Setting up a simulation in the GADEN+Unity framework consists on the following steps:

- Obtain mesh file (STL format) of the environment. This can be obtained from CAD files, or exported from Unity assets using plugins like https://github.com/karl-/pb_Stl.

- Obtain the mesh of the empty space in the environment (boolean complementary of the obstacles). If using CAD, refer to the GADEN tutorial for this.

  Otherwise, use the node GADEN_preprocessing to obtain a 3D occupancy grid file from the STL models, and then use the program export_stl (included in this repository) to reverse-engineer the new mesh. The program takes three arguments: input file path (string), output file path (string), innerVolume (bool). For this purpose, set innerVolume to “true”. Setting it to “false” will cause the program to export the STL file that models the obstacles.

  If the CFD simulation tools don’t accept the resulting mesh because of any defects (split faces, self intersections, etc.) we recommend using an external tool like Meshmixer of MeshLab to correct them.

  Meshmixer is the easiest option, since it offers powerful tools for this purpose, such as the Analysis tool, or the Make Solid tool, that do not require extensive knowledge of mesh manipulation.

- Run CFD simulation. See GADEN tutorial.

- Run GADEN simulation. You can just follow the GADEN tutorial for this, but for best results when reading the log files in Unity we recommend setting the parameter “writeConcentrations” of the filament_simulator node to “false” (it works either way, but doing this allows for a much more realistic visual representation of the gas plumes, and faster reading).

- Read the simulated gas dispersion data in Unity. Use the sample scene included in this repository as a minimal example of how to set up the different scripts to make them work.