



Whitireia  
NEW ZEALAND

# ESR FARO PROJECT



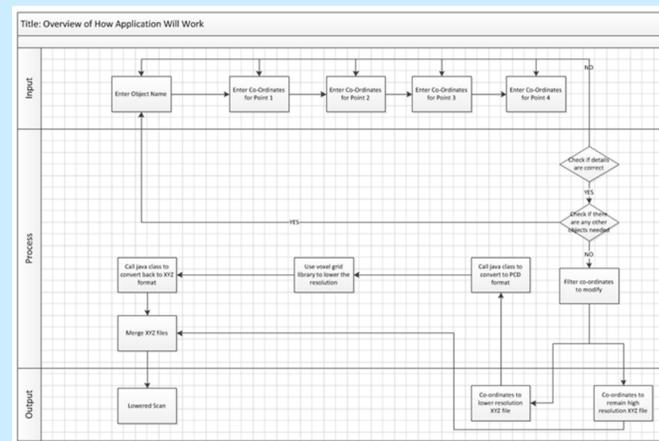
## Scope Statement

This project will primarily consist of lowering the resolution of portions within the FARO laser scans. To do this research will be carried out on the last group's progress and on different methods to accomplish this objective. We will then need to decide whether to continue on with the last group's progress or choose an alternative method to lower the resolution of a scene. After the decision is made we will then either need to create or refine an application to call the Point Cloud Library, lower the resolution of the specified portion and then convert the lower resolution data back to the Point Cloud Library format. This project will be completed by 5<sup>th</sup> November 2012.

## Primary Objective

The primary objective of the project was to lower a point clouds resolution, while keeping certain specified objects within that point cloud in high resolution

The process of how this was done is in the diagram below



## Methodology

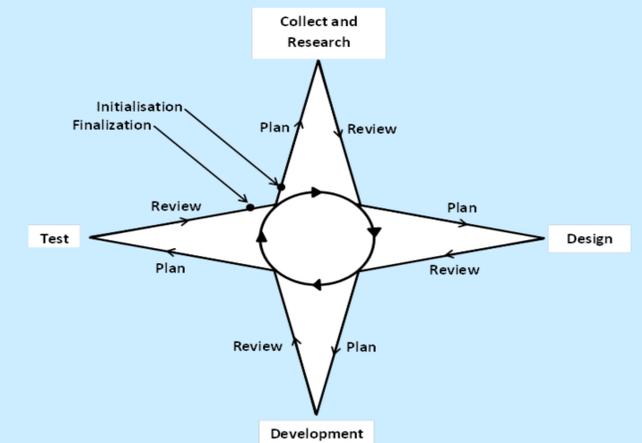
### Methodology Chosen

We choose to create our own methodology after thorough research into many different methodologies. This is because we could not find a methodology that would suit our project.

### Why we chose to create our own methodology

The work required to complete the tasks in the project is unknown, due to this the number of iterations is unknown.

There is no methodology that we researched that allows us to skip phases.



## Project Outcome

An application was created in java programming language that allows the user to lower the resolution of a specific object(s) in a 3D scan.

The application can currently take an XYZ file, the user then inputs co-ordinates of an object, these co-ordinates are removed from the XYZ file and put into a new XYZ file containing the object; this is to remain high resolution.

The XYZ file that needs to be lowered is then converted into the PCD file format. The PCL library Voxel Grid is called and executed on the PCD file. This lowers the resolution. The PCD file is then converted back to XYZ file format. The two XYZ files are then merged back together creating a final XYZ file. The two XYZ files are then deleted. The final XYZ file then only needs to be imported into a 3D scan viewer application.

Scene Before



Scene After



## Future Recommendations

The next group to take on this project should look into running the application that has been created, on multiple blades (i.e. parallel processing). Multi-threading will ensure that the time it takes to process through the file will be cut dramatically.

The group should conduct further research into importing xyz files into faro scene as this would be a huge advantage because ESR has a full license to use this software; also this is the software that they use for their scans. Research and implement a better way of collecting and noting point cloud point data

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### Project Client:

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