# 2nd February 3D Printing Project Meeting Notes

## MVP Feedback

* Solution is very slow (due to focus on correctness rather than efficiency)
  + Program currently runs in around five minutes on test file, but one minute is realistic.
  + We’re working towards two minutes, but with one minute as the ideal runtime.
* Core of the system is now implemented, and file reading/writing for .sl1 files works correctly.
* A lot of places are being identified as islands needing support when in fact they are supported by a pixel other than the one directly below (e.g. one diagonally below).

## Future Development Priorities

1. Less supports (i.e. lower threshold for island detection)
2. Speed optimisations (as described above & below)
3. Easily removable supports (using cones, as described below)
4. Merging supports (e.g. two supports close to each other could become a Y-shaped support)

## Other features

* GUI would be nice, but command line interface is fine.
  + Improved functionality preferred over GUI
  + Command line is preferred given time constraints
* Concurrency to speed up the program
  + This would provide huge time improvements
  + The overlap between chunks given to each thread would need to be a special case, potentially checked multiple times.
  + A compromise between runtime and optimal supports should be considered if the overlaps are relatively small.
* Ease of removal is possible
  + Adding anti-aliasing will increase complexity, so is probably not worth implementing given time constraints
  + An easier approach than anti-aliasing is to make the end of each support a cone shape, so that the contact point is small.

## Data About 3D Printing Settings

* Lightest support cone settings
  + Contact point 0.2mm
  + Diameter 1mm
  + Length 2mm
  + Contact depth 0.2mm (the length of the cone which effectively goes into the shape)
* Heaviest support cone settings
  + Contact point0.7mm
  + Diameter 2mm (possibly recorded incorrectly by me!)
  + Length 3mm
  + Contact depth 0.4mm
* 115x65mm print bed (most 3D printers are the same within a couple of millimetres)
* Standard 2k lcd panel
* 47nm per pixel (from Oliver’s memory)
* Some 3D printers use 4k panels, but most in the market still use 2k (around 90%)