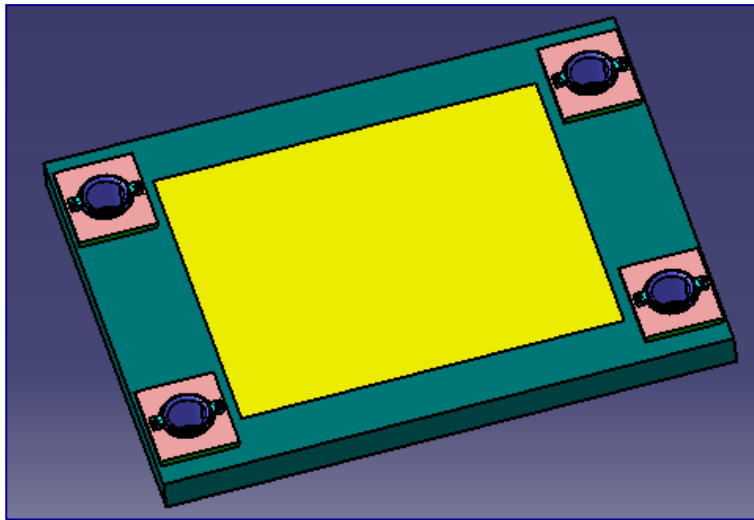


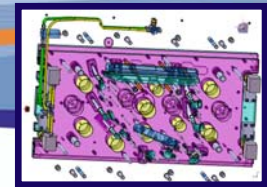


# Tooling Components : Add/Remove Material by User-defined Associations

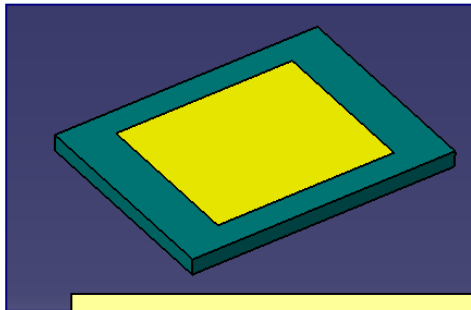
## Purpose :

- Integrating the Manufacturing Intent in the Design
- Easier and more reliable creation of Complex User Assembly Components
- Better integration of Company Know-how

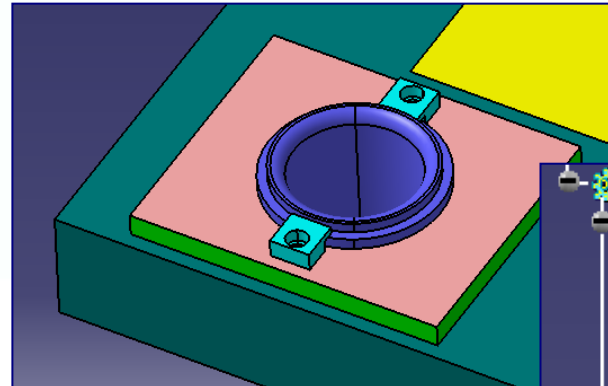




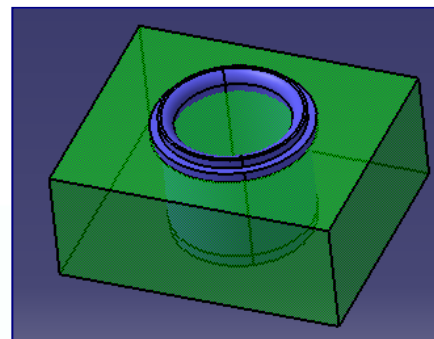
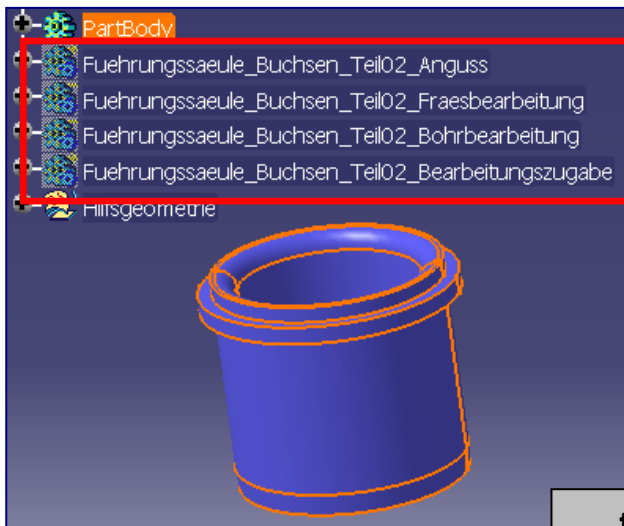
# Tooling Components : Add/Remove Material by User-defined Associations



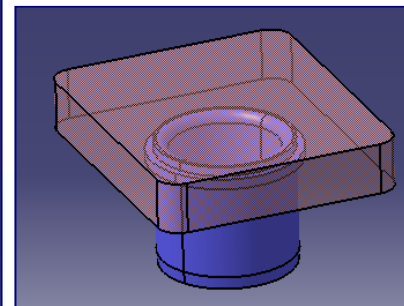
From Rough Plate ...



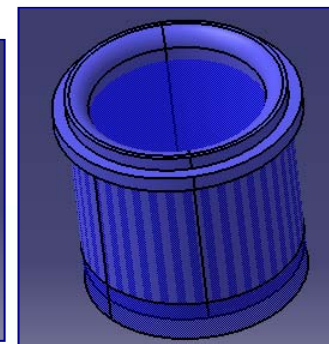
... to Final Plate ready for Manufacturing ...



Over-thickness



Finishing

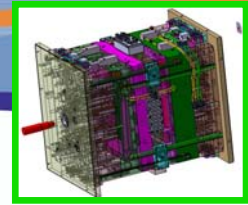


Drilling

... thanks to Tooling Component including fully user-defined Manufacturing Intent



# Tooling Component : Restricted Splitting Surface

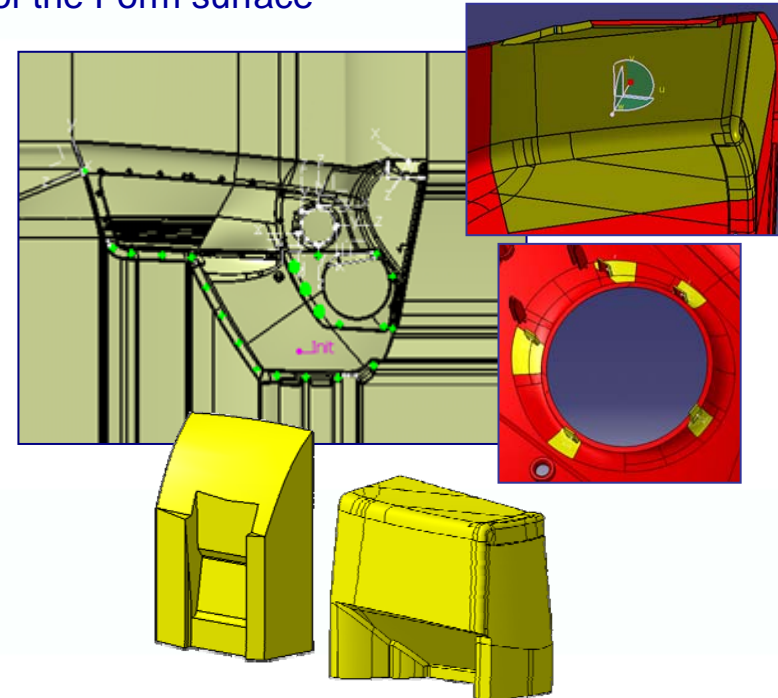
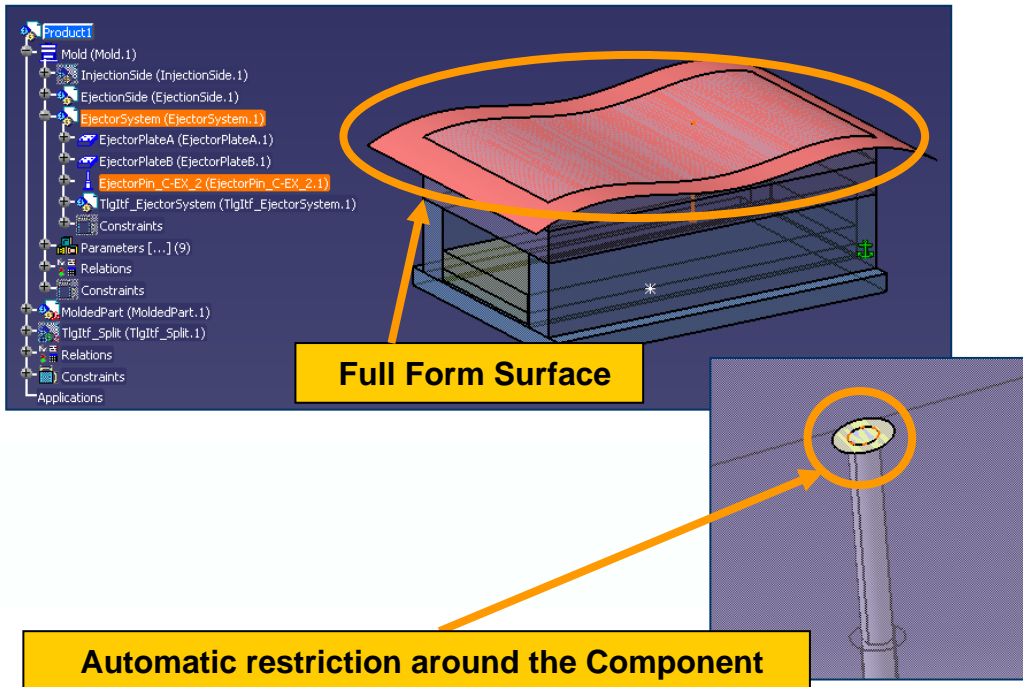


## Purpose :

Downsizing parting surface data

## New capability in V5R16 :

- Restriction of the Form surface to the minimum zone necessary for the component.
- *Automatically* applied when performing operation "Split Component"
- *Associative* to the position of the component and the shape of the Form surface



Very complex shape ?  
Many form elements ?  
=> The gain will be even bigger !

# To Sum Up ...

- **Concurrent Engineering**

**Working together**

- **Integration Design To Manufacturing / Drafting**

**Tighter than ever**

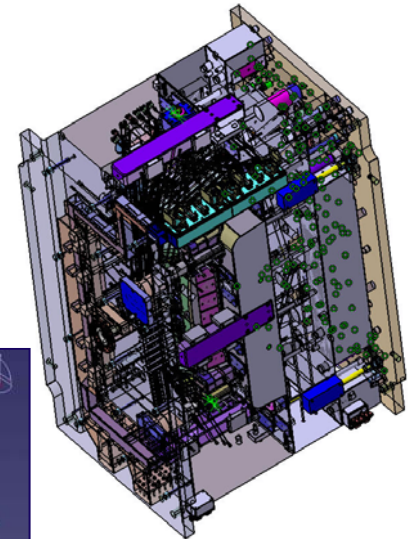
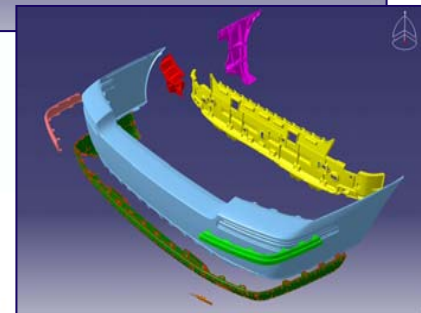
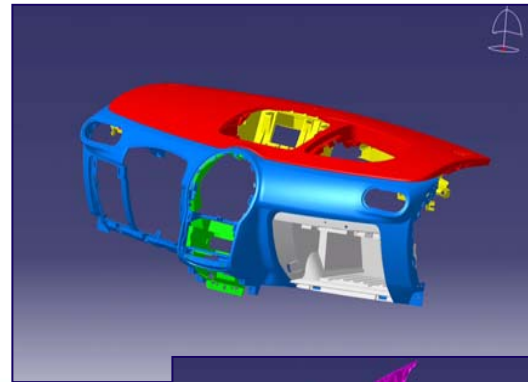
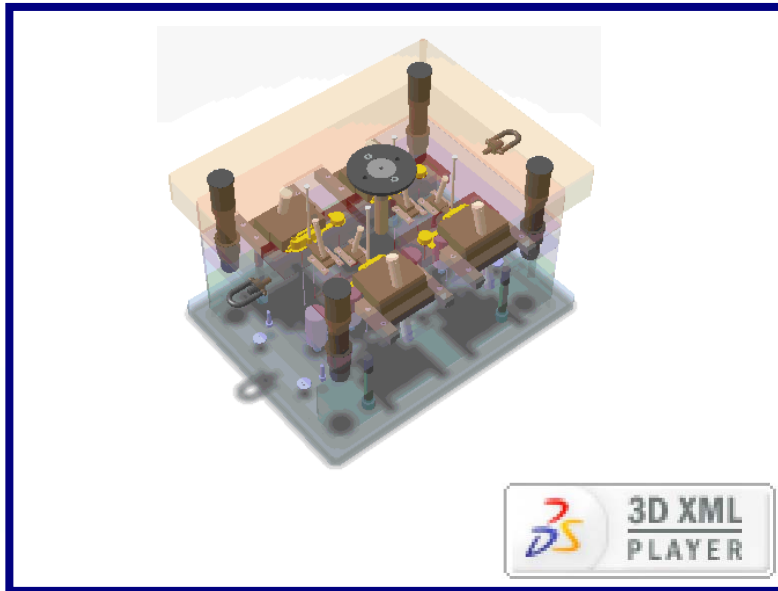
- **Large Assembly Management**

**Big is beautiful**

# CATIA V5R16 Mold & Die

## Also Taking Advantage of New Power !!!

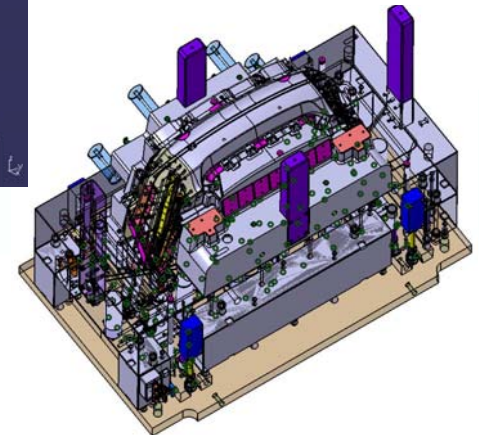
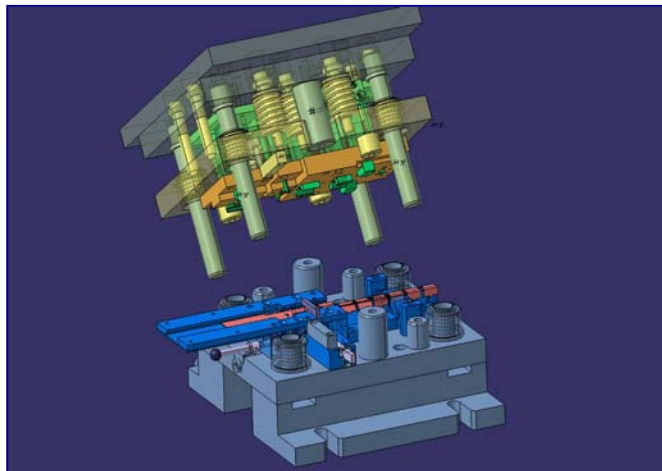
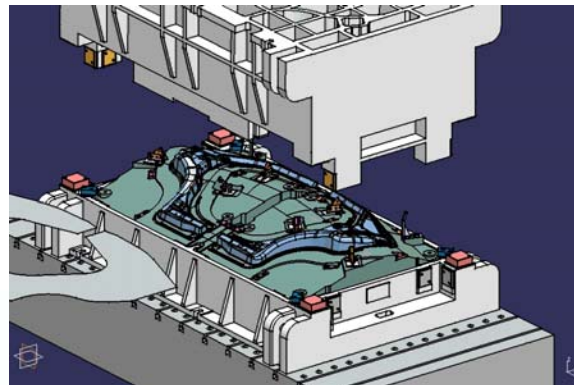
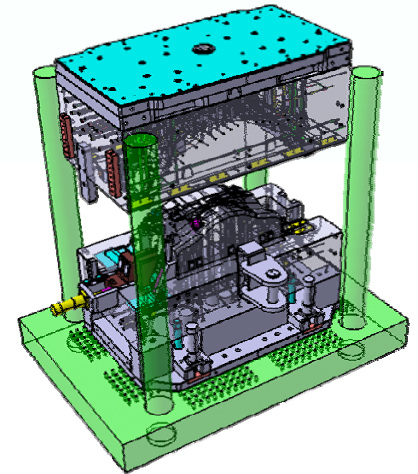
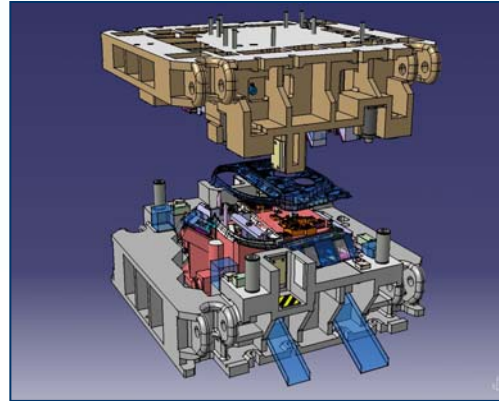
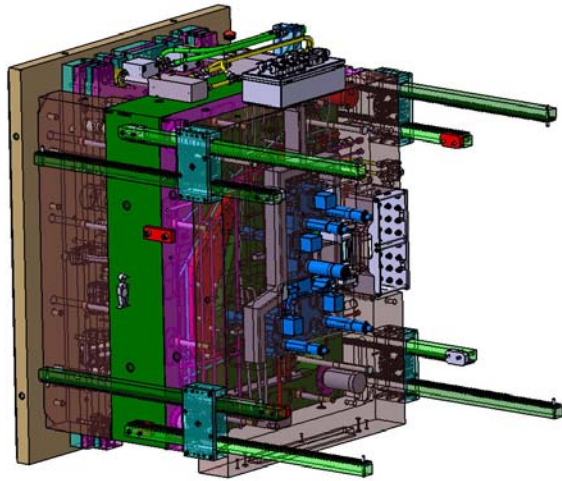
- 3D XML : Share and Collaborate
- 64-bit Architecture : No limit for Complex Tool Assemblies





# CATIA V5R16 Mold & Die: "Accelerating Collaborative Product Design"

Just Do It Now !





**Thank You !**

