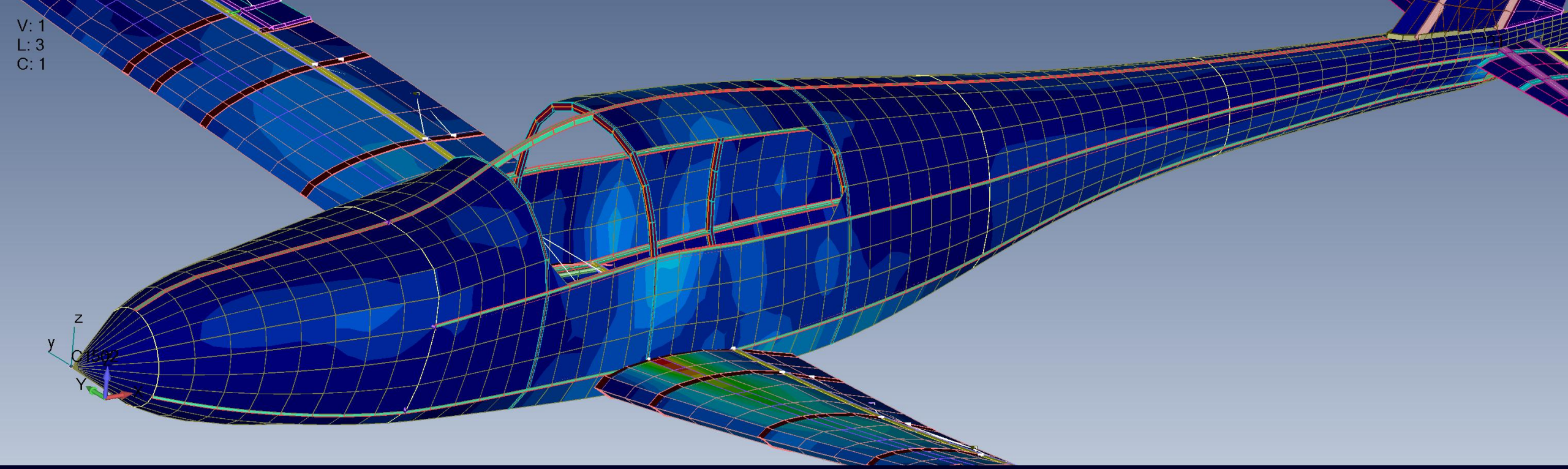
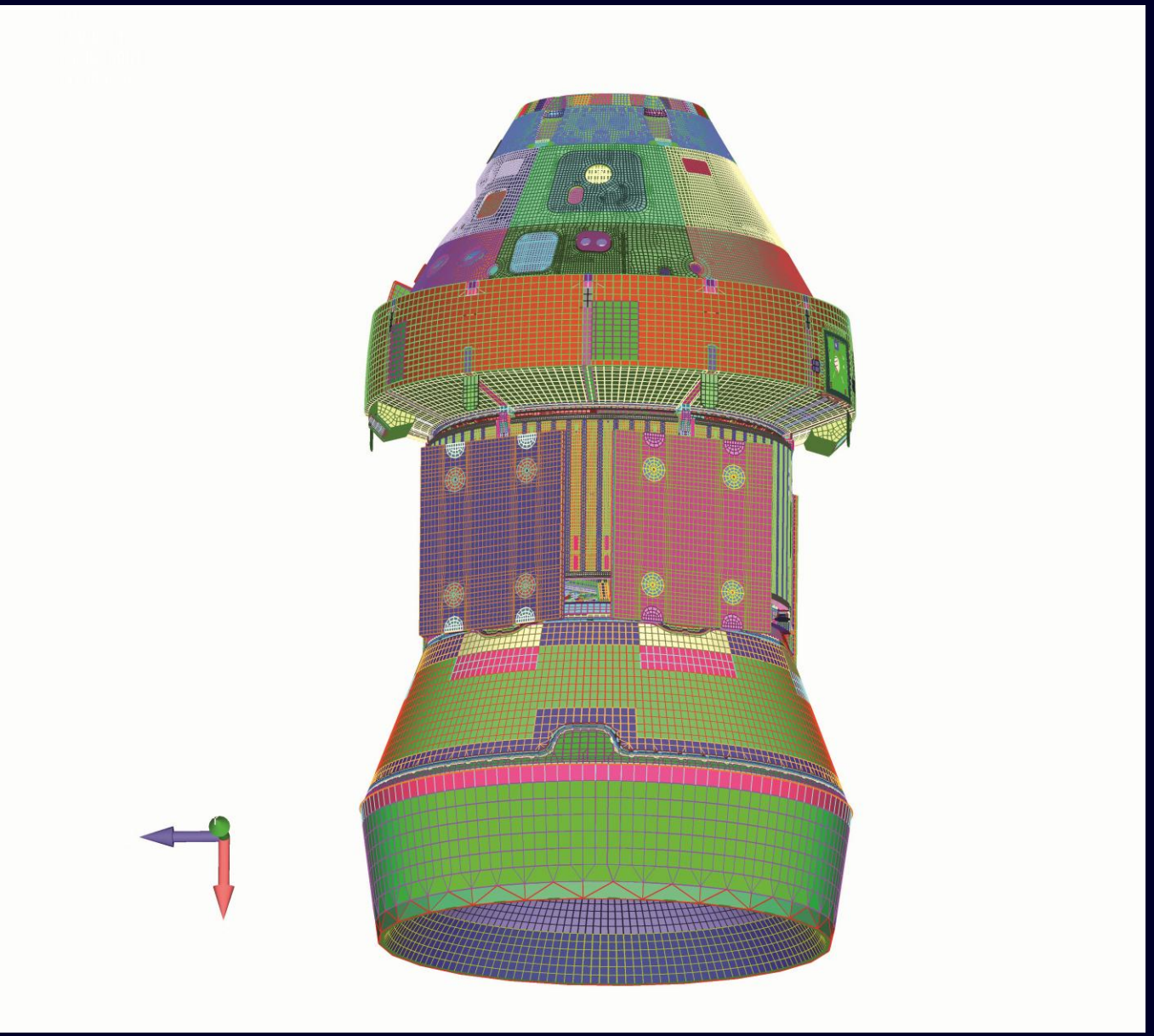


Simcenter FEMAP

What’s new in 2512?

SIEMENS



Lockheed Martin Space Systems

60-analyst team uses the integrated solver, pre- and post-processor to optimize the design of the successor to the Space Shuttle

“We’re able to run several iterations each day,on models with approximately one million elements, and we’re able to perform some fairly complicated trade studies in just two to three weeks.”

Eric Lewis
Stress Analyst and Senior Staff Engineer
Lockheed Martin Space Systems

SIEMENS

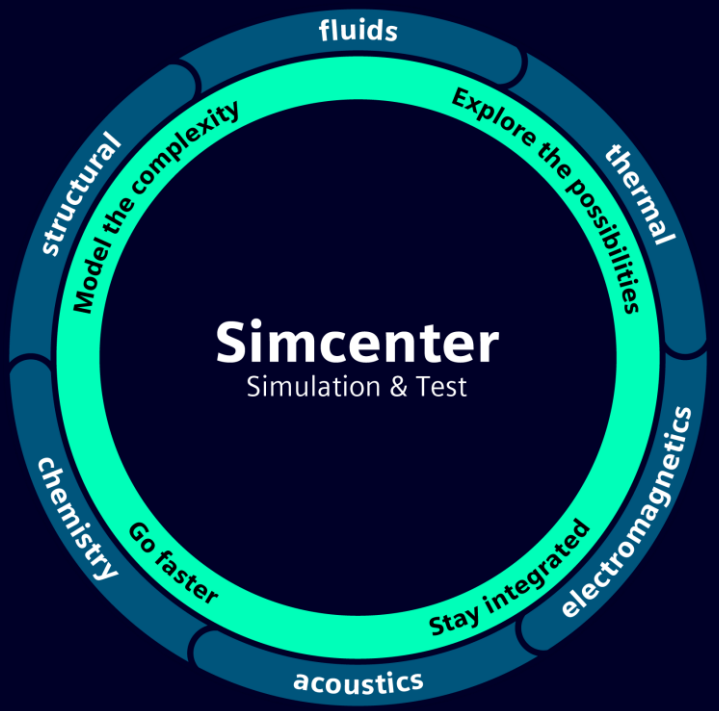
Transform Engineering
Drive productivity, empower innovations

Model the complexity
Delivering insights

Explore the possibilities
Empowering decision confidence

Go faster
Increasing throughput

Stay integrated
Ensuring alignment



SIEMENS

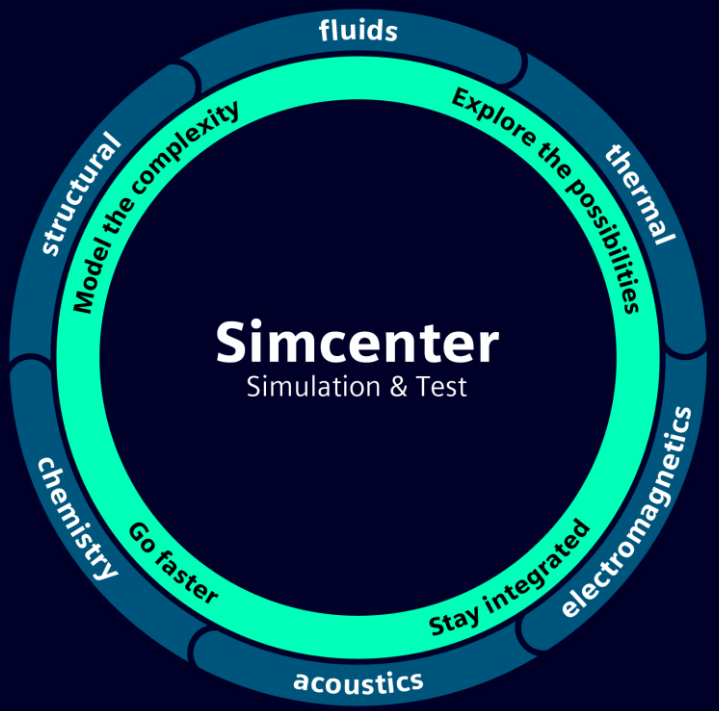
Transform Engineering
Drive productivity, empower innovations

Model the complexity
Delivering insights

Explore the possibilities
Empowering decision confidence

Go faster
Increasing throughput

Stay integrated
Ensuring alignment



SIEMENS

ZONA ZAERO Trim Analysis Pre- and Post-Processing

Model the complexity

Challenge

Model the complex interactions of a flexible structure with aerodynamic forces and damping

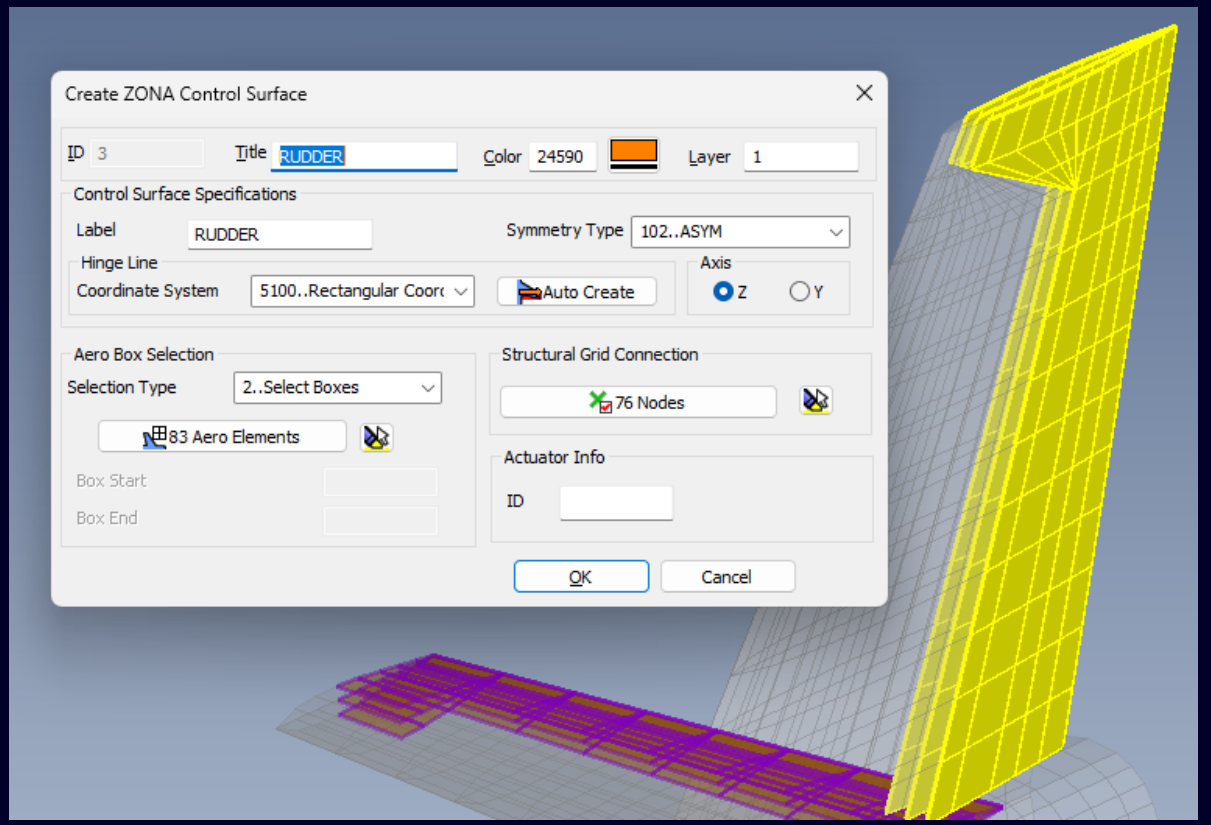
Solution

FEMAP GUI setup of ZAERO Trim Input, Analysis Run Set-Up and Post-Processing

Benefits

- Confirm aircraft stability
- Understand aircraft flight control effectiveness
- Recover accurate loads for structural certification

ZAERO TRIM Results Applied to NASTRAN Structural Model



SIEMENS

ZONA ZAERO Trim Analysis Pre- and Post-Processing

Setting up a ZAERO Trim Analysis is very complex…

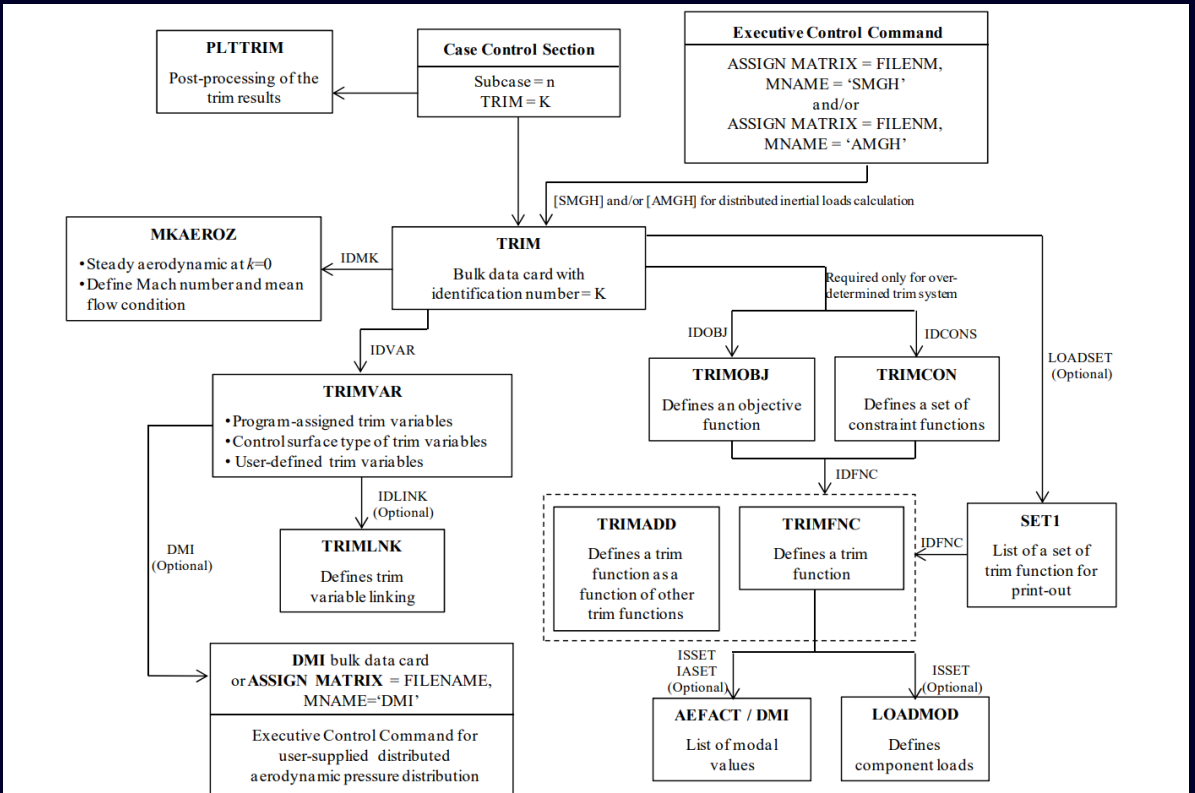
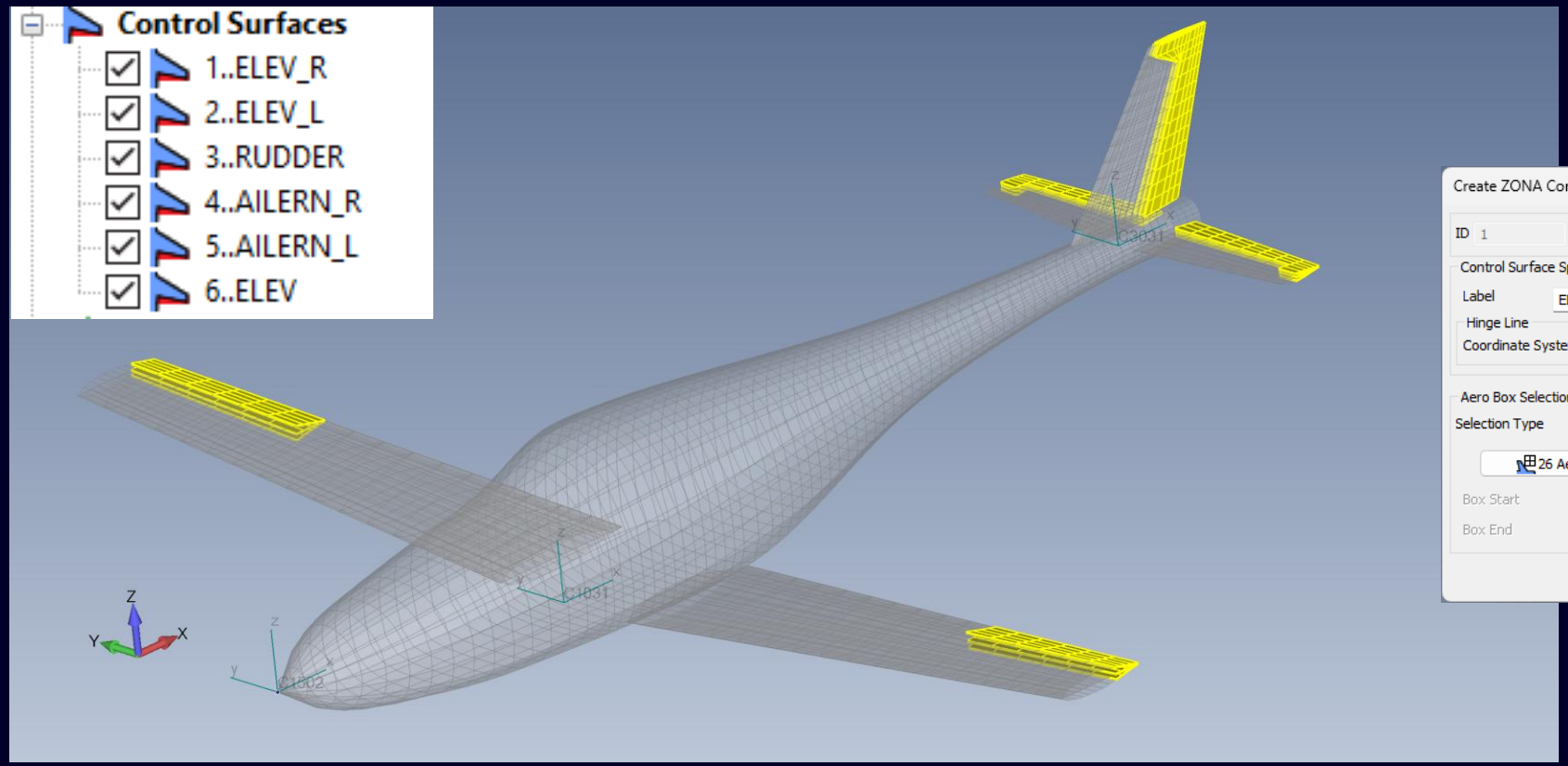


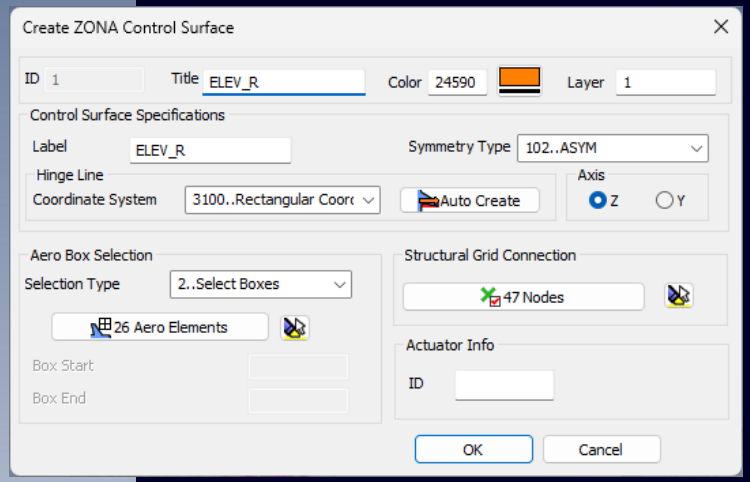
Figure 4.11 Bulk Data Interrelationship for Static Aeroelastic/Trim Analysis

SIEMENS

ZONA ZAERO Trim Analysis Pre- and Post-Processing

Simcenter FEMAP 2512 Adds GUI Hosted Pre- and Post-Processing to Streamline Model Setup





SIEMENS

ZONA ZAERO Trim Analysis Pre- and Post-Processing

Simcenter FEMAP 2512 Adds GUI Hosted Pre- and Post-Processing to Streamline Model Setup

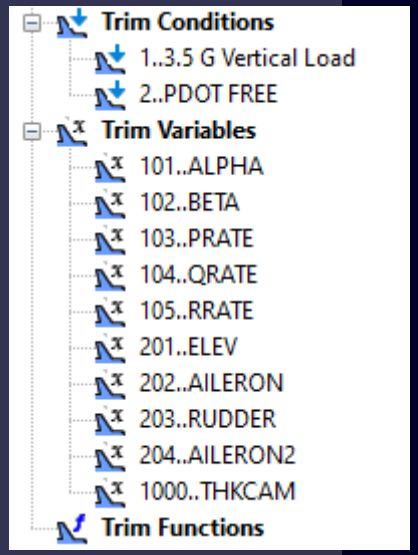
And the required -

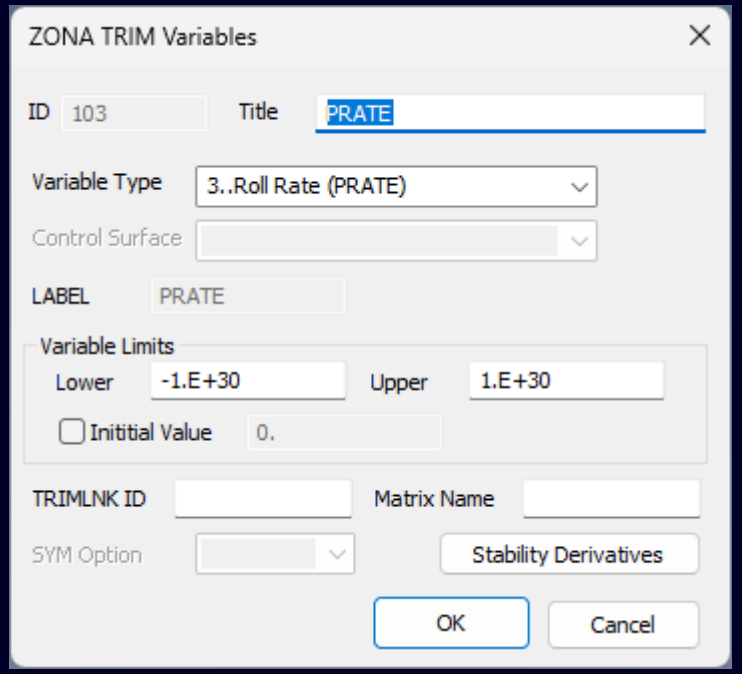
Trim Conditions

Trim Variables

Trim Functions

Trim Analysis Setup





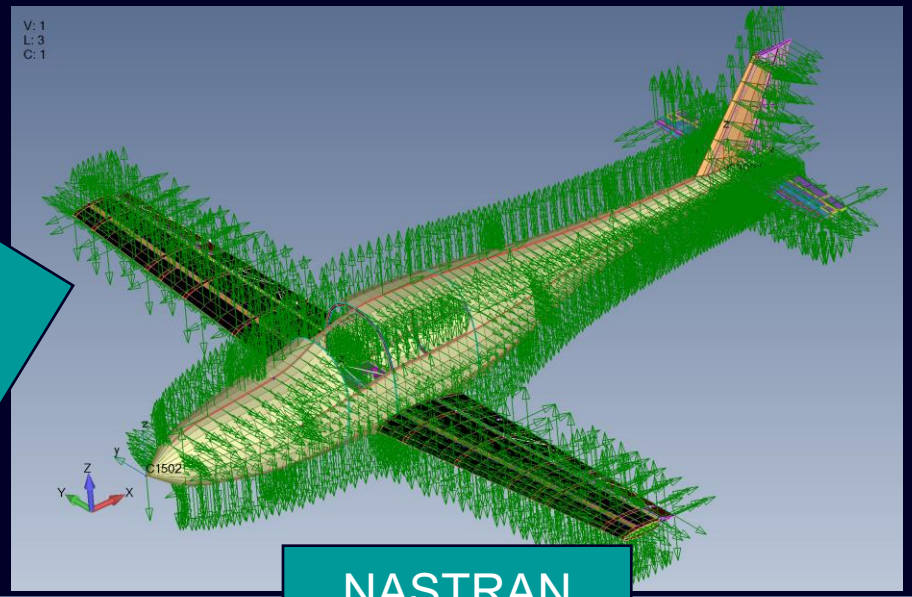
SIEMENS

ZONA ZAERO Trim Analysis Pre- and Post-Processing

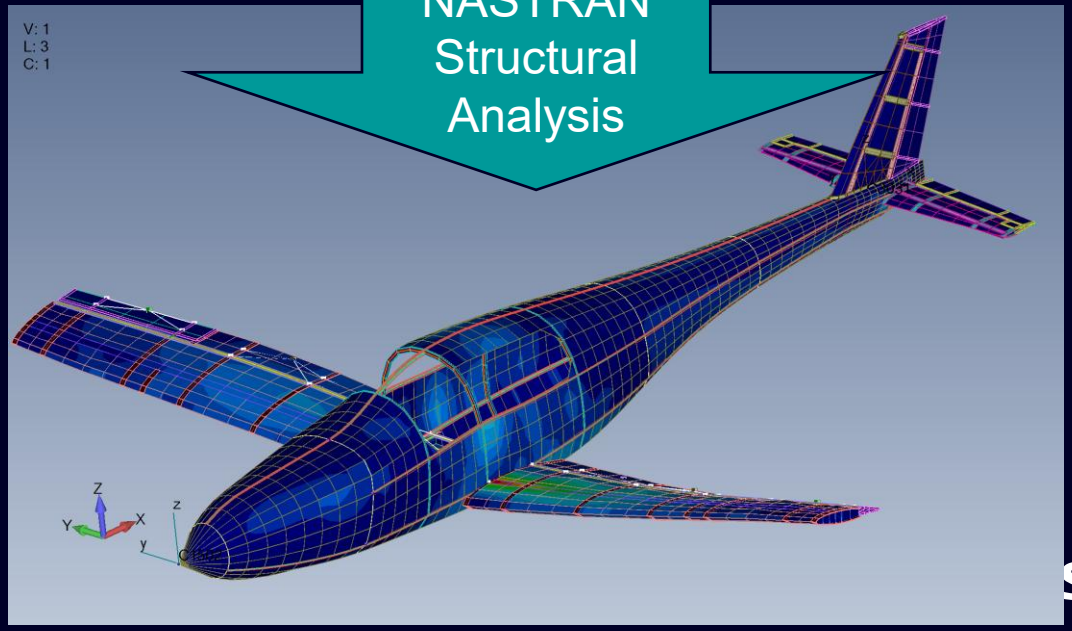
End result – ZAERO Ready to Run Trim Input File

```
$ *************************
$ Executive Control Section
$ *************************
ASSIGN FEM=trim_2-0005.f06, FORM=NX, BOUNDARY=ASYM, SUPORT=-123456/10608
ASSIGN MATRIX=mass_matrix.mgg ,MNAME=MGG
DIAG 1
CEND
  TITLE = TRIM_1104_457
  ECHO = NONE
SUBCASE = 3
  SUBTITLE = ROLL MANEUVER
  LABEL = ROLL RATE + ACCEL UNKNOWN GIVEN AILERON DELFECTION
  TRIM = 3
BEGIN BULK
$ ******************************************************************************
$   Written by : Femap
$   Version    : 2512.0
$   Translator : ZONA
$   From Model : C:\Trim\Trim_2.modfem
$   Date       : Tue Nov  4 17:15:10 2025
$   Output To  : C:\Trim\
$ ******************************************************************************
$
$ Femap Aero Property 1601 : Aero Property
PAFOIL7     1601       1       2       3      0.       5       6      0.
AEFACT         1      0.     .02     .05      .1     .15      .2      .3+
+             .5      .7      1.      2.      3.      4.      5.     7.5+
+            10.    12.5     15.    17.5     20.    22.5     25.    27.5+
+            30.    32.5     35.    37.5     40.    42.5     45.    47.5+
+            50.    52.5     55.    57.5     60.    62.5     65.    67.5+
+            70.    72.5     75.    77.5     80.    82.5     85.    87.5+
+            90.    92.5     95.    96.      97.    98.      99.    100.
AEFACT         2      0.   .0162   .0404   .0808   .1212   .1616   .2425+
+         .4041   .5657   .8082  1.6164  2.4246  3.2328  4.0394  4.7181+
+        5.3968  6.0755  6.7355  7.0842   7.433  7.7817  8.1305  8.3053+
+        8.4788   8.618  8.7392  8.8127  8.7971  8.7815  8.7659  8.7503+
+        8.7347  8.7093  8.3672  8.0168  7.6664  7.3161  6.9657  6.6153+
+        6.0996  5.5414  4.9831  4.4249  3.8667  3.3085  2.7911  2.3259+
+        1.8607  1.3955   .9304   .7443   .5582   .3721   .1861      0.
```

NASTRAN Forces and Moments



NASTRAN Structural Analysis



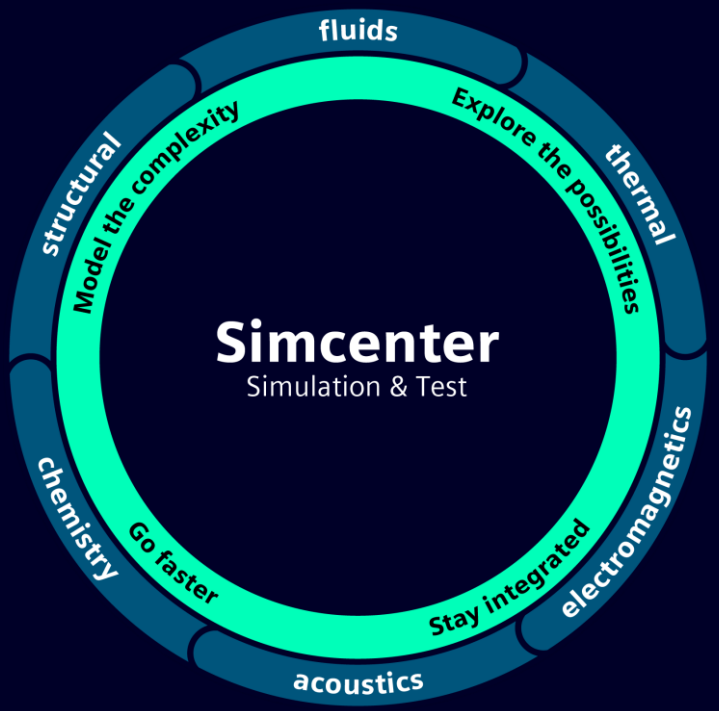
Transform Engineering
Drive productivity, empower innovations

Model the complexity
Delivering insights

Explore the possibilities
Empowering decision confidence

Go faster
Increasing throughput

Stay integrated
Ensuring alignment



SIEMENS

Organizing Results Data

Explore the possibilities

Challenge

Identifying the critical data in the terabytes of results comon in Finite Element Analysis

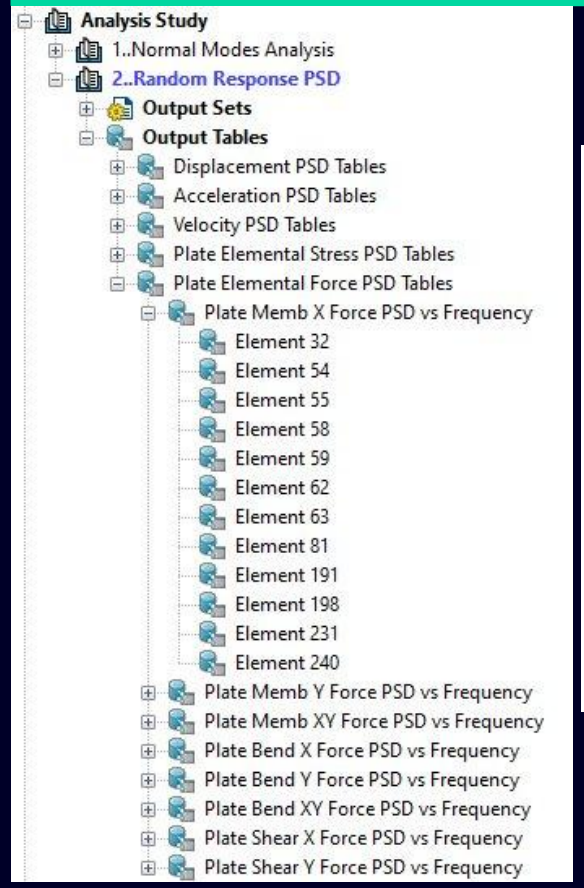
Solution

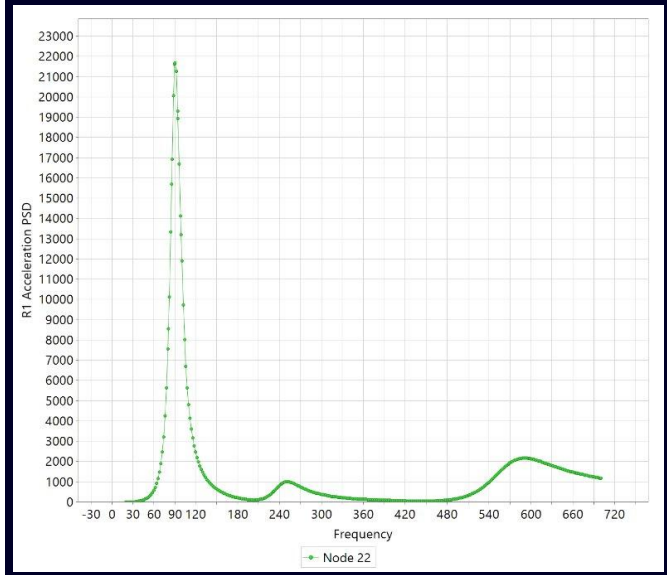
FEMAP Output Tables organizes Tabular Data to more effectively impact design

Benefits

- Tabular Data now stored together with traditional Nodal and Elemental Data in Analysis Studies
- Tracebility – all data from a single NASTRAN run is co-located in the FEMAP GUI
- Immediate Right-Click access to querying the pertinent data

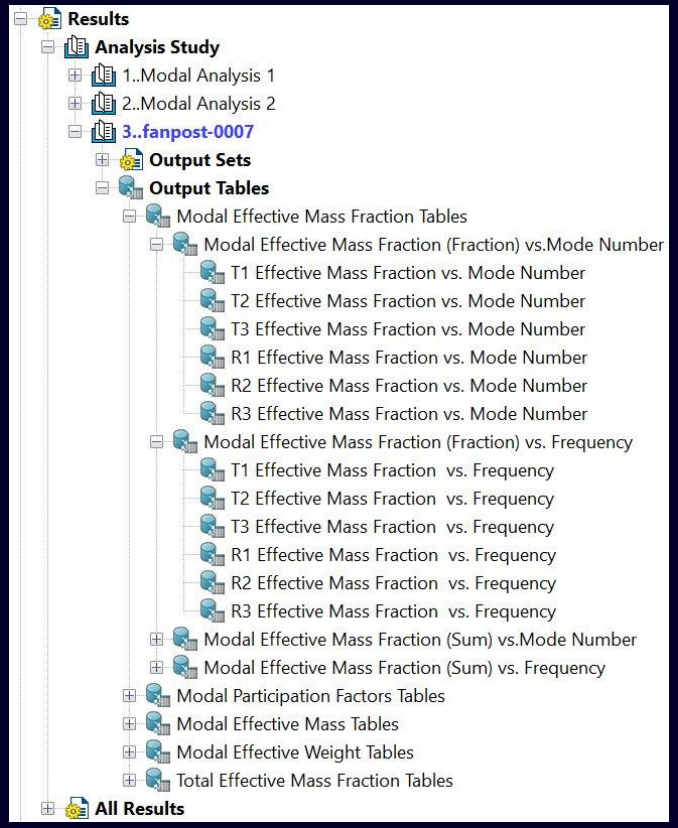
Random Response Results in Output Tables

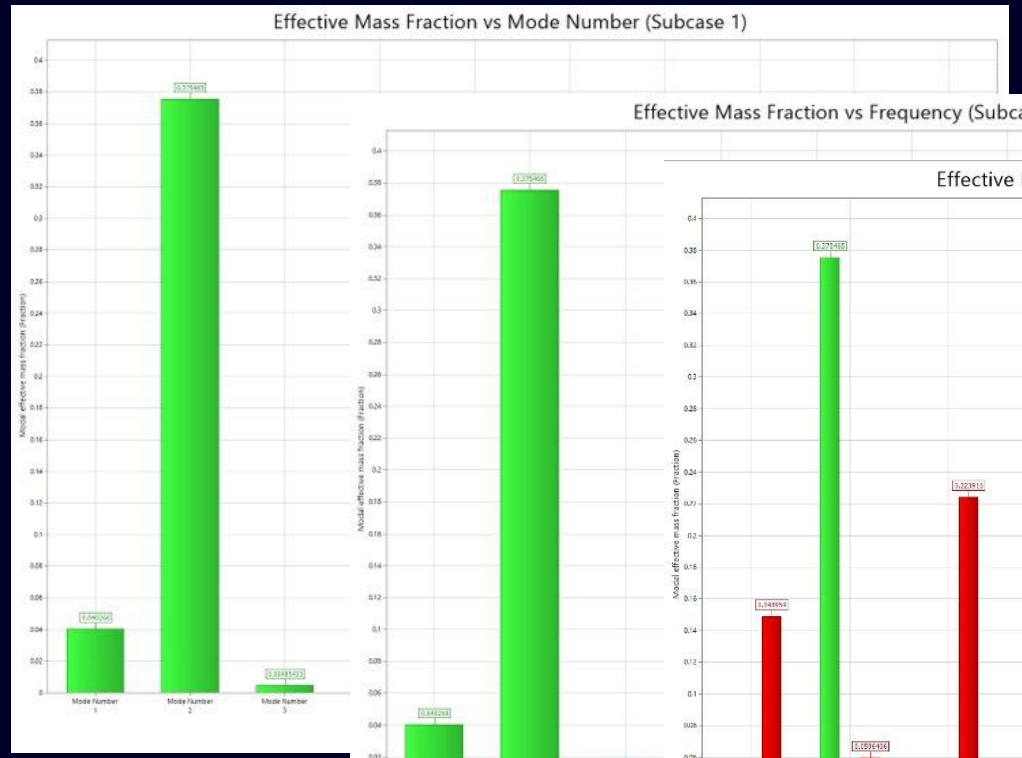




SIEMENS

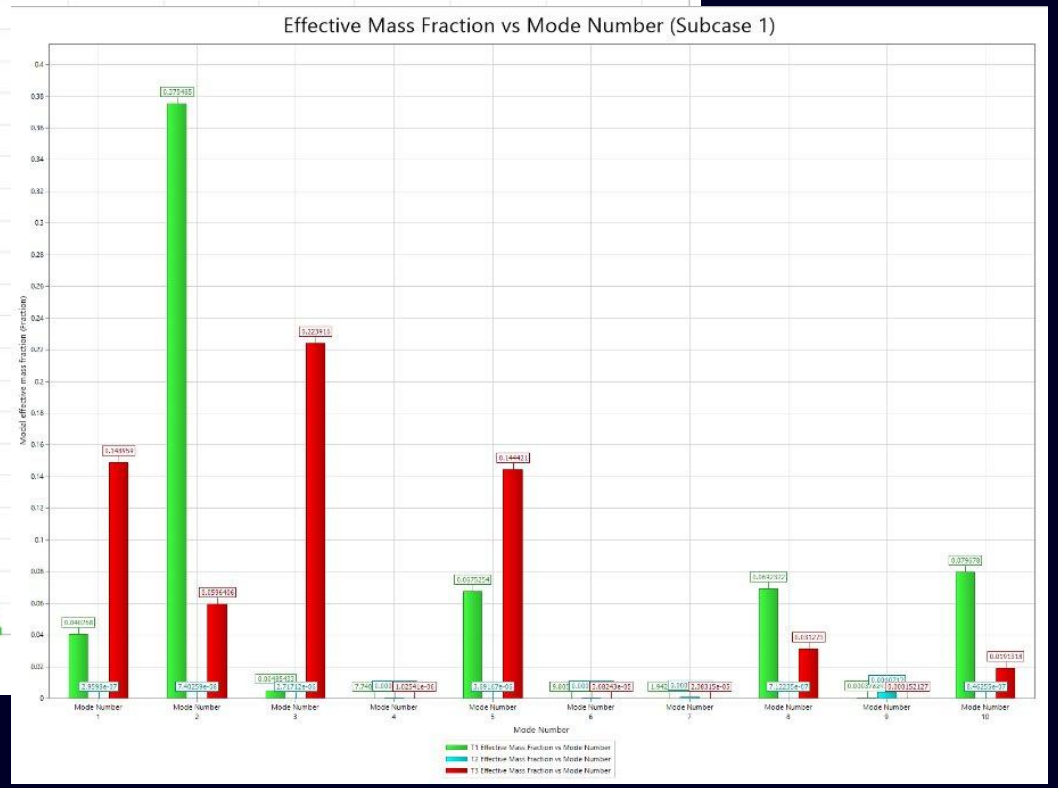
FEMAP 2512 – Output Table Modal Mass Data Enhancements





vs. Mode Number

vs. Frequency



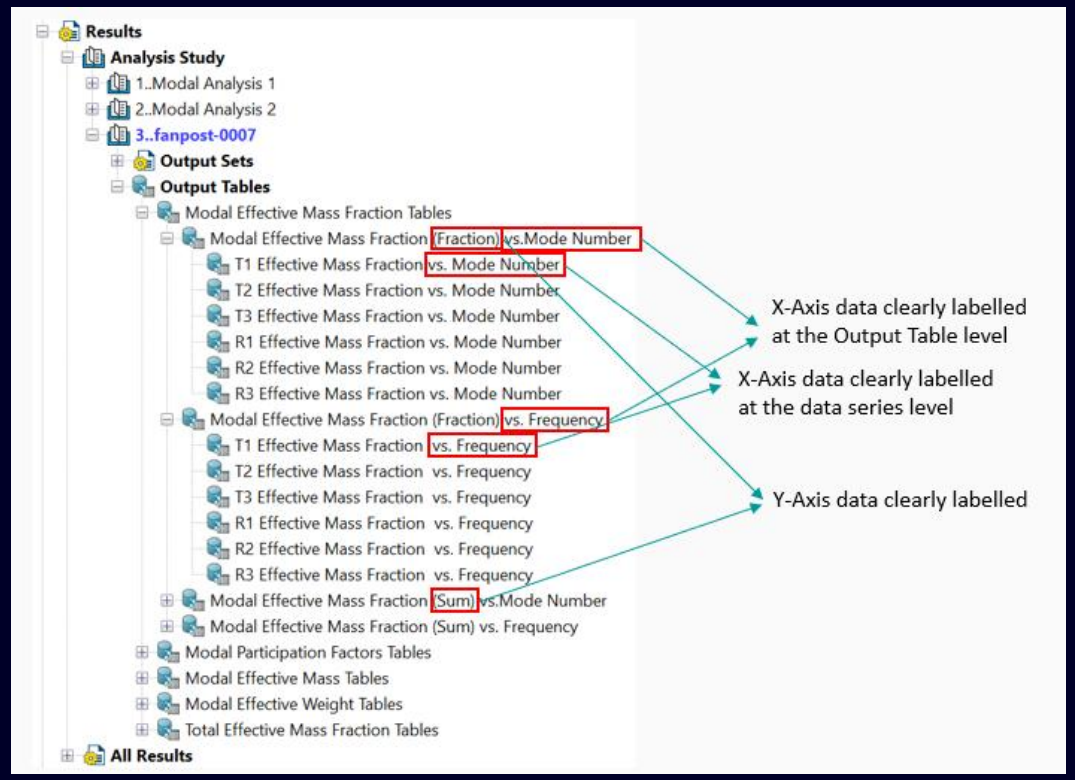
And with Multi-Axis Support

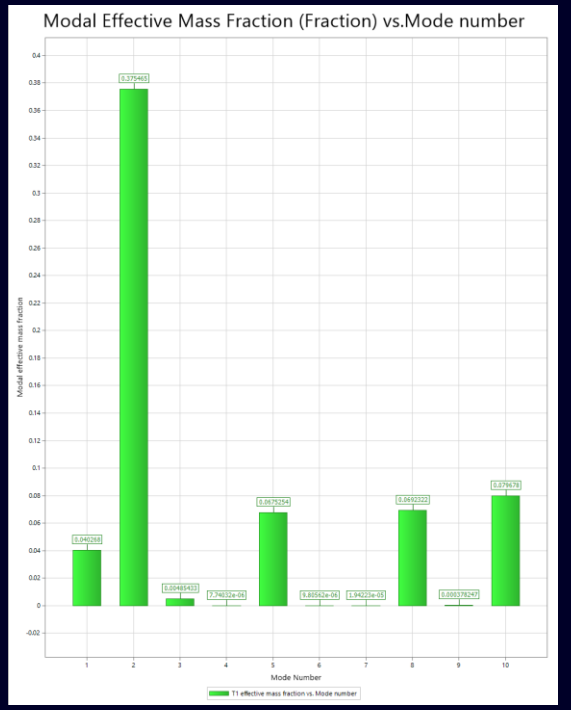
Modal Mass Data moved to Output Tables in FEMAP v2506

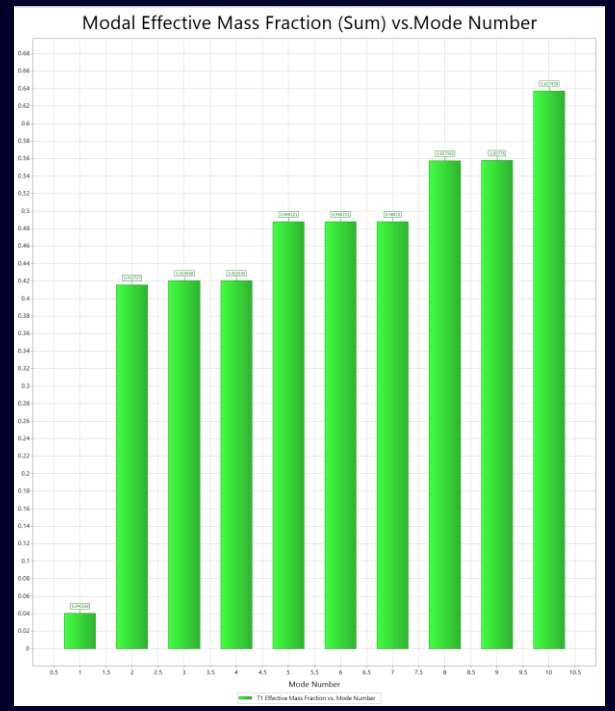
Bar Charts added in v2512

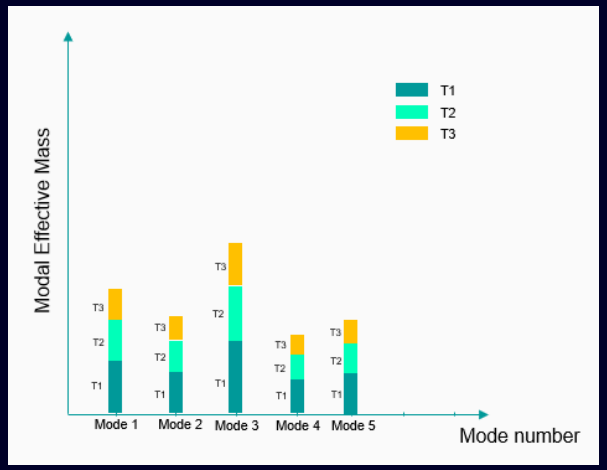
SIEMENS

FEMAP 2512 – Output Table Modal Mass Data Enhancements









SIEMENS

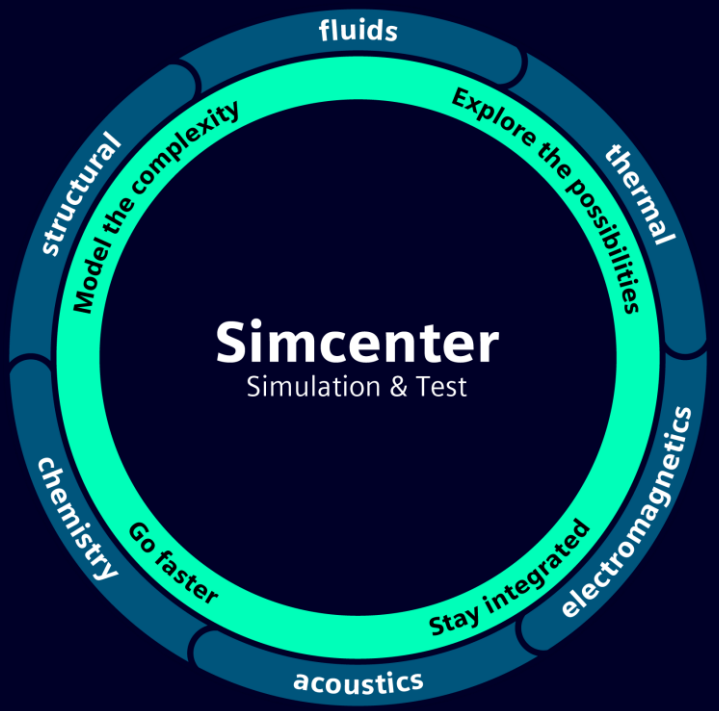
Transform Engineering
Drive productivity, empower innovations

Model the complexity
Delivering insights

Explore the possibilities
Empowering decision confidence

Go faster
Increasing throughput

Stay integrated
Ensuring alignment



SIEMENS

Unified Graphics Architecture

Go faster

Challenge

Effective displaying Finite Element Data of larger and more complex models

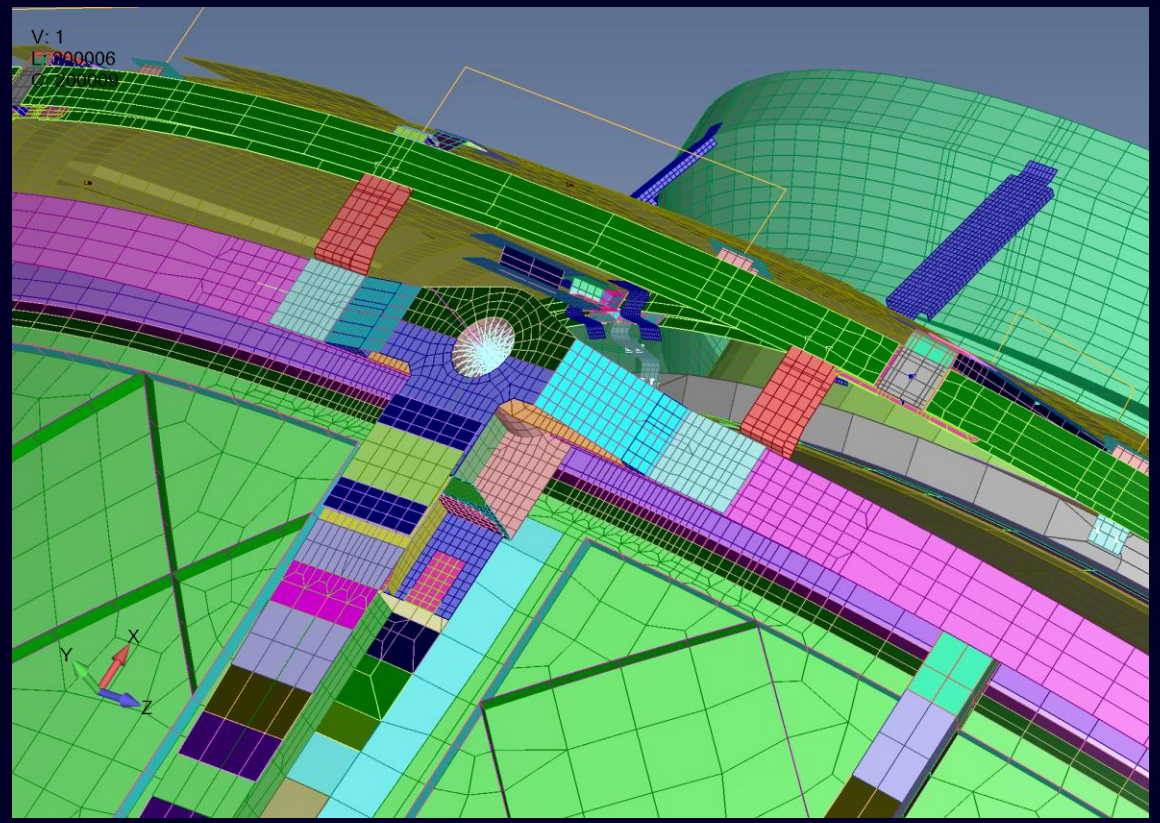
Solution

Unified Graphics Architecture – new highly optimized code leveraging the latest GPUs

Benefits

- Enhanced efficiency of FEA Modeling and Post-Processing through faster redraws
- Better organized for long term maintenance, extensions, and more performance enhancements

Unified Graphics Architecture

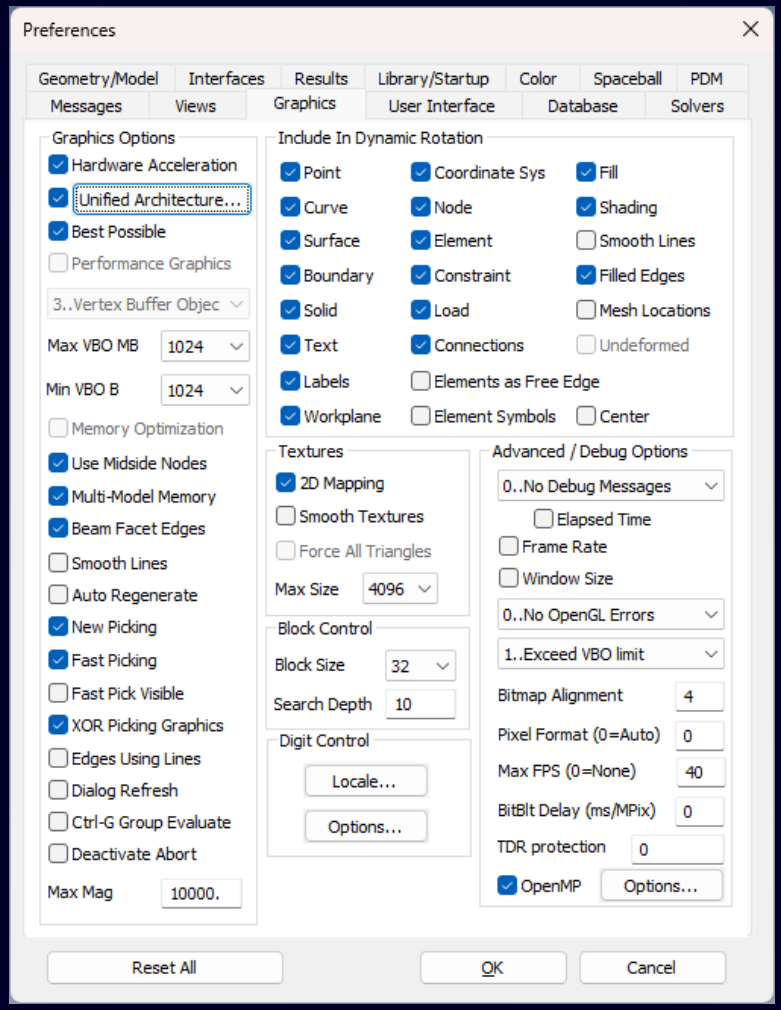


SIEMENS

FEMAP 2512 Unified Graphics Architecture

Development started in Simcenter FEMAP v2301, the following entities have been added into the UGA Pipeline

- Coordinate Systems
- Geometric Entities – Points, Mesh Points, Curves, Composite Curves, Surfaces, Boundary Surfaces, and Solids
- Geometry-based Loads and Constraints
- Nodes
- Beam and Solid Mesh entities – FEMAP v2512
- IsoSurface/Cutting Plane/IsoLine/Streamline – FEMAP v2512

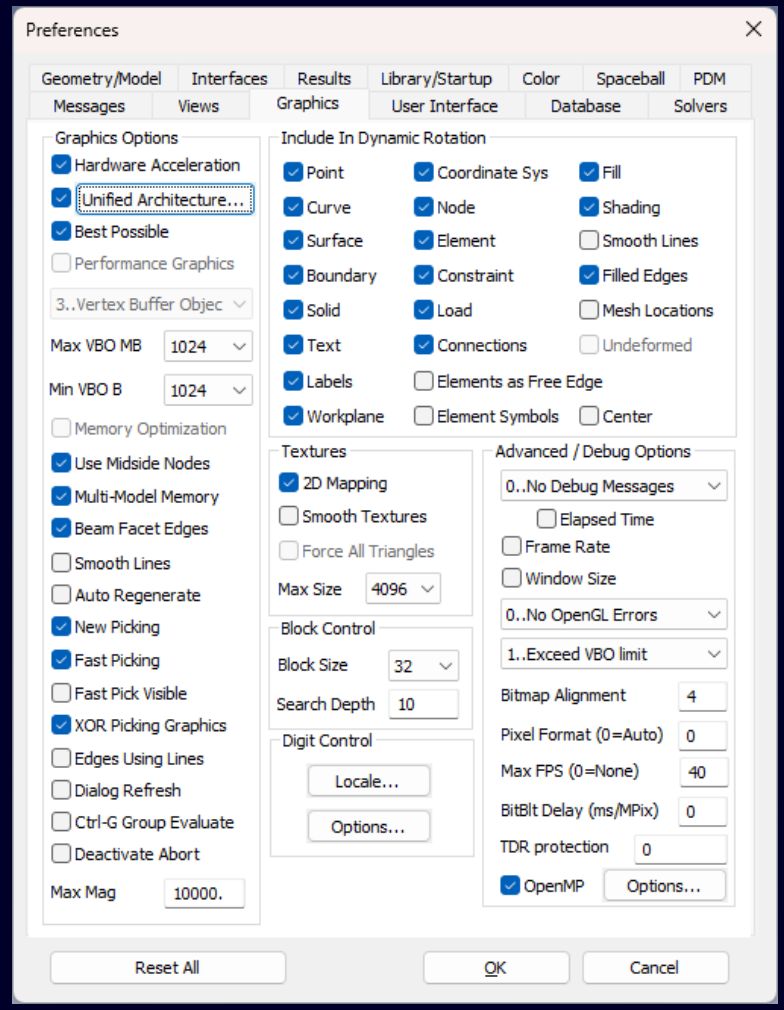


SIEMENS

FEMAP 2512 Unified Graphics Architecture

What's Next – v2606

- Shell/Plate elements
- Contact
- Text objects
- 2D screen entities (View/Post Titles, Contour Legend, ViewAxes, Origin)
- GFX and User Defined
- OGL_Mesh and interactive Mesh Splitting
- Aero entities
- Beam Section Cut



SIEMENS

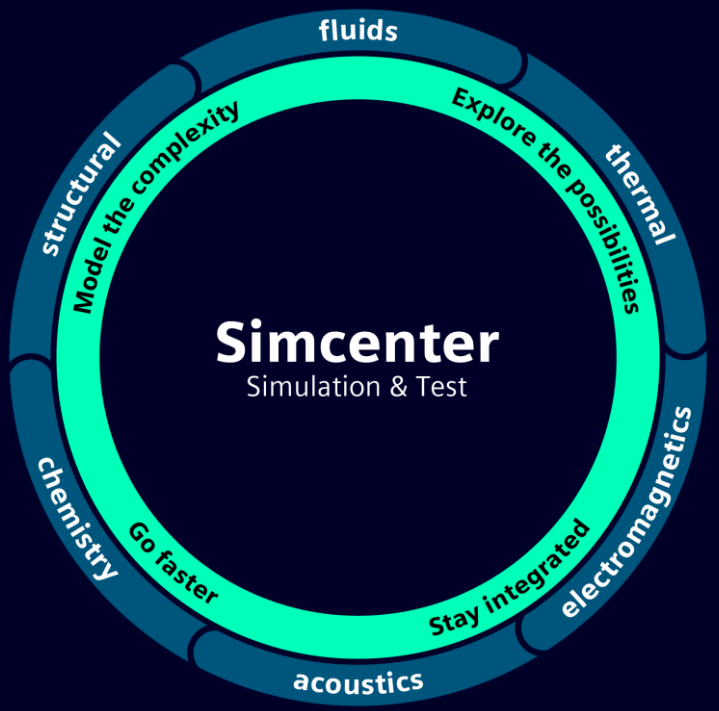
Transform Engineering
Drive productivity, empower innovations

Model the complexity
Delivering insights

Explore the possibilities
Empowering decision confidence

Go faster
Increasing throughput

Stay integrated
Ensuring alignment



SIEMENS

FEMAP 2512 Rollover Licensing

Stay integrated

Challenge

Ease access to FEMAP Licenses with multiple possible licensing sources

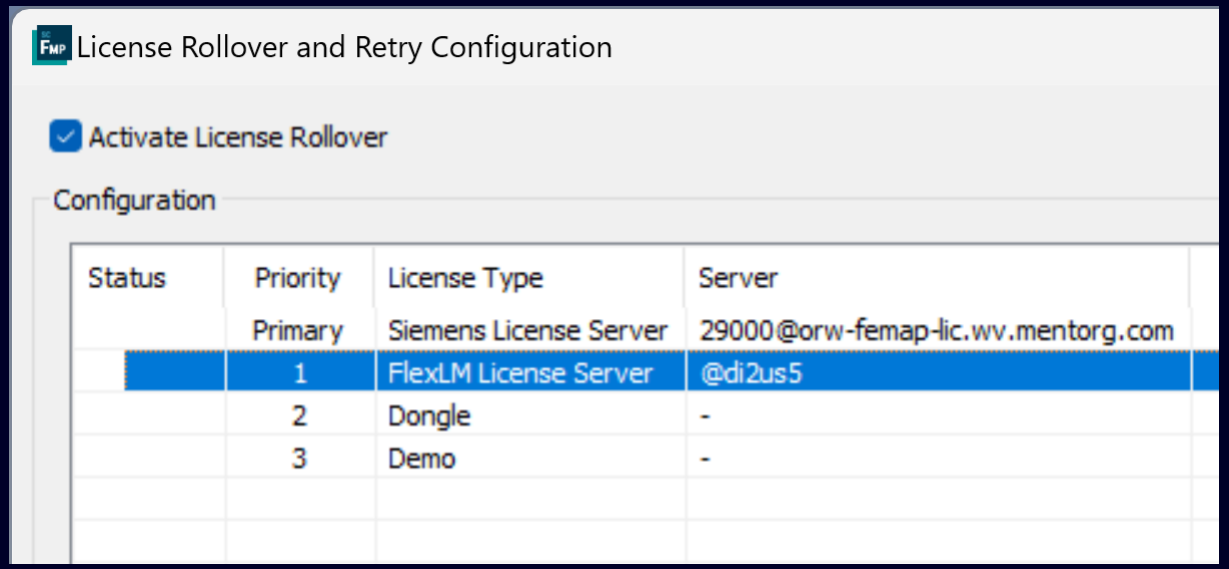
Solution

Rollover Licensing – user can now specify multiple licensing sources and order of preference

Benefits

- Given the number of ways FEMAP can be licensed, Dongle, Legacy Float, SALT Float, Simcenter X, and SC12504 Combo SC3D/FEMAP – user always gets a license if one is available through multiple paths

Rollover Licensing



SIEMENS

FEMAP 2512 Stay Integrated/User Requests

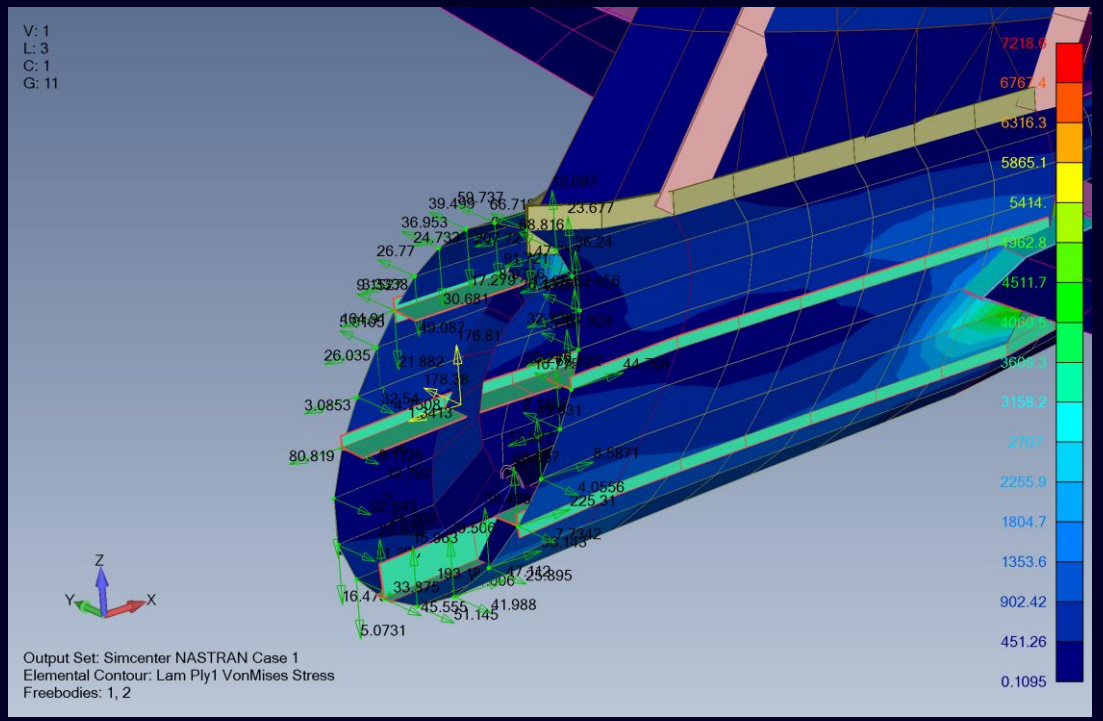
Teamcenter Integration – added management for ZAERO files through FEMAP's Teamcenter connection

Updated CAD Translators to latest versions

Pick Front now the default in new Models

Separated Plate Thickness/Beam Cross Section visualization, both can be controlled on their own

Added Edge Fade of solid meshes when zoomed way out – cleaner display



Beam Thickness On/Plate Thickness Off

SIEMENS

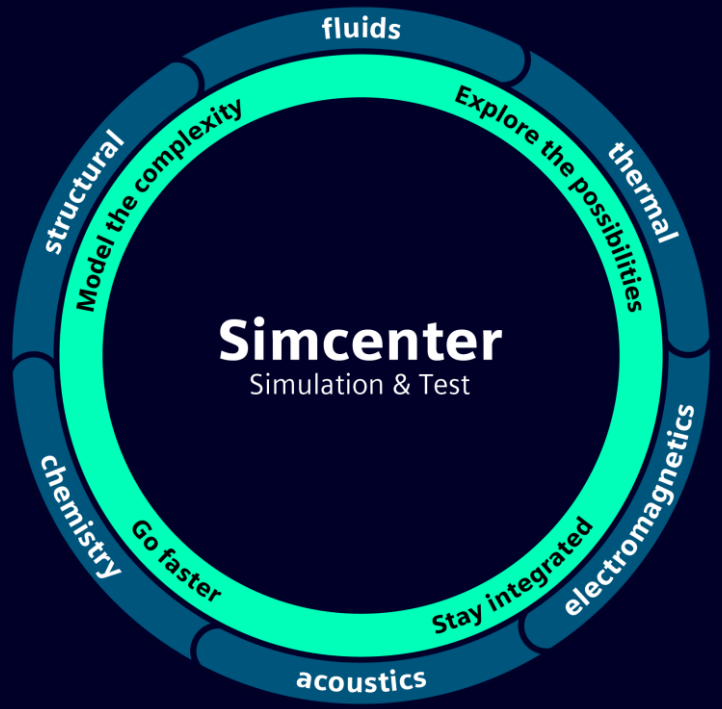
Simcenter FEMAP <release version number>
Top new features

Model the complexity
ZAERO Trim

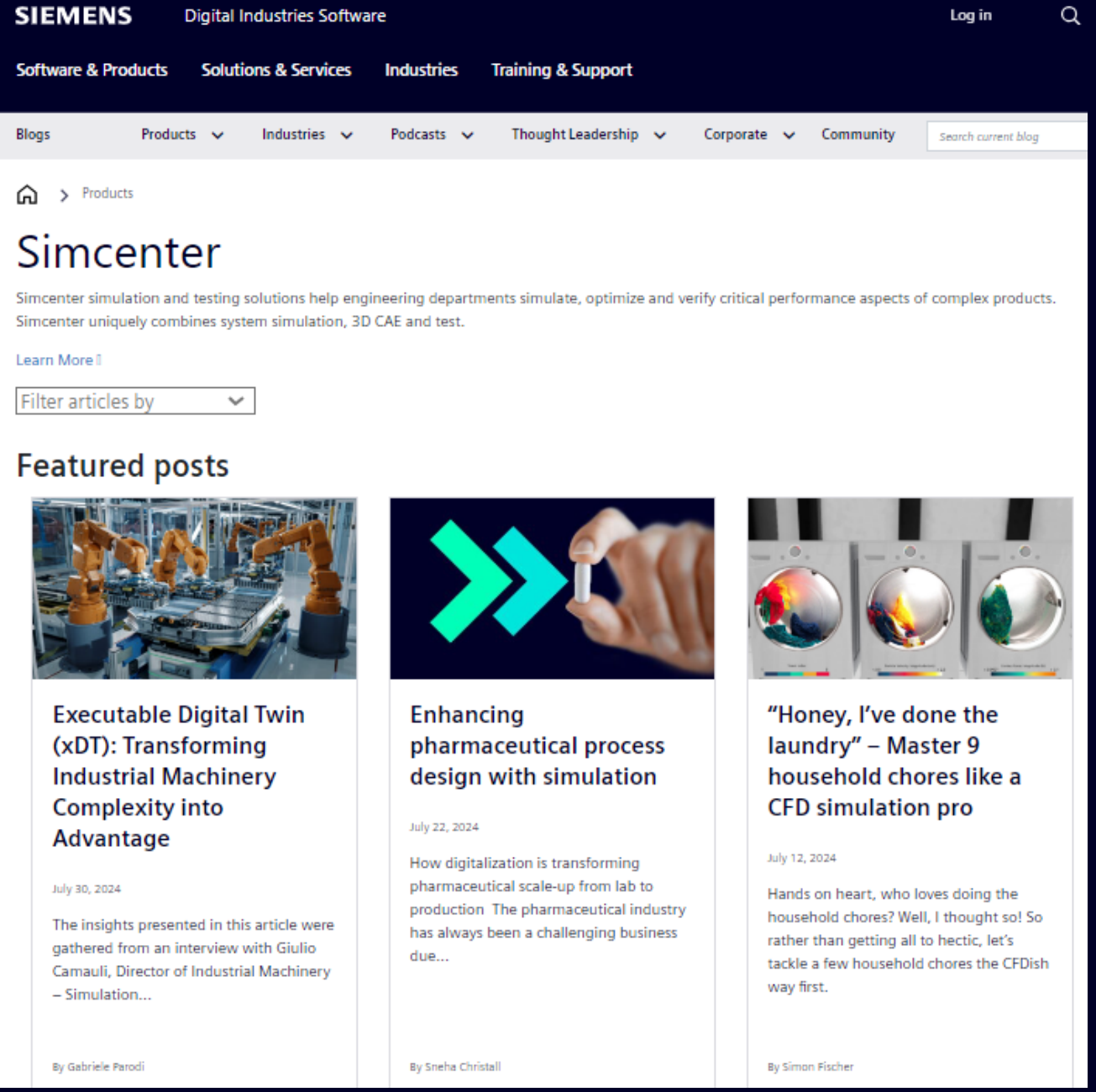
Explore the possibilities
Output Tables

Go faster
Unified Graphics

Stay integrated
ZAERO Teamcenter Support



SIEMENS



Simcenter blogs

Bookmark the URL now!
Stay ahead of Simulation and Test solutions news.

Learn more

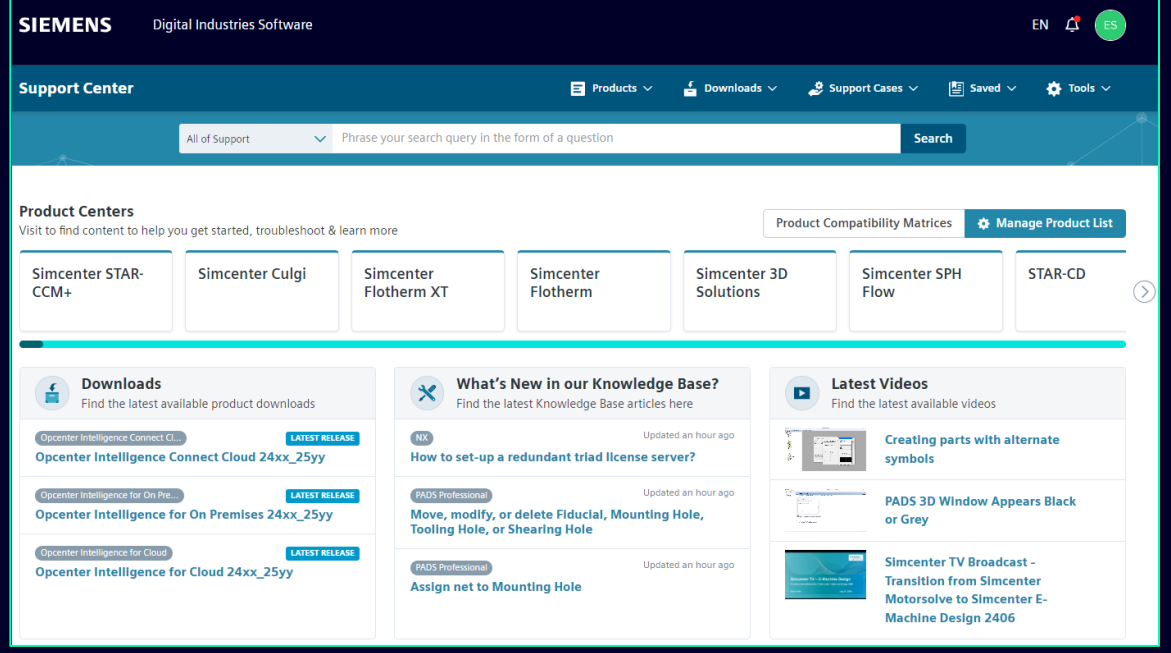
https://blogs.sw.siemens.com/simcenter/

SIEMENS

Simcenter Support Center and Community

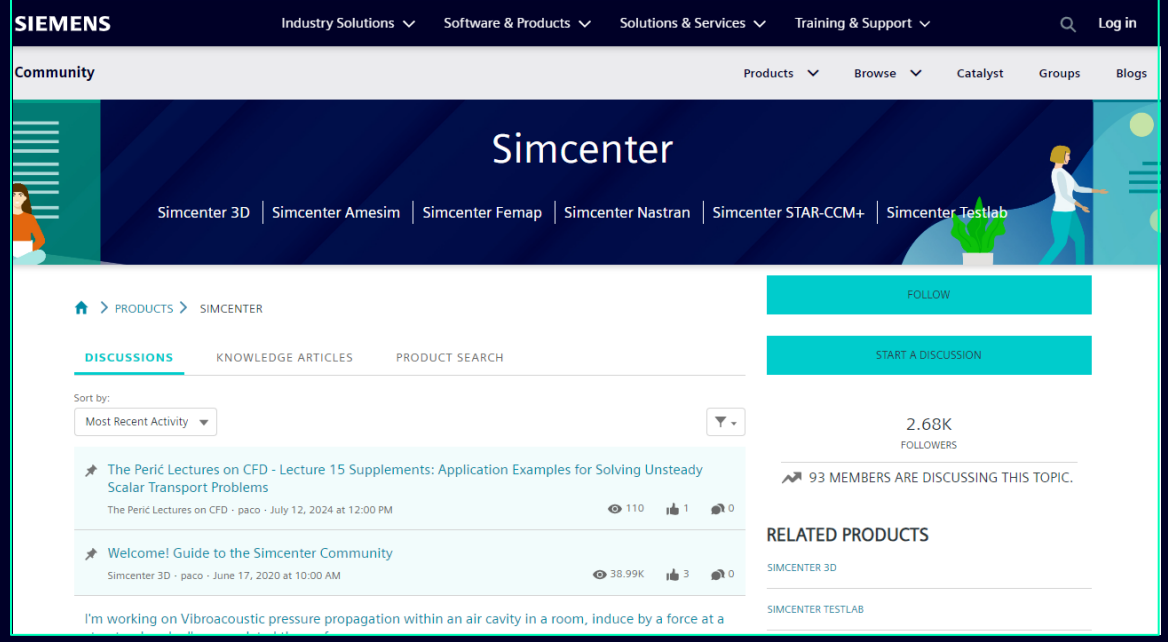
Simcenter Support Center

Get product support, updates and documentation on Support Center. Start now!



Simcenter Community

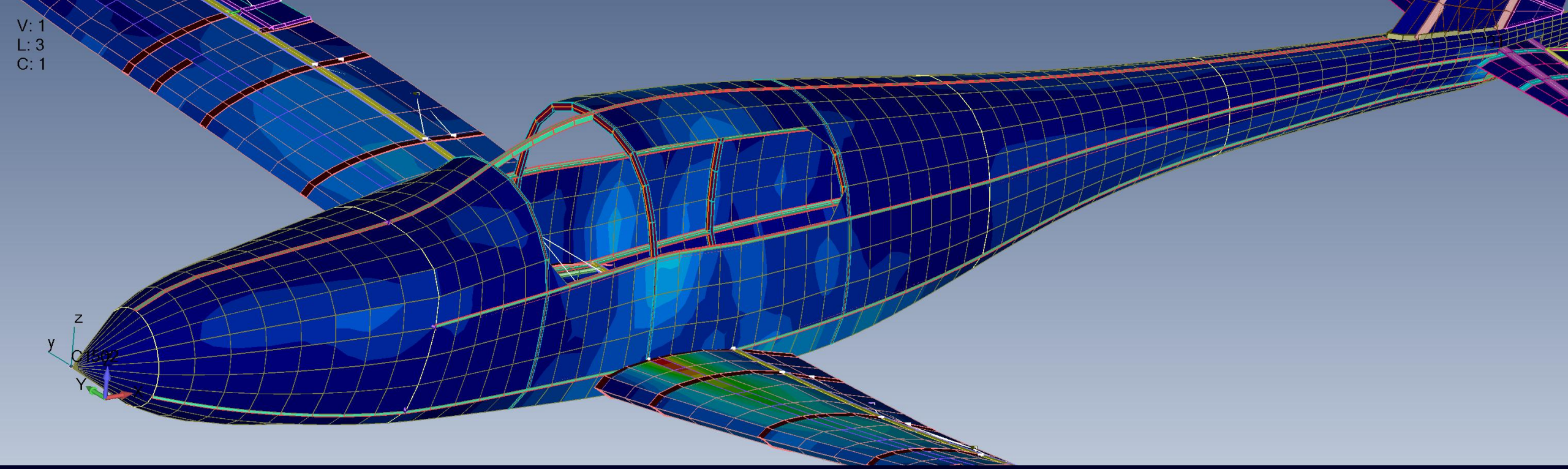
Explore, share, and learn. Join us on the Simcenter Community.



SIEMENS

Mark Sherman
FEMAP Product Manager
sherman.mark@siemens.com

SIEMENS



Simcenter FEMAP

What’s new in 2512

SIEMENS