Topic

Initial preparation of Docker Image for Fire Simulation

Background

The simulation of fire phenomena is progressing a lot. E.g. calculations of smoke distribution are wide spread in industry. However, providing the needed simulation tools in a convinient format to students needs to be addressed. For some simulation tools the installation itself needs a bit of effort. Especially as in fire engineering projects a multitude of tools are often needed.

This work should make the first step in providing the main simulation for fire safety engineering based on a docker approach.
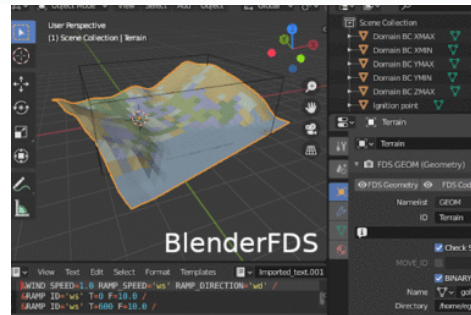
Main Steps

1. Get familiar with docker and its features
2. Set up of standard UoW user
3. Step by step installation of tools (e.g. starting with FDS and some standard tools)
4. In the end a manual (Readme) should be provided and the image should be make public and tested by other students.

FDS–SMV
Fire Dynamics Simulator (FDS) and Smokeview (SMV)

Open∇FOAM®

BlenderFDS

python™

Tools

- Docker - Ubuntu
- CFD-, Pyrolysis-, Zonemodelling
  - FDS, gpyro, OpenFOAM, pato, cfast
- CAD and Mesh Generation
  - Blender, BlenderFDS, FreeCAD, gmsh
- Post-Processing
  - VisIt, ParaView, Smokeview
- Optimization, Sensitivities and Uncertainties
  - propti, dakota
- Scripting / Programing
  - Julia, Python, cpp, Fortran
- Writing
  - $\LaTeX$ system and templates
  - VisualCode, Emacs (Spacemacs), Neovim
- Linux tools (e.g. fzf, mc, nnn, tmux, silver-searcher)

Requirements

- High motivation
- Interest in CFD, Linux and Fire Simulation