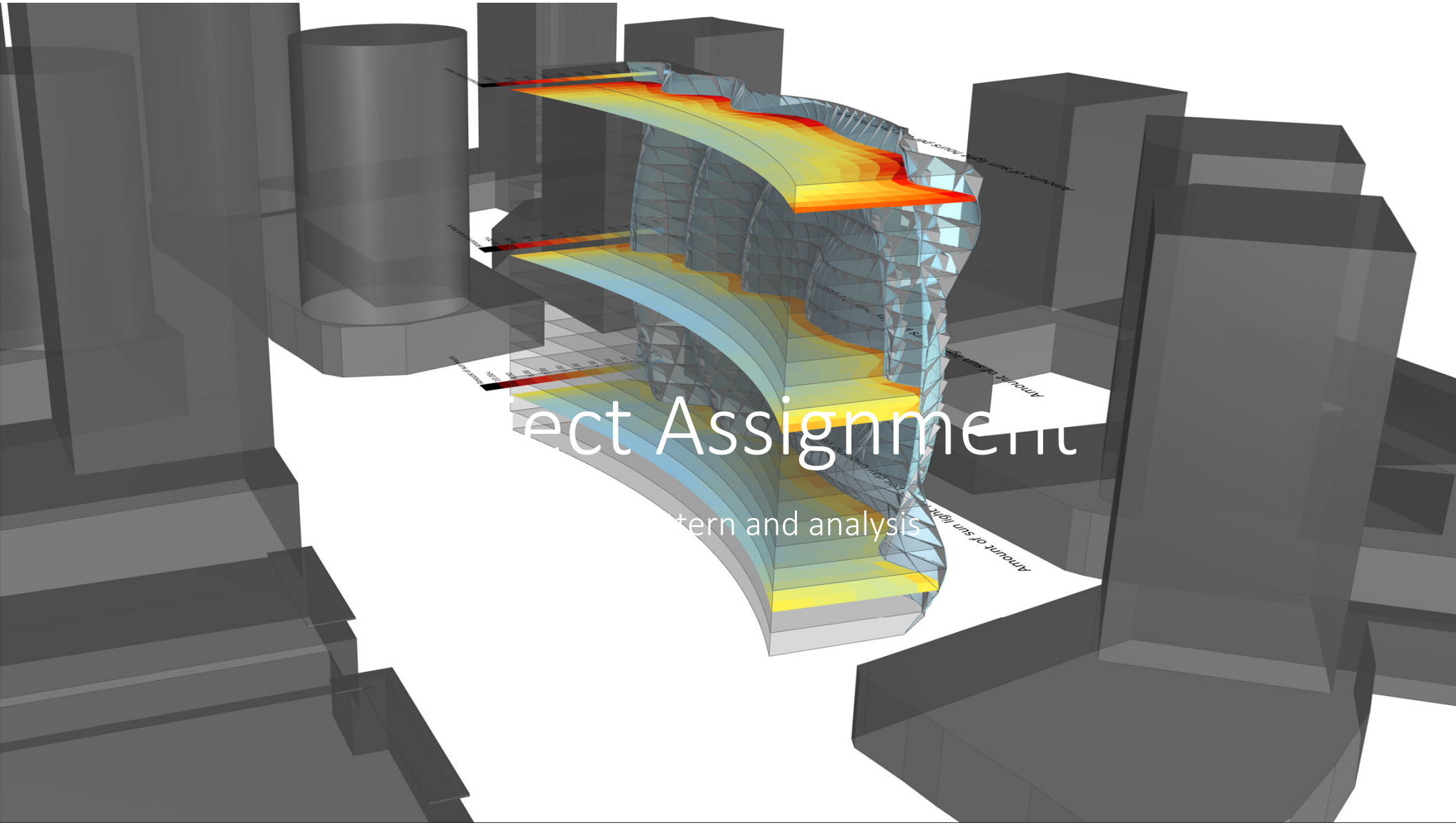

ect Assignment
tern and analysis

Project description

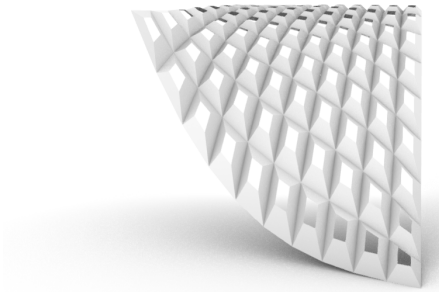
In this assignment you should work with form and repetitive sunshades for a building that should be placed in an urban in the city of **Gothenburg**. The interior and the exterior environment should be analyzed based on solar comfort and views to the outdoors.

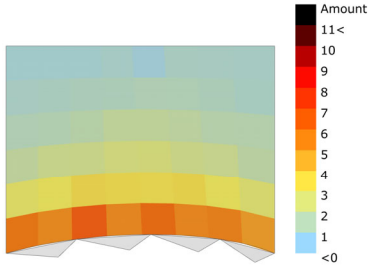
The aim is to explore and design forms and patterns in a parametric design environment as well as linking it to quantifiable measurements for comfort wellbeing.

Deliverables

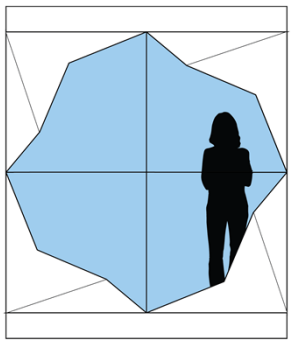
- 3 pdf slides in A3 format that should include:
  - Description of the form concept and the parameters that control the form.
  - Description of the concept of the sun shape and the parameters controlling the pattern.
  - Show the analysis of solar studies of the urban space and solar studies and outdoor view analysis in the interior environment. Also show how the parameters linked to form and sunshade inflict the interior comfort.
  - Picture of a portion of the code that is relevant to understand the above, you can add the entire code as an added appendix(bilaga).
- Grasshopper Script generating the form, pattern and analysis sent in separately. The Rhino input should be internalized.

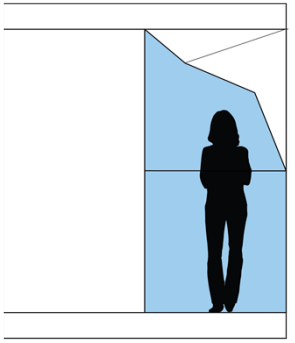
This should be handed in 12:00 4/6 on Canvas. Please merge the pdf:s before handing in. The studies should also be presented and discussed during the seminar from 13:15-17:00 the same day. For this assignment you will work in teams of 2-3.





Amount of sun light hours per day over the year





The site

Choose a site in Gothenburg that you would like to work with. Try to find a site with surrounding buildings or environments that can be affected and inflict on your design in terms of sunlight.

If you can't decide – just pick one!

We will show how one can import images from google maps into Rhino to quickly get a good starting point to for modelling the surrounding environment for a conceptual phase study.

Magasinsgatan

Skanstorget – classic!

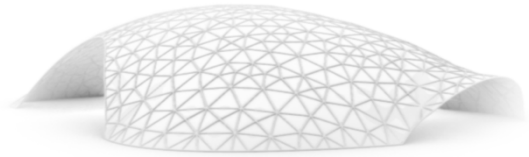
Planerad bebyggelse innergård Karl-Gustafsgatan

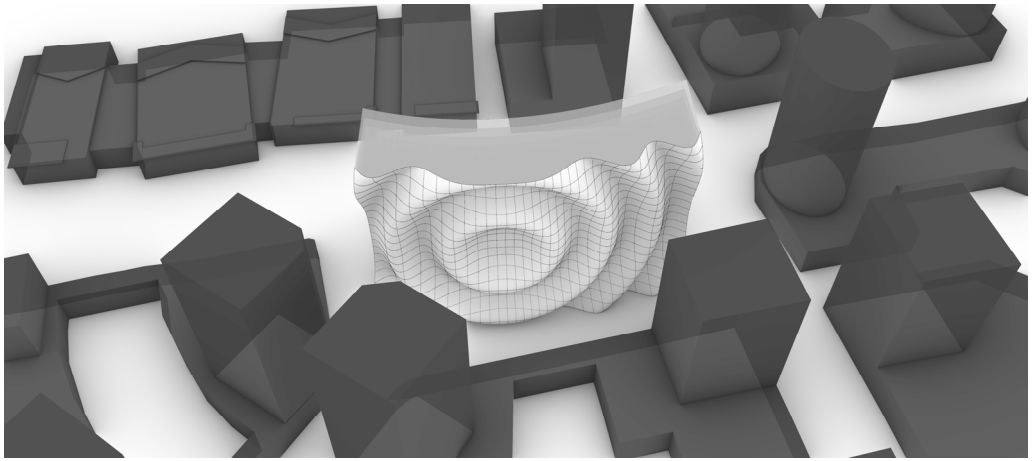
Landala torg

The form

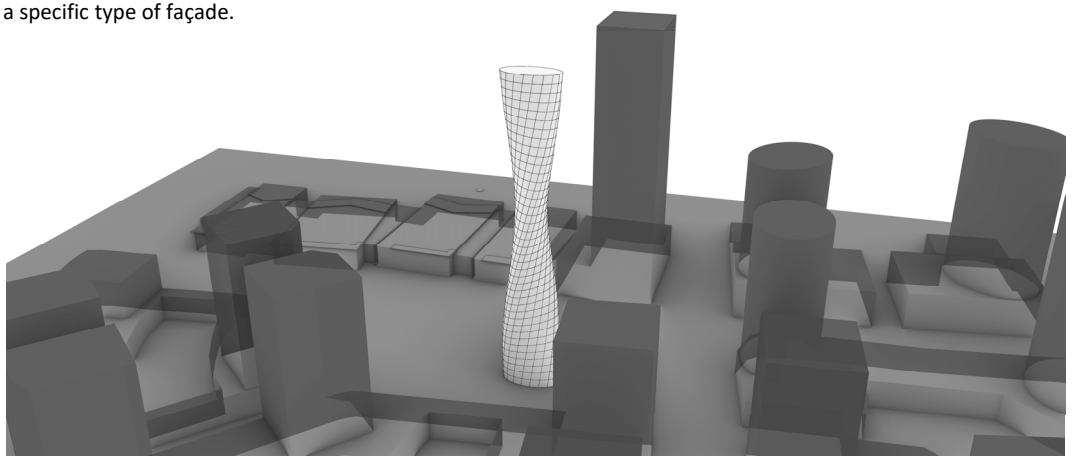
The building can be of a high rise, an office, a residential building or whatever you find most interesting.

You are free to choose the concept for the building and the form. Though it is important that it is controlled and generated by parameters from Rhino and Grasshopper.





Option 1 – work with an office, hotel or residential building with a specific type of façade.



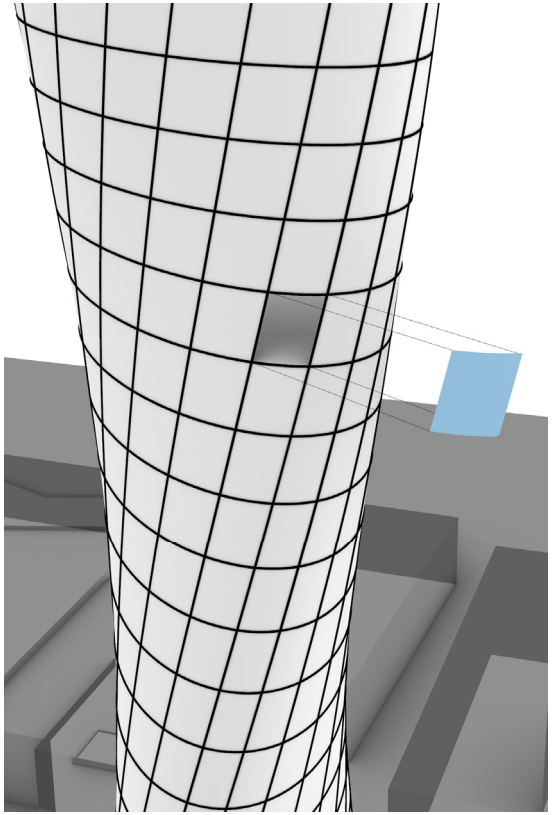
Option 2 – work with a high-rise design

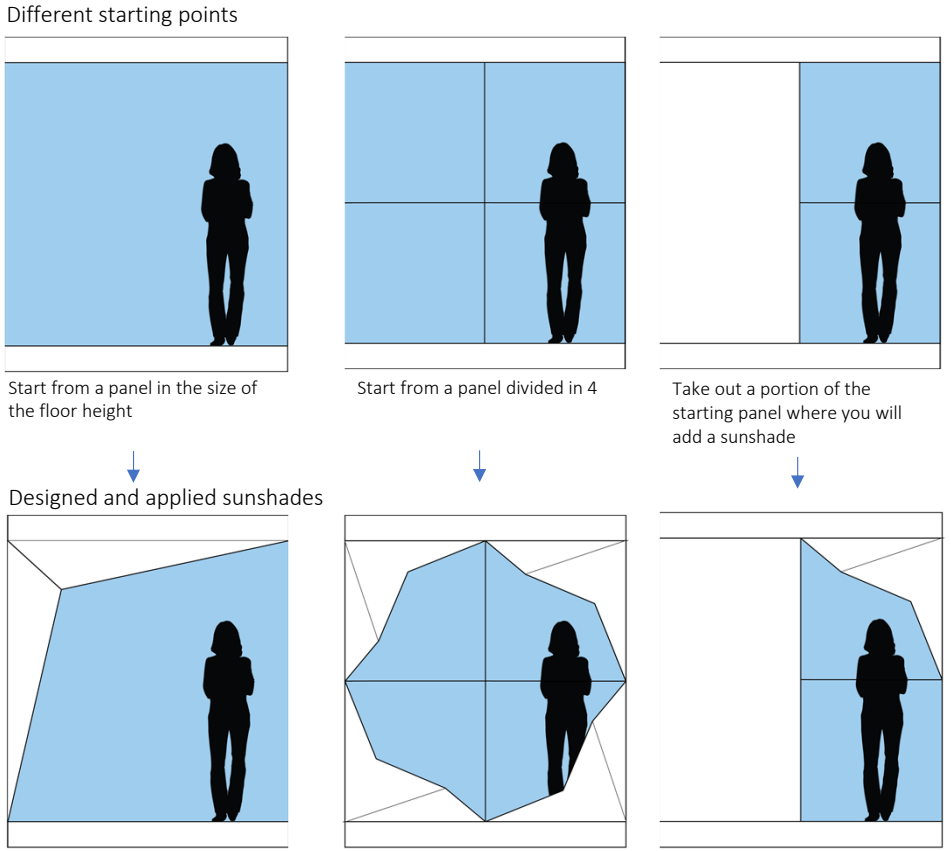
The pattern - façade panels and sunshades

From the shape you can divide it into several small surfaces which you can use to generate a repetitive sunshades and façade panels. You can think of this surface patch represent window with the height of each floor, or you can divide it into smaller pieces to create smaller apertures. It is important that the sunshades do not collide, clash or interfere with each other.

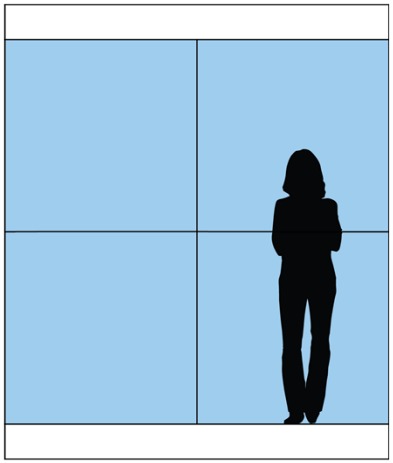
You can use Part 9 in the grasshopper file on Canvas to get an idea how to get started with this(though no copying of the design).

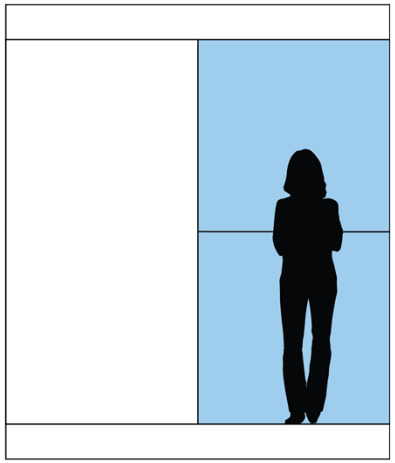
Try to add an **attractor point** that affects the façade panels, as in example 9.5



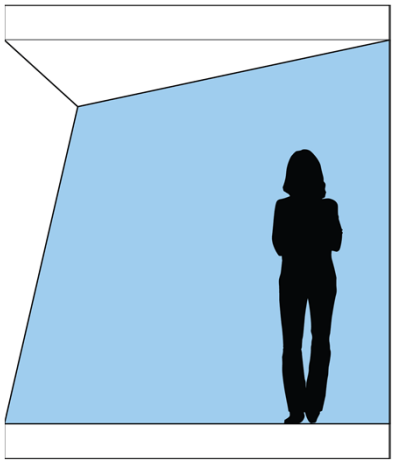


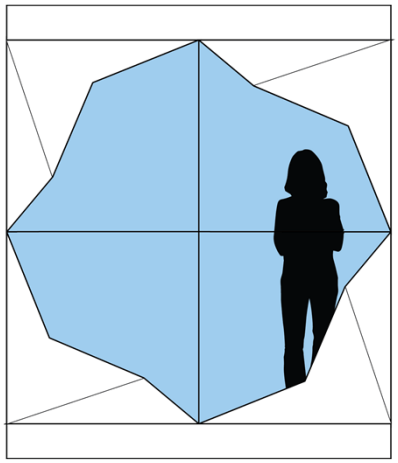
Starting point

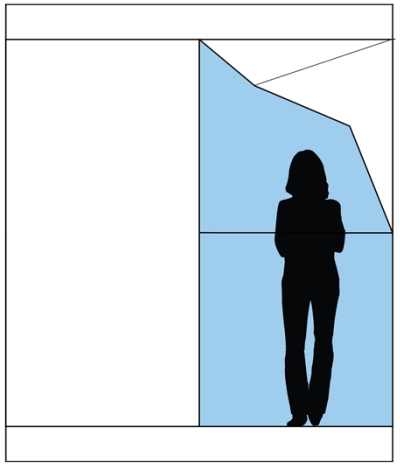




Sunshade applied







The comfort analysis

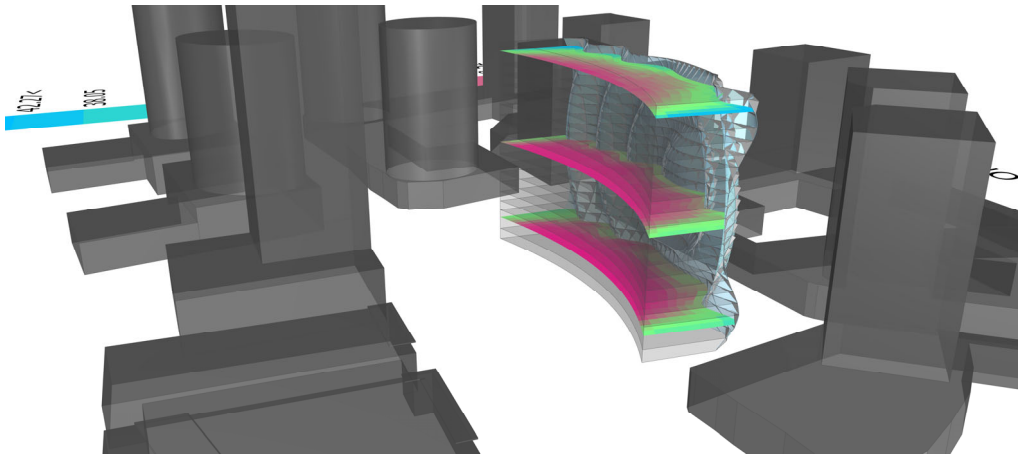
You should analyze three scenarios.

1. Sunlight hours in the urban environment before and after your contribution.
2. Sunlight hours in the interior space, above 2 hours per day can be uncomfortable.
3. Views to the outdoor in the interior space, above 2% is good(remember that eye height from sitting position is around 1.2 m).

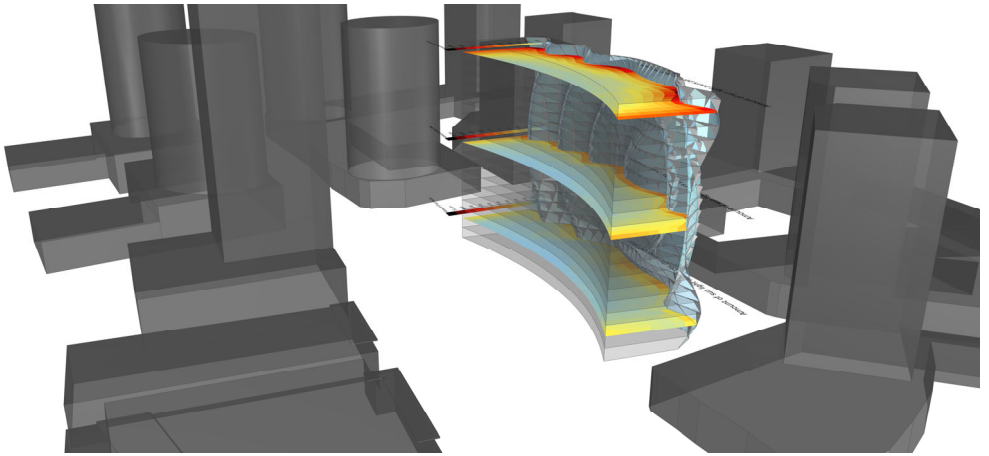
For the interior space analyze a ground floor, a middle floor and a top floor in the building and evaluate the difference. In a high rise the top floor and bottom floor will have difference in sunlight hours, see figures to the right.

Compare and evaluate how to balance view to the outdoors and sun light hours. Is there an optimal solution?

The analysis should be done over the entire year.

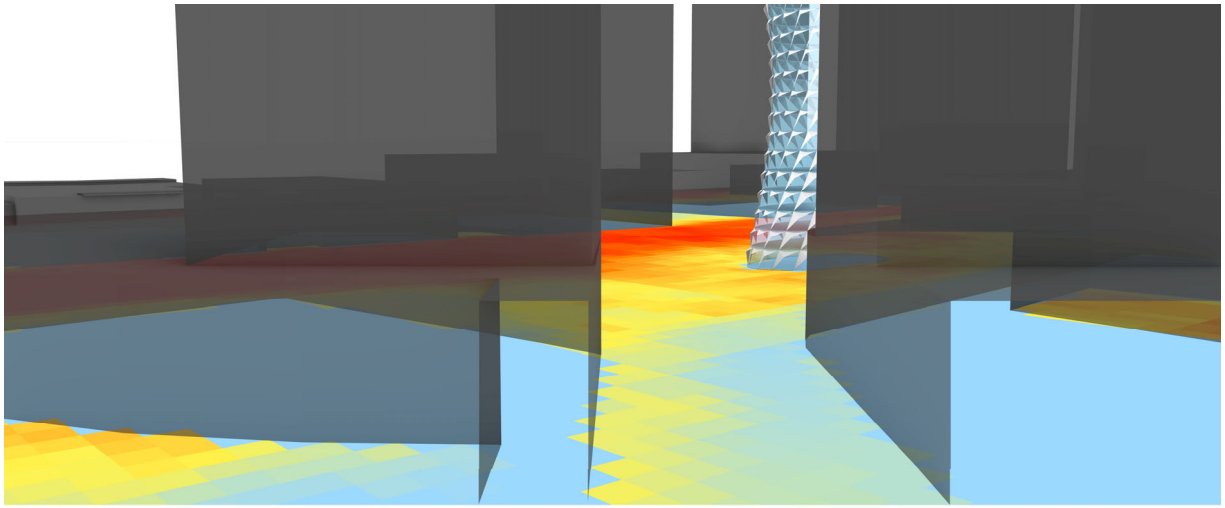


View analysis of three different floors of a building

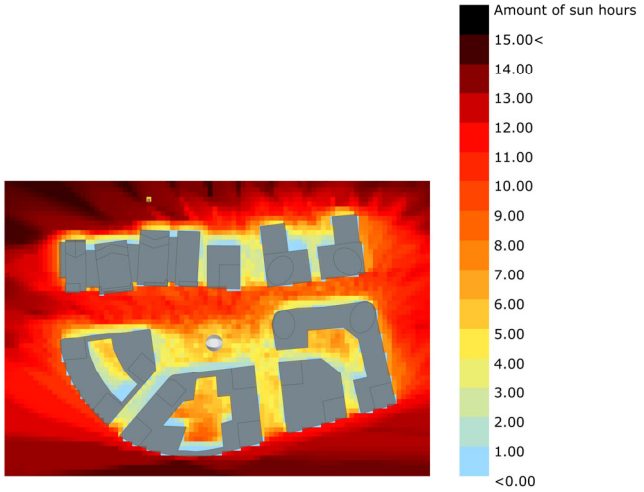


Sun hour analysis of three different floors of a building

Urban analysis



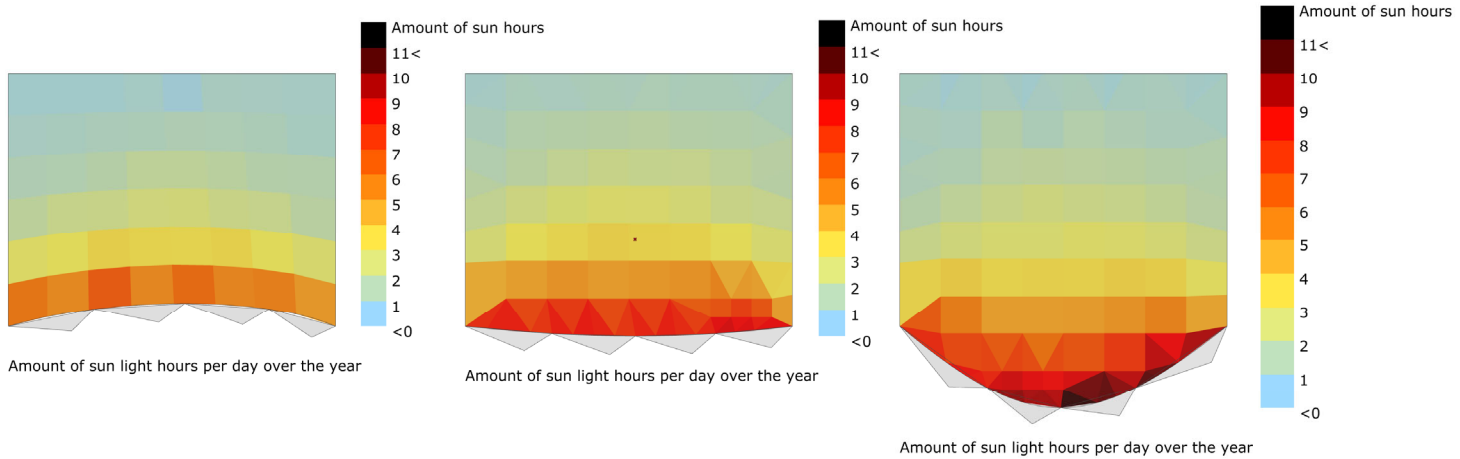
Urban analysis of the impact of the building. Evaluate before and after and see how the form and placement affects the surrounding environment,

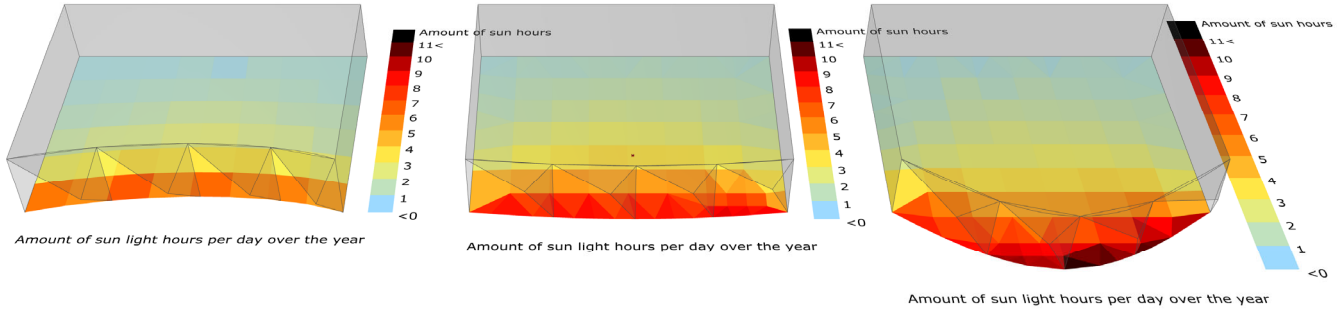


Amount of sun light hours per day over the year

Relation between form and comfort

Try to elaborate with how the form and comfort is related by adjusting parameters related to the shape. In the pictures to the right, only the shape is changed, not the panels.





Relation between façade panel design and comfort

Try to elaborate with how the design of the façade panels and sunshades affects the comfort by adjusting parameters related to the shape. In the pictures to the right, only the sunshades are changed, not the shape.