Visualising Daily Solar Supply

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Abstract

Daily Solar supply is important. Providing data on daily solar supply is novel. The data is provided with a 3D interface. Search through geographical areas. View the data by visualising in natural ways.

1 Introduction

Visualising Daily Solar Supply has produced the product OpenSolar. OpenSolar is a data processing and visualisation system. There are a number of dedicated applications as part of the system.

OpenSolar gathers daily data and calculates the PV power generated in the previous day.

OpenSolar can visualise solar power on a national scale, as well as zoom in to smaller, more focused geographic areas.

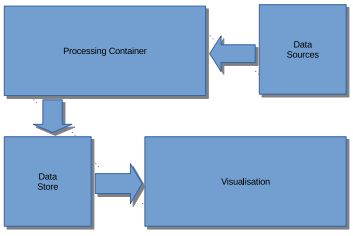
How much solar power is generated per day nationally? This question is hard to answer and before OpenSolar, there was no estimate of such a value to be found.

OpenSolar answers the question of how much power is being generated daily, as well as provides estimates on state, territory and postcode level.

OpenSolar increases the understandability of the data by presenting it in a visually familiar way, using 3D maps to display recognisable locations.

OpenSolar increasses ease of access to data by making the system available to users by a web browser, which is standard for modern devices including computers, tablets and phones.

OpenSolar uses existing data services to make its calculations. This leverages existing sources to create new information.



2 Background

Solar growing, millions of $s, mandated energy targets. Interest of PV to power companies. Interest of PV to small system owners and community at large.

3D visualisation is an easily available and accessible way to express solar supply. The data can be very dense, so 3D visualisation makes it more interesting.

The solution is available on any device.

Some source data was provided. Some was missing. Part of the project was to find out what the missing data was.

We ended up asking how much solar power is generated each day? There wasn't a good answer, so to find out we had to dig up more data.

By monitoring instantaneos output and daily solar irradaince we could come up with a relation between the current installed capacity and the daily solar power generation.

With all the background data together, the visualisation has everything needed to build a solid foundation.

Digital environment - emcc compiler, opengl, webcore. With this we can generate a blank canvas that we can work from.

Navigation

Postcode to lat-lon to 3d co-ordinate system.

UI

User interface to search for place or postcode.

High-Level viewing

Simple 3D map

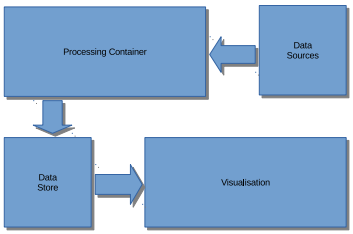
Adding terrain - 3D geometry. Construct mesh grids. Adjust height and tile them together. Download and parse elevation tilesets from OSM. Mesh grids are uv mapped, which lets us show image tiles.

Adding buildings - 3D geometry

Representing the data in the geometry

3 Project Design

4 Results



5 Conclusion

Acknowledgement