



International TechneGroup

CADfix 11/SP1

April 2017

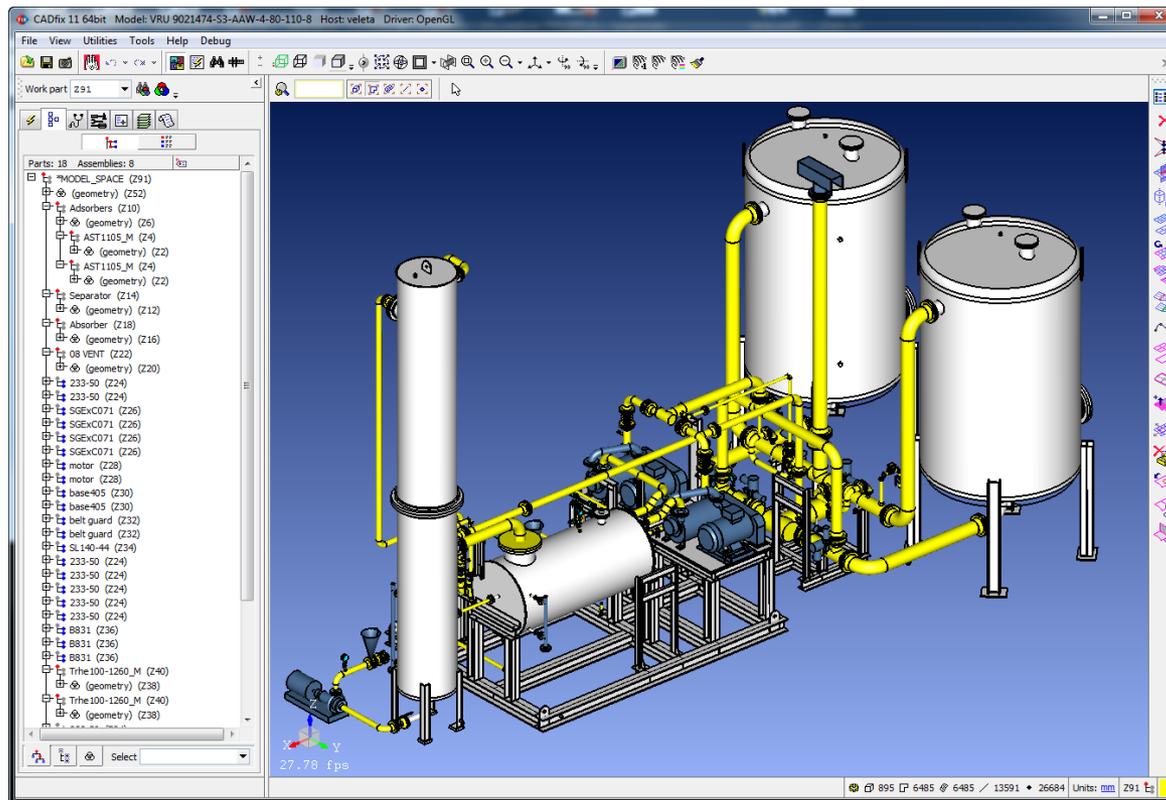


CADfix 11/SP1 Summary

- Import/Export
 - CAD version updates: NX11, Creo 4, SW 2017
 - DXF/DWG: support for assemblies
 - STL: new preview quality checks & faster binary export. More robust faceting.
 - CATIA V5 import of geometric sets/combined surfaces
 - New mesh export to ABAQUS
 - Faster export of large assemblies
- Assemblies
 - Faster exploding and general handling
- Wizard
 - New Transform options for collapsing sliver faces and sharp edge angles
- Diagnostics
 - Faster result browsing
- Morph
 - Improved matching and deformation quality
- 3D Printing
 - Improved slice generation (parallelised)
 - Hatching tool path generation (prototype)
- Facets
 - Improved facet stitching
 - New shrink-wrapper (prototype)
- Defeature
 - More robust fillet removal
 - Faster hole removal
- CAE Geometry
 - Auto mid-surface tool (prototype)
 - Improved split quality from CFD splitting tool
- Build
 - Improved welding of v-shaped gaps
 - Support for defining non-manifold bodies (adding internal faces)
- GUI
 - Faster screen selection
 - New smart selection for tangential faces
 - Various user driven improvements

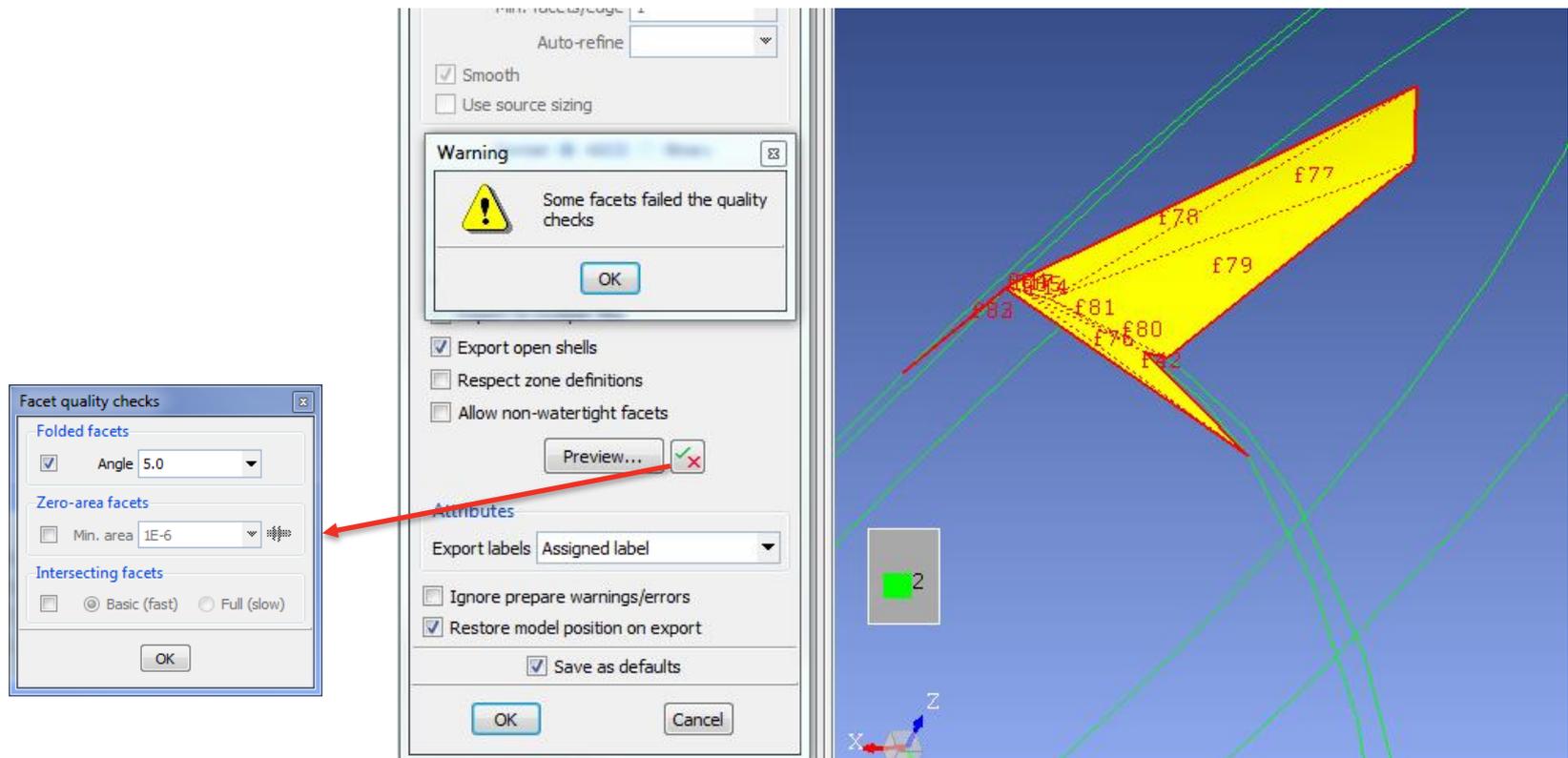
Import/Export

- New support for DXF/DWG assemblies
 - Faster processing due to fewer entities (no exploding done)
 - Significantly smaller DXF/DWG files exported



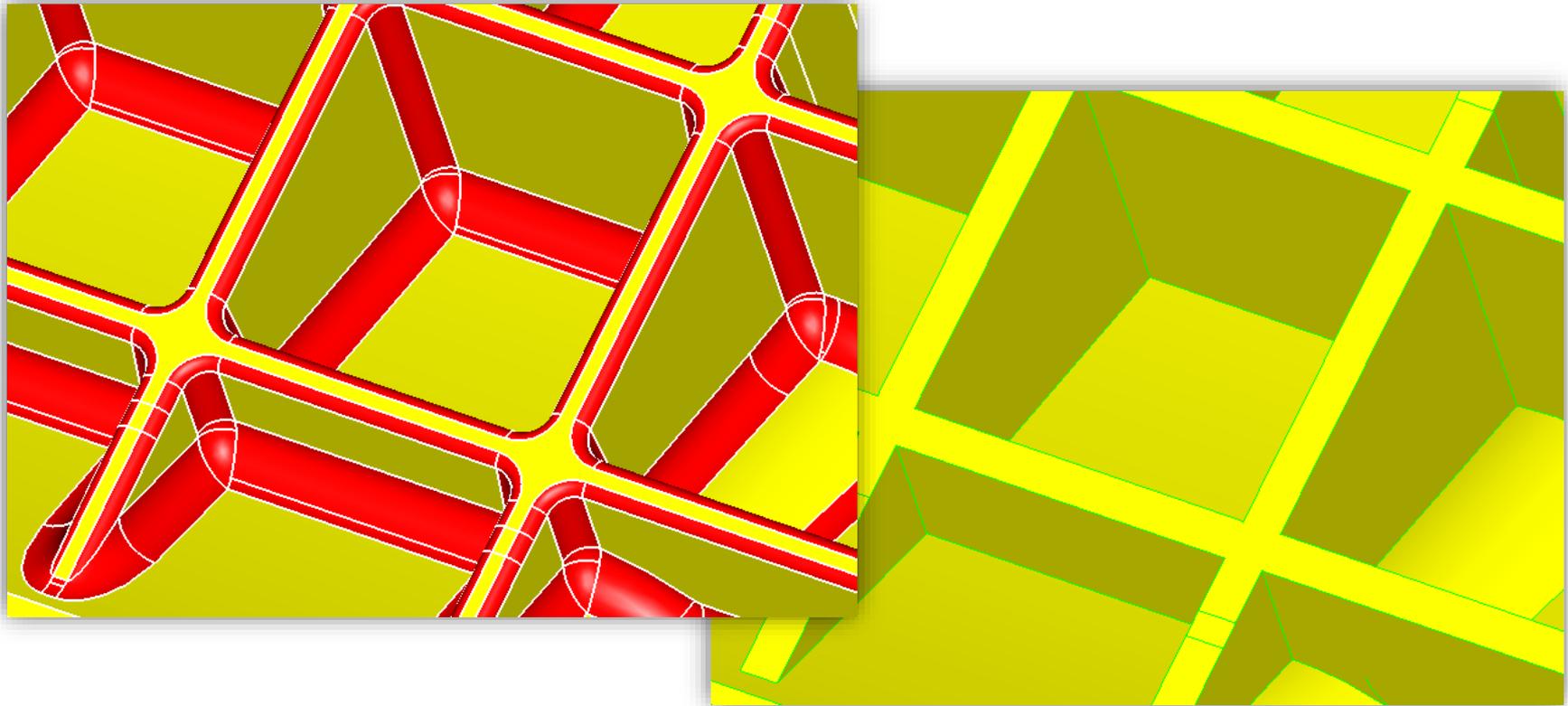
Export

- New STL quality checks
 - STL export “Preview” tool now offers quality checks to detect bad facets



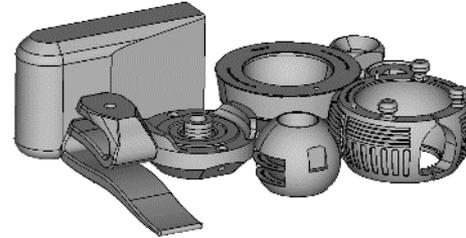
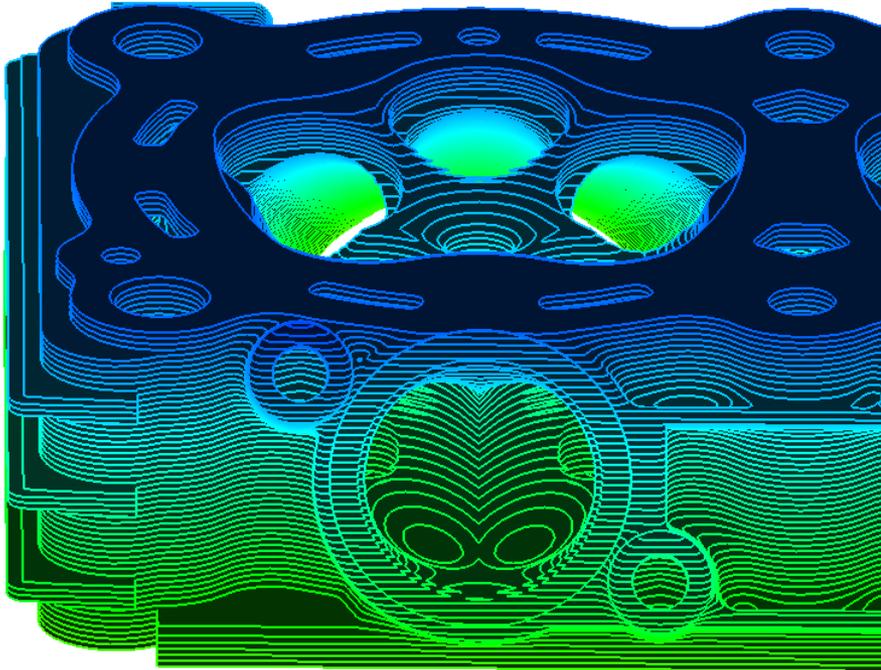
Defeature

- Improved fillet removal
 - Now capable of handling complex split fillets
 - New incremental algorithm gives higher success rate

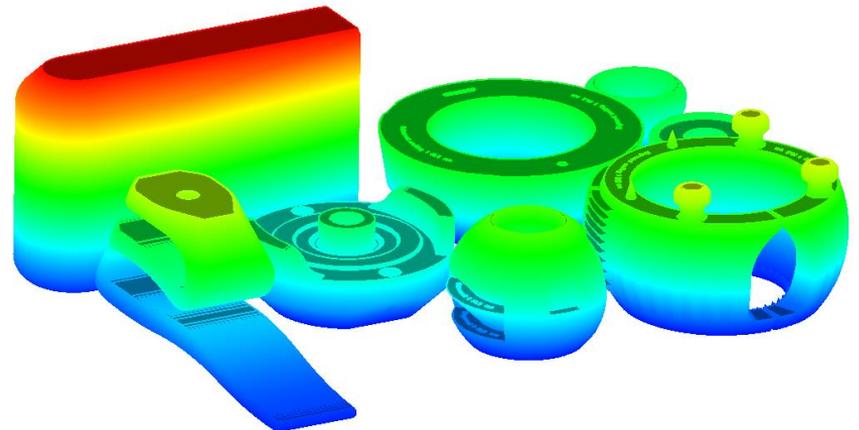


3D Printing

- Improved Slice Generation
 - Faster (now parallelised)
 - Improved curved facet slicing
 - Robust detection of multiple-loop slices

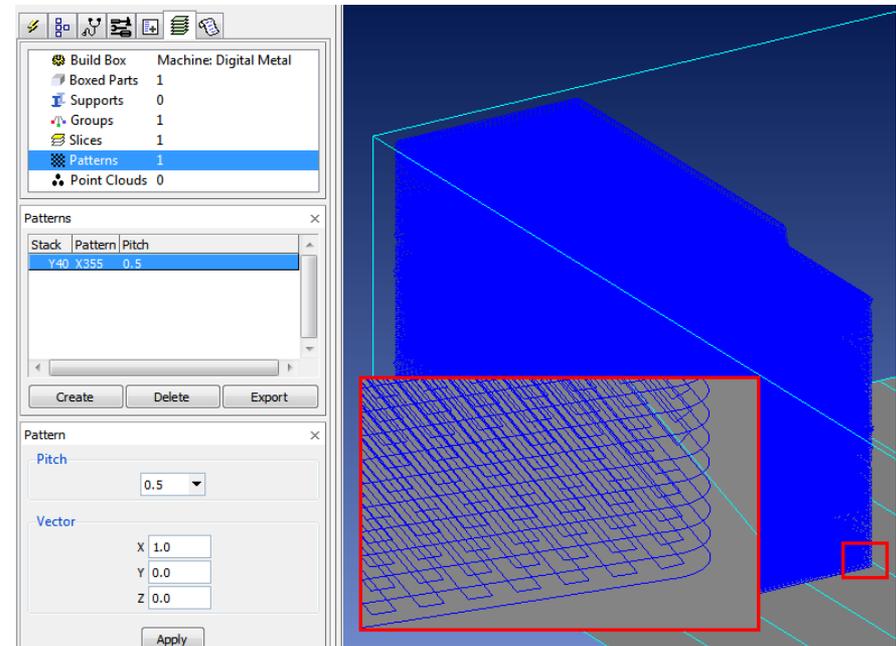
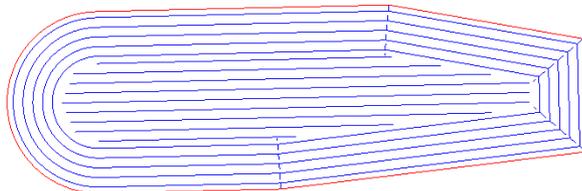


924 slices,
45 seconds



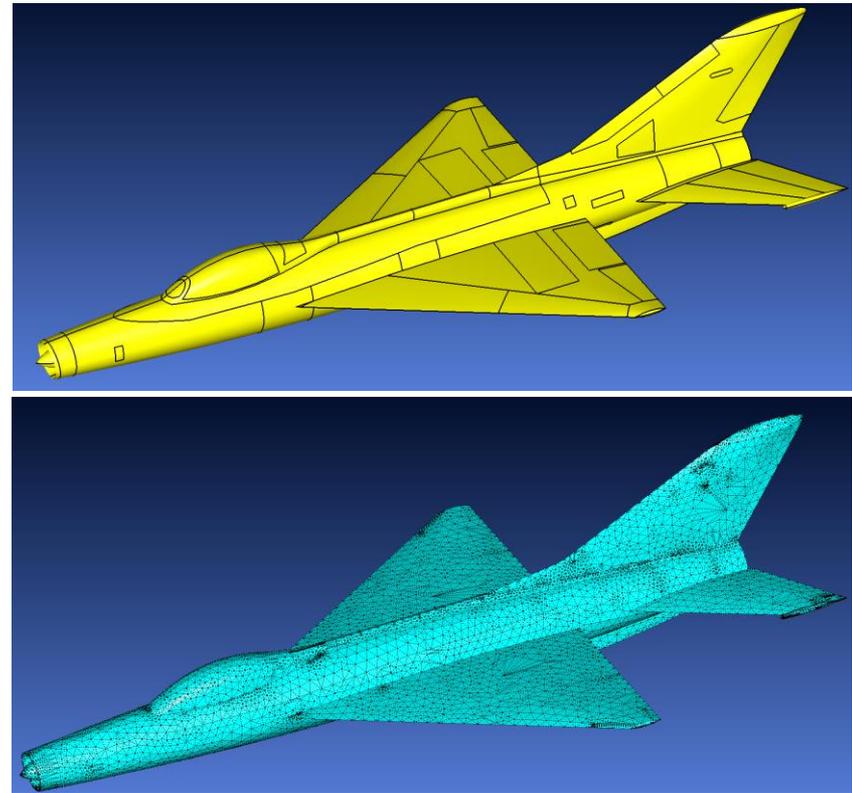
3D Printing

- New Toolpath Generation (*prototype*)
 - Generate toolpaths within each slice
 - Control of pitch/width of tool path and orientation
 - Export to CL files
 - Coming in CADfix 12:
 - Variable radius toolpaths
 - Medial Axis Transform shell-based paths
 - Hybrid shell/hatching paths



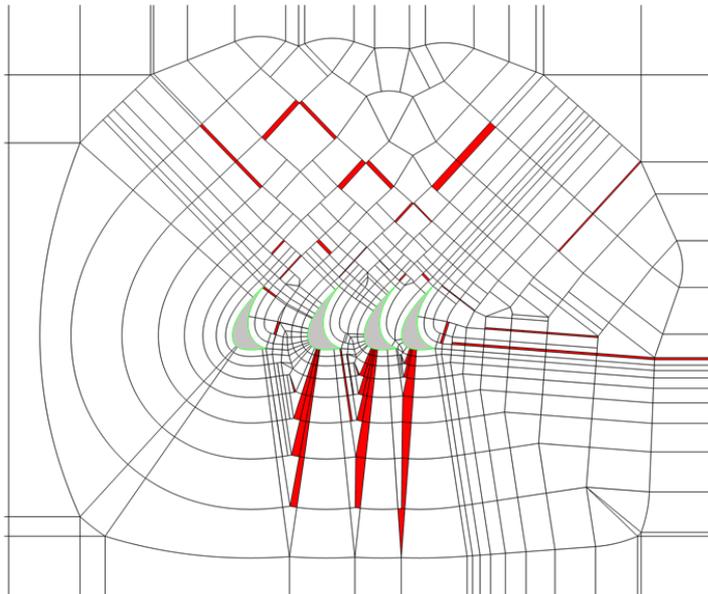
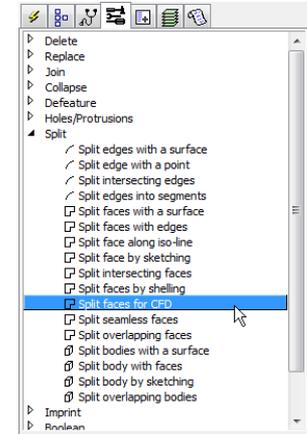
Facets

- New Shrink-wrapper (*prototype*)
 - Alternative to traditional oct-tree approach
 - Benefits:
 - Robust capture of thin regions and sharp edges, e.g. trailing edges and junctions.
 - Recovery of CAD parenthood enables quality re-meshing with complex size controls
 - Coming in CADfix 12:
 - Enforced capture of selected CAD edges

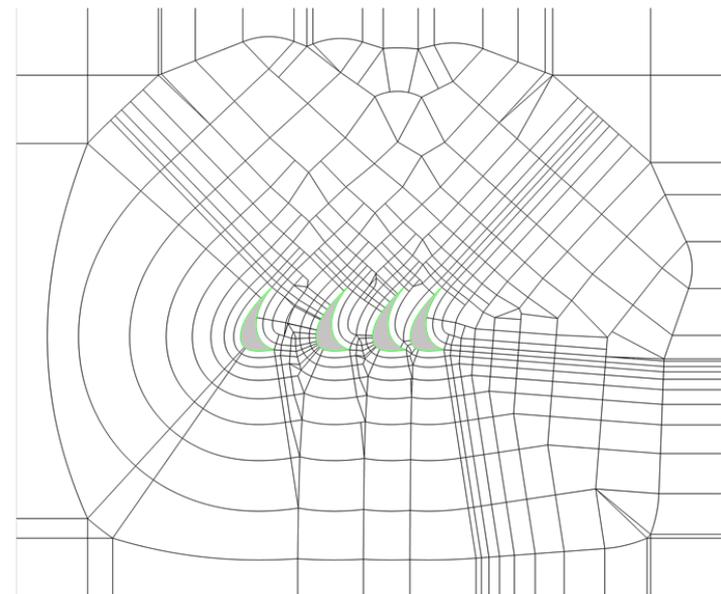


CAE Geometry

- Split faces for CFD
 - Improved split topology
 - Fewer narrow faces created



Before



After

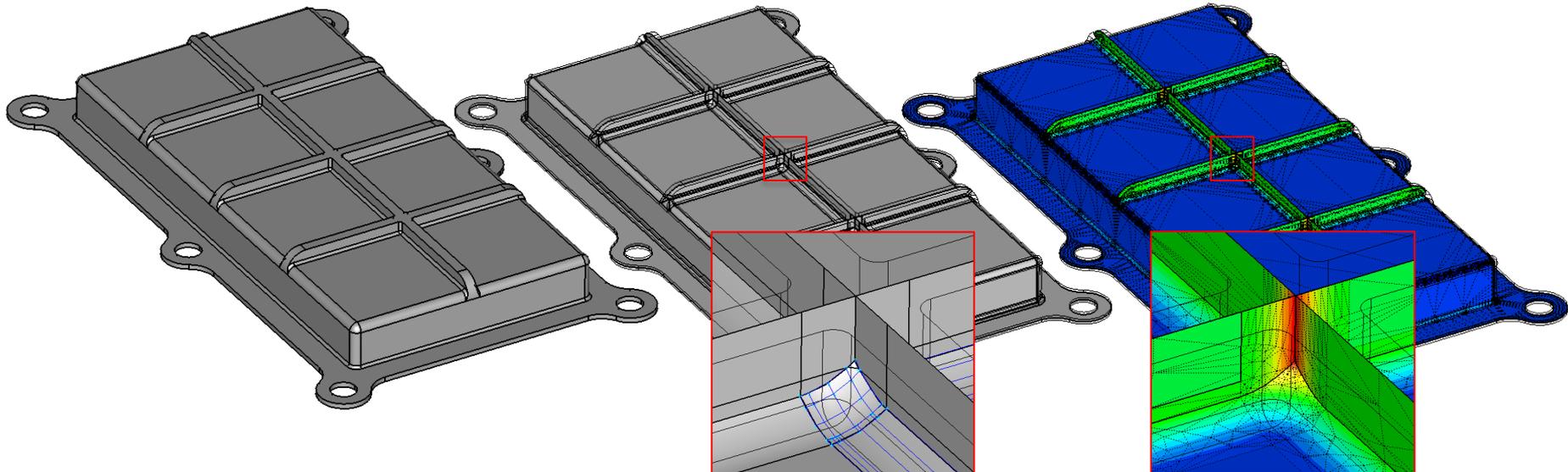
CAE Geometry

- Automatic Mid-surface Generation (*prototype*)
 - 3D Medial Object based automatic tool
 - Generates mid-surface geometry as mesh and/or CAD exact (NURBS-based) geometry
 - Mesh export with nodal thickness (NASTRAN & ABAQUS)

Original CAD solid

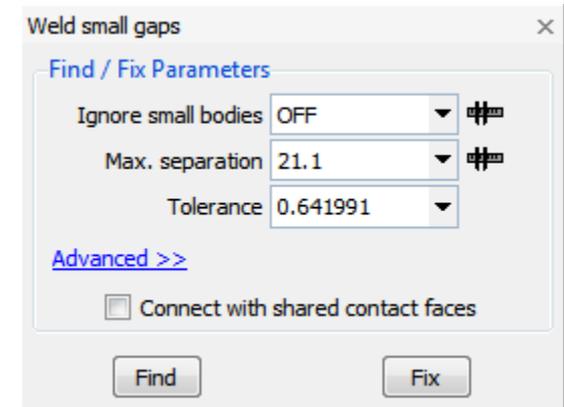
Mid-surfaces as CAD geometry

Mid-surfaces as mesh + thickness

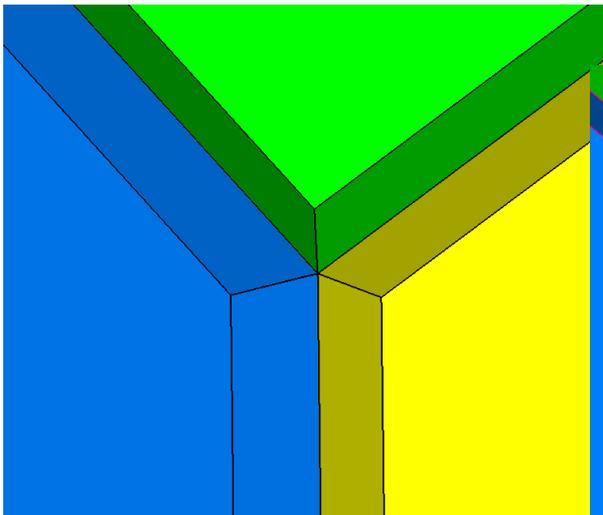


Build

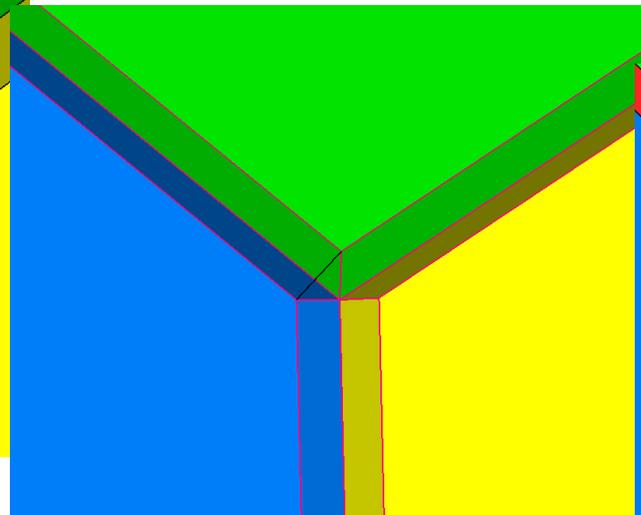
- Weld tool
 - Improved handling of v-shaped gaps
 - Common geometry for plate models



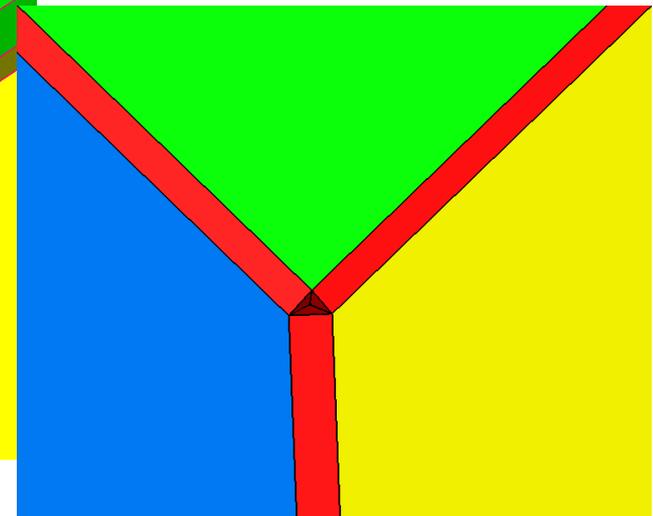
Three plate solids



Weld gaps detected

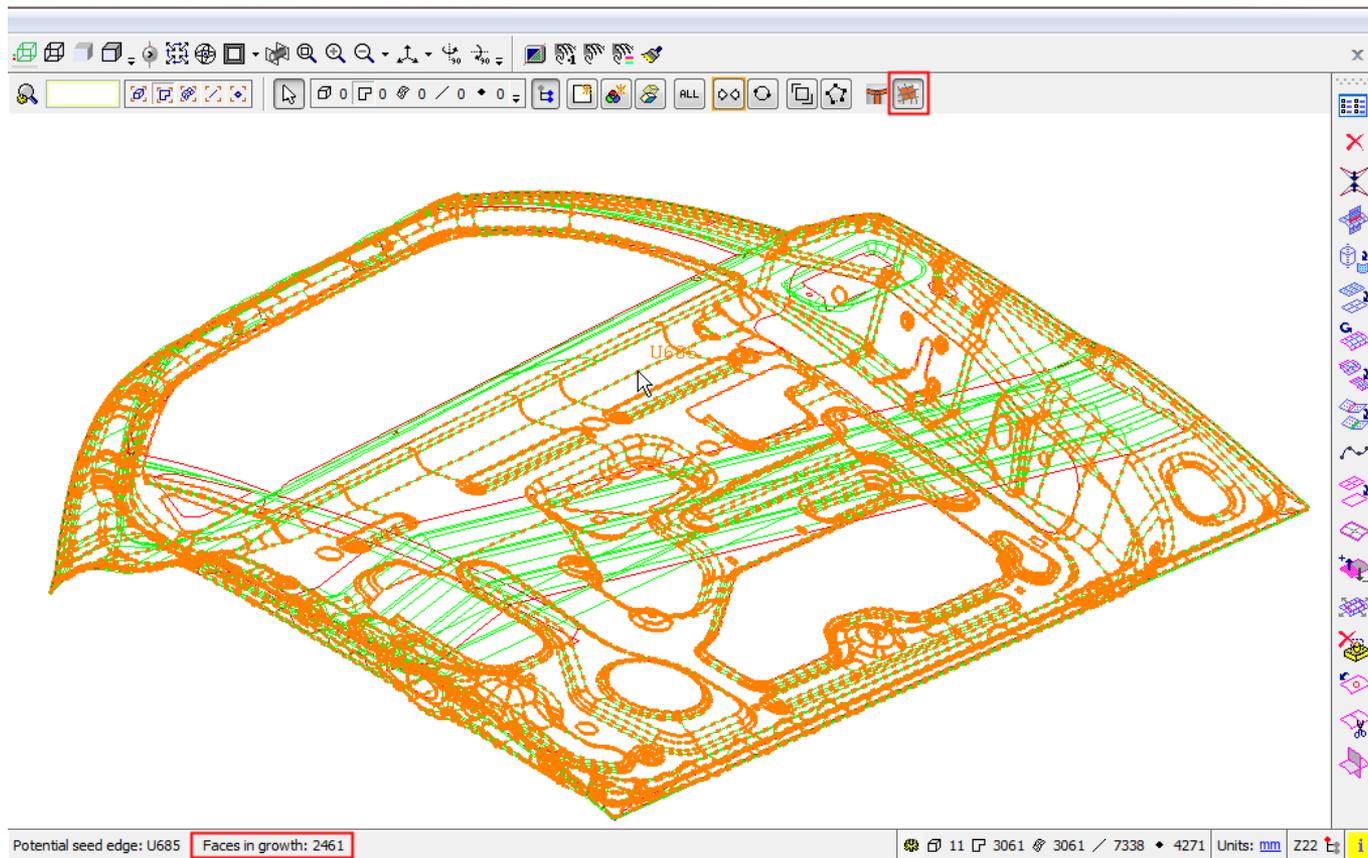


Weld solids generated



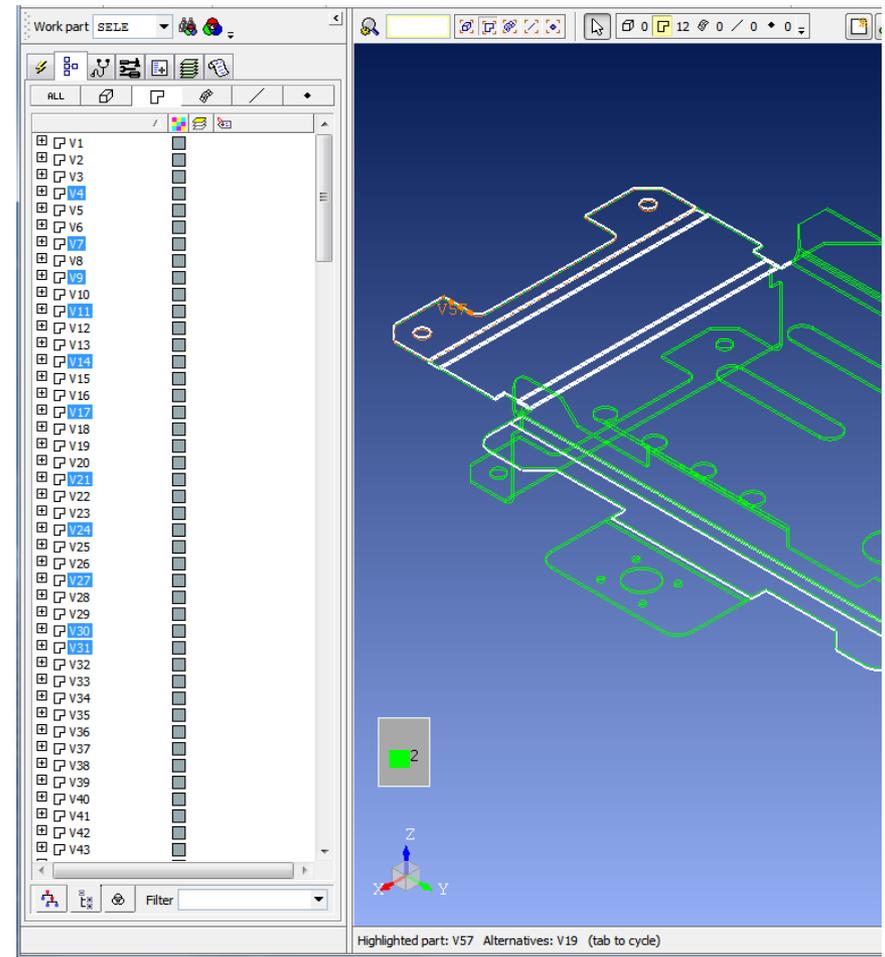
GUI

- New smart selection method
 - Select large carpets of tangential faces with one click



GUI

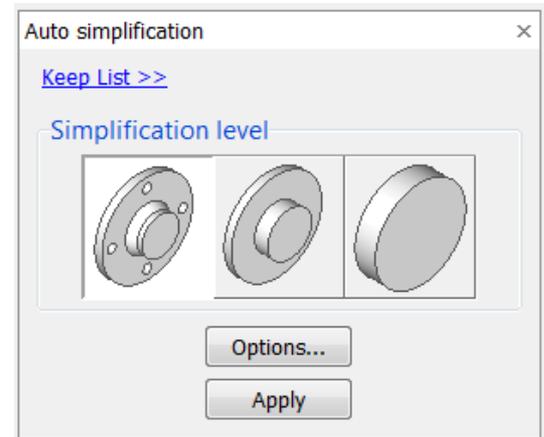
- Improved selection
 - Faster picking when doing repeated picks of same entity type.
 - Box select cancels with Escape key
 - Polygon picking now completes pick on double-click. Escape key aborts current pick



Coming soon

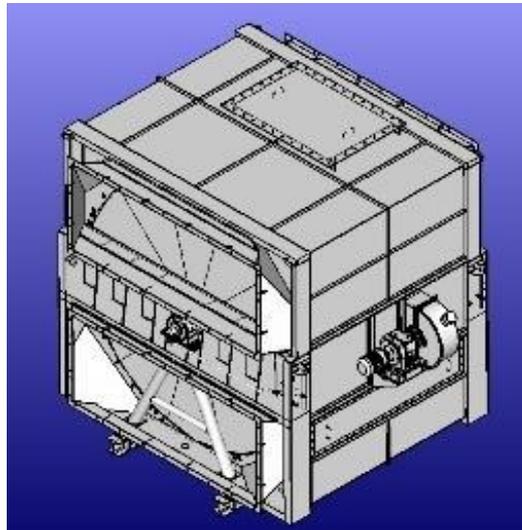
- **Process Plant Simplification (PPS)**

- **CADfix/PPS:** New product designed specifically for simplification of complex components for process plant models
- New stream-lined user interface with dedicated auto-simplification process
- Manual tools also provide fast selection and simplification
- Release scheduled for Q3/2017

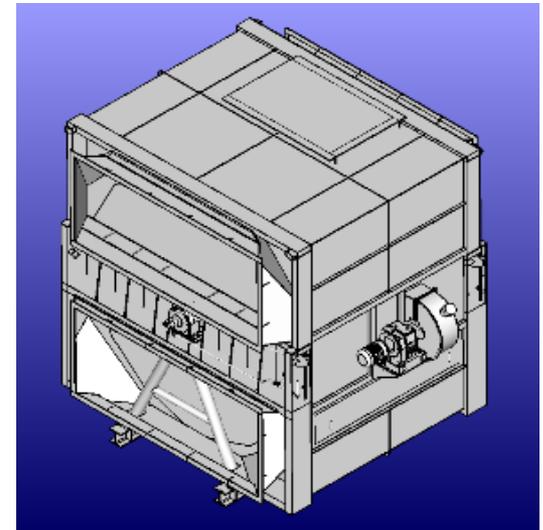


- **Example:**

- Original Model
 - 40 MB DWG
 - 73,000 CAD faces
- Simplified Model
 - 1 MB DWG file
 - 2,000 CAD faces
- 97% data reduction
- 15 minute runtime



Original File **40 MB .dwg**
73K CAD faces



Simplified File **1 MB .dwg**
2K CAD faces

Coming soon

- **High Quality Quad Dominant Partitioning tool**
 - New tool designed to give high quality boundary aligned quad partitions
 - Variable sizing and anisotropic alignment controls

