

Requirement Specification

Team 3

Terminology	
<i>User</i>	The engineer that is using the system
<i>Customer</i>	The person, with whose roof the engineers are working and who will receive the end result of the whole system.

Purpose

- Purpose of the document:

This requirement specification will mainly act as a guideline for Team 3 on the common goal of our team and the idea of the project. It will be available for the Team 3, Team Leaders from other teams and the Project Leader to grasp the understanding of our team's work and future goals.

- Purpose of the team:

Our main goal as a team is to create an addition to the main system of our project which will optimize the placement of solar panels on our customer's roof by following requirements specified by the manufacturer of said panels. The position of the panels will be calculated according to the data received from Team 2 – the panels will not obstruct paths stated in fire code and they will not be placed on certain parts of the roof. The algorithm will also maximize the amount of panels that can be placed on a roof.

Functional Requirements

- **High Priority**

- The system, using given data, will automatically calculate the best solar panel distribution on the roof surface leaving optimal gaps between the items.
- The system will identify chimneys, skylights or other obstacles on the roof and will not mark them as solar panel installation friendly parts of the roof.
- The algorithm will try to maximize the amount of solar panels on the roof.

- **Low Priority**

- Have some user-friendly interface which will help the user of this system to manipulate data and receive certain results.

Quality Attributes

- **Availability:**

- The system should be available for Team 2 and Team 4 accordingly.
- Only specified users be able to access the system.

- **Compatibility:**

- Team 3's part of the system should be compatible with Team 2 and Team 4.
- Data receive from other teams should work with our system and information generated by our algorithms should be reusable by other teams.

- Reliability:
 - System should work if put under a lot of stress
 - After computer or other component updates, the system should be still operatable.
 - Wrong inputs, corrupted data should stop the system from working, but not make it unoperatable entirely.

- Security: (needs to be added)

Future Plans

As it is a understandably complicated project, our team decided that we will distribute our area's work in these said versions:

1. 1st week – blank code, not much functionality implemented, try-outs of the platform.
2. 2nd week – data received from team 2 or sample data will be loaded onto our code.
3. 3rd week – basic manipulation of data will be performed.
4. 4th week – basic calculation algorithm for putting solar panels near each other with gaps implemented.
5. 5th week – polishing of calculation algorithm (the algorithm should try to calculate the maximum amount of solar panels in a restricted area with boundries)
6. 6th week – tryouts for the algorithm to make calculations on provided roof.
7. 7th week – the algorithm should be able to make rather precise calculations for the roof (only for 1 type of the roof)
8. 8th week – the calculations are applied to a bigger variety of roof types (the algorithm will place panels onto obstacles that are present on the roof)

9. 9th week – implementation of some kind of visual representation of our calculations.
10. 10th week – optimization of the algorithm (solar panels shouldn't be placed on obstacles or pathways that are present on the roof)
11. 11th week – the working system.