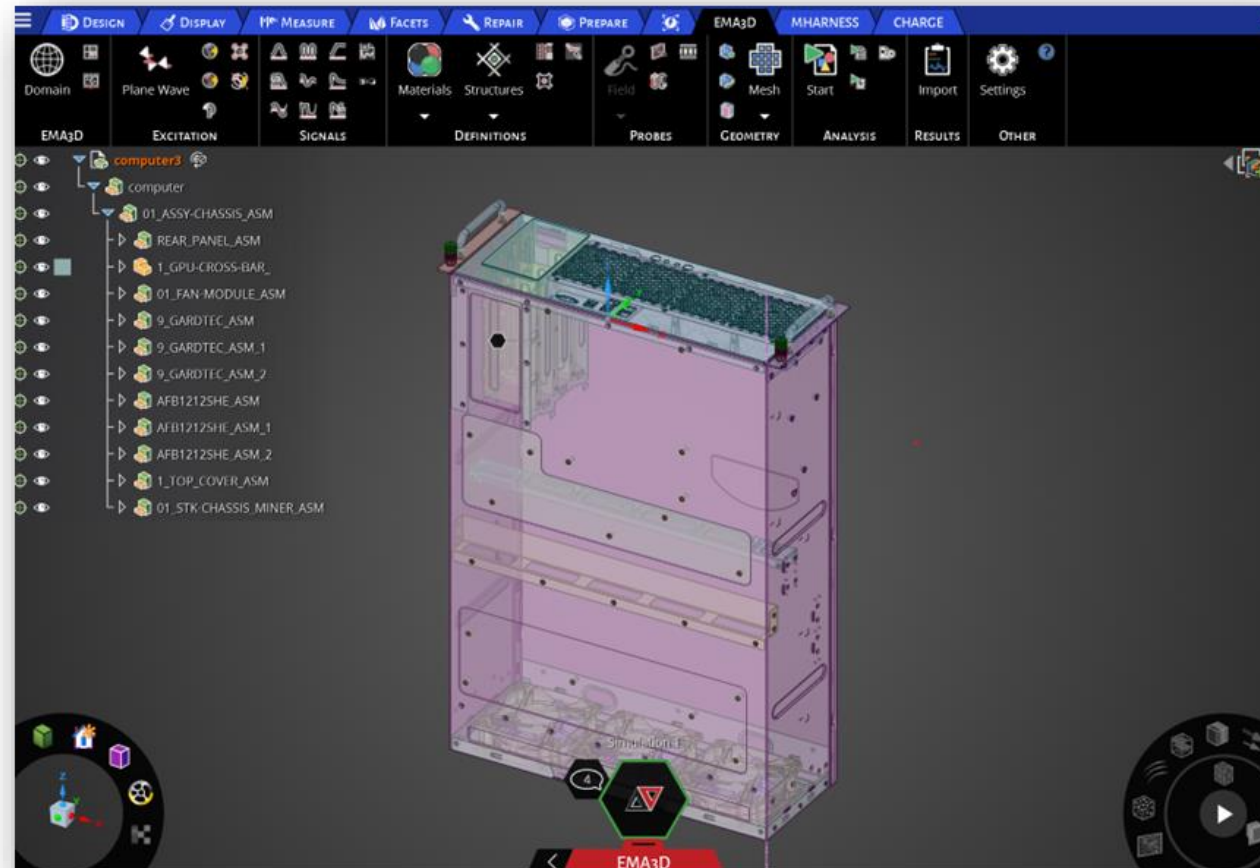


Release 2023 R1 Highlights
Ansys EMA3D Cable



ANSYS EMA3D Cable 2023 R1

Device- and Platform-Level Electromagnetic Modeling Solution



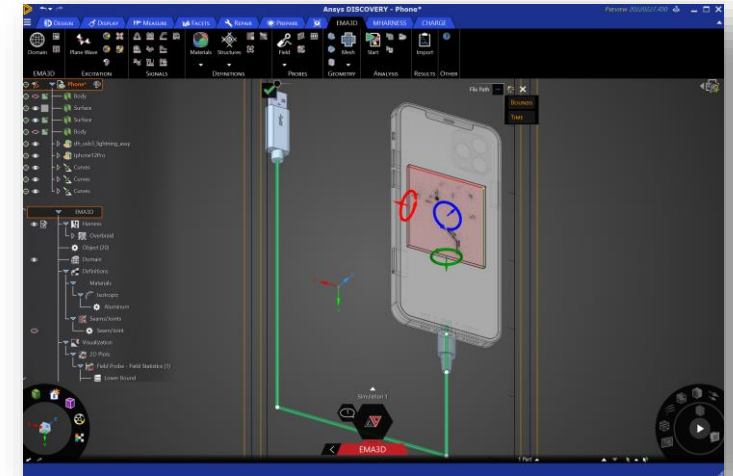
ANSYS EMA3D Cable 2022 R2 Distinguishing Features

- Accurate

- Decades of validation heritage of experiment compared to simulation on complex platforms
- Full wave solution of electromagnetic equations
- Fully integrated co-simulation with transmission line equations
- Integrated co-simulation with Nexxim Transient Circuit

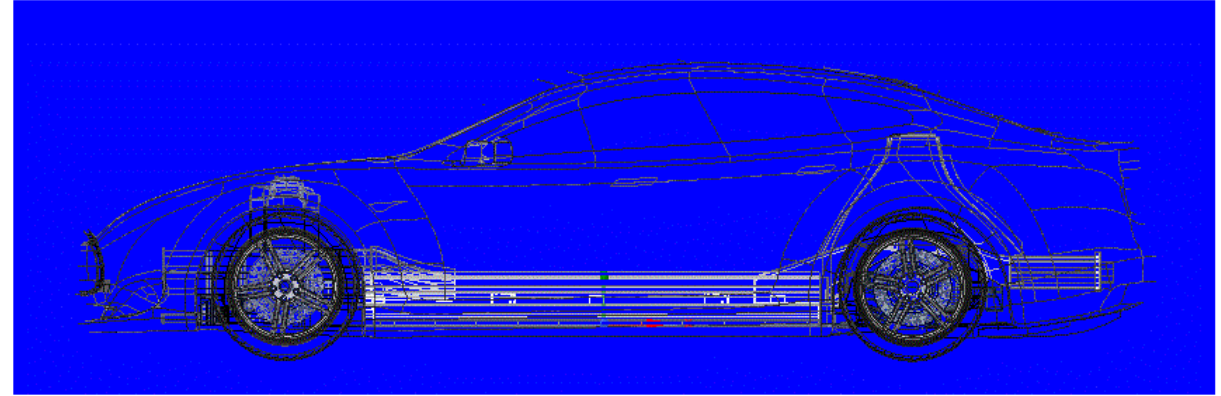
- Easy to use

- User interface within Ansys Discovery
- Intuitive for new users
- Utilize mechanical CAD directly with minimal cleaning or preparation
- Prepare models of complex platforms and unit enclosures in a fraction of the time of other methods
- Integrated workflows with Ansys SIwave and Ansys HFSS



2023 R1 Ansys EMA3D Cable Featured Updates

- New **EMA3D Automated Workflows** that enable full-device and full-vehicle simulation with automatic material assignment from Ansys Granta, automatic meshing, and automatic post-processing with standard electromagnetic compatibility (EMC) limit curves
- New **EMA3D API** (application program interface) and interoperability features to allow for efficient use with Ansys optiSLang, Ansys ModelCenter, or a user Python script (pyEMA3D). This feature allows 3D geometry and cables to be programmatically adjusted and the simulation re-run many times without user interaction
- New **Tools to Easily Work with Multiple Cable Harnesses** that allow for automatic import of additional cable database formats, automatic joining of different harnesses at connectors, and the rapid assignment of cable termination circuit elements.



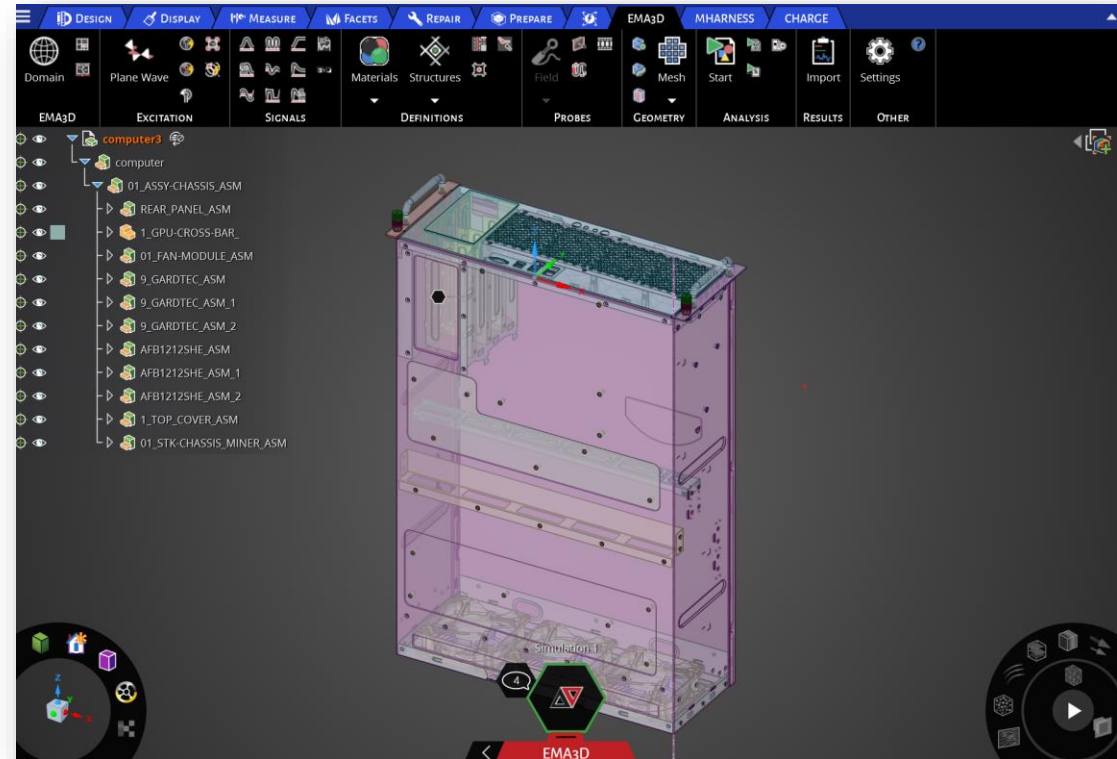


Featured Update 1: New EMA3D Automated Workflows



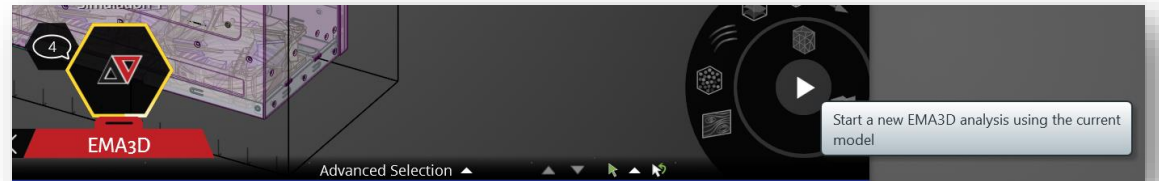
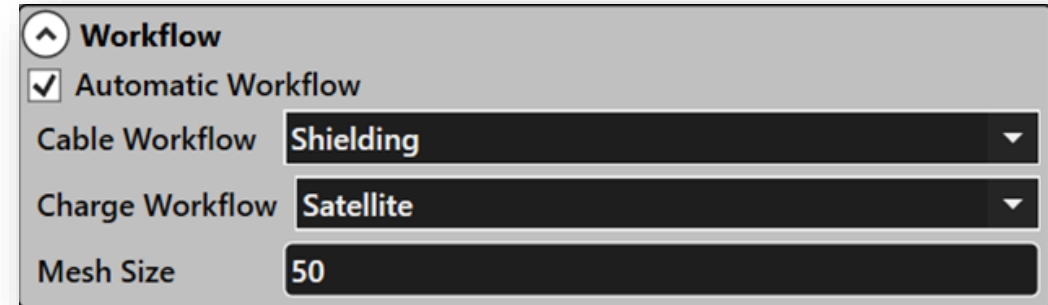
Import Mechanical CAD Geometry

- Discovery imports all major CAD formats
- EMA3D works with mechanical CAD with minimal or no cleanup required



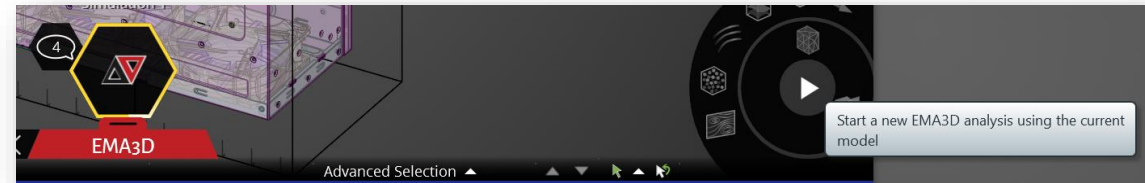
Automated One-Click Workflow

- New one-click work allows for the simulation to begin with only one user interaction
- Users click the “Play” button to begin the automated workflow



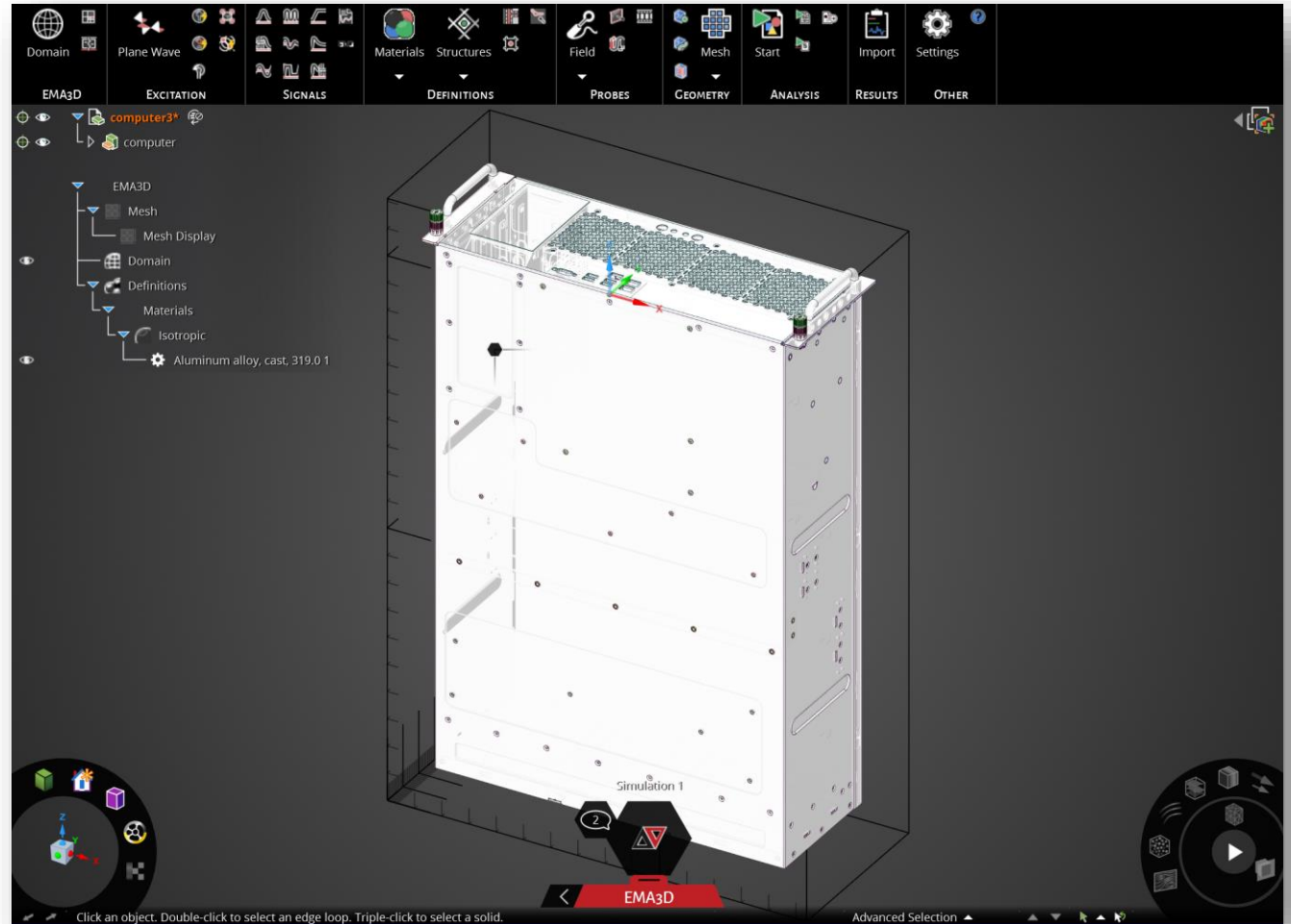
Automated One-Click Workflow

- The Simulation Information Display (SID) shows the state and setup of the current simulation
- Users can prepare multiple simulations, with results tracked independently
- Applied physics, defined variations, and notification messages are included in the SID



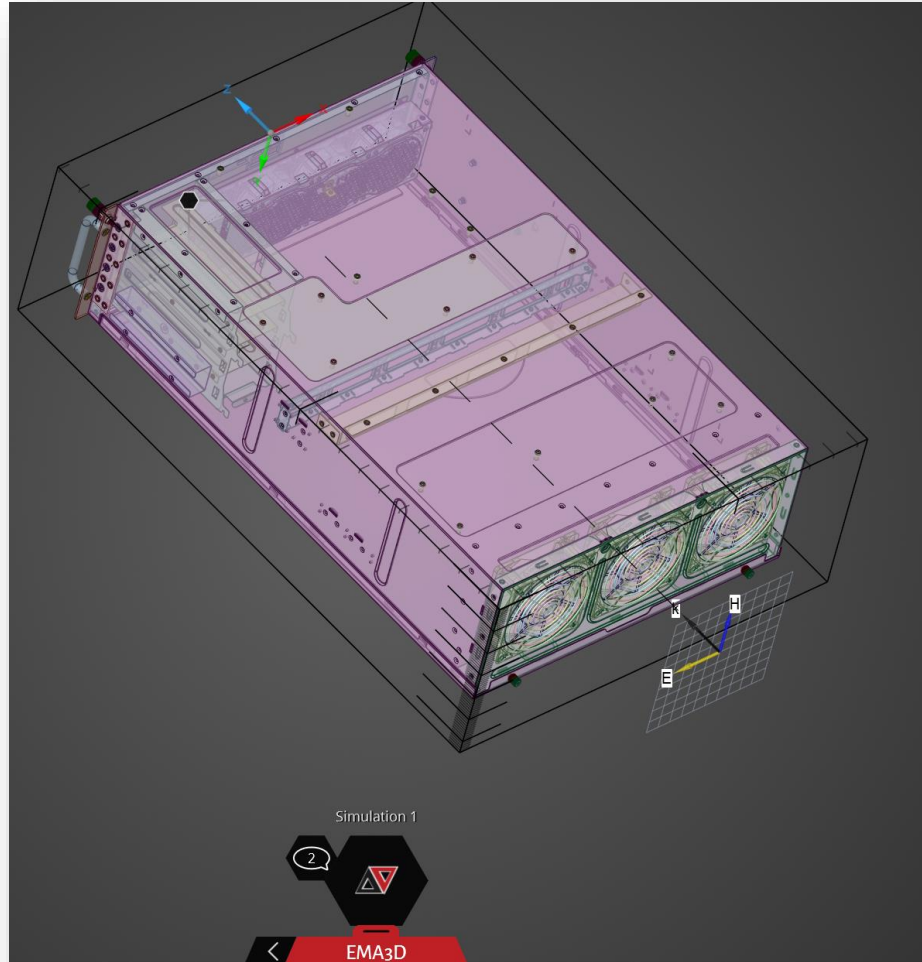
Domain and Materials Set Automatically

- EMA3D materials are assigned automatically with electromagnetic material properties
- Users with a valid Ansys Granta license have an expanded set of electromagnetic materials available to them automatically in Ansys Discovery



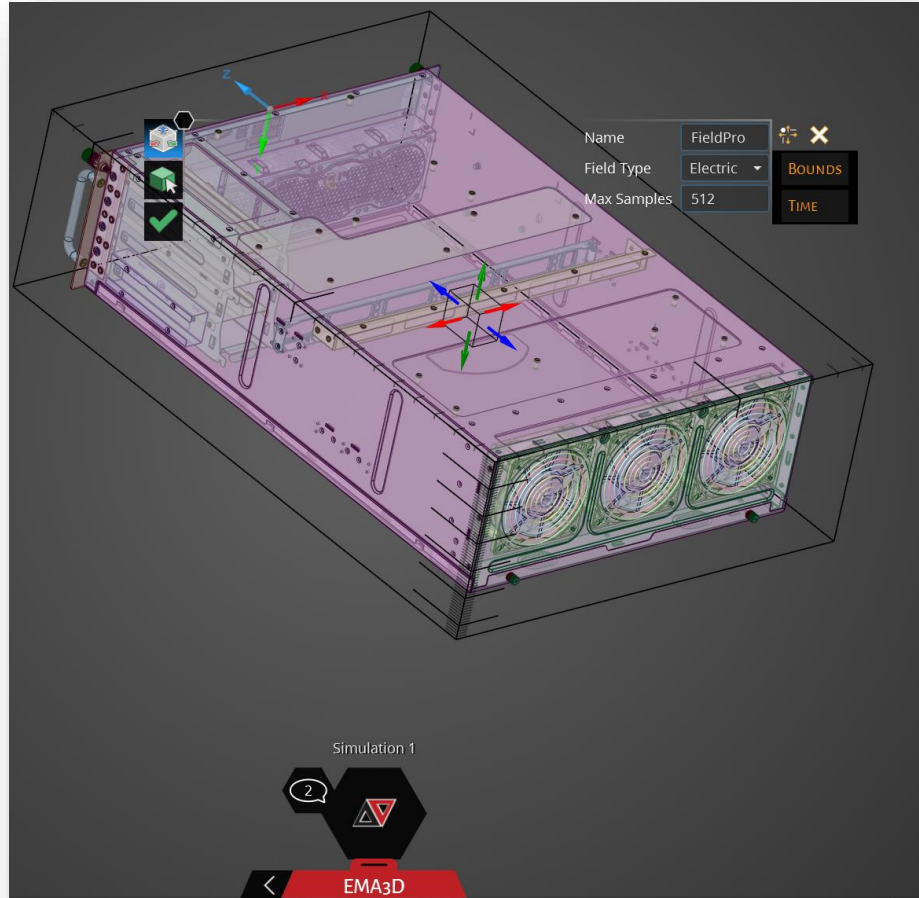
Excitation Set Automatically

- EMA3D automatically creates an excitation with no user interaction
- The excitation includes the main frequency band of interest for EMC



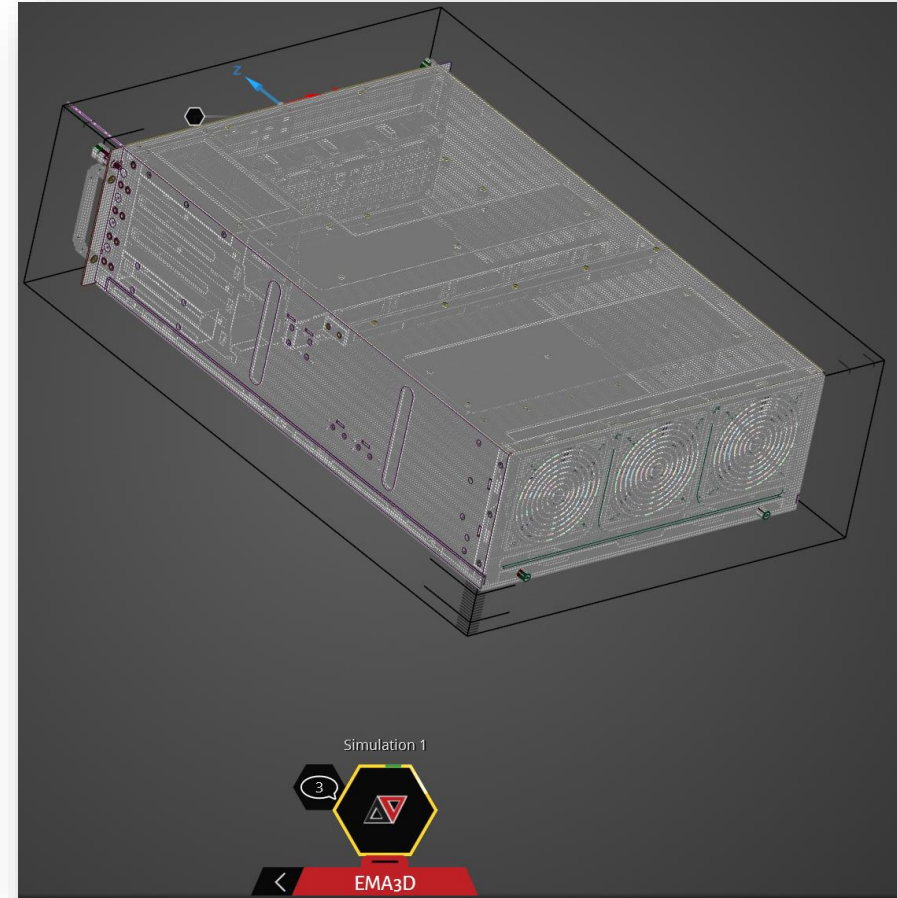
Field Probe Set Automatically

- EMA3D automatically creates a field probe inside the device
- The field probe automatically represents the effects of a real EMC field probe



/ Mesh and Run Automatically

- The meshing process and simulation begins automatically with no user input
- Post processing of the probe occurs automatically for the user

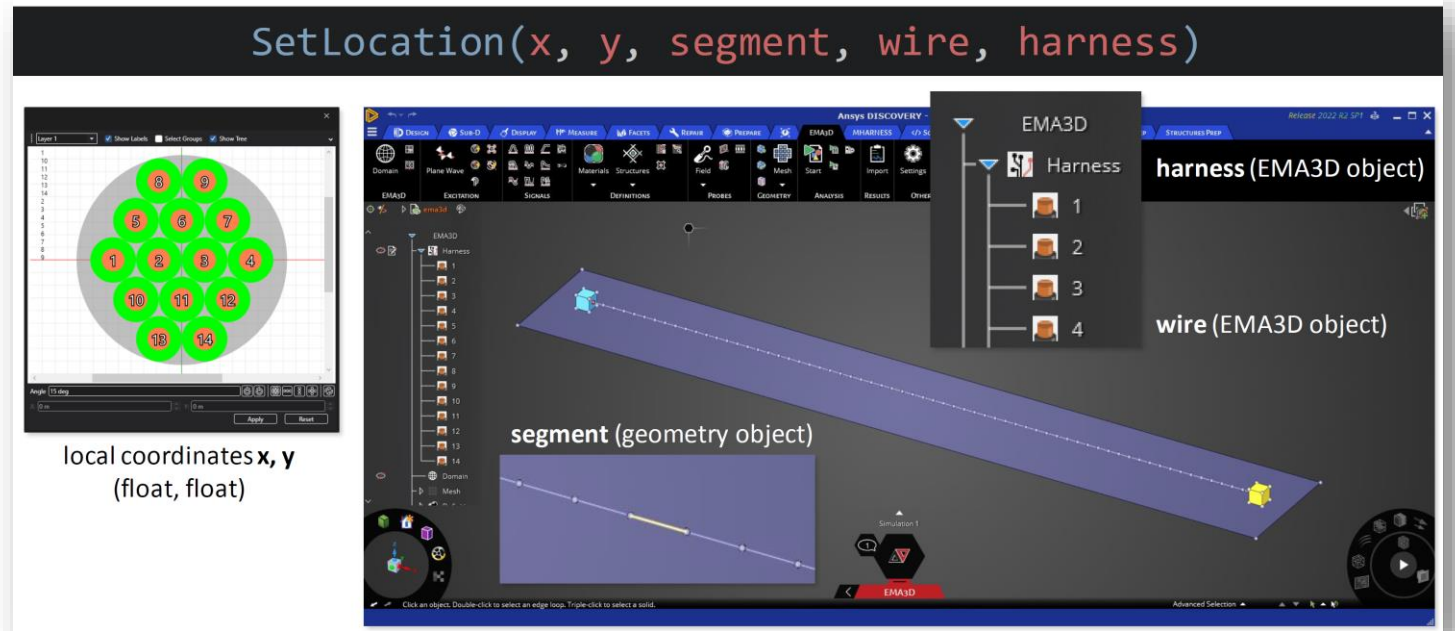




Featured Update 2: EMA3D API

EMA3D API

- EMA3D API allows for parameters to be changed and the simulation to proceed non-interactively
- Users may call the API through Python or Ansys products such as optiSLang and ModelCenter



Basic EMA3D run script

```
import clr
clr.AddReferenceToFileAndPath("ema3d.Api.V20.dll")

from ema3d.Api.V20.Execution import E3DWriter
from ema3d.Api.V20.Execution import E3DSimulation
from ema3d.Api.V20.Meshing import FDMeshEngine

document = Window.ActiveWindow.Document;

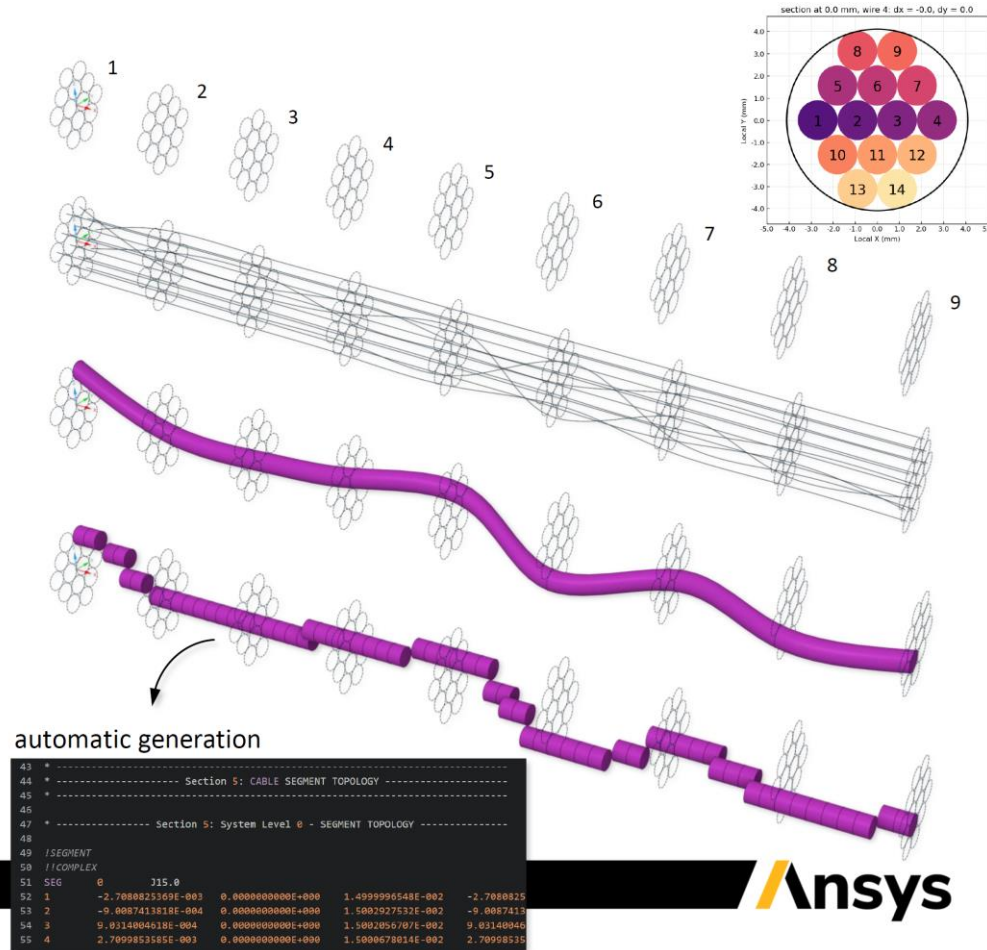
# Step 1 - Mesh the geometry in the current document (Optional).
FDMeshEngine.Create(document).Mesh();

# Step 2 - Export the current simulation files.
path = E3DWriter.Write(document)

# Step 3 - Execute the simulation and block until the simulation completes.
E3DSimulation.Launch(path).WaitForCompletion()
```

EMA3D API and optiSLang

- Users can change the location of cable segments in a pack cross section through the API
- optiSLang runs hundreds of EMA3D simulations non-interactively
- EMA3D S-parameters predicted via analytical model

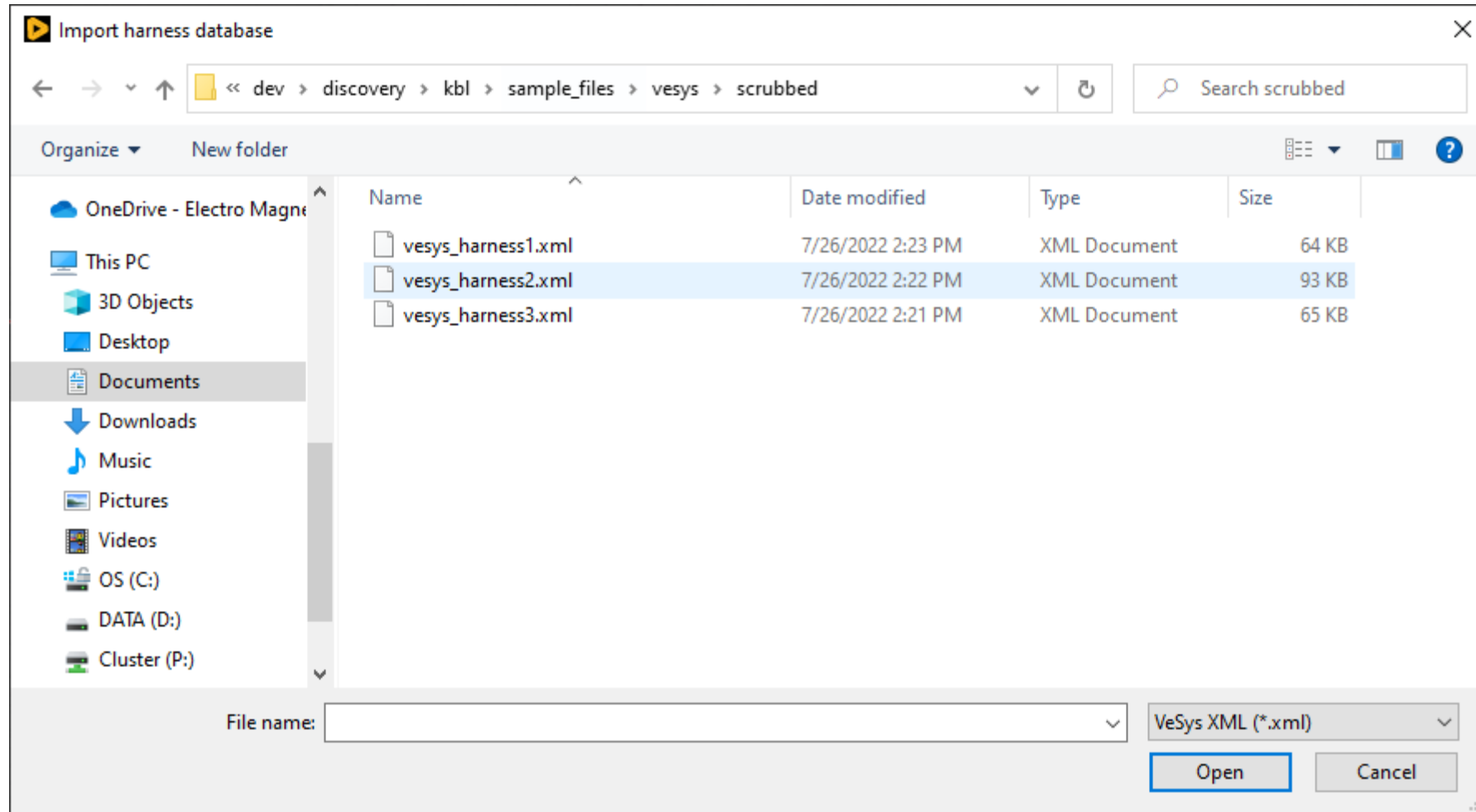




**Featured Update 3: Tools
to Easily Work with
Multiple Cable Harnesses**

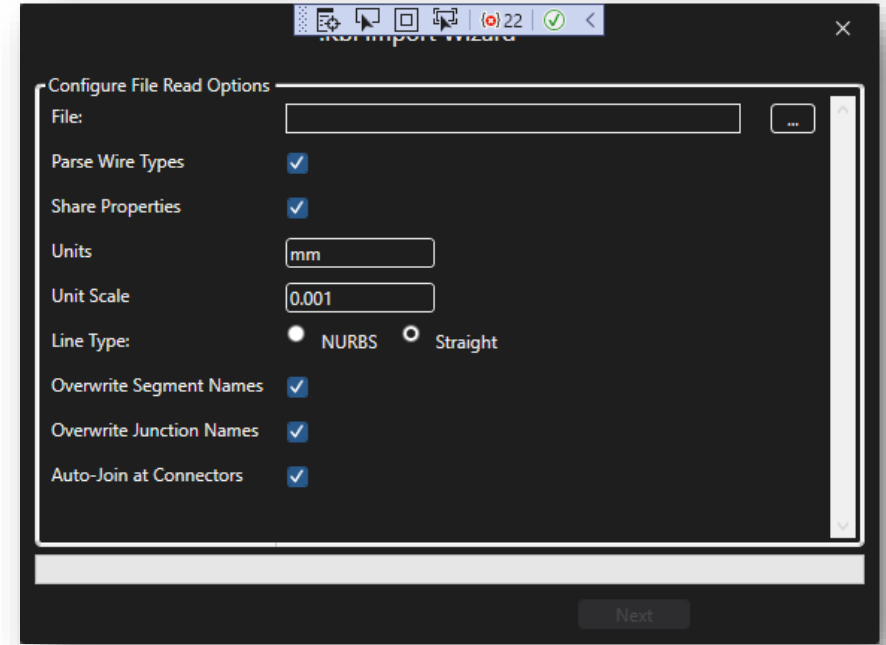


New VeSys Format Cable Import



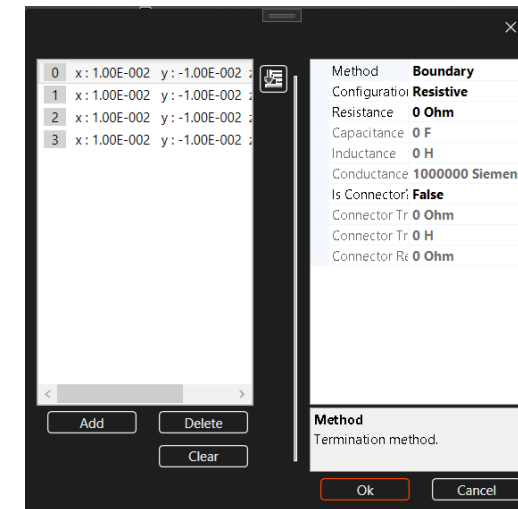
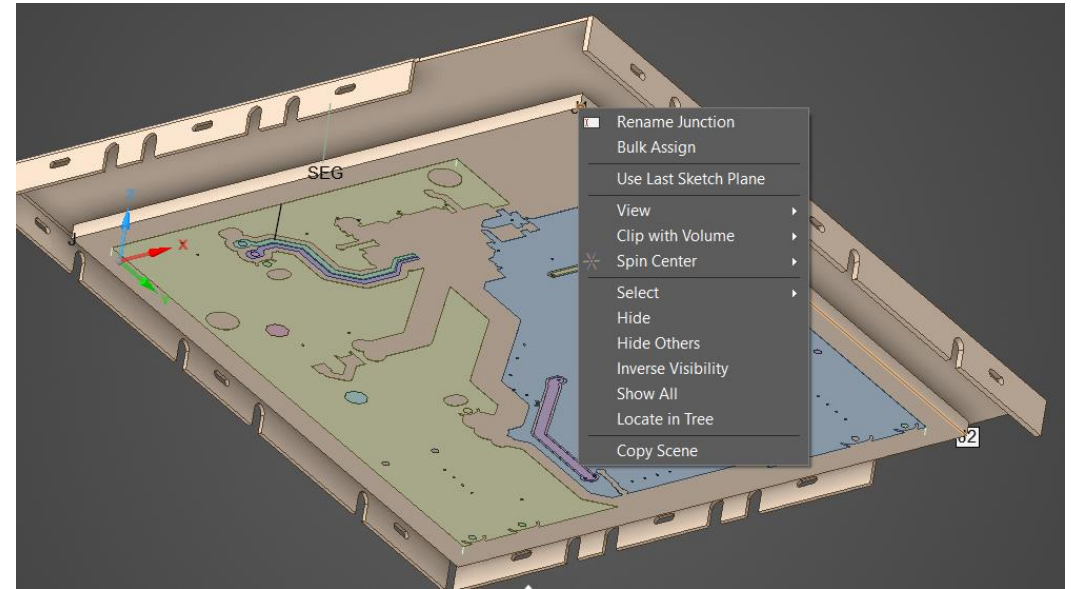
Automatically Join Harnesses at Junctions and Bulkheads

- In large platforms, the path of signals may pass through multiple individual harnesses
- This new tool automatically joins conductors in different harnesses in the vehicle

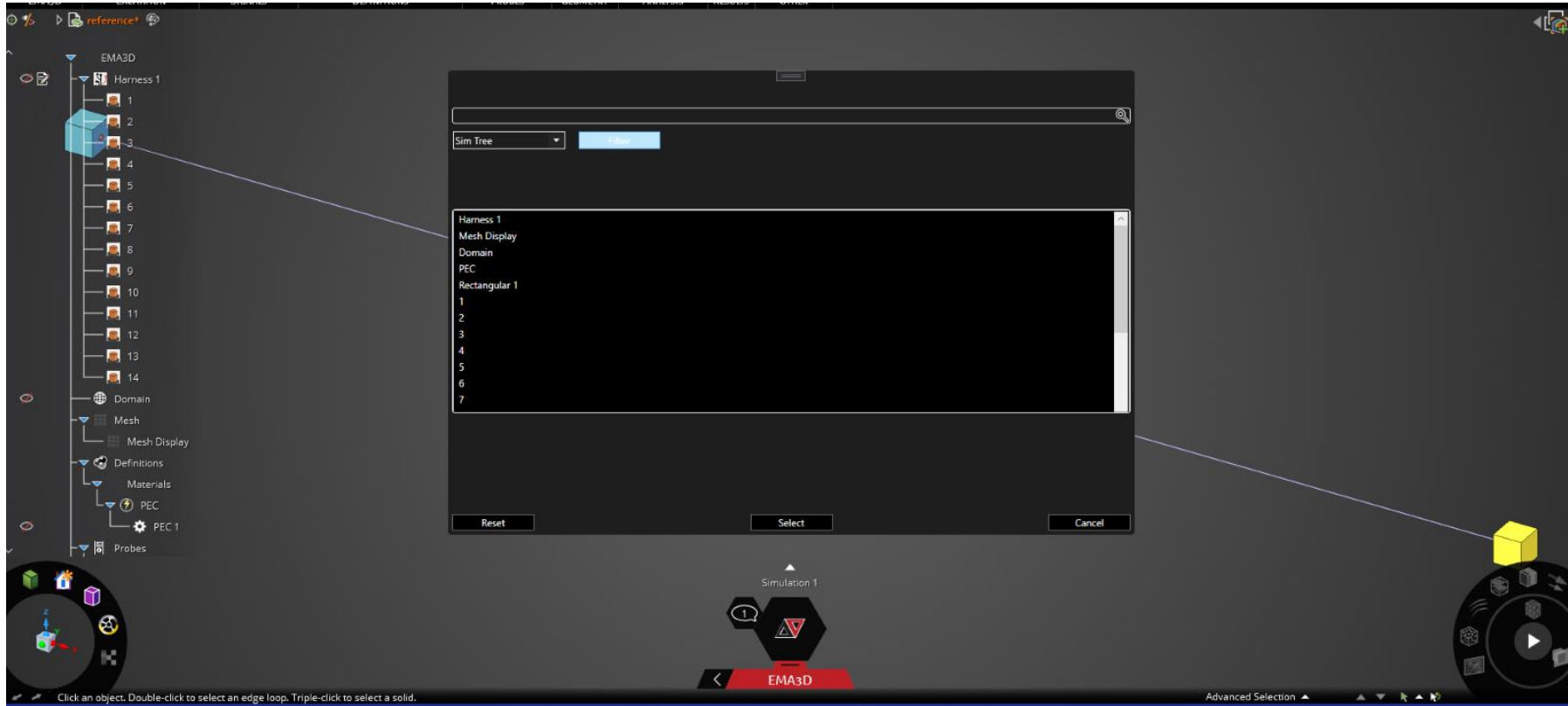


Bulk Assignment of Cable Terminations

- The termination of many conductors in a harness may be assigned with a single tool
- This eliminates the effort to select each cable individually and edit its termination



New Search Function for Simulation Tree



 **Ansys**

