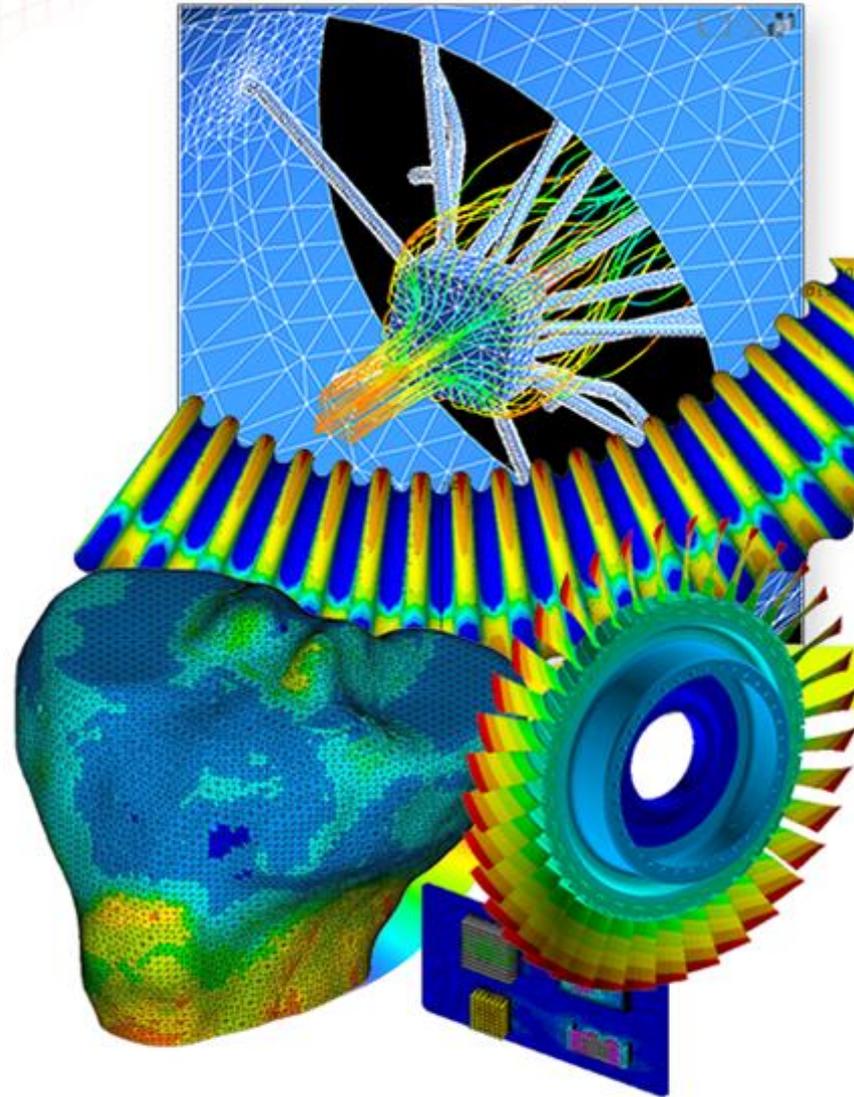


# Q & A Session



Q: Can you pair Maxwell with CFX instead of Fluent?

A: CFX is not compatible with a "drag and drop" connection to Maxwell. However, volumetric heat generation rates can be exported from Maxwell in a CSV file and imported into CFX as a User Function.

Q: Can you use the Fatigue tool with harmonic and random vibration?

A: No. nCode is required for this.

Q: Can you use Solution Combination to combine harmonic and random results?

A: No, the solution combination tool does not allow a harmonic response environment and in any event it would be incorrect to do this via a simple load case combination.

Q: How do you model sine-on-random?

A: There is no standard for this calculation. It is possible with load case combinations in MAPDL but care must be taken that the stresses are combined appropriately. nCode can be used to evaluate life based on a sine-on-random loading.

Q: How do you check mesh quality graphically for individual parts?

A: When you hide all other parts and select the metric as the display style in the mesh details the metric is limited to the visible part. Otherwise set a metric in the Statistics region of the mesh and view the statistics summary in the details of the part.

Q: Can you provide user defined stresses for nonproportional analyses in the Fatigue Tool?

A: Yes

Q: For imported loads can you limit the lower value of the scaling process or is it uniform scaling?

A: No, the scaling is uniform. You could edit the data and use the External Data Utility.

Q: How do you access the [+P] parameter icon for a pull operation in SCDM?

A: Activate pull and use the spacebar to enter a value and assign it to a parameter.

Q: Is STL the only option for reverse engineering in SCDM?

A: No, any supported file format can be re-engineered in SCDM.

Q: Does overset meshing work in CFX?

A: No, it is a Fluent functionality.

Q: Are their plans to offer classes for the new additions to Mech Ent? (ACP, DX, ACS, etc.).

A: Yes, contact your CAE Associates sales representative to schedule classes.

Q: Why did ANSYS choose Python for scripting?

A: It's actually "Iron Python" on Windows systems and it was chosen because it sounds like the name of a pro wrestler.

Q: What is NOT included in Mechanical Enterprise?

A: nCode, Autodyn, LS-Dyna, Maxwell, CFD, DesignModeler, CAD connections, High Frequency tools such as HFSS, SiWave, Simplorer, and some others. Please refer to the slides when they are posted.

Q: Why aren't material property assignments shared across the multiphysics applications?

A: That is a question for the ANSYS developers.

Q: Why are effective mass results in a modal analysis reported in slinches?

A: Because all BIN units are converted to consistent units during solution and converted back when postprocessed in Mechanical.

Q: Gear on shaft problem: how would you estimate that you have a proper fit, i.e. no slipping?

A: Check contact status, contact pressure, sliding distance, moment summary, etc..

Q: How does adaptive meshing address boundary conditions and/or singularities?

A: Adaptive meshing addresses the element distortion in the adaptive region based on the metric chosen (an energy coefficient (Energy), a geometric region (Box), or maximum allowable corner angle (Mesh)). Boundary conditions are remapped onto the adapted mesh. Stress singularities are not a criteria for adaptive refinement.

Q: Has emphasis shifted away from AIM?

A: No, AIM is a separate target audience. It is intended for design level Multiphysics analysis and will be covered in future CAE Associates presentations.

Q: What is the average airspeed of an un-laden African swallow?

A: Unknown. The average airspeed of an un-laden European Swallow has been heavily studied and is estimated at 24 mph.

Q: How accurate is the reversed engineered model as compared to the original STL file.

A: The reversed engineered model can only be as accurate as the measured points from which the stl file was created. You can however, easily measure features in the SpaceClaim model and determine if non-standard sizes were used, e.g. a hole might be 0.5" diameter in the physical part, but if the reversed engineered hole was 0.499, you could very easily pull the diameter to 0.5 to make any adjustments as needed.

Q: Can joints and joint loads be defined in the Explicit Dynamics (LS-DYNA Export) analysis type.

A: No. Joints and Beam connections are not supported for Explicit Dynamics (LS-DYNA Export) analyses in v17.

Q: Is there a way to create spot and fillet welds using a weld file containing points and lines (respectively)? With the option to model the weld with either beam or solid elements.

A: Yes, you can create spot welds from a file in DesignModeler with the "Point" feature. Please see the help on the file format for the weld point locations or other methods that can be used to define the placement of the welds. Spot welds are linked together using beam elements during meshing. If solid elements of the weld are desired, the weld geometry will need to be created by the user. Note that spot welds can also be made to fail using the breakable property if desired.

Q: What are the subsets of capabilities in Autodyn that make up explicit STR?

A: The list is quite lengthy; the best solution would be to compare the ANSYS Mechanical Enterprise column to the ANSYS Autodyn column in the "ANSYS Capabilities Brochure 17.0".

<http://resource.ansys.com/staticassets/ANSYS/staticassets/resourcelibrary/brochure/ansys-capabilities-17.0.pdf>

Q: What is the workflow to simulate impact and potential fracture?

A: This is most commonly accomplished with an explicit code (e.g. Explicit STR), where the problem physics are solved for in each instance of time. If material failure is an included material property (i.e. plastic strain failure, principal stress failure, etc.) the code will evaluate the material state at each instance in time and determine whether the element needs to be eroded away in the simulation.

Q: Can an arbitrary crack be imposed on an Explicit STR model.

A: No, this feature can only be used in either a static structural or an implicit transient structural analysis.

Q: Does it matter if each of the four surfaces in the gear bore were in separate contact pairs?

A: It shouldn't if all of the contact settings are the same. However, it could be more computationally expensive and more subject to human error than using one contact region for all.

Q: Does DesignXplorer handle nonlinearities? Can you get a response surface when using nonlinear material properties like viscoelasticity?

A: DesignXplorer can create a response surface for any solvable system, linear or nonlinear. If the nonlinear material coefficients are tabular as in the case of viscoelasticity then the material definition cannot be controlled parametrically in a DOE. However, multiple temperature tables for viscoelastic material can be entered. If there are no other temperature effects in the system then a thermal condition could be used as a dummy parameter to vary the material tables (after setting all CTEs to zero).

Q: How does ANSYS fatigue and crack growth results compare with other methods?

A: ANSYS fatigue uses stress life and strain life methods, which are standard fatigue approaches for high cycle and low cycle fatigue. The capability for modeling cracks in ANSYS uses standard linear elastic fracture mechanics approaches for calculating stress intensity factors at the crack tip. The XFEM method for modeling fatigue crack propagation represents the latest technology approach.

Q: Is the Fatigue Tool material library built in?

A: Fatigue data is defined in Engineering Data, and there are both stress life and strain life models available. Built-in data is included for steel and aluminum.

Q: Can the Fatigue Tool de-rate strength for surface finish of a part versus surface finish of a fatigue test specimen?

A: The Fatigue Tool has a fatigue reduction parameter that can be used to adjust the fatigue data to account for surface finish.

Q: My computer reports 12 cores but only 6 are available for HPC, why?

A: The other six core reported are hyper threaded. ANSYS HPC only uses physical cores.

Q: Can you define initial crack thickness?

A: Yes with a user defined crack.

Q: What if the crack closes?

A: A contact region can be defined in the event of crack closure. Named Selections from the crack front mesh can be generated as used to define the contact region.

Q: Does Explicit STR have any benefits over DYNA?

A: Generally no unless you have an AUTODYN license which allows you to do some complex blast analysis and FSI, even from within the Workbench environment. The Explicit STR product that is included with the Mechanical Enterprise license does not have this capability but has similar basic capabilities to Workbench/LS-Dyna. It is generally not as rich in features and not as fast in parallel as Workbench/LS-Dyna however.

Q: What is the advantage of using Icepack for thermal analysis over using the standard thermal program?

A: The Icepack product is specifically designed for electronic cooling applications.

Q: What is the status of the next gen software (AIM) beyond WB?

A: AIM development is ongoing. It is intended for design level Multiphysics analysis and will be covered in future CAE Associates presentations.

Q: Coupling back to Maxwell from Fluent?

A: Yes there is the Feedback Iterator which will allow feeding temperatures back into Maxwell at specified time intervals, and have the Maxwell run updated with the newly evaluated temperature dependent properties.

Q: Are the DesignXplorer, Fracture tool, Fatigue tool included only in v17 of ANSYS or in previous revisions?

A: With v17 licensing you will have access to the tools in previous revisions. All tool may not be available depending on the revision.

Q: Does surface body crack creation also create contact regions at the crack interface?

A: No, but Named Selections can be extracted to create a manual contact region.

Q: When distributing the solution can you use a different number of CPUs for a restart?

A: Not in Mechanical. The number of CPUs must be the same.

Q: Any plans to include Python as an alternative to APDL?

A: No but Python can be used to create ACT extensions to add APDL functionality to WB.