Hello, I'm a student of engineering from "La Sapienza" University of Rome and for the elaboration of my thesis I'm using the Trnsys17 software. I wanted to simulate a street canyon with two facing buildings. So I modeled the geometry through the Trnsys3D-plugin by Google SketchUp for creating 3 separate thermal zones constituting the two side buildings and the central canyon. In SC (street canyon) configurations, the solar direct and diffuse irradiation is characterized by multiple diffuse and specular reflections at the building surface. Similarly, multiple long wave reflections and radiative exchange with neighbouring building surfaces and the sky have to be considered. In TRNSYS 17, a 3D radiation model including multiple reflections is present, but which is only used for interior zones. Therefore, in this study, the street canyon between the buildings is modelled as an atrium within the building, but with an open ceiling to the sky (the top surface of the canyon is modeled as a **virtual surface** in SketchUp). In this way, shadowing by the neighbouring buildings and the exchange of long wave and solar radiation between the different buildings can be accurately modelled.
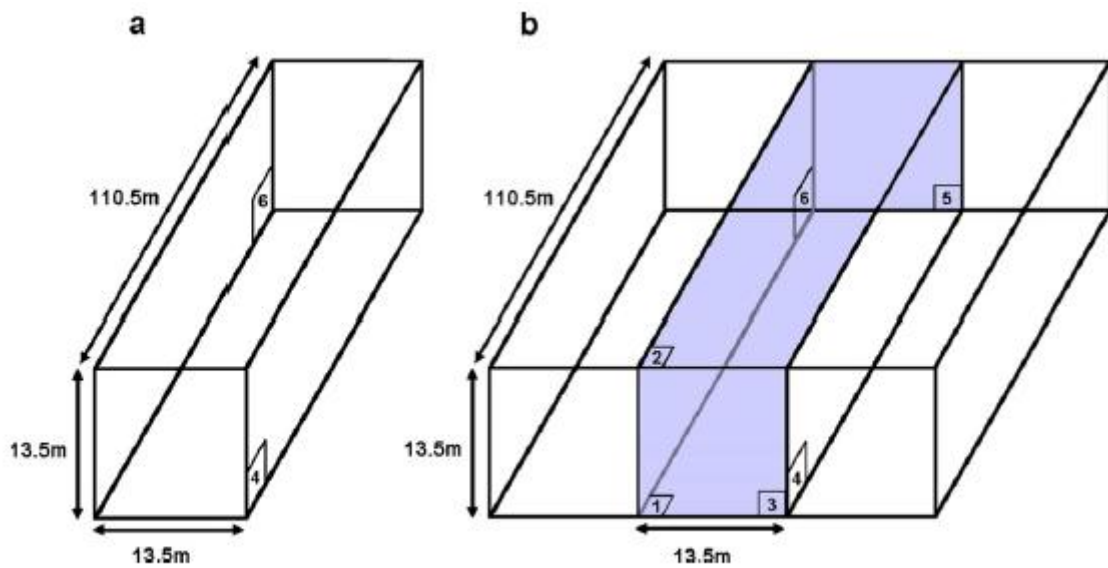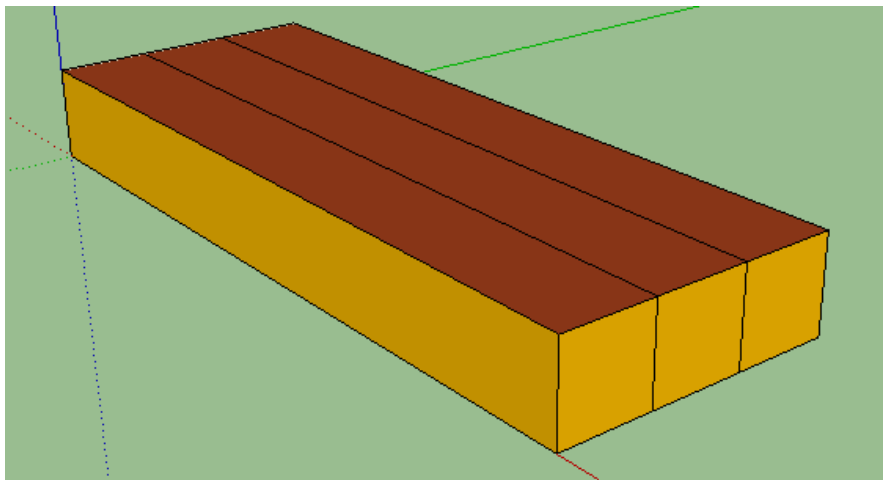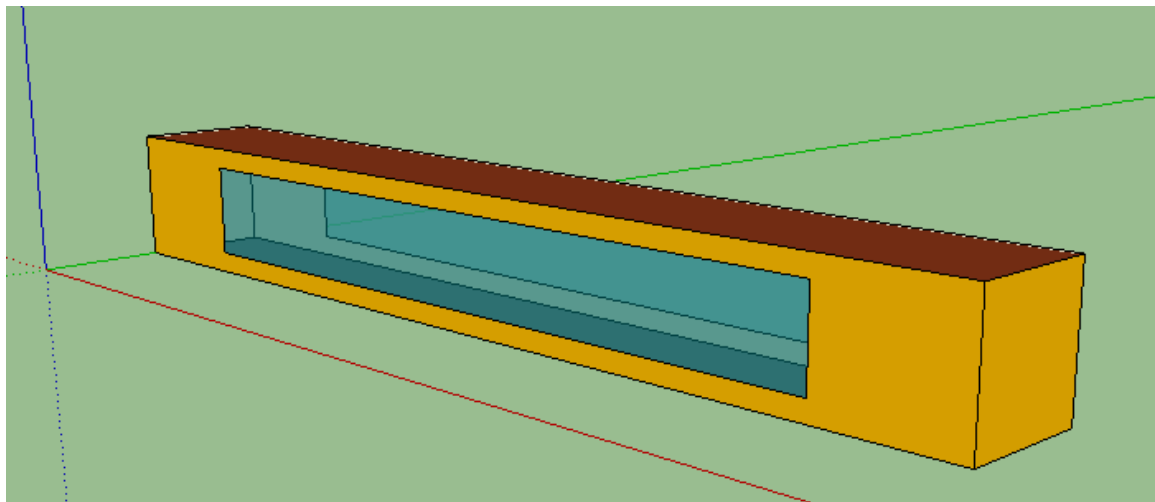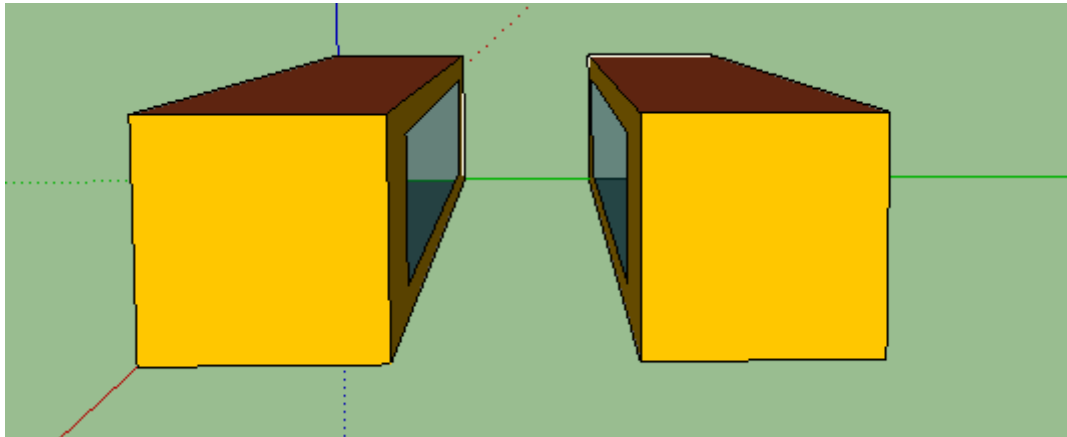

Fig. 10. Stand-alone building (a) and the street canyon (b) geometries of the radiation example.

SketchUp:

After the definition of the geometry using SketchUp I implemented the project in TRNSYS importing the idf file. The problem arises when I want to generate the view factor matrix for the canyon thermal zone defined as "hall" to use the detailed radiation mode. How can I resolve it?
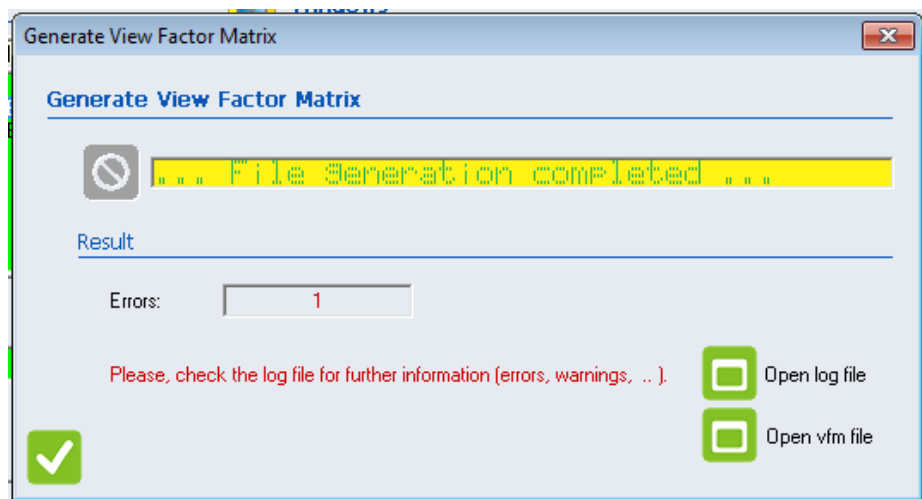
Radiation Modes of Thermal Zone

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Solar to air factor

Solar to air factor: `0`   .

Beam radiation distribution

○ Standard model (user defined distribution factors GEOSURF)

● Detailed model (external windows: geometric distribution; adjacent windows: user def. distribution)

Diffuse radiation distribution

○ Standard model (absorption area weighted)

● Detailed model (based on view factors)

Longwave radiation exchange within a zone

○ Standard model (starnet model)

○ Simple model (one node model with combined heat transfer coeff.)

● Detailed model (based on view factors)

Note:
For longwave radiation, multiple airnodes and inside userdefined emissivities of surface
can be handled by the detailed model only !!!