Joshua Maloney - s40107464
Mashhuda Glencross - Supervisor

Visualising Daily Solar Supply

What tools will you use?

There might be different tools to use depending on the aspects of the project.

The source data is available through web API's so any software should be able to integrate with online data. The product should be a 3D visualisation which will display the data. The visualisation should also be available online or in virtual reality.

Tools such as Unity engine and Unreal engine are available to support 3d visualisation development and create online experience or interactive virtual reality program.

Other technologies are more flexible, OpenGL and WebGL, with c++ and can compile to native software or web assembly. This can integrate with online websites for accessibility with no plugins. This solution requires compiling tool Emscripten.

Data sources are essential, the freely available data source at http://pv-map.apvi.org.au/ contains the daily solar data. Weather data can be found with Open Weather Map or NOAA or the BoM.

Geographic data can be found at the Bureau of Statistics with approximate postal boundaries.

Mapnik is able to convert shape files to map tiles for better rendering performance. May need to set up a tile server, or somehow make Mapnik tiles available online.

There are geolocation API's available that allow to query a place name and return the location. This is useful for serching for places. Bing API can do this, there is Google Geocoding.

Bokeh is a tool for creating online interactive data plots. This can show maps and shapes as well.

Python can be used to do statistical analysis with NumPy and any offline data processing that arises.

What tools will you use for project management?

Bibliography and referenced can be managed by keeping .bib files in the project folder. This keeps a record of what sources have been referenced and makes it easy to cite in reports.

Gantt chart scheduling should be used to create project timelines and line up with milestone items. There is an online chart tool provided for free by https://online.officetimeline.com.

What kind of backup strategy will be used?

Project can be set up with source control sites like GitHub or GitLab. Source files for the project and the report can both be stored on the same project. This makes it easy to save backup versions at any time in the workflow. Backups save history of work that has been performed in a session.

Timeline

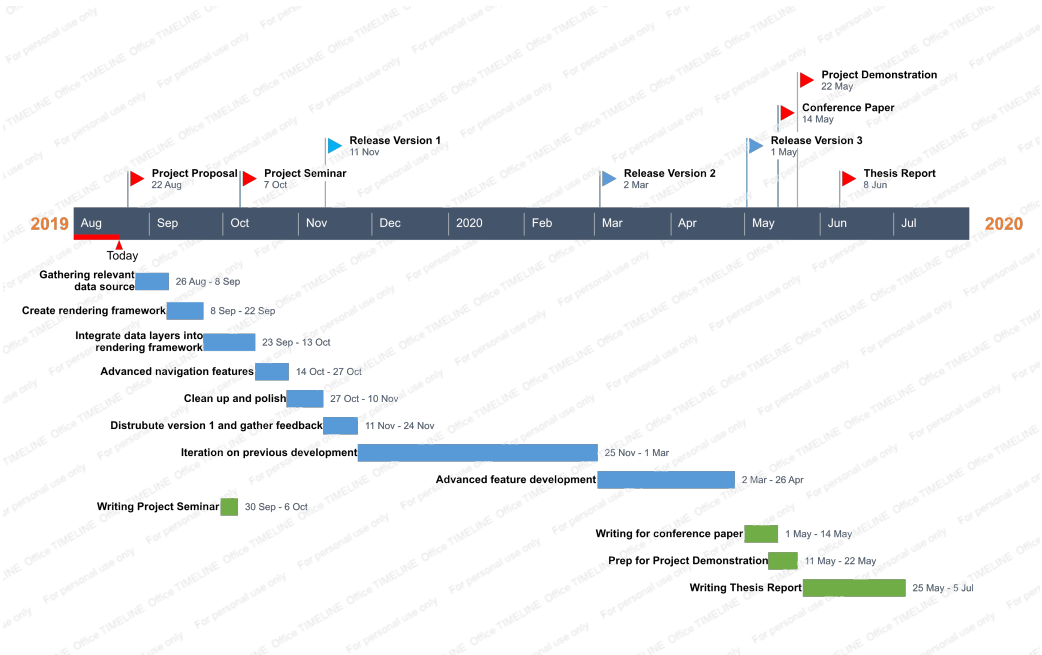

Figure 1: Project timeline

Figure 1 is the project timeline. The order for the timeline is focused on getting the least level of required materials and building a framework that can work with everything together. Once everything comes together, more gaps can be filled and detailed can be added as required. It is expected that unforseen circumstances, such as bugs or new data types, as well as taking into account feedback from the supervisor and other users, will provide direction for specific areas to improve in the second phase.

There can be an iterative release schedule made between version 1 and version 2, as development allows.

More advanced features such as a predictive model and detailed graphics effects can be implemented in the third phase of development. At this point there should be a robust framework already and sufficient utility provided by the previous work. Hopefully the advanced features will make the work more novel and useful as a tool.

There is sufficent time alotted at each assessment point to work on writing and preparation. Although materials and drafting can be prepared for reports outside of the alotted time, there should not be much development work occuring near the end of the project.

Elevator Pitch

We're going to create a virtual model of solar supply and weather effects to show more about solar power. Smart Cities are the idea of all services having a data network online. Solar supply will create energy engagement as well as prediction and utility in the energy sector.