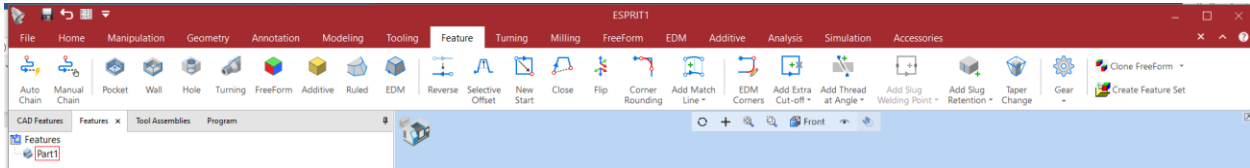


ESPRIT TNG Innovations

New Ribbon Interface and 64-Bit Performance

The new ESPRIT TNG interface is much easier to use. It includes virtually all of what ESPRIT 20xx Users are accustomed to but in a simpler interface. There is a new HELP SYSTEM in TNG with dramatically more content than found in ESPRIT 20xx.

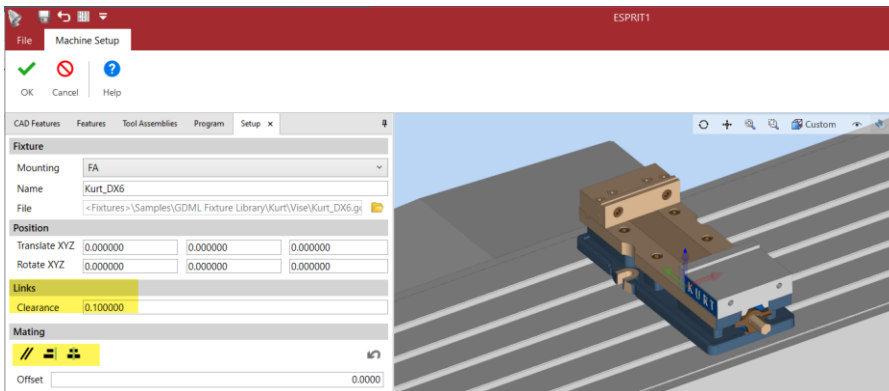


The Machine Plays Much Larger Role in TNG than ESPRIT 20xx

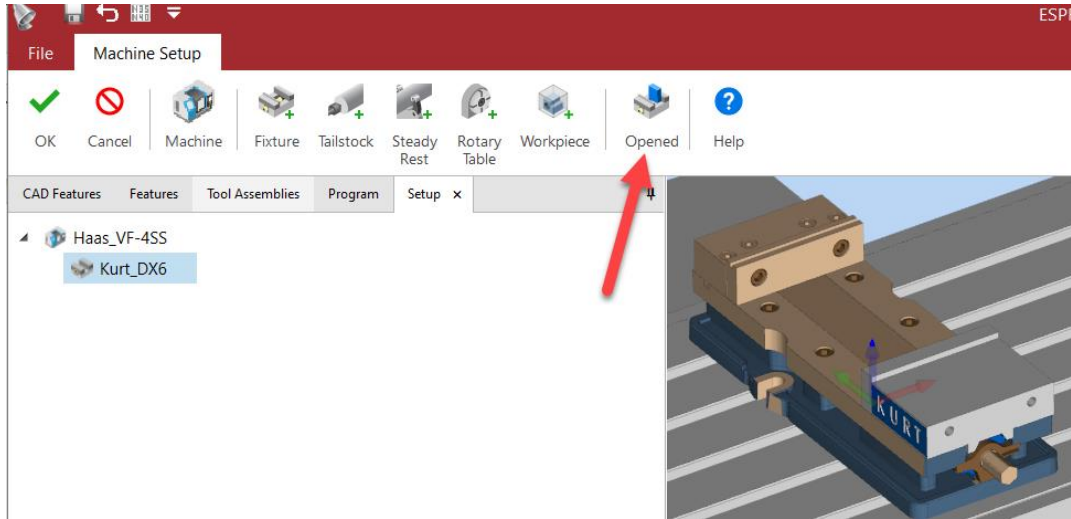
In ESPRIT TNG the Machine not only includes the kinematics for simulation (like ESPRIT 20xx) but all travel limits, spindle restrictions are always active and observed. Functionality such as Rotary Axes, Turning Spindles are found in the Machine which must be declared first and will only allow those Operations consistent with the Machine to be active. The way I explain it is as if ESPRIT TNG loads "Vericut" or "NCSimul" up front instead of at the end of the process. The Machine in TNG will not allow any axes to overtravel and can identify and eliminate any possible crashes with any Workpiece, Fixture, Tool Length or adjacent Tools on a Turret.

Adding Fixtures is Dramatically Easier in TNG

First, ESPRIT includes a free Library of actual OEM Fixtures and Holders that numbers over 12,000. In ESPRIT TNG all Machines include a Fixture Adapter (FA) making adding Fixtures quick and easy. No more Group – Copy – Translate then add components to Simulation. Just add the Machine and then Mount the Fixture on the Machine.

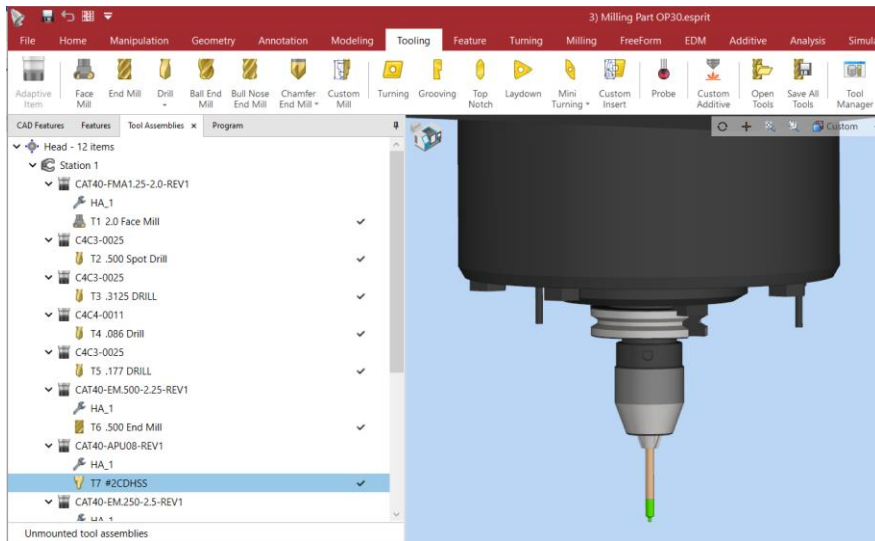


All Fixtures include a Workpiece Adapter(s) (WA) to quickly mount your Workpiece onto your Fixture. If the Fixture has a movable component such as a Vice Jaw or Chuck Jaws you can toggle "Opened" or "Closed" to make sure that your Workpiece fits in your fixture.

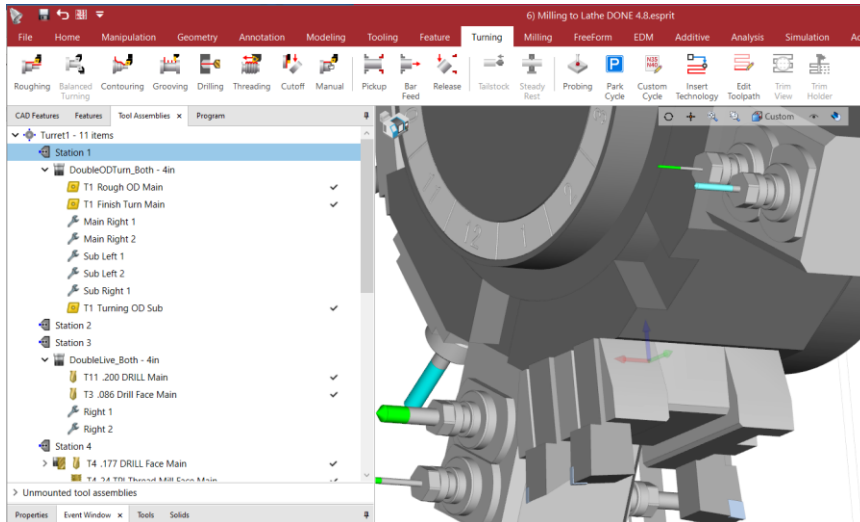


Adding Tool Holders (Adapters) is Even Easier than Fixtures in ESPRIT TNG

No more Tool Model Setting for adding STL Holders. ESPRIT TNG Machines include Holder Adapters (HA) for every Spindle or Turret Station. Each Adapter includes a Mounting position and automatically Mates the Adapter to the Spindle or Station.



For Adapters with Multiple Tools such as Turning Holders, each Adapter includes all possible Mounting Positions. You can simply drag a Tool from one position to another. No need for Tool Shifts or guessing.



Adaptive Machining and Machine Swap

Instead of duplicate Milling and MillTurn Operations in ESPRIT 20xx, ESPRIT TNG includes one Milling Ribbon. Operations are identical whether you have a Milling Machine or a MillTurn Center. Rotary Face is no longer needed because all 2.5D and FreeForm 3-Axis OPs include Rotary Milling settings that will allow Polar Interpolation.



The result is that any part programmed on a Mill can be quickly converted to a MillTurn Machine by Changing the Machine, replacing any Fixtures and Mounting the Workpiece in the new fixture. No need to reprogram anything. The same Milling Operations can be used on a Mill or MillTurn machine. Move a finished program from a Vertical Mill to a Horizontal in minutes just by loading the new Machine, replacing the Fixtures and Mounting the Workpiece.

Machine-Aware Environment

Machine-aware CAM programming is a fundamental change in the way CNC machines are driven, simplifying the programming while increasing tool life, reducing cycle times, and improving machine performance. Unlike traditional CAM software, ESPRIT's patent-pending machine-aware algorithms use a digital twin of the CNC machine, tooling, and workholding to drive ESPRIT's most advanced and beneficial features for CNC programming, optimization, and simulation.

Stock Aware Toolpath

Adapting to setup and process changes, ESPRIT TNG dynamically optimizes toolpaths based on the real-time state of the stock, eliminating air cuts and minimizing repositioning for optimized cycle times for every Operation.

High-performance cycles, including ProfitMilling for 2- to 5-axis high-speed roughing and ProfitTurning for high-speed turning, facing, and grooving, yield shorter cycle times and longer tool life by monitoring tool loads and optimizing cutting speeds.

Automatic Links

The ESPRIT AI engine automatically creates collision-free rapid positioning between toolpath cutting cycles. These links are optimized for the machine, tooling, and setup. The result is automatic, efficient, and safe positioning between cutting and non-cutting operations, tool changes, and part handling. No more micromanaging Retract moves or forcing Full Clearance for safety or remembering to add an Exit Mode to an ID Bore or Groove. Automatic Links do that for you.

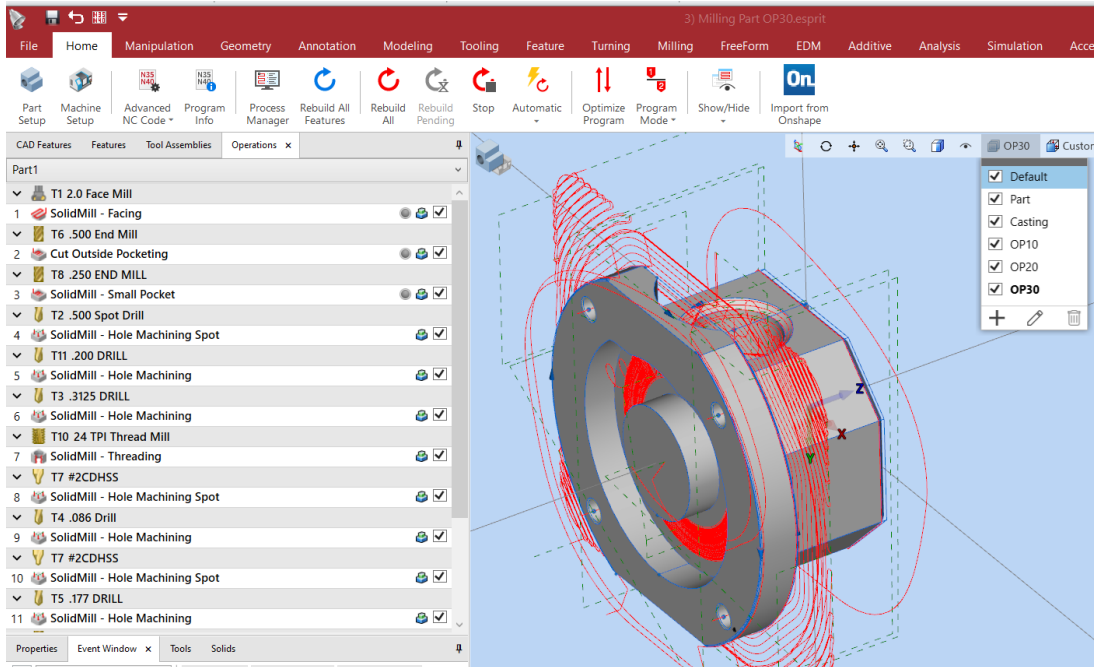
Simulation and Verification Improvements

See exactly what will happen at the machine before you ever cut a chip or for that matter run Simulation. View the entire machining environment, including stock materials, fixtures, and clamps in dynamic, solid-shaded graphics. Quickly change the view from Part View (working view) to Machine View to see the current state of the part in the Machine with a preview of material being removed.

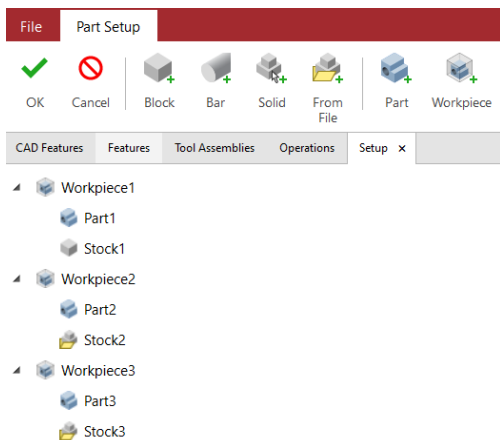
All the kinematic action of your machine is displayed in real time, giving you an incredibly accurate verification of the entire machining process. Using ESPRIT's built-in part inspection, you can easily compare the original "as-designed" part to your "as-machined" workpiece to assure part accuracy. No need to add a "Target" the Part in TNG is always in view.

One Part, Many Operations

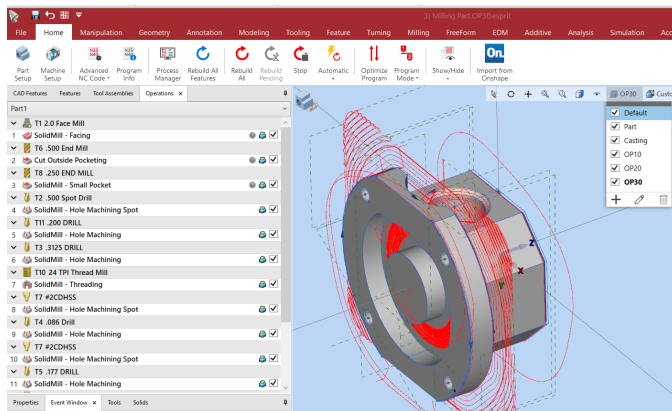
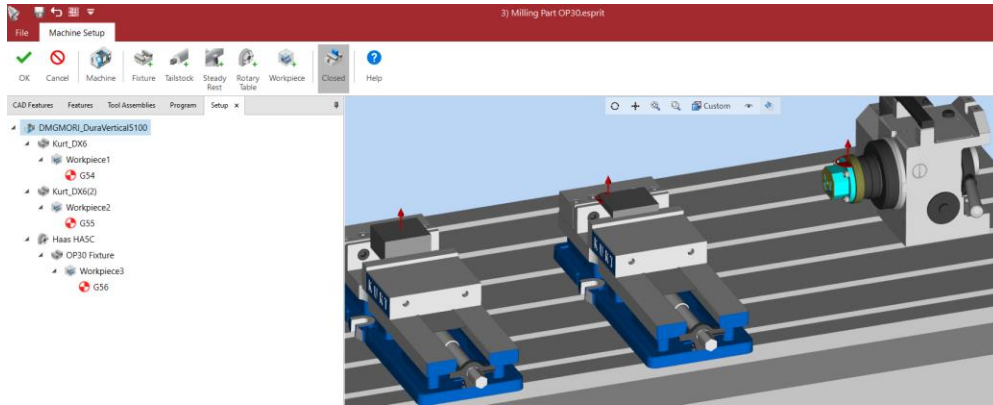
ESPRIT TNG is fundamentally different from ESPRIT 20xx in that if you machine multiple Operations, you can use the same Solid Part and define multiple Workpieces on different sides of the part. In this example there is one Part but three (3) Operations on different sides of the part. The Part View is shown here.



Each Operation is defined as a separate "Workpiece". Part 1 shown here uses the initial Stock. Workpiece2 uses the Stock saved at the end of OP1 and Workpiece3 uses the Stock from OP2. The original Solid Part never moves so no need to chase a .SIM or .STL with a Work Plane flipping and moving the Stock to match OP2 or OP3.

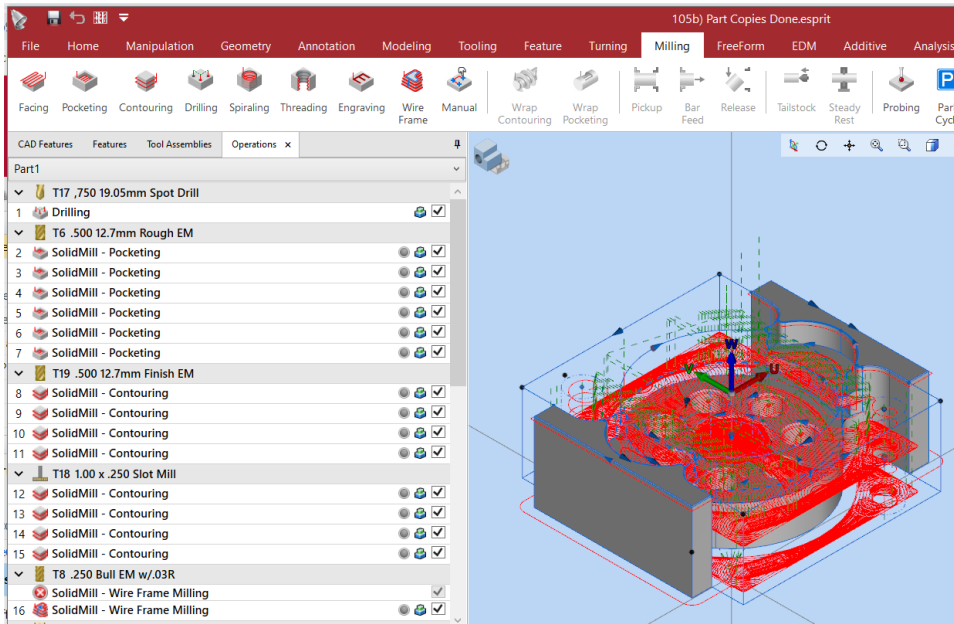


In Machine Setup each Workpiece is Mounted in its Fixture shown here in Machine View with separate Work Offsets. One mouse click and we switch from Machine View to Part View. Also, toolpath between Operations is automatically optimized.

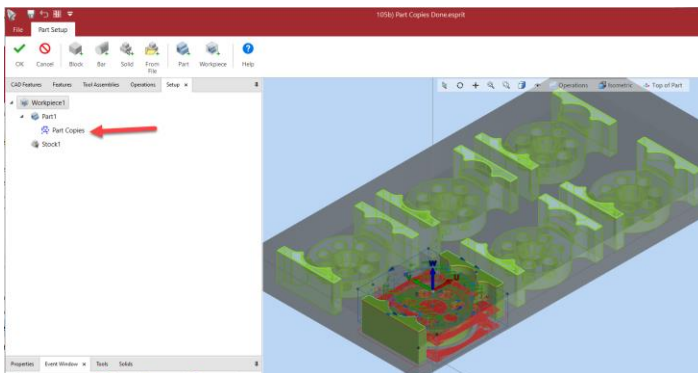


One Part, One Operation and Part Copies

Here we have one Vertical Mill part with one Operation. We want to change the material and machine multiple parts in a larger plate.

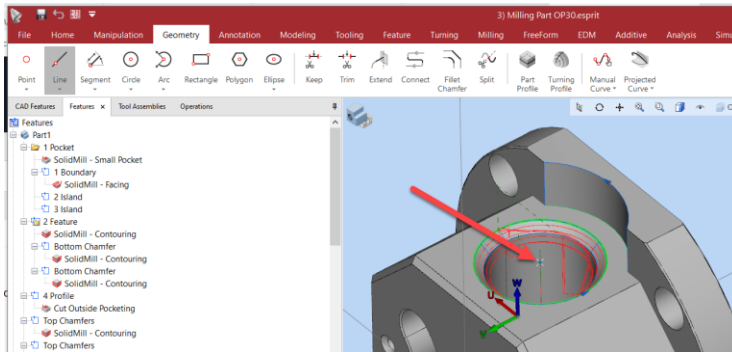


In Part Setup we right-click on the Part and choose Part Copies and Translate and/or Rotate the Part Copies. No extra duplicate Operations are created in Part View. Part Copy Operations are added to the Program Manager where they are optimized and available for creating NC Code without adding dozens of extra Operations cluttering the original Part. Edit the original Part and all Part Copies are automatically updated.

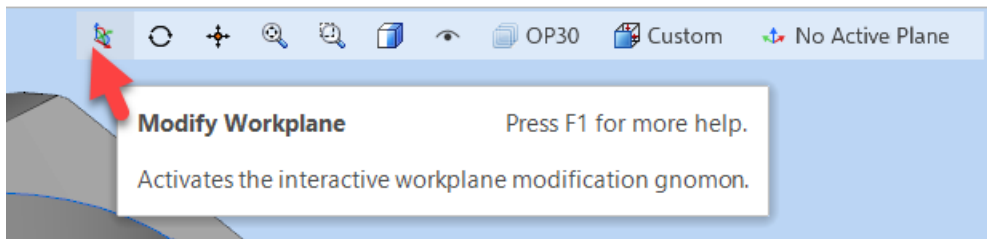


Improvements to Everyday Tasks in ESPRIT

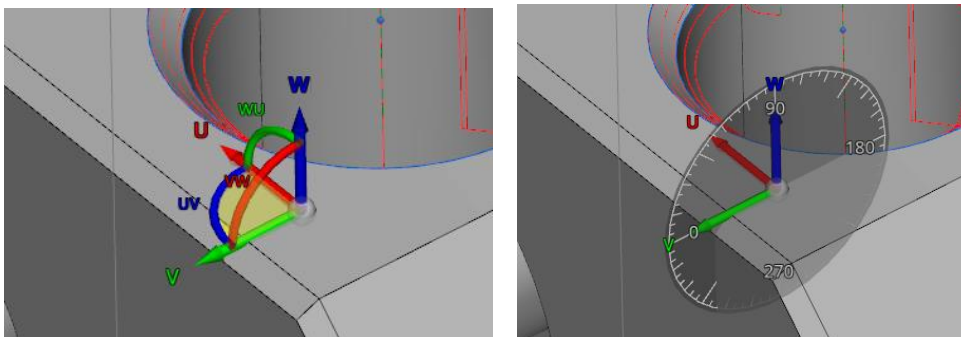
Create Geometry by Snapping to Solid Components. You don't need a wireframe or smash to create new geometry when all you have on the screen is the Solid Model. You can SNAP to any Vertex, Mid-Point of an Edge, or Center of a Cylindrical Face to create new geometry.



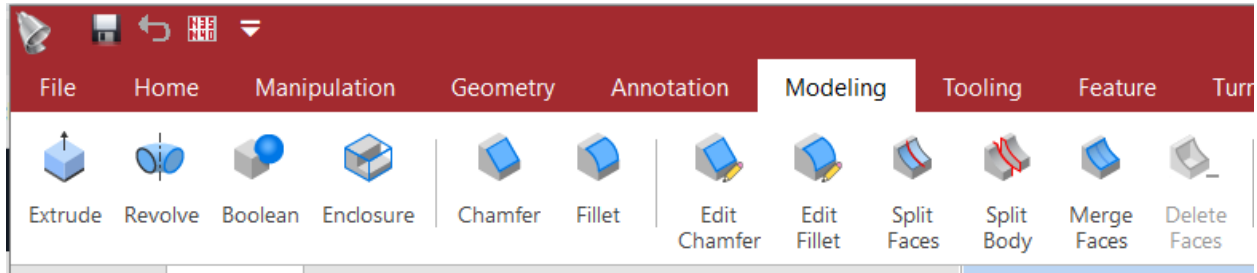
Work Plane Gnomon. This is a major change in how we create and manipulate Work Planes. Found on the Heads Up Display this opens a whole new way of



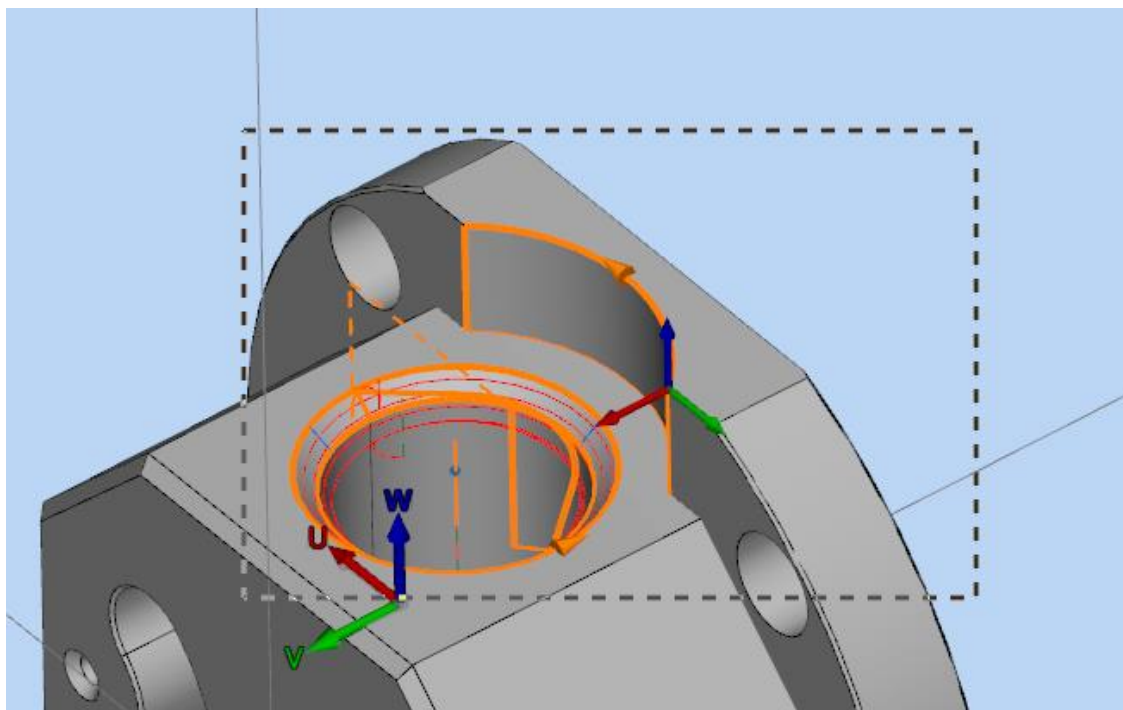
Pick one of the three Faces inside the Gnomon and then select the Face to orient. Pick one of the Arcs on the Gnomon and rotate the Work Plane. You'll never go back to the old way of creating Work Planes.



Solid Modeling Enhancements. ESPRIT TNG includes a number of additions including Boolean to Join, Add or Subtract multiple Solids, Enclosure and Edit Chamfer along with Edit Chamfer and Split Body.

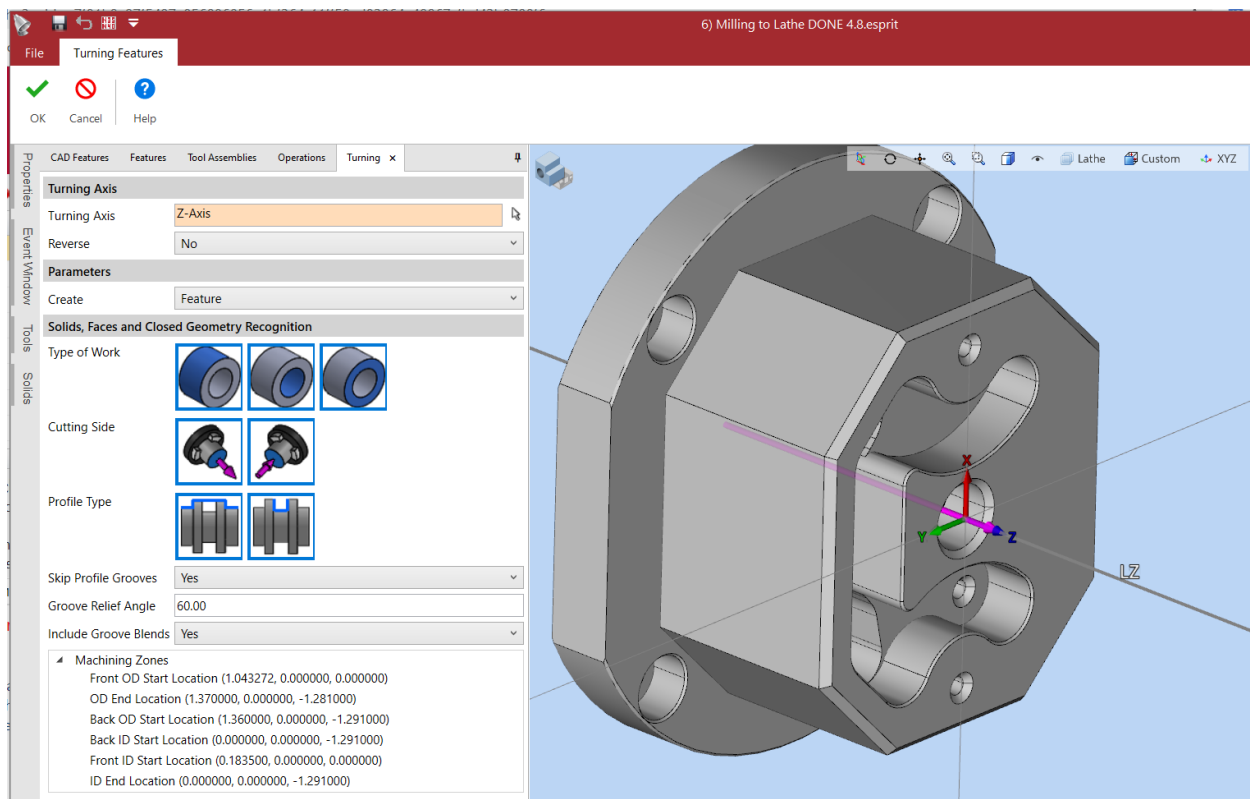


Grouping by Box Changes. While ESPRIT 20xx always Groups anything that touches a box, ESPRIT TNG offers two different methods. Drag your Group box from the Top Left to the Lower Right and it's a Box Partial (like ESPRIT 20xx). Drag the box from the Lower Right to Upper Left as shown here and it only Groups items completely in the box.

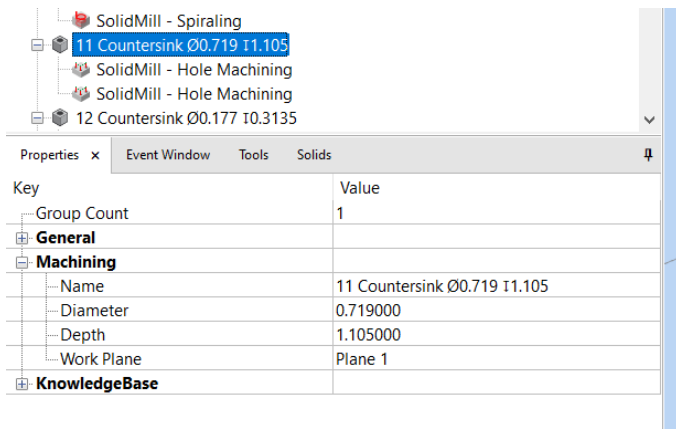


Turning Orientation and Feature Recognition Changes. ESPRIT TNG allows the orientation of the Part around any axis. No longer are you forced to use the X-Axis for Turning. The new Turning Features first asks the User to select the "Turning Axis". In this case the Part is oriented around the "Z" Axis like it would on the Machine.

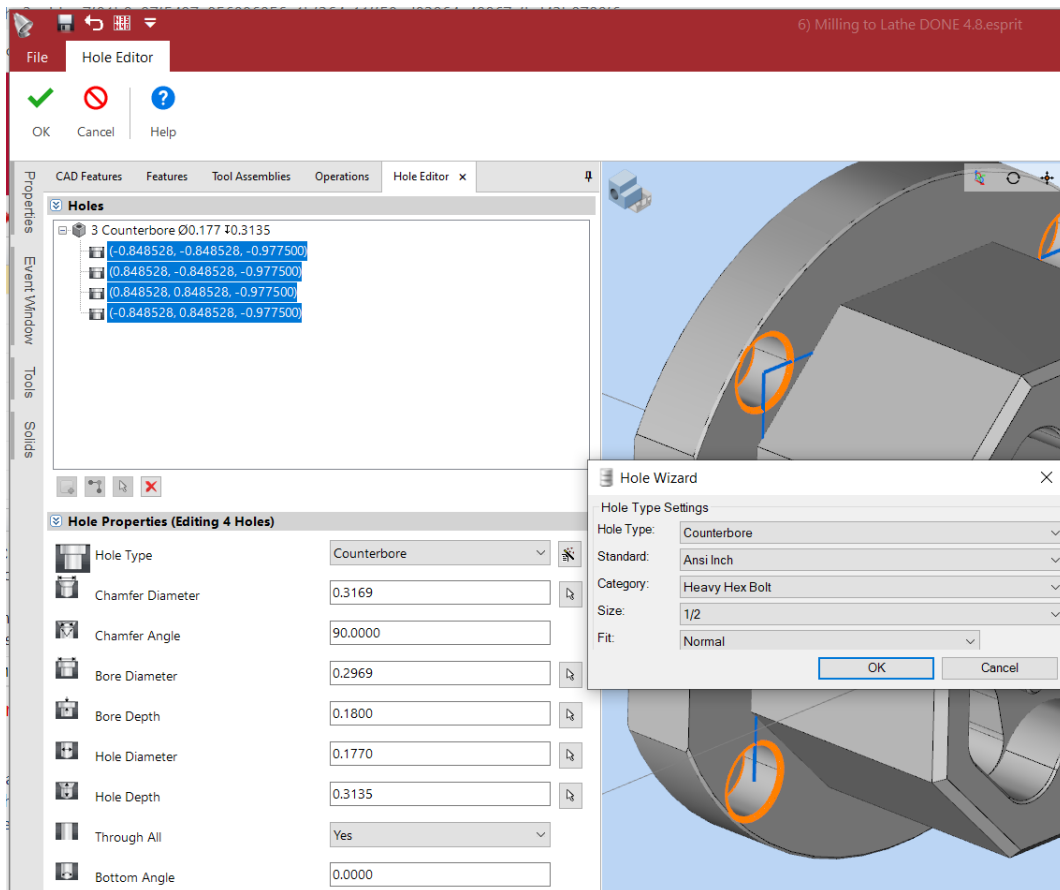
The benefit of these new Turning Features is that the Features include the Machining Orientation. When you create a Turning Roughing, Contouring or Grooving Operation you are no longer asked for ID/OD/FACE. Instead, the Turning Feature provides that information to the Operation. You can easily copy a Face Roughing to an OD Feature without errors.



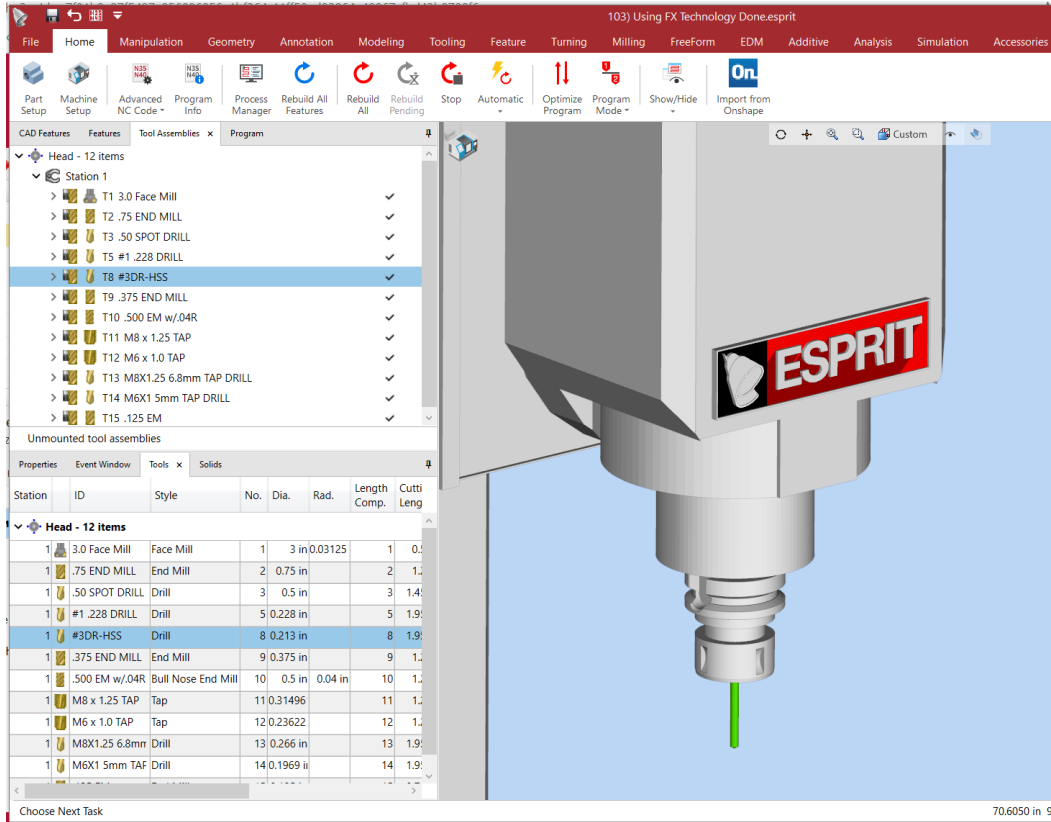
New Hole Editor. When you Group a Hole Feature you won't see as much detail in the Properties Window as you see in ESPRIT 20xx.



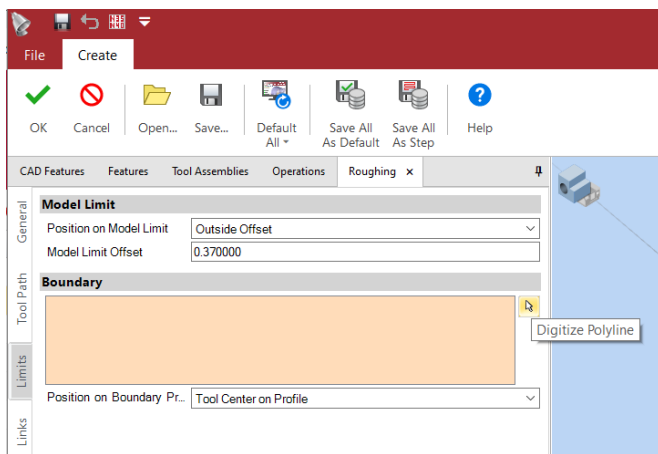
That's because when you double-click a Hole Feature the Hole Editor comes up. You can change the Sequence of Holes, Add or Remove Holes and edit the Properties or use the Hole Wizard to assign Hole Properties.



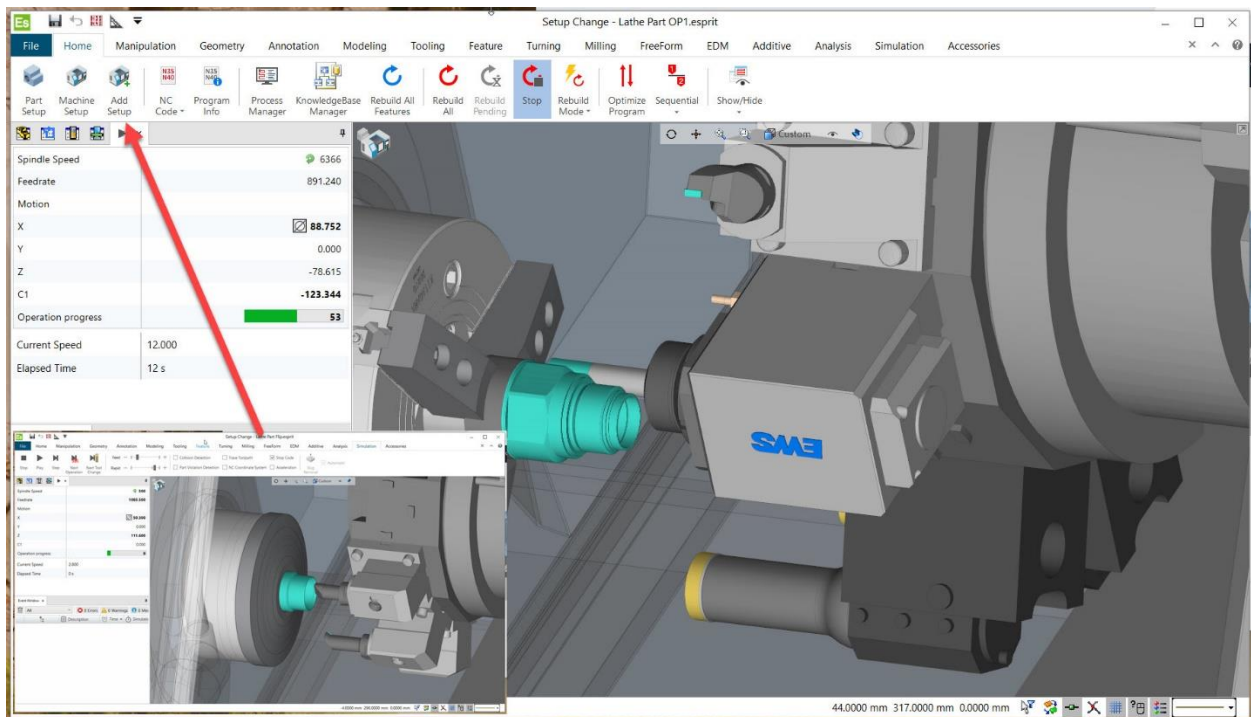
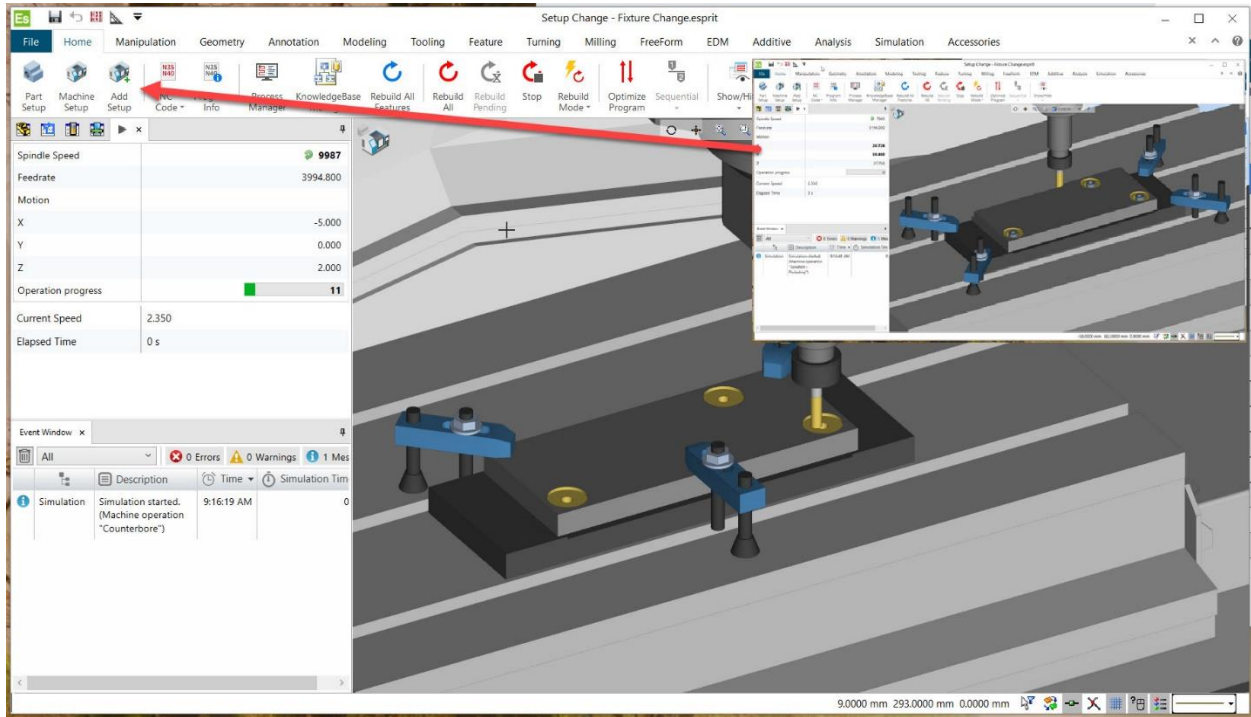
Tool List View. There is a new Tool List View which is similar to the Properties Window. You can get a quick view of the Tool information without opening each Tool.



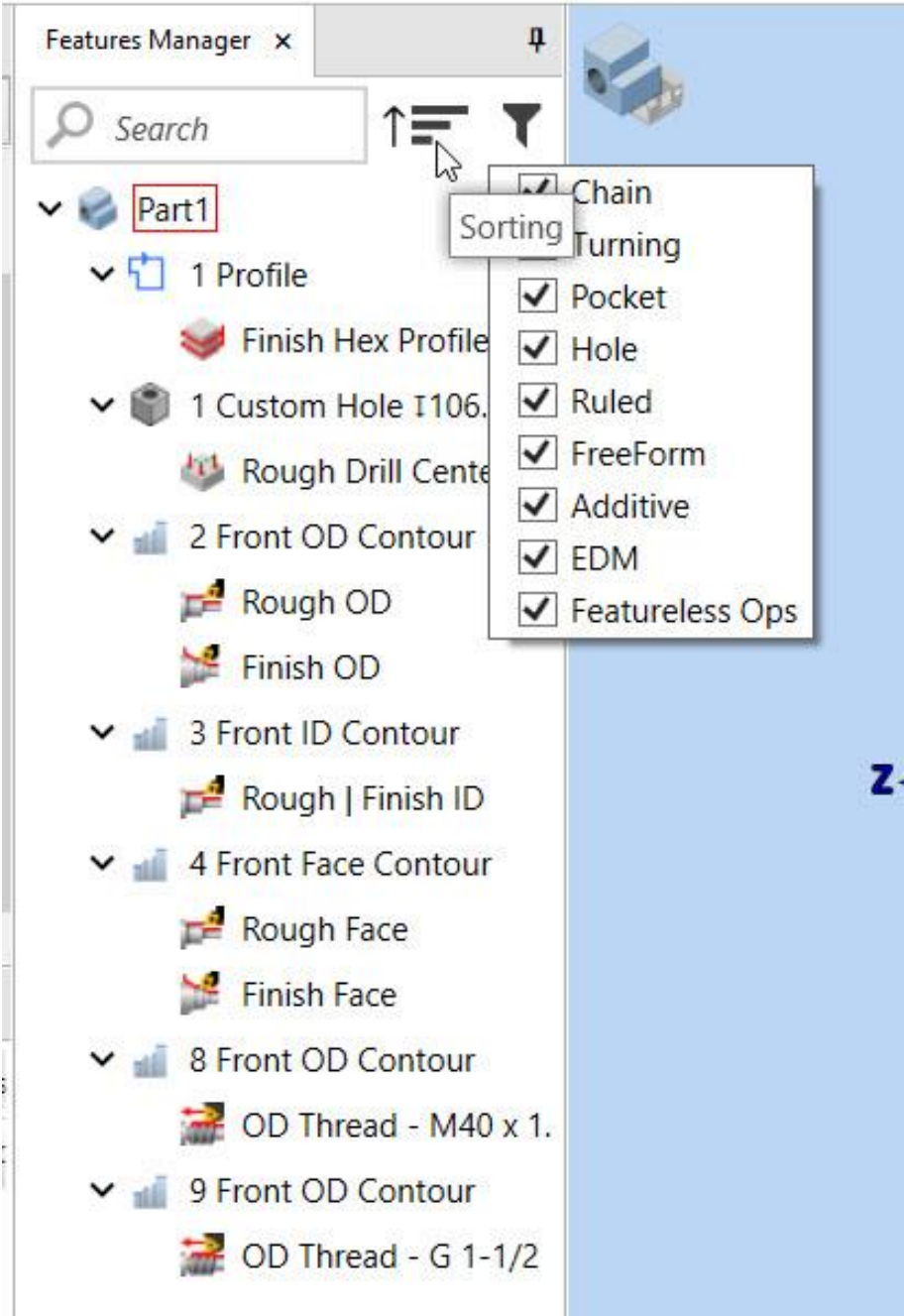
Create 3-Axis and 5-Axis Boundaries on the Fly. Boundary Limits now include a Digitize Arrow which will allow you to freehand sketch a Boundary without worrying about Snap.



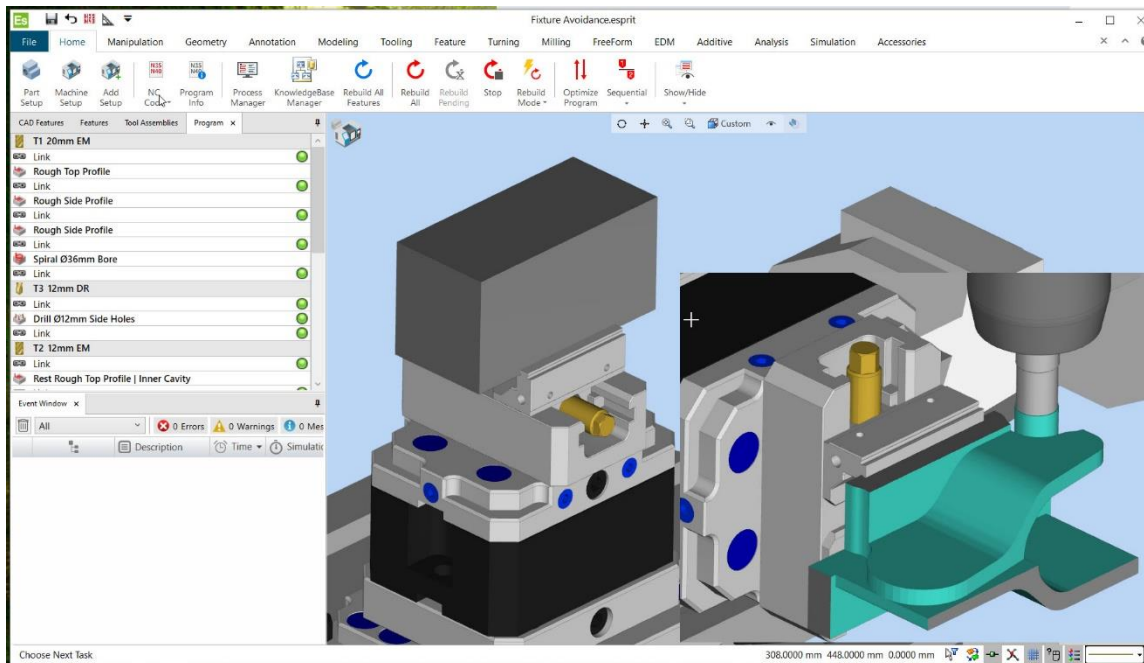
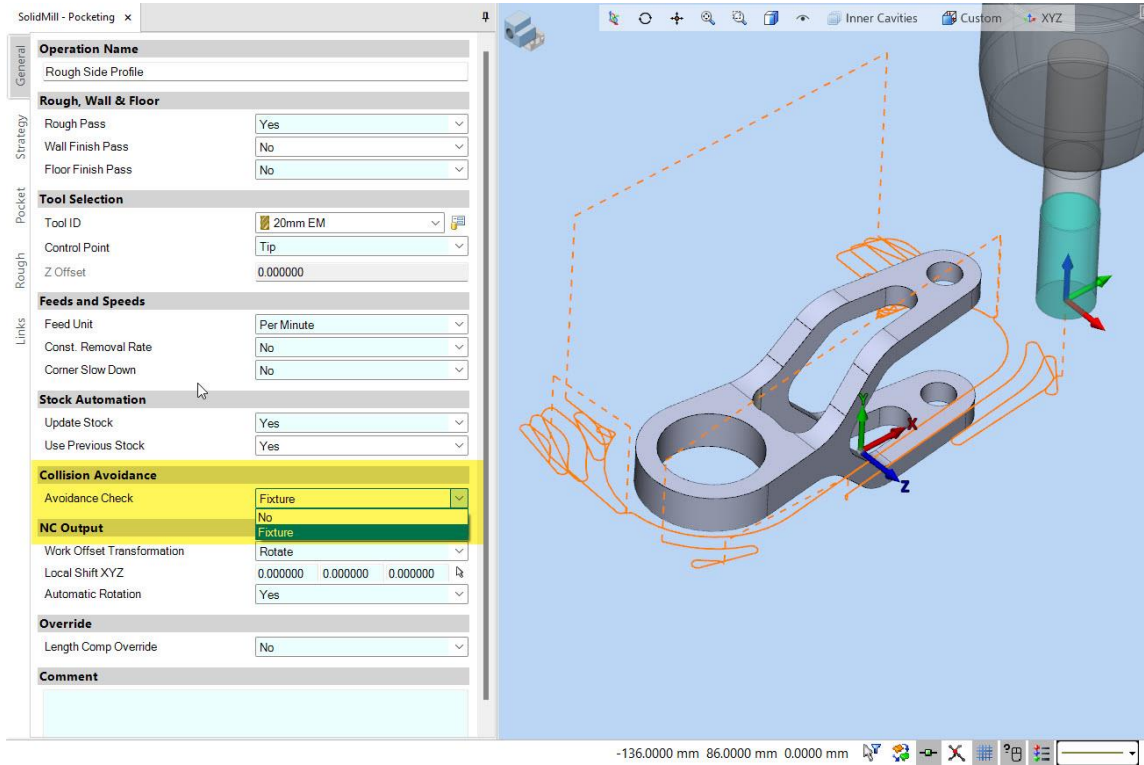
New Add Setup Change. Manual Lathe Part Flips and Milling Fixture Changes can all be created and simulated for multi-operation projects to provide Digital representation of the real machining environment.



Feature Manager. User can now Mask and Sort Features in the new Feature Manager. Great for projects with lots of Features to narrow down your focus to certain classes of Feature and to reorganize the Feature list.



Fixture Avoidance. 2D Pocketing now includes Fixture Avoidance to automatically adjust to Toolpath to avoid any Fixture components. Great for machining around Vice Jaws, Clamps or Tabs placed around a part.



While these only scratches the surface, they highlight a number of enhancements only found in ESPRIT TNG which will continue to improve with every new Release. Significant R&D effort at ESPRIT is going into ESPRIT TNG.

Contact MRI for information about joining the ESPRIT TNG Early Adopter Program (EAP) and to discuss your migration plans from ESPRIT 20xx and ESPRIT TNG.

www.eccmri.com

Randy Rauh
randy.rauh@espritcamcenter.com
918.272.3355 x1

Randy Hahne
ESPRIT CAM Center
randy.hahne@espritcamcenter.com
918.272.3355 x2

Kim Baker-Rauh
kim.rauh@espritcamcenter.com
918.272.3355 x4