

TUTORIAL FOR B3D

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B3D: Tools to create boundary conditions

B3D aims to enable boundary conditions to be implemented through a hierarchy of boundary conditions, starting with “boundary primitives”. Thus, the user would be able to add to the library, reconfigure the library or customise it. At present, we use a convenient program, GID (commercially available from CIMNE) to read a geometry file (.stl, .msh, .igs, .acs,...). There are various Open Source alternatives such as GMESH and we recognise that considerable man years of software engineering has given the commercial tools notable advantages. In GID, we set up boundary conditions and material properties. We use a folder template of files (in folder .gid) to generate meshes and properties and we finally export a .B3D file. We then import this .B3D file into a purpose-built translator program that adds the final input information needed to prepare all the input information for the generic file structure as required by Y3D. The purpose-built translator code is written assuming the initial conditions and meshing has been done in the GID environment and is thus called GID_gen. In this way, GID acts as the graphics user interface. GID_gen generates an input file (.Y3D file) for the main solver program Y3D as shown in Figure 1.

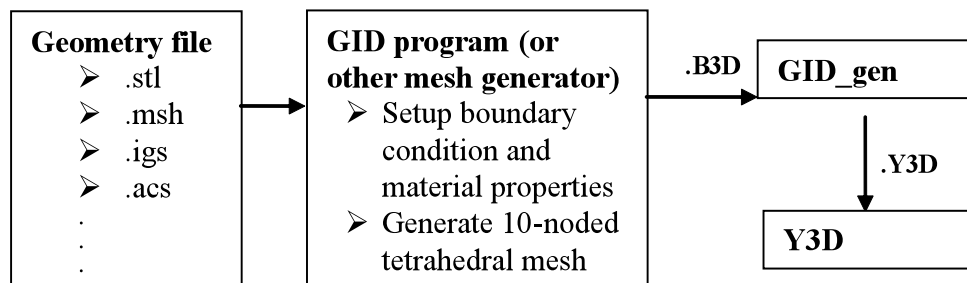


Figure 1 Procedure for generating an input file for the Y3D FEMDEM solver.

The workings of GID_gen are explained through use of examples and tutorials.