

Digital media and online teaching using UC-Win/Road

Aim of this students' project:

To understand the capabilities, 3D visualisation tools such as UC-Win/Road offers comparing to 2D tools limitations such as Photoshop.

Tutorial:

Last week you used Photoshop to imagine the original shape of the 250 years old building's ruin, where you came up with a interesting outcome below in figure 2.



Fig 1: original building



Fig 2: the imagined original building using Photoshop

This week you will use the same building and the same aim of imagining the original shape of the building, but using a 3D tool (UC-Win/Road). The expected outcome will be something similar to the 3D drawings below.

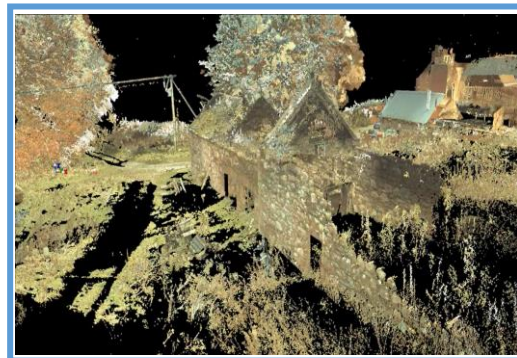


Fig 3: 3D scan of original building



Fig 4,5: Screenshot outcomes using UC-Win/Road from last year's students' project

Tutorial's steps:

Step 1: As raw data of the 3D scanning is given to you, you are required to remove the noise from the given cloud points by following the steps below:

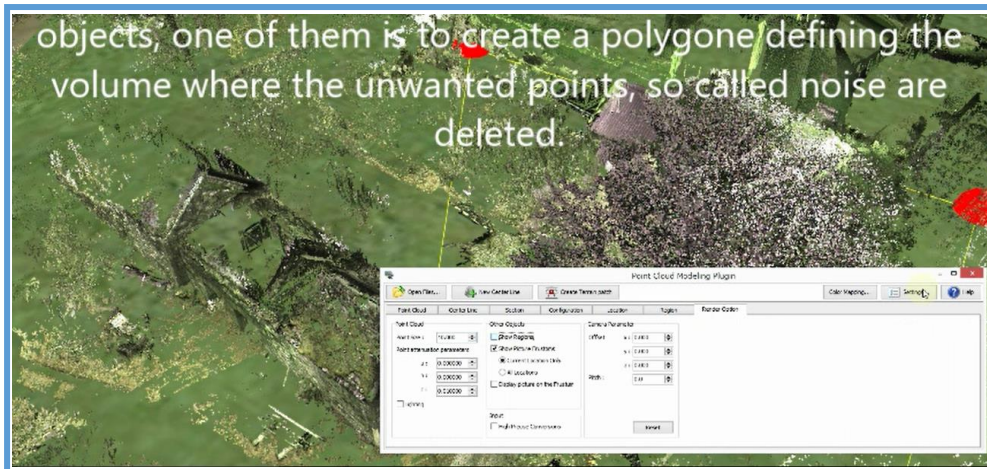


Fig 5: noise elimination process in UC/Win-Road

In the above scan, the noise include all points such as birds flying, cars on the field and all the unwanted objects.

After the elimination of the noise, you will be able to work on the building itself.

Step 2: by identifying the footprint of the building, draw a polygon defining the inscribed volume of the building, close attention should be given to the extension of the building that you can find out by zooming into your site or rotating it to see hidden site, this option can't be seen in Photoshop hence the advantage of working in 3D environment.

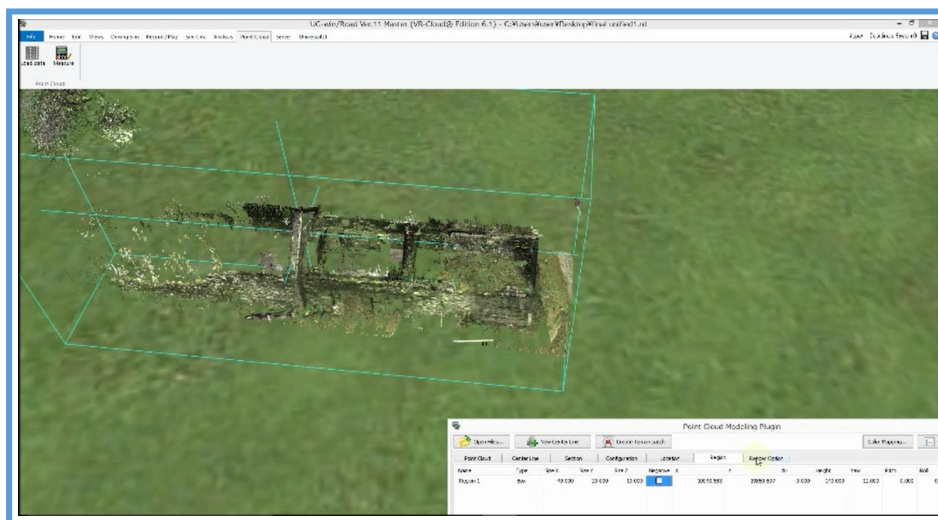


Fig 6: Creation of a Polygon to prescribe the building's limits

Step 3: where possible try to identify in the 3D scan any area of the building that you feel complete and that was not destroyed by the time. If not try to identify different part of the buildings that can work to your advantage so you can make a complete piece of building by adding them together like a puzzle. The next step will depend on what you found in the scanned ruin. But let's imagine you found a whole portion of the building that you can replicate.

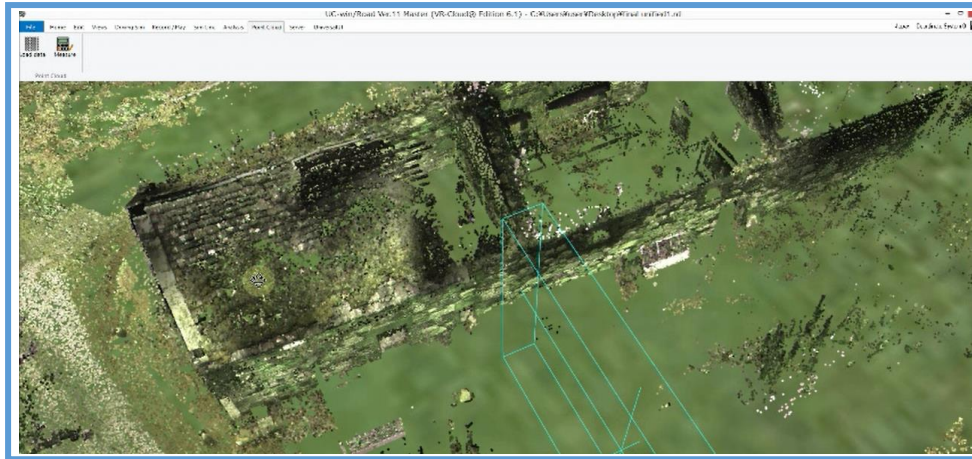


Fig7: copy of part of the building to be replicated

You need to create another smaller polygon where the copy of part of the building will be prescribed, so you can copy it and reproduce it, examples shown in figures 7 and 8.

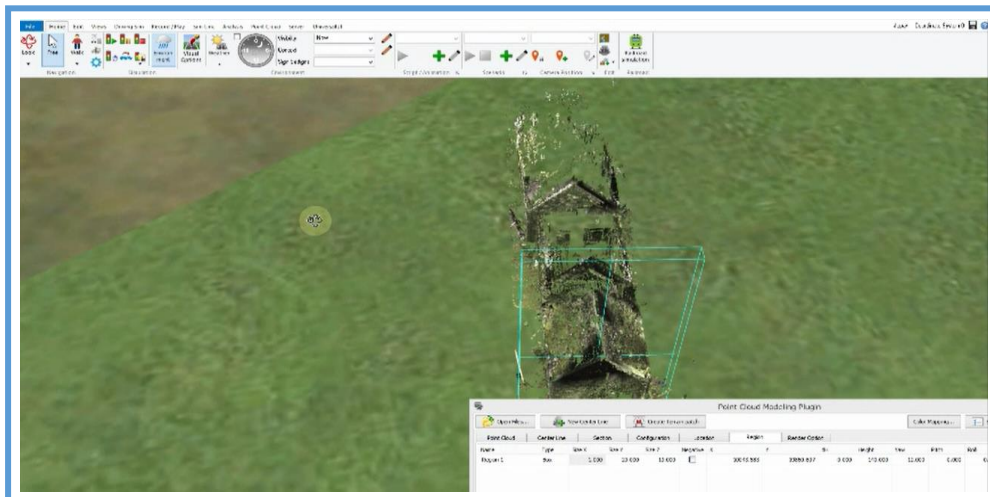


Fig 8: another copy of part of the building to be replicated

Step 4: once you created part of the building to be replicated, you can start proceeding like a copy past in Microsoft Office software and copy the polygon where needed. In the case below (see figure 9), the roof and walls are being created using the piece of building you copied.

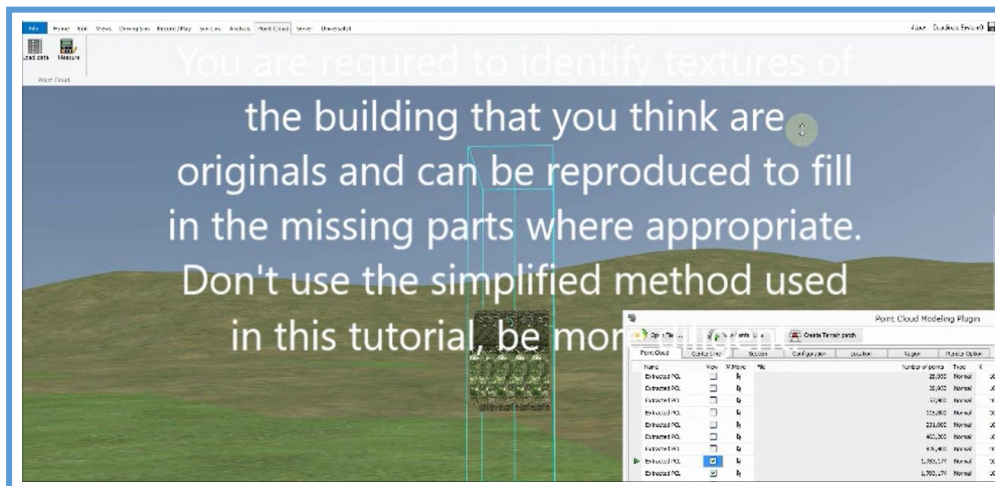


Fig 9: coping process of building's portion

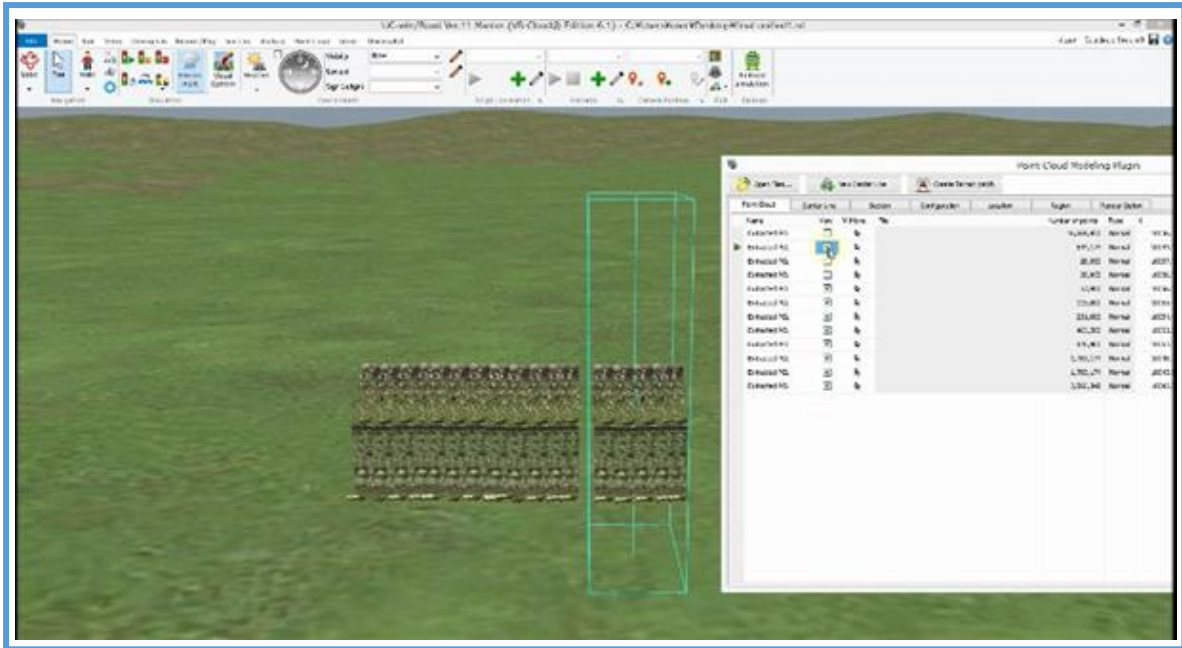


Fig 10: production of the building in progress

Step 5: Now that your building outlines shape is completed in a friendlier environment that allowed you to have full control of your manipulations; you can move it now to its original position so you can finalise the last touches and take screenshots for other communication purposes.

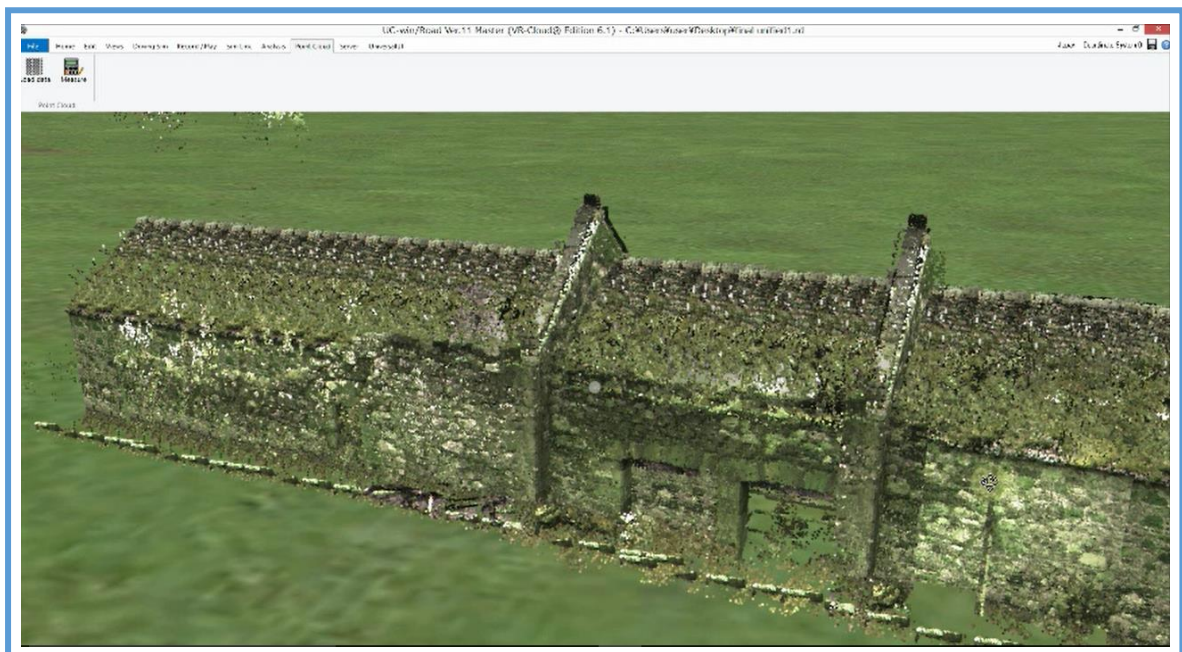


Fig 11: creation of building completed and ready to be transferred to the site

It is important that you refer to old photos or historical documents to identify the position of window, doors or chimney so you don't just copy walls all over. Once you identify these component, repeat the same process described above and copy/past the missing elements in their positions.

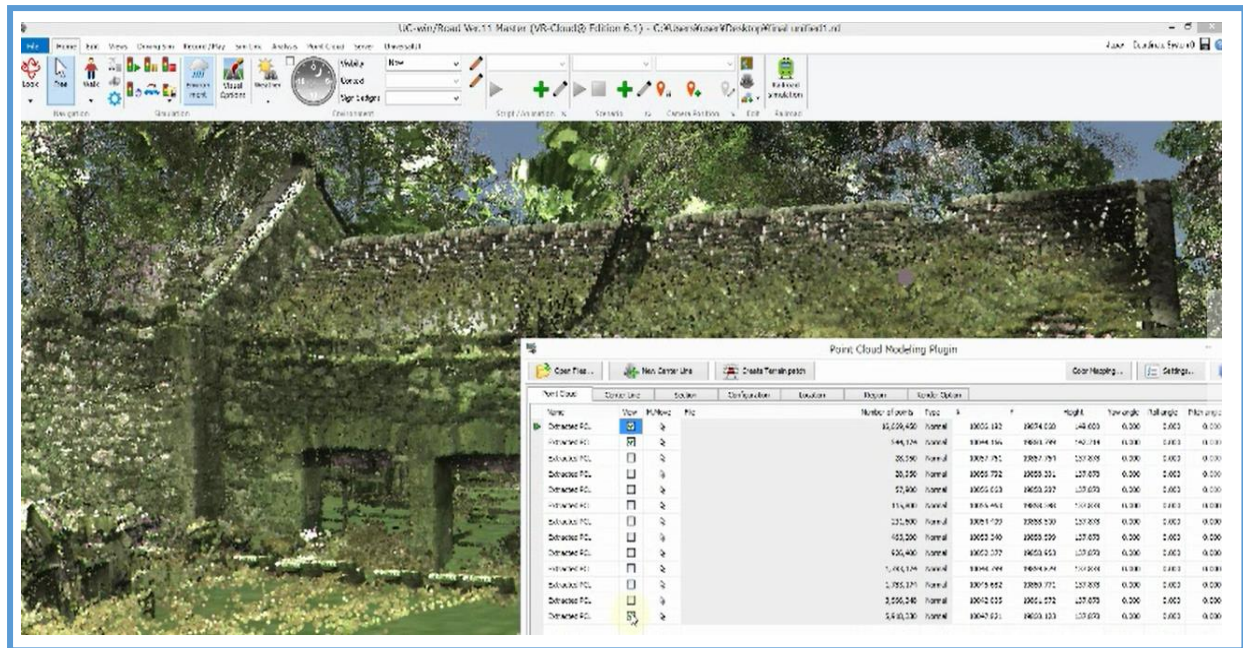


Fig 12: importation of the building to its original site

Step 6: although the full building's envelope has been created, for the purpose of better visual communication, you still need to clean up your model, and add some environmental features such as the sun (that we will see in the next tutorial).

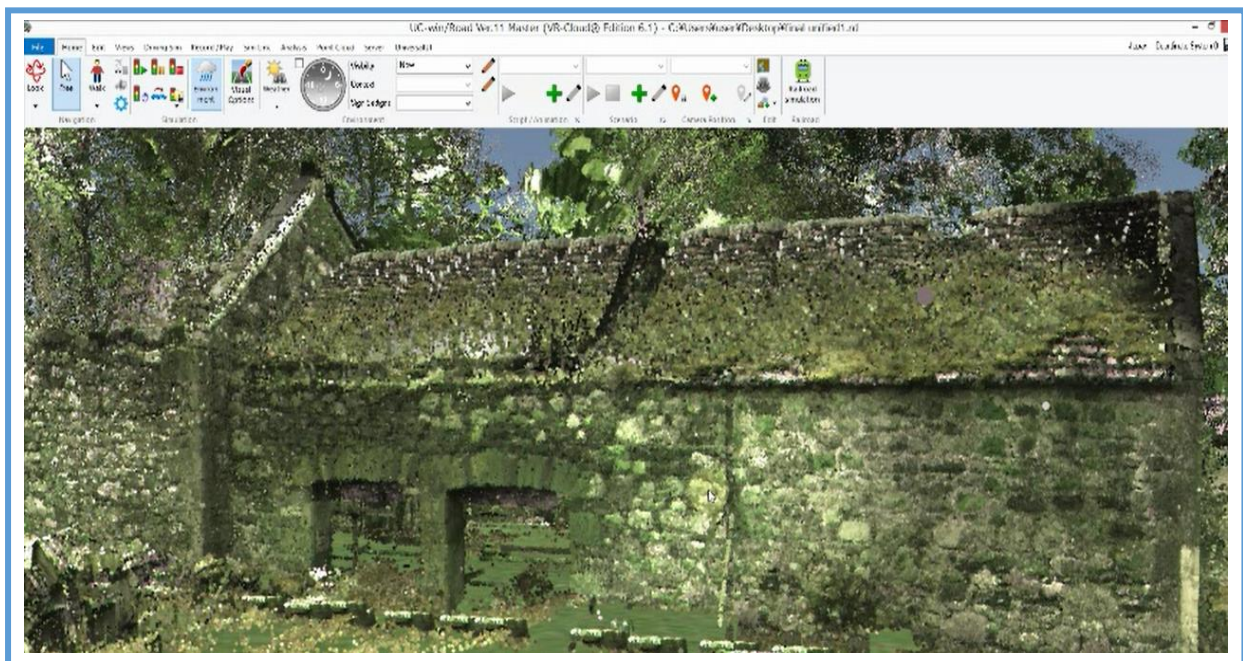


Fig 13: the building completed in its site

Conclusion to be drawn:

Now that you worked with 2 different software you will need to draw a conclusion reflection on which of the software gives you more flexibility in investigating your task of recreating a new building from a ruin.

The report including screenshots is to be submitted online by November 15th 2016.

Good luck: Dr Amar Bennadji (visualisation module coordinator: a.benandji@rgu.ac.uk)