

The logo for Materialise, featuring the word "materialise" in a bold, lowercase sans-serif font, with the tagline "innovators you can count on" in a smaller, lowercase sans-serif font below it. The background consists of a white area on the left and a blue area on the right, separated by a diagonal line that slopes upwards from left to right.

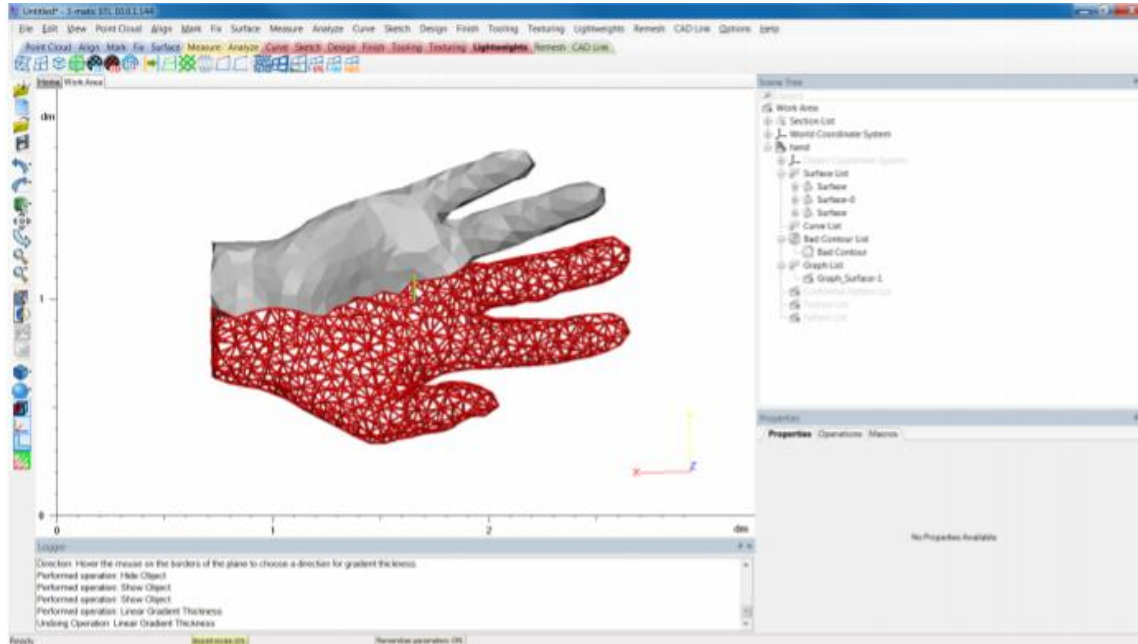
**materialise**  
innovators you can count on

# Materialise 3-matic link with Altair HyperMesh

## General workflow

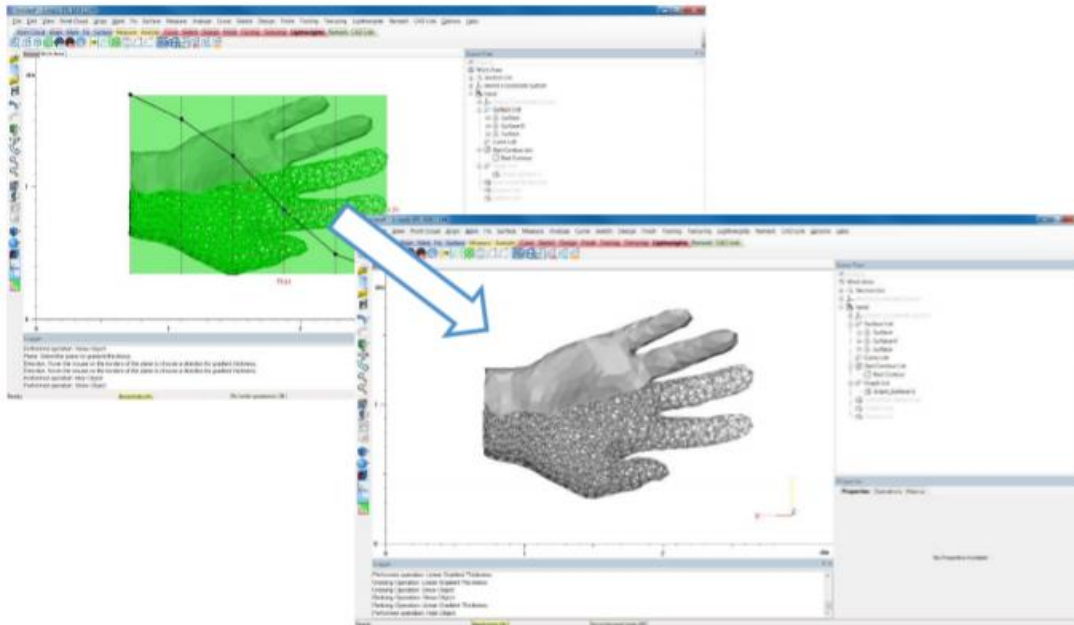
- ▶ Create surface / volume / graph meshes in Materialise 3-matic
- ▶ • Export meshes as .fem in Materialise 3-matic
- ▶ • Import .fem in HyperMesh
- ▶ • Finite Element Modeling / CAE in HyperMesh
- ▶ • Export result as .fem
- ▶ • Import .fem back in Materialise 3-matic

# Create meshes in Materialise 3-matic



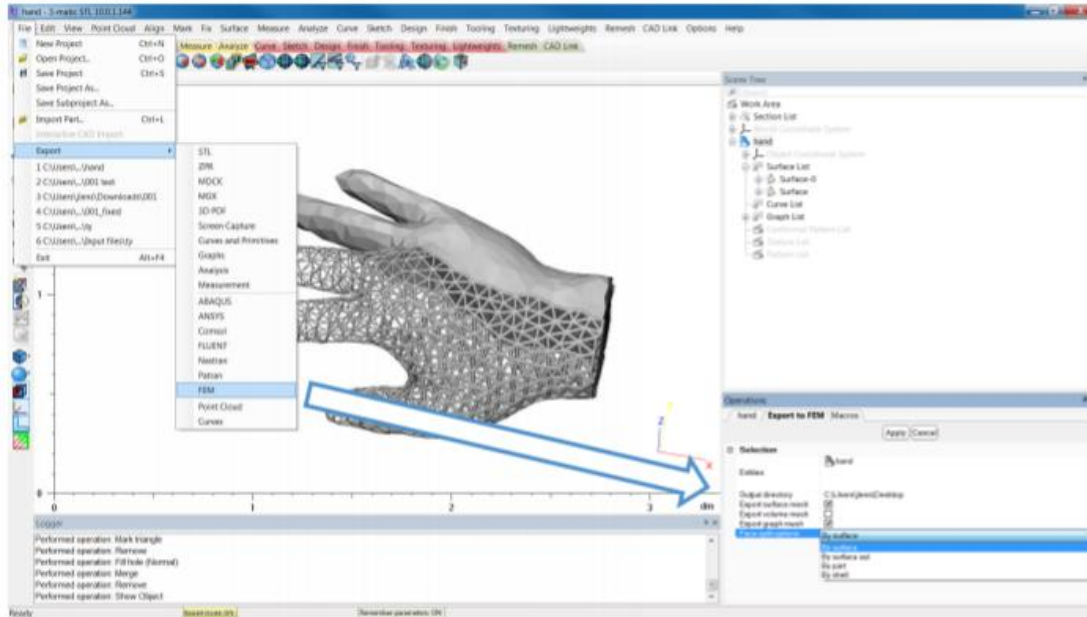
- ▶ In this example: surface and graph meshes, no volume mesh made
- ▶ Graph nodes connected to surface or volume meshes

## Create meshes in Materialise 3-matic



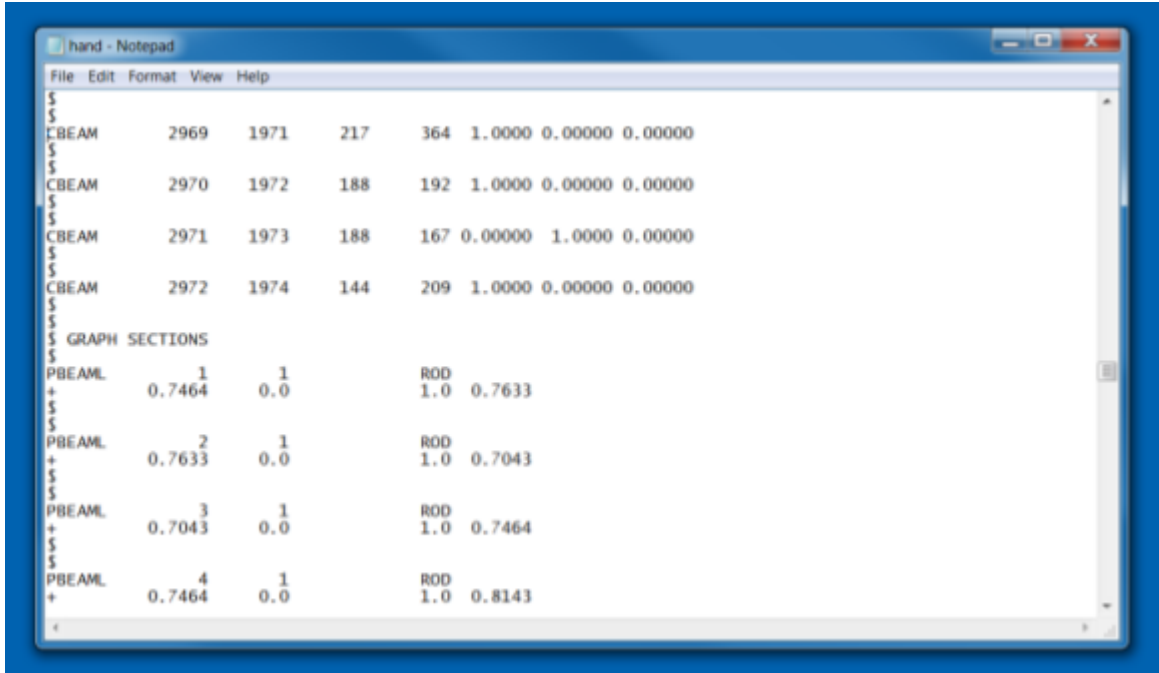
- Assign thickness to graphs before exporting
- Thickness options:
  - Gradient
  - Image-based
  - Uniform

# Export meshes



1. File
2. Export
3. FEM
4. Select part and output directory
5. Choose which meshes to export
6. Apply

## Check .fem file (if needed)



```

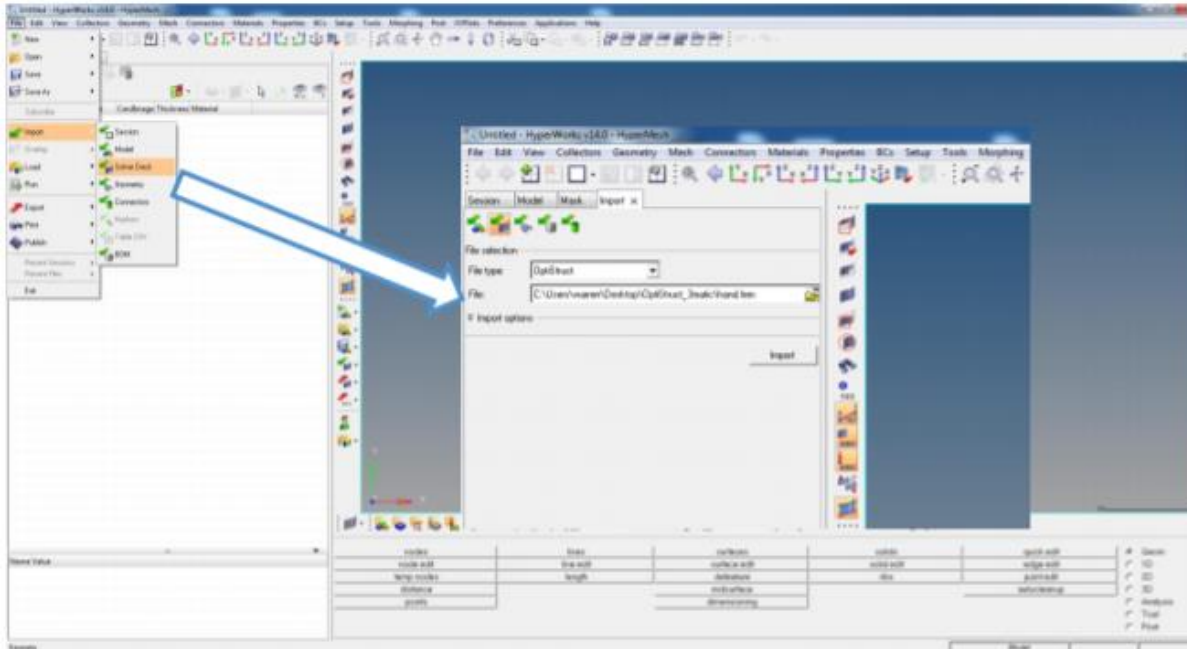
hand - Notepad
File Edit Format View Help
$
$
CBEAM      2969   1971   217   364   1.0000  0.00000  0.00000
$
$
CBEAM      2970   1972   188   192   1.0000  0.00000  0.00000
$
$
CBEAM      2971   1973   188   167   0.00000  1.0000  0.00000
$
$
CBEAM      2972   1974   144   209   1.0000  0.00000  0.00000
$
$
$ GRAPH SECTIONS
$
PBEAML      1      1      ROD
+      0.7464   0.0      1.0   0.7633
$
$
PBEAML      2      1      ROD
+      0.7633   0.0      1.0   0.7043
$
$
PBEAML      3      1      ROD
+      0.7043   0.0      1.0   0.7464
$
$
PBEAML      4      1      ROD
+      0.7464   0.0      1.0   0.8143

```

In this example:

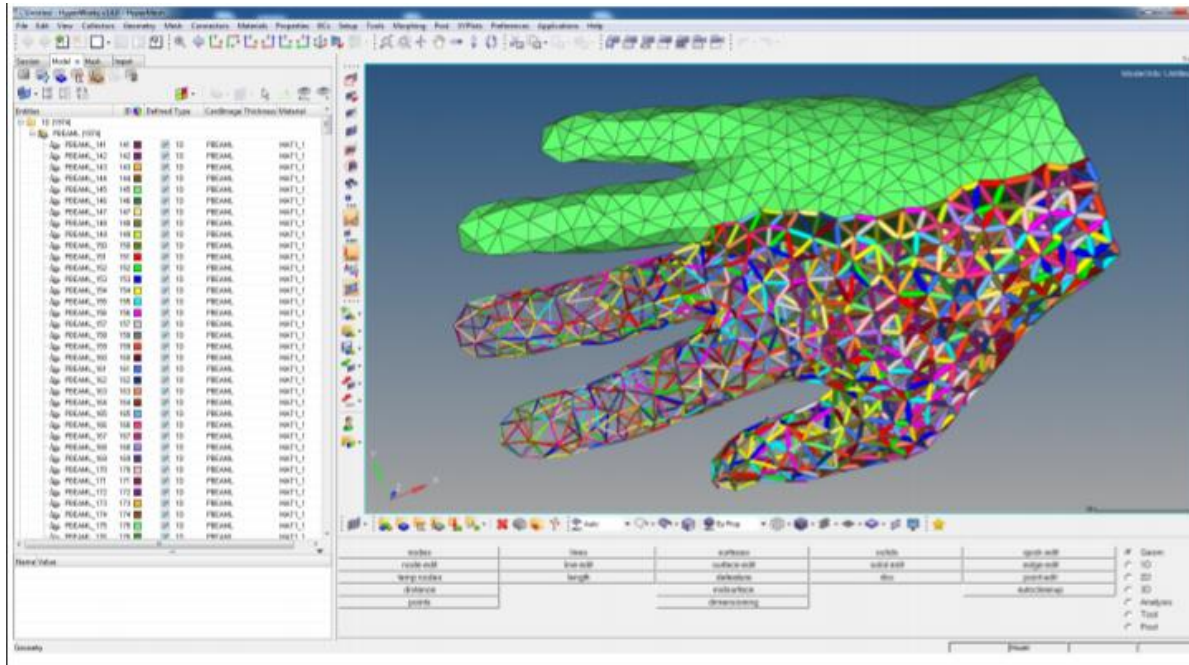
- ▶ List of mesh nodes (GRID\*)
- ▶ List of mesh triangles (CTRIA3)
- ▶ List of graph edges (CBEAM)
- ▶ List of graph sections and graph thickness (PBEAML)

# Import .fem in HyperMesh



1. File
2. Import
3. Solver Deck
4. File type: OptiStruct
5. Import

# Inspect part in HyperMesh

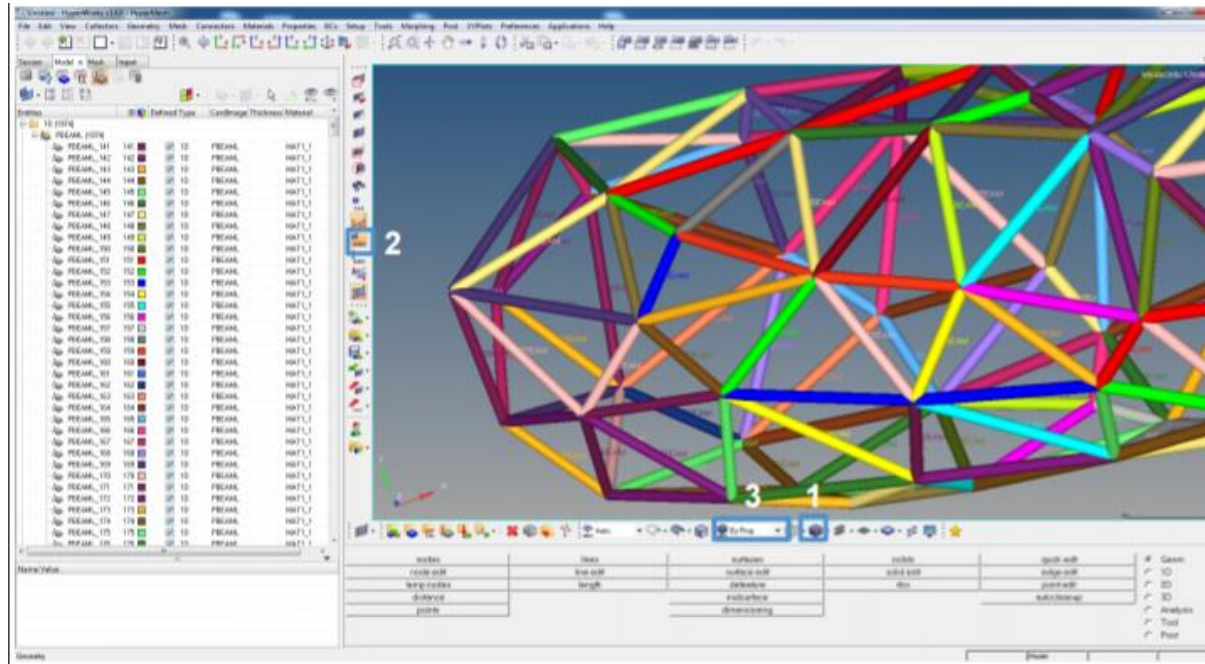


## Basic controls

- ▶ Ctrl+LMB: rotate
- ▶ Ctrl+RMB: move
- ▶ Ctrl+scroll: zoom

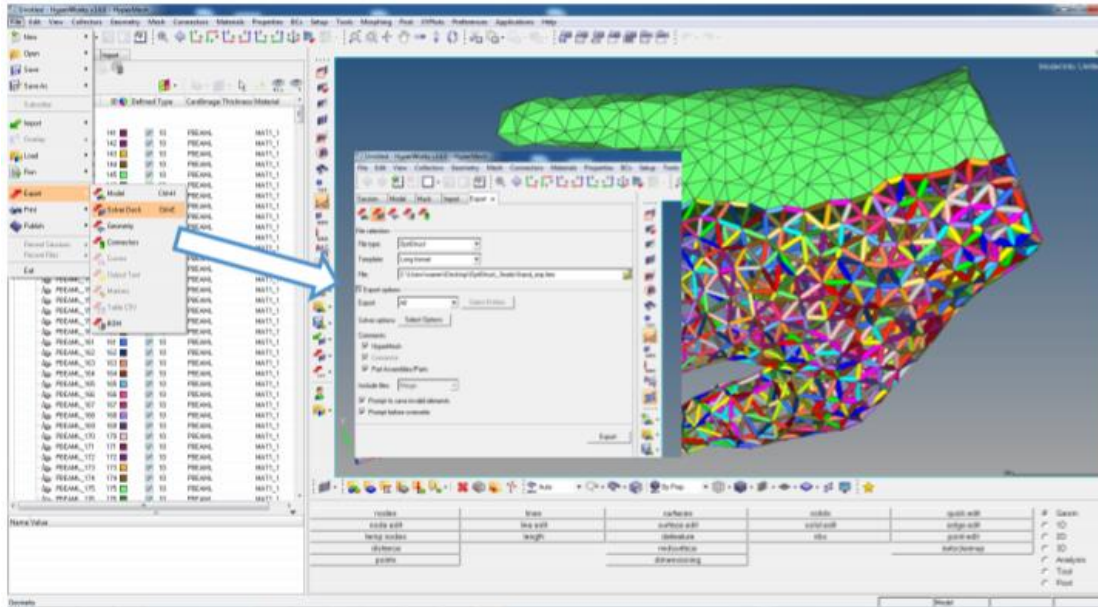


## Detailed view and mesh info



1. Switch between solid and wireframe view
2. Toggle tags (CBEAM, BAR2,...)
3. Change mesh color mode

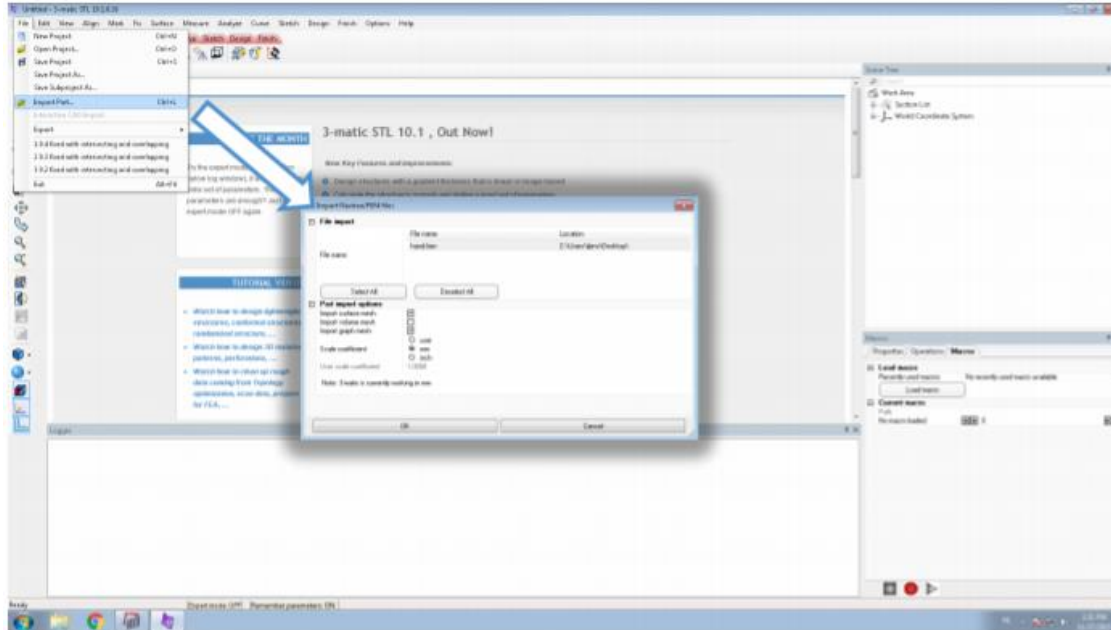
# Export .fem in HyperMesh



After FEM / CAE, export to .fem

1. File
2. Export
3. Solver Deck
4. File type OptiStruct
5. Template: Long format
6. Export

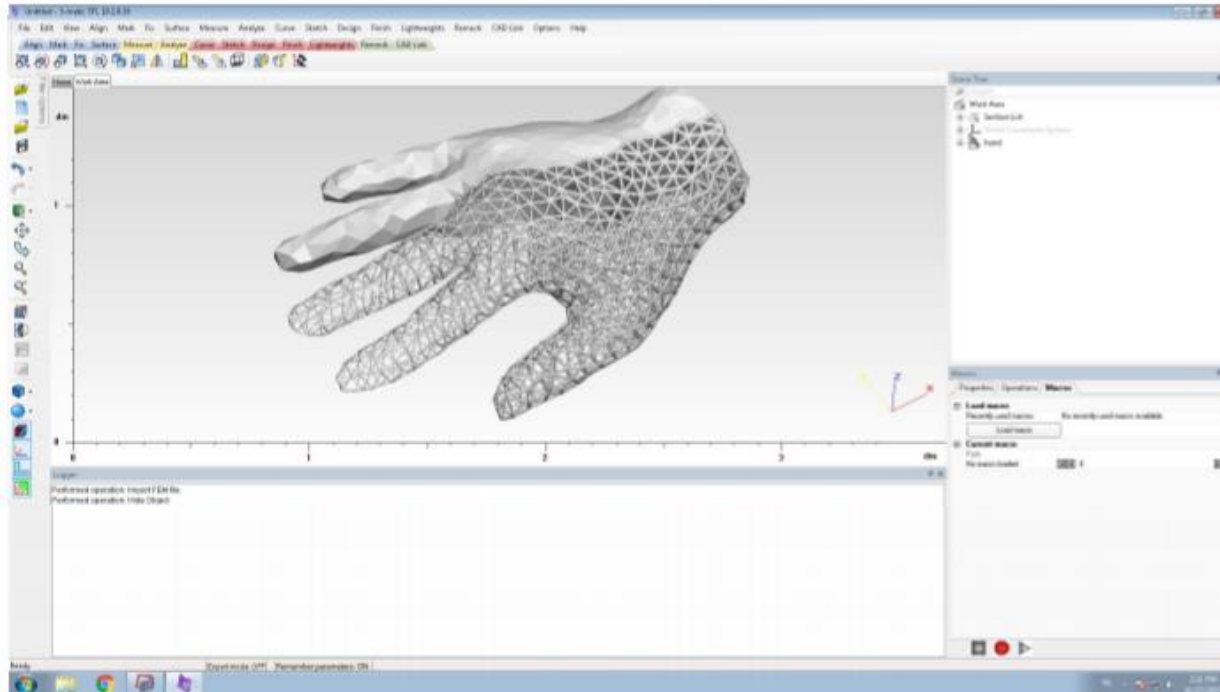
# Import .fem back in Materialise 3-matic



Requires at least Materialise 3-matic 10.1 (part of Altair Partner Alliance) with Remesh module

1. File
2. Import Part
3. Import relevant meshes
4. OK

## Finish design further in Materialise 3-matic



Shape and thickness  
information is preserved