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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

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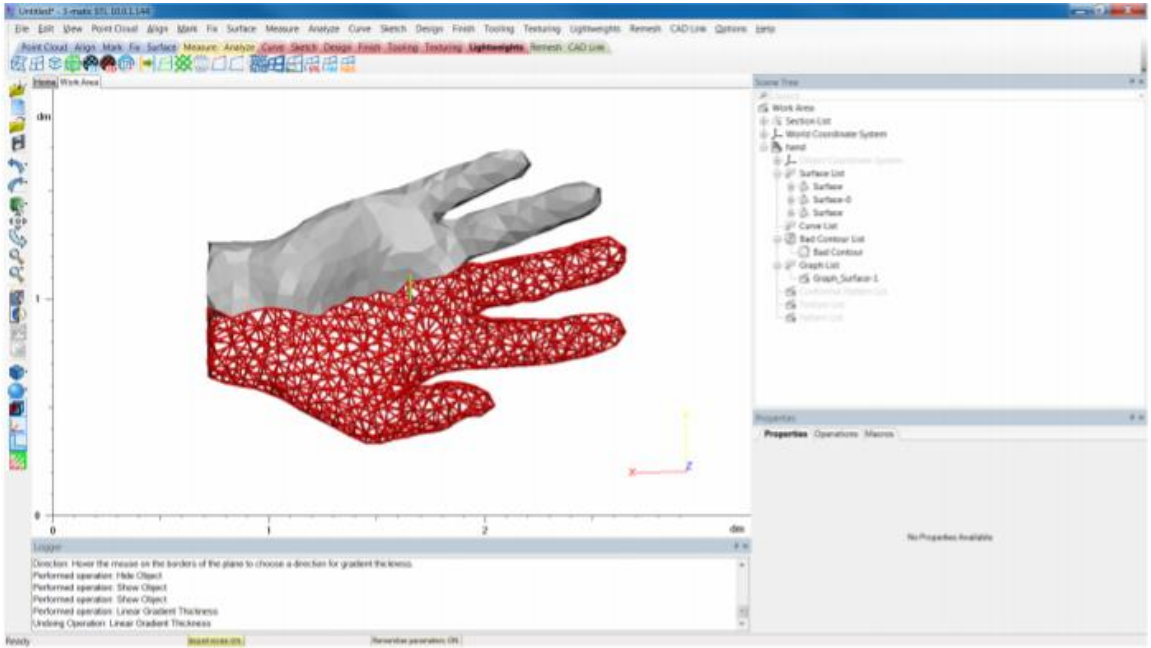
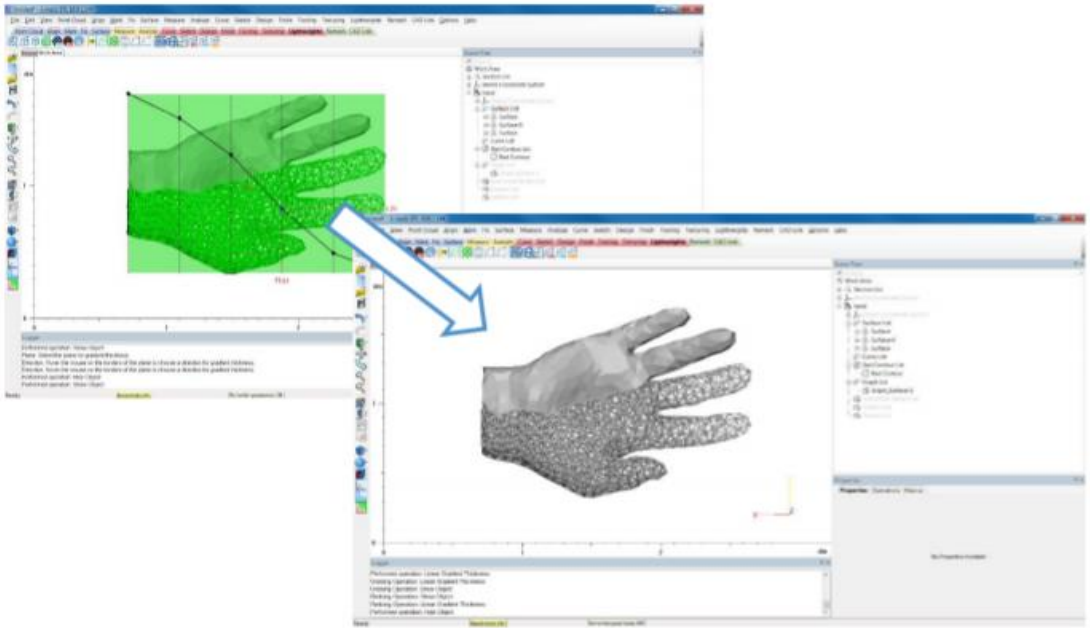
Create meshes in Materialise 3-matic



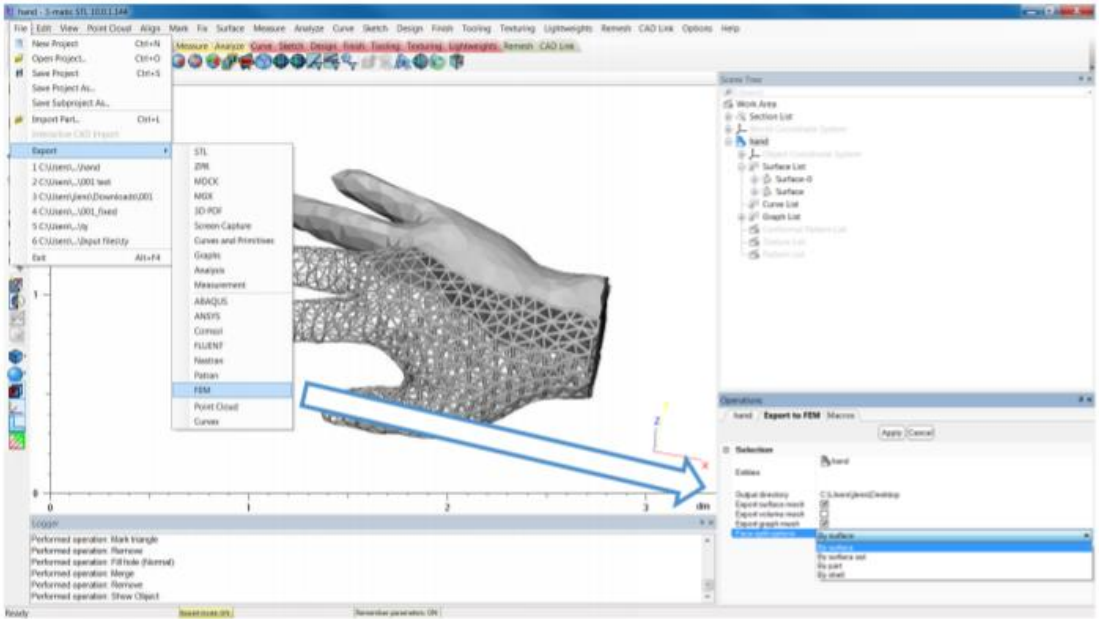
- In this example: surface and graph meshes, no volume mesh made
- Graph nodes connected to surface or volume meshes

Create meshes in Materialise 3-matic



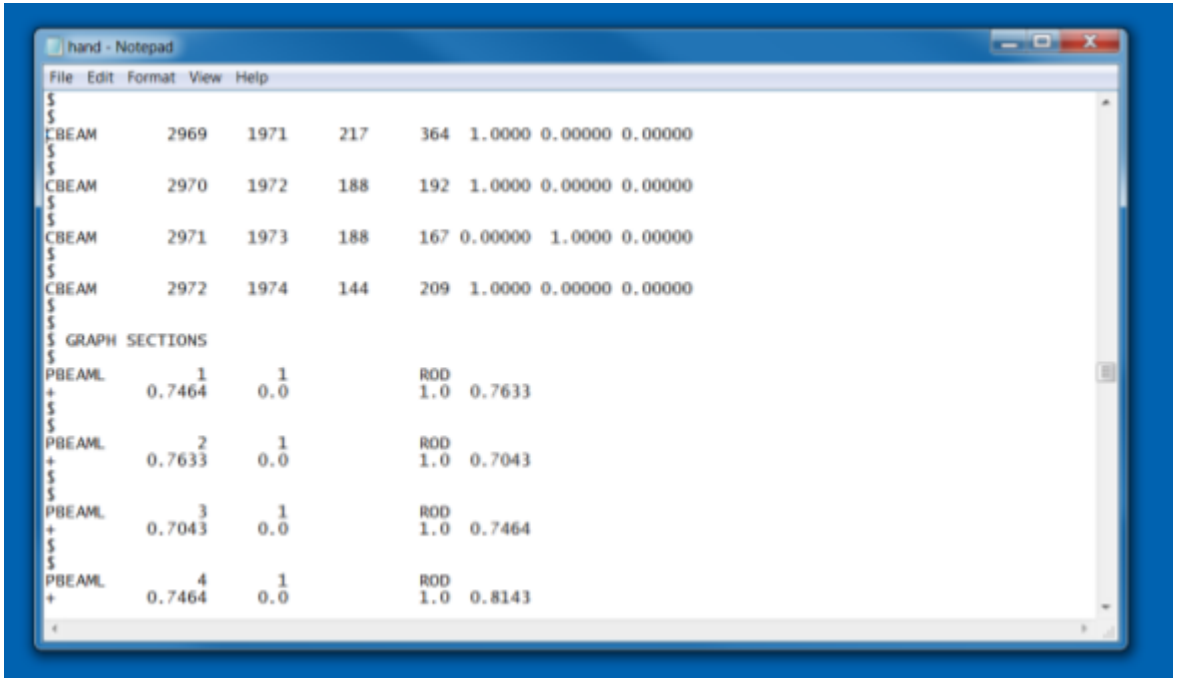
- Assign thickness to graphs before exporting
- Thickness options:
  - Gradient
  - Image-based
  - Uniform

Export meshes



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

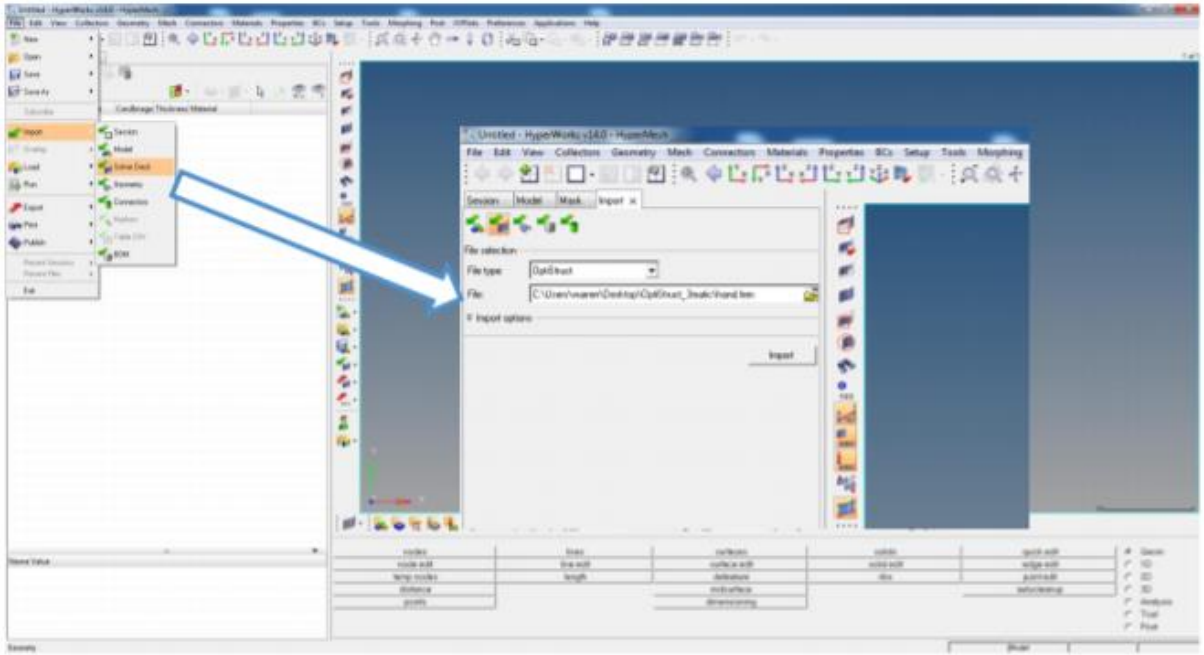
Check .fem file (if needed)



In this example:

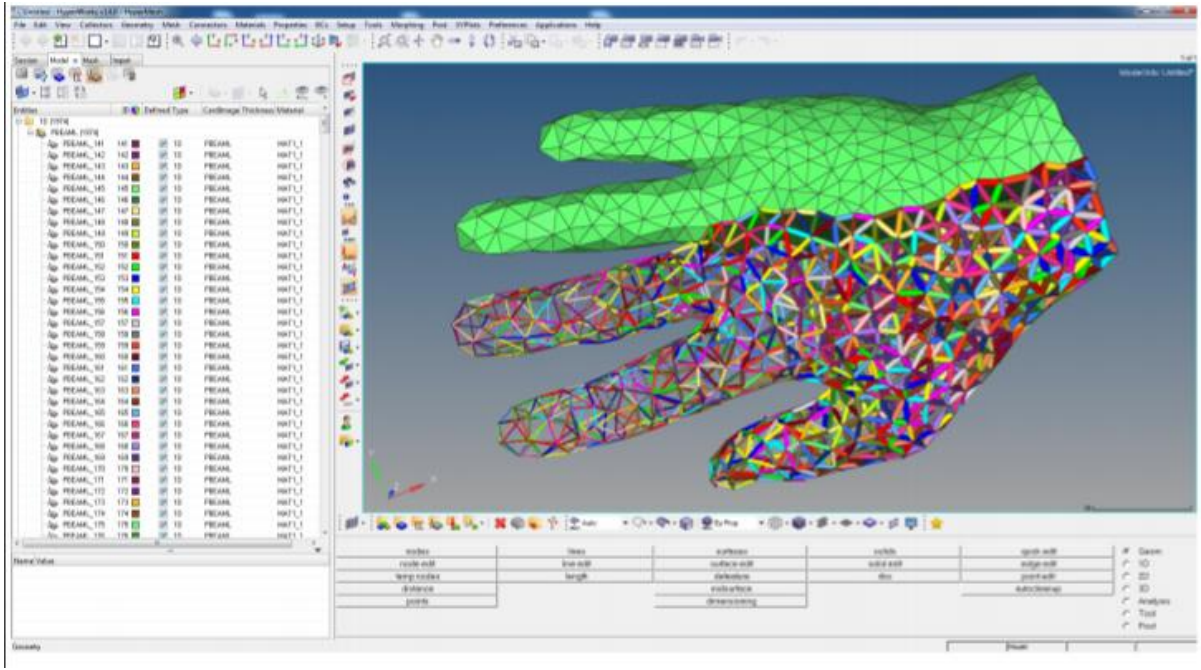
- List of mesh nodes (GRID*)
- List of mesh triangles (CTRIA3)
- List of graph edges (CBEAM)
- List of graph sections and graph thickness (PBEAML)

Import .fem in HyperMesh



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

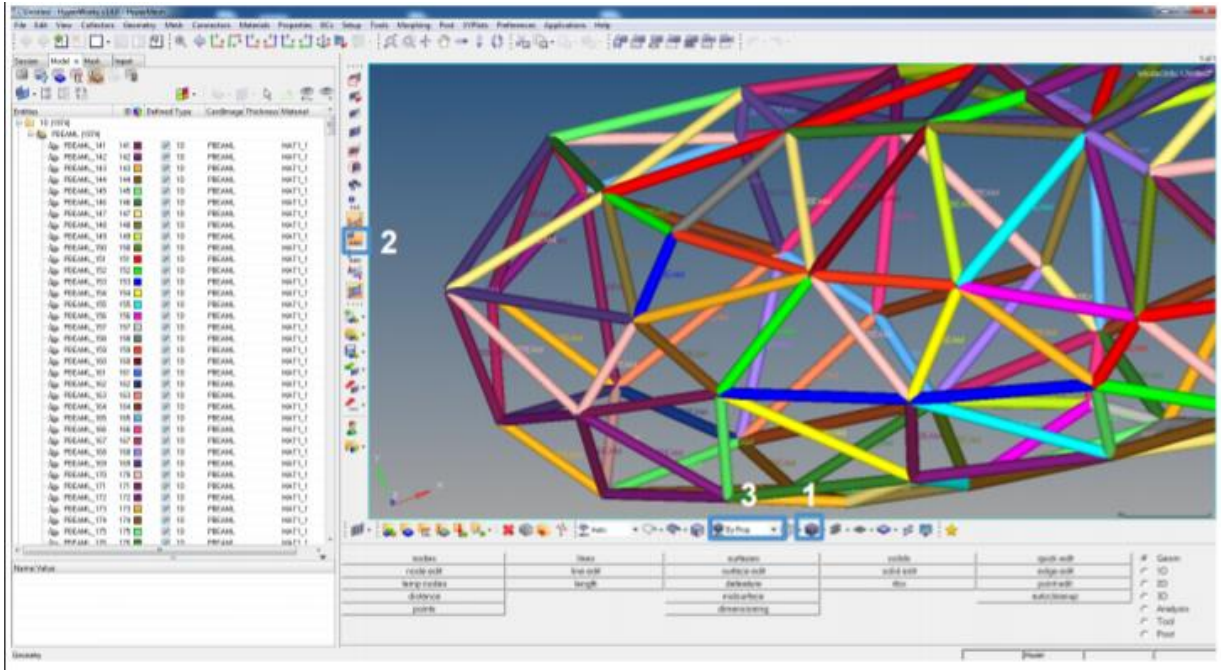
Inspect part in HyperMesh



Basic controls

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

Detailed view and mesh info

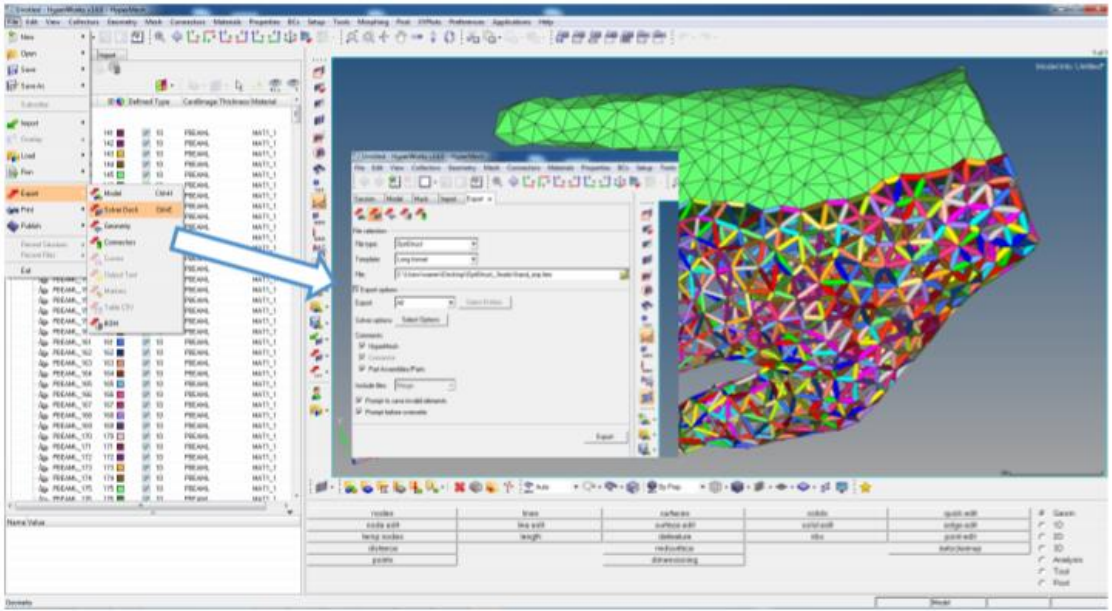


1. Switch between solid and wireframe view

2. Toggle tags (CBEAM, BAR2,…)

3. Change mesh color mode

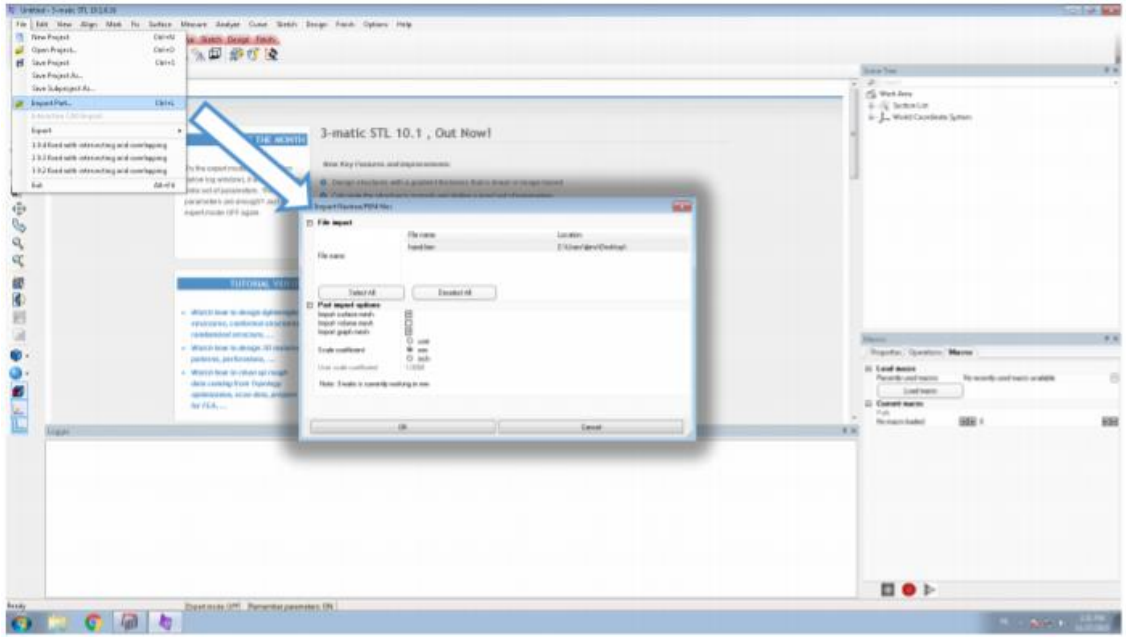
Export .fem in HyperMesh



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

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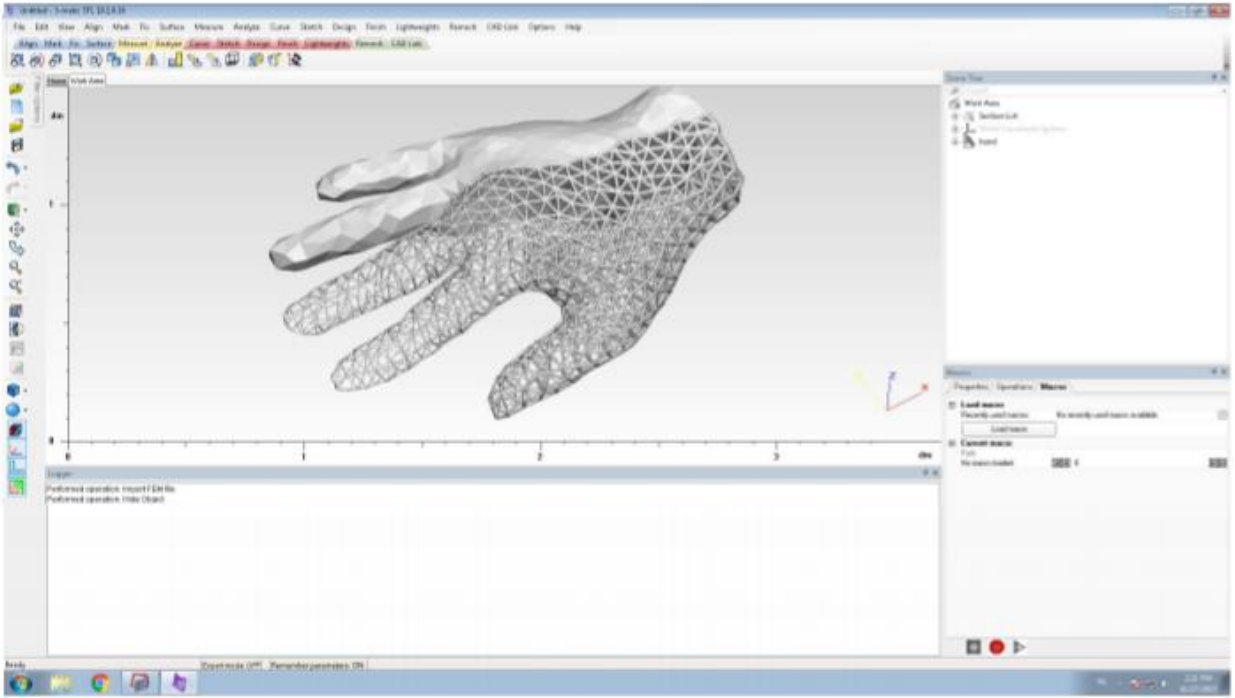
Finish design further in Materialise 3-matic



Shape and thickness information is preserved