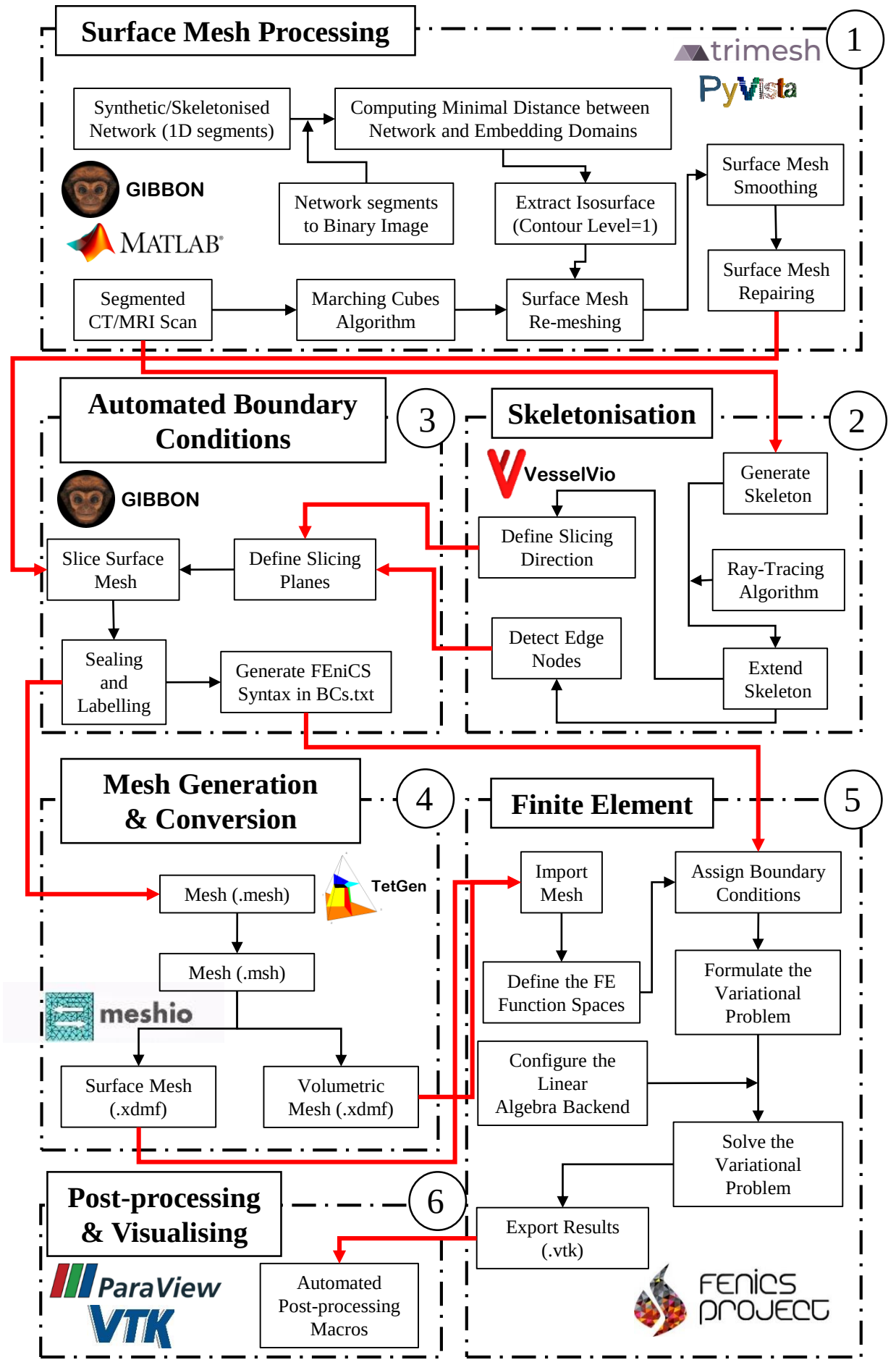
Surface Mesh Processing
1
trimesh
PyVista
Synthetic/Skeletonised Network (1D segments)
Computing Minimal Distance between Network and Embedding Domains
GIBBON
MATLAB
Network segments to Binary Image
Extract Isosurface (Contour Level=1)
Surface Mesh Smoothing
Segmented CT/MRI Scan
Marching Cubes Algorithm
Surface Mesh Re-meshing
Surface Mesh Repairing
Automated Boundary Conditions
3
GIBBON
Slice Surface Mesh
Define Slicing Planes
Sealing and Labelling
Generate FEniCS Syntax in BCs.txt
Skeletonisation
2
VesselVio
Define Slicing Direction
Generate Skeleton
Ray-Tracing Algorithm
Detect Edge Nodes
Extend Skeleton
Mesh Generation & Conversion
4
Mesh (.mesh)
TetGen
Mesh (.msh)
meshio
Surface Mesh (.xdmf)
Volumetric Mesh (.xdmf)
Finite Element
5
Import Mesh
Assign Boundary Conditions
Define the FE Function Spaces
Formulate the Variational Problem
Configure the Linear Algebra Backend
Solve the Variational Problem
Post-processing & Visualising
6
ParaView
VTK
Automated Post-processing Macros
Export Results (.vtk)
FENICS PROJECT