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TRAINING CAMP 2024

Digital Heritage Camp:
3D Surveying Training in Sermoneta Castle and Ninfa Park

GEOSLAM Data processing

“a black box experience”

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CNR DSU · Consiglio Nazionale delle Ricerche · Istituto di Scienze del Patrimonio Culturale · Consiglio Nazionale delle Ricerche · Istituto di Scienza e Tecnologie dell'Informazione "A. Faedo"

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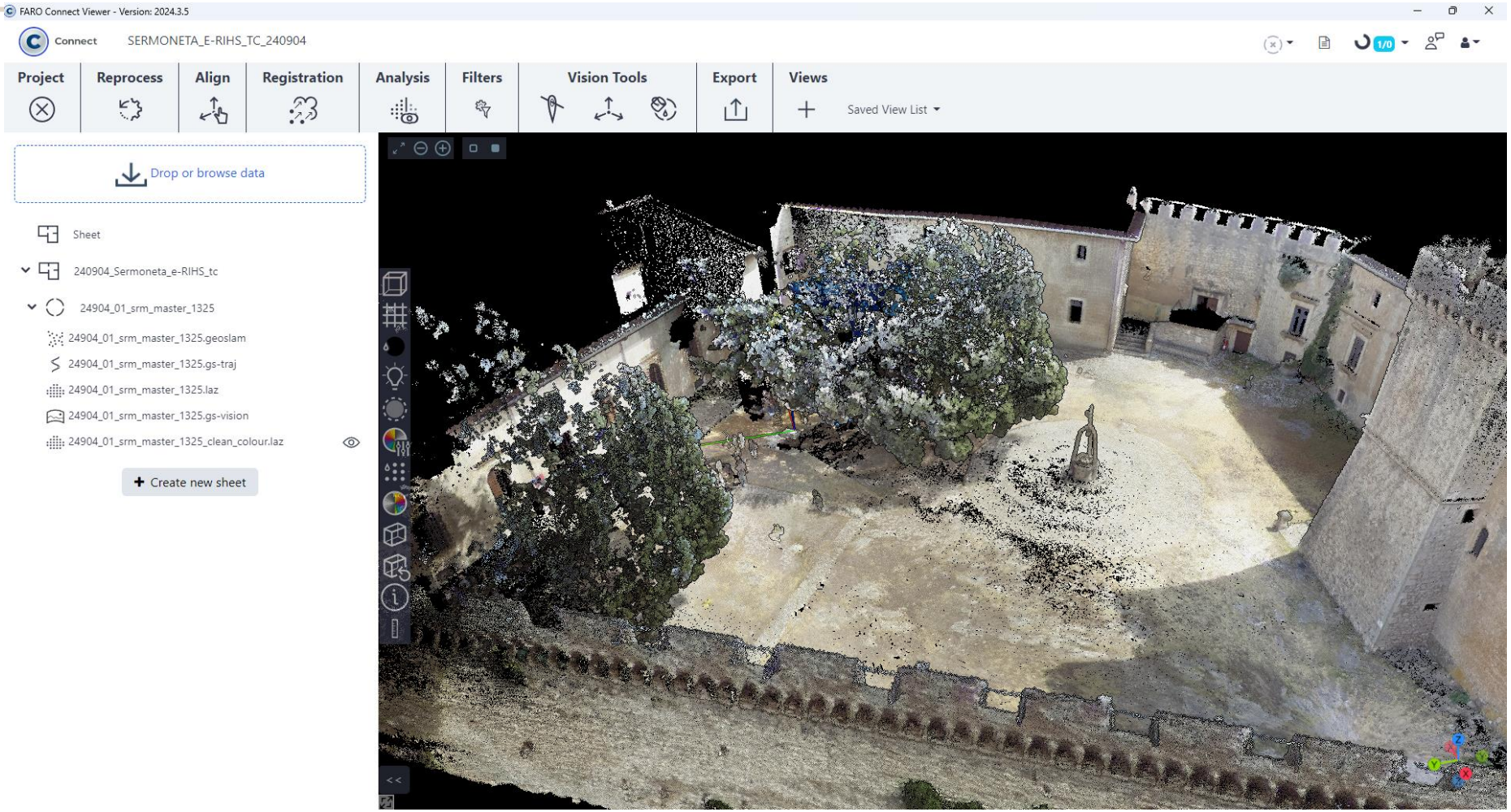
What now?

So you've planned your pathways the SLAM took the data, you did not have any particular issue and now it's time to process data.

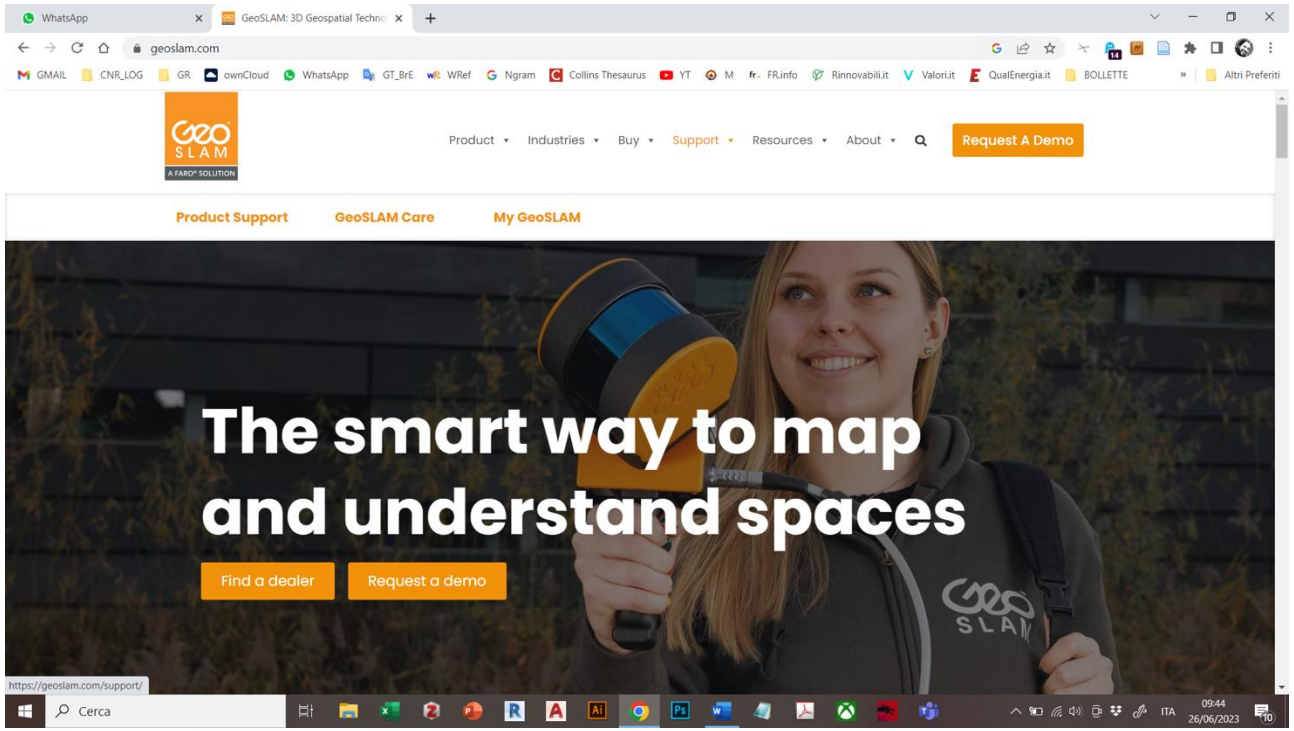


What now?

The software went through 4 deep rework in a couple of years… is it because it was bad?

Not really…

GEOSLAM was a small company that was then acquired by FARO that keeps changing things…



FARO

Connect

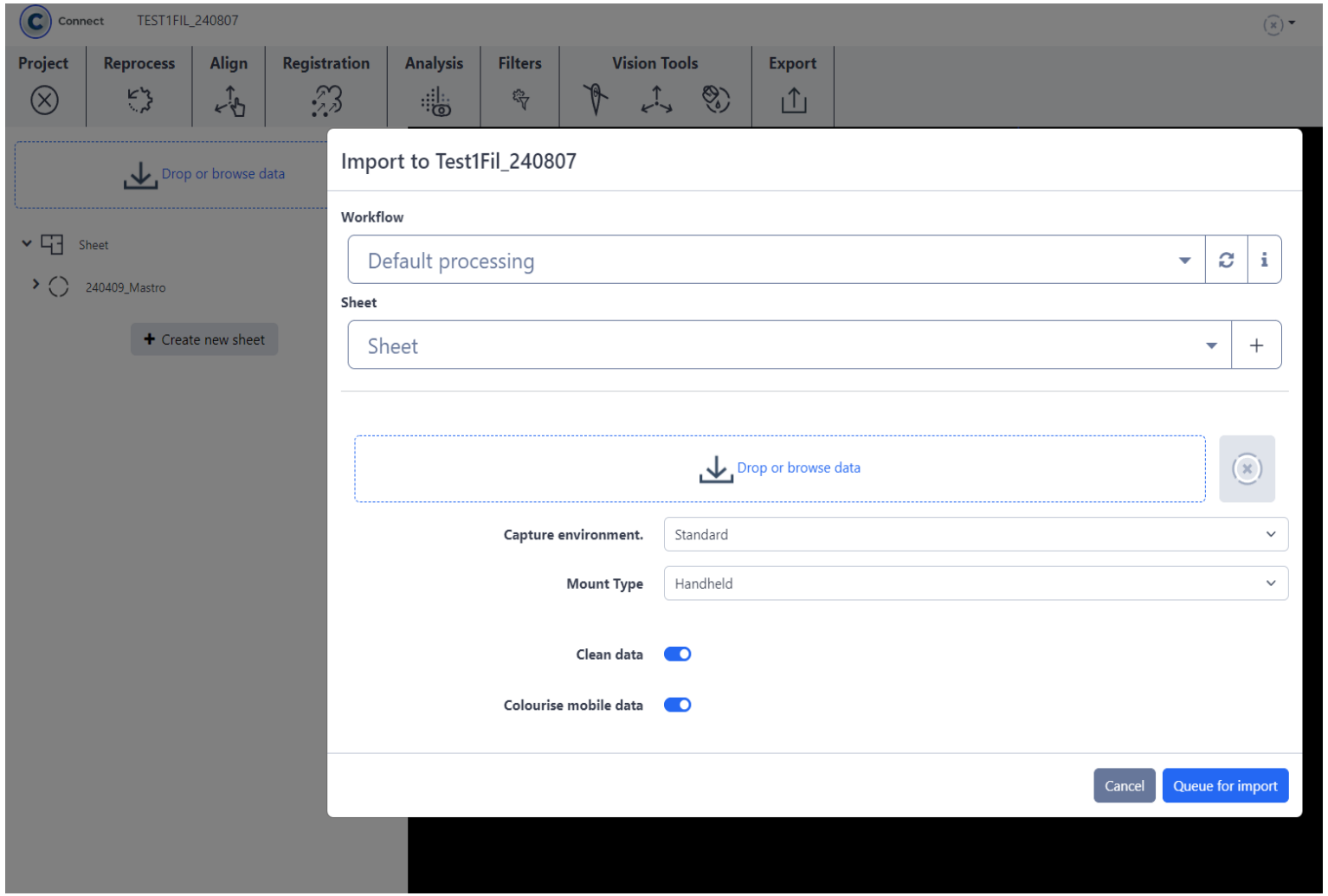
Jahreslizenz

SPHERE XG

HOLO BUILDER

The Post processing pipeline

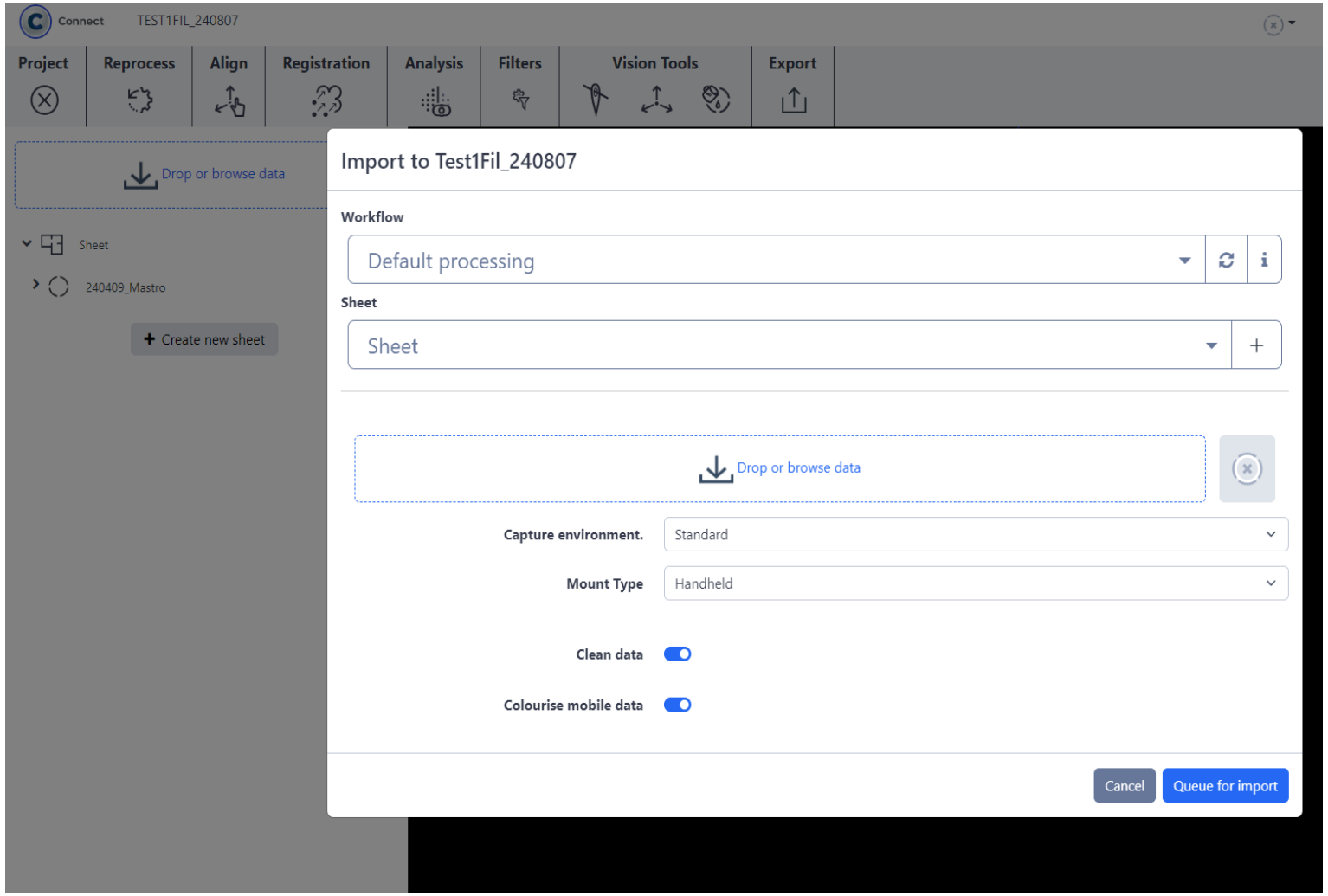
Since the last three iterations (starting from Geoslam Connect) the pipeline is organised in semi-automatic workflows in which you input just the datasets.



The Post processing pipeline

The first step converts the .geoslam file into a point cloud file + trajectory file + spherical panorama.

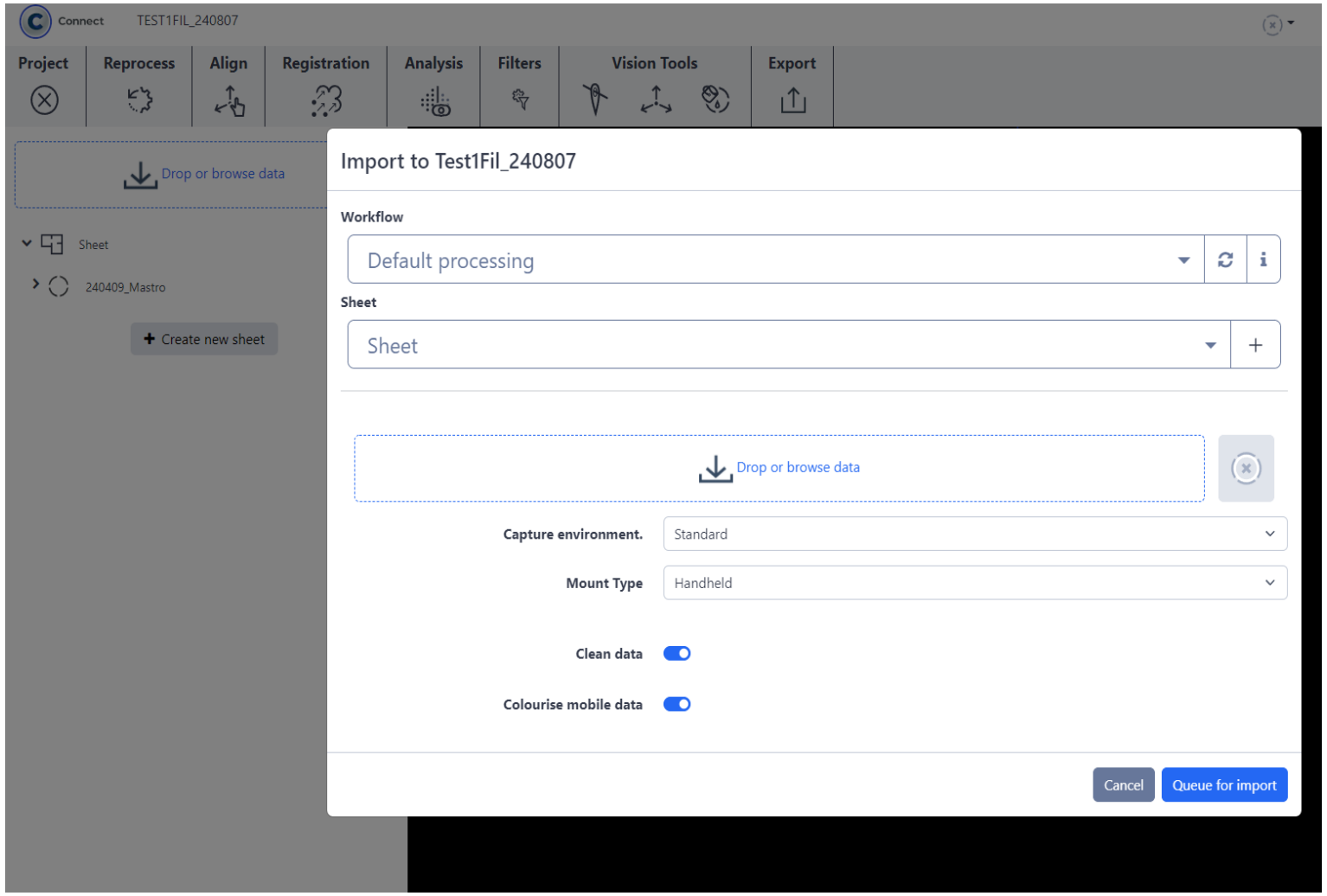
You can give all the datasets in one batch. In this phase, apart from giving some basic info like the mount tipe of the tool you decide the capture environment, and if you want to clean and colourise data.



The Post processing pipeline

Based on our experience (you will here this a lot because there is a lot of black box approach), the current release of the software favours the cleaning and colourising of data while you import the file.

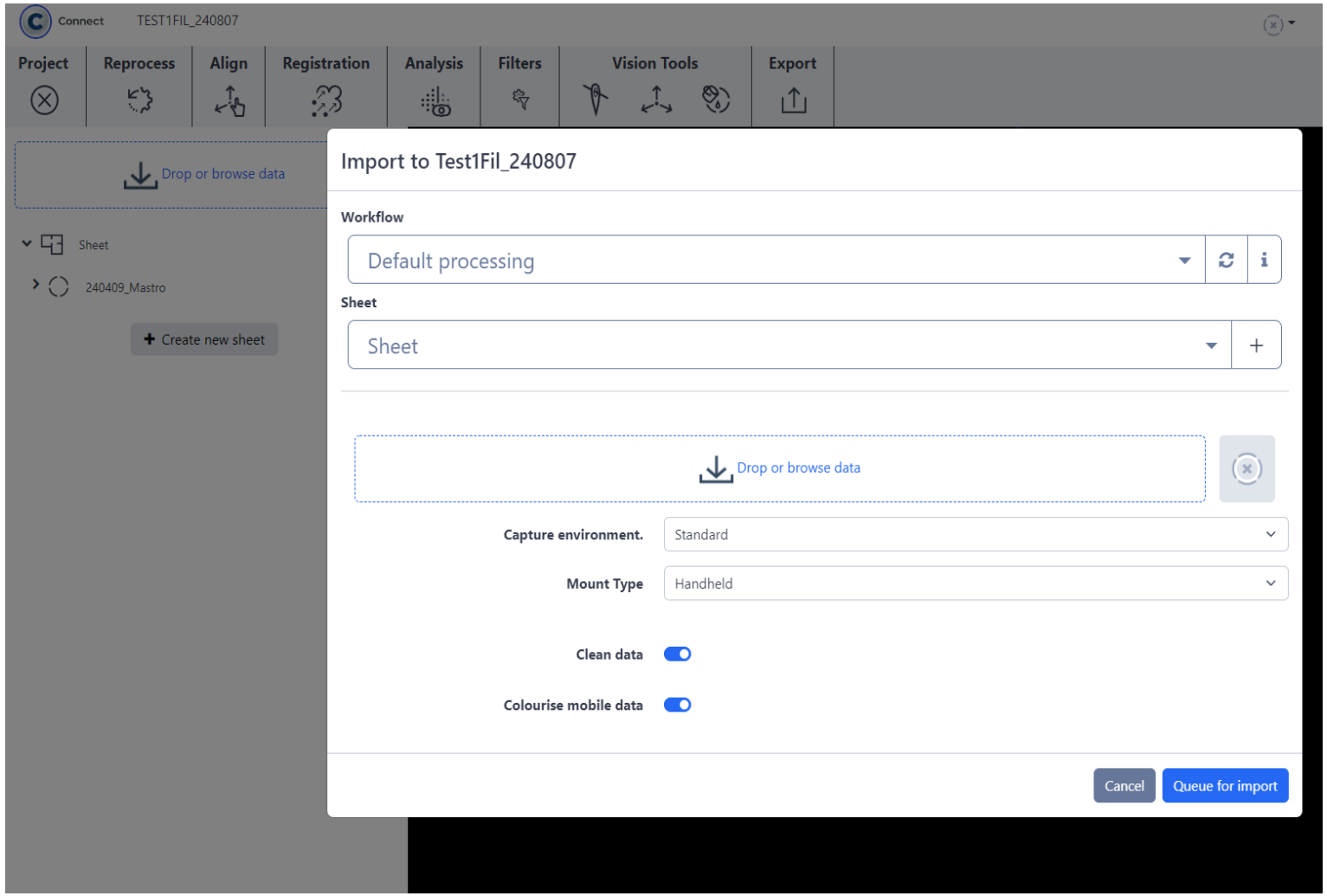
The capture environment allows to tune wether giving more importance to the IMU or the laser data and other parameters for the post-processing.



The Post processing pipeline

Usually for simple historical buildings the standard capture environment is ok, «confined» can help in very dense historical areas or small rooms. If this phase results in any kind of errors tou can «reprocess» the .geoslam file to «fine tune» the procedure.

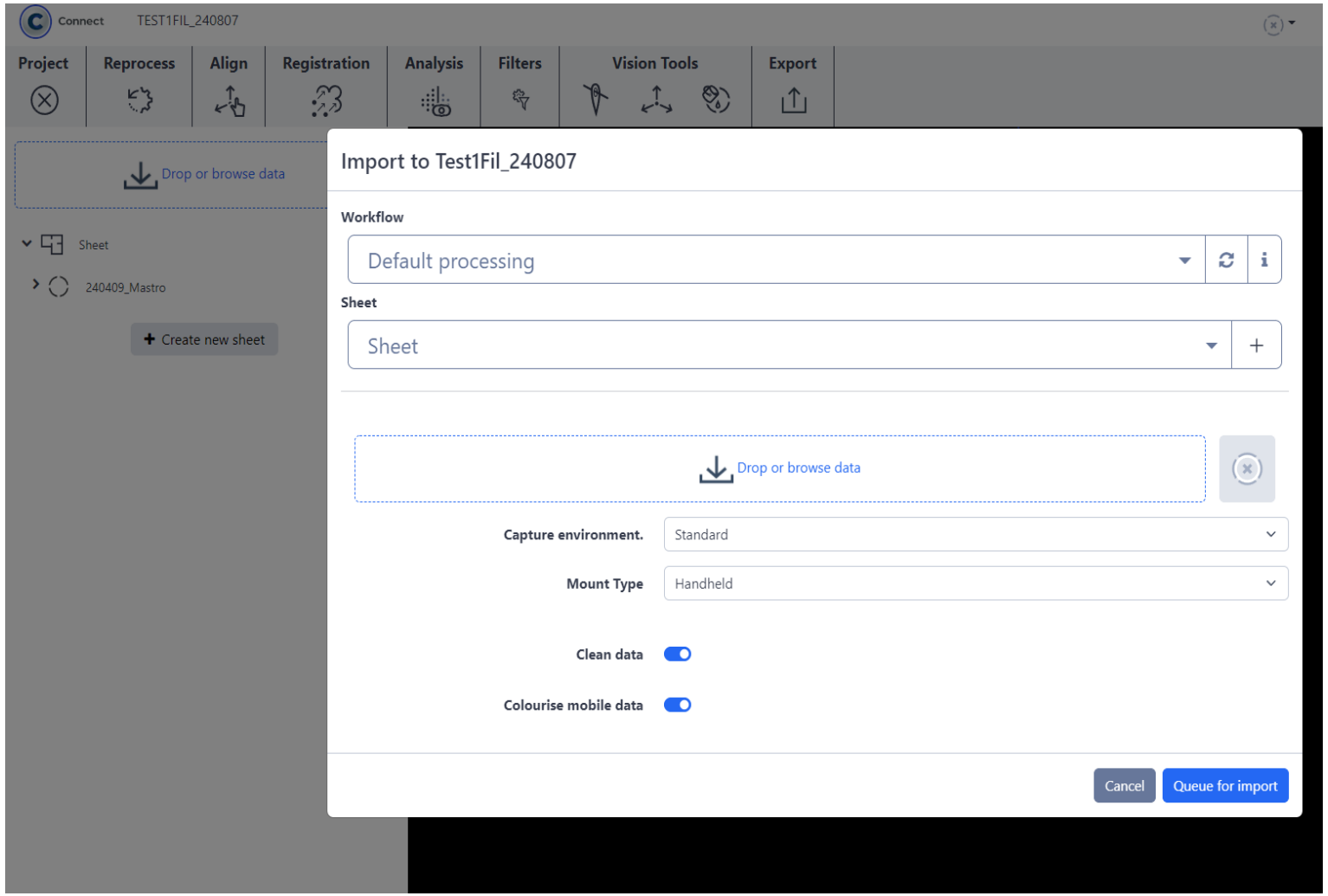
A 20 min pathway can take up to 5-6 hours to process.



The Post processing pipeline

A 20 min pathway can take up to 5-6 hours to process.

Just the IMU and Laser data are quite fast (45 min), the longest part is the stitching of RGB data on the point cloud and the cleaning phase.



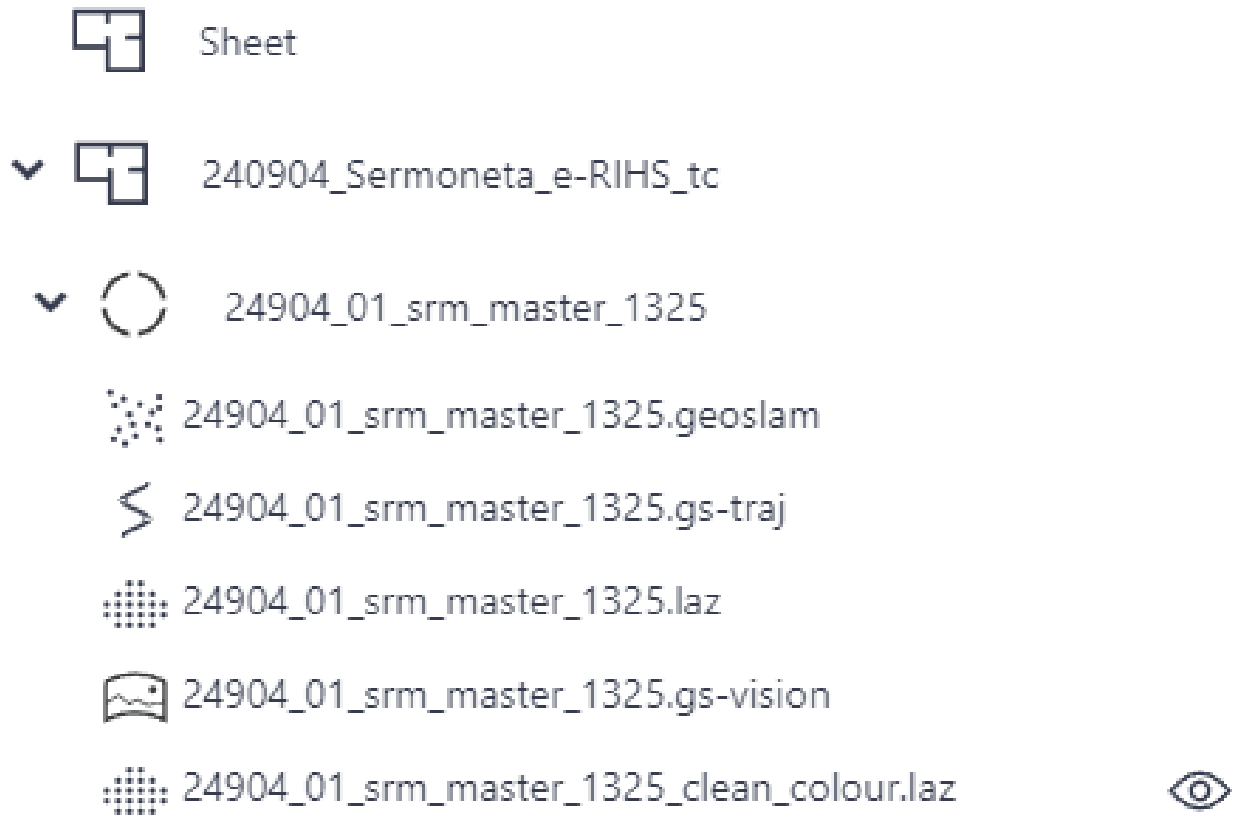
The Post processing pipeline

A project is called «sheet» each .geoslam pathway will create a subset of post-processed data, each step is recorded.

For example after the first processing you get the following data.

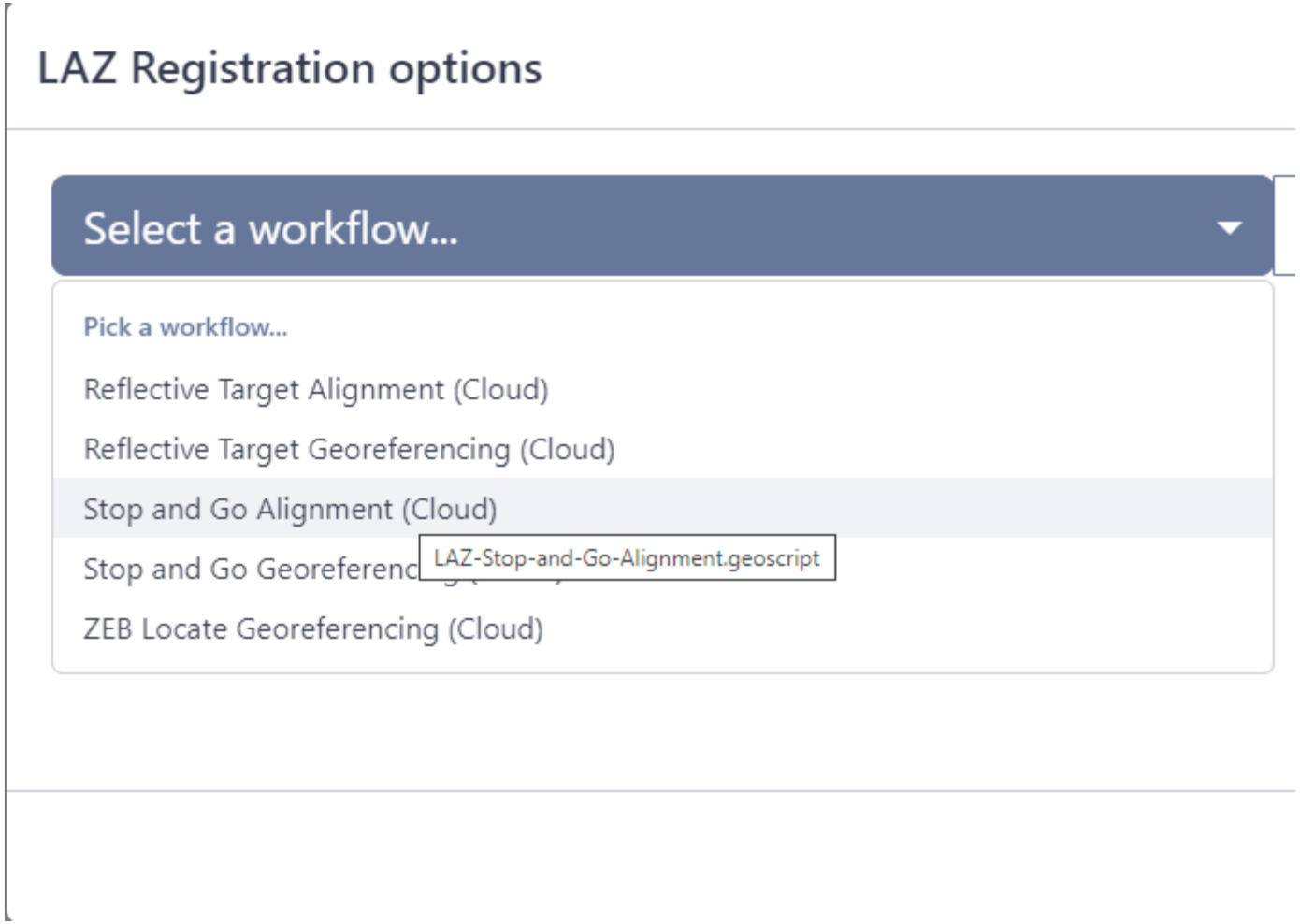
Each step adds an «_something» to the file name it produces, to help keep track of what you are doing, altough sometimes the files are saved in a position you would not expect and losing track of what you are doing and of the pipeline steps is easy, especially when the pipeline is repetitive.

The tip is to have your own analogic pipeline with all the action you are taking on the software.



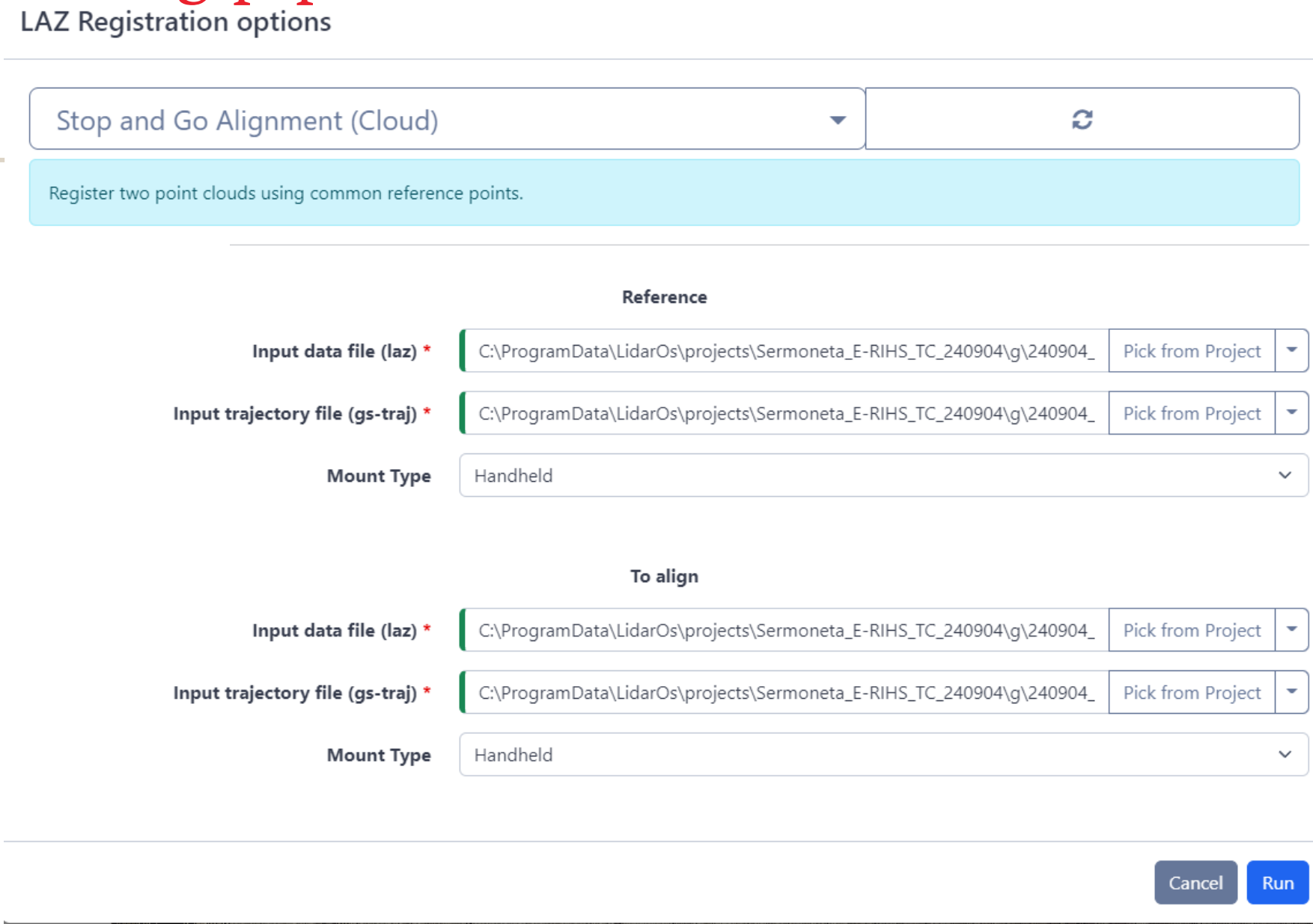
The Post processing pipeline

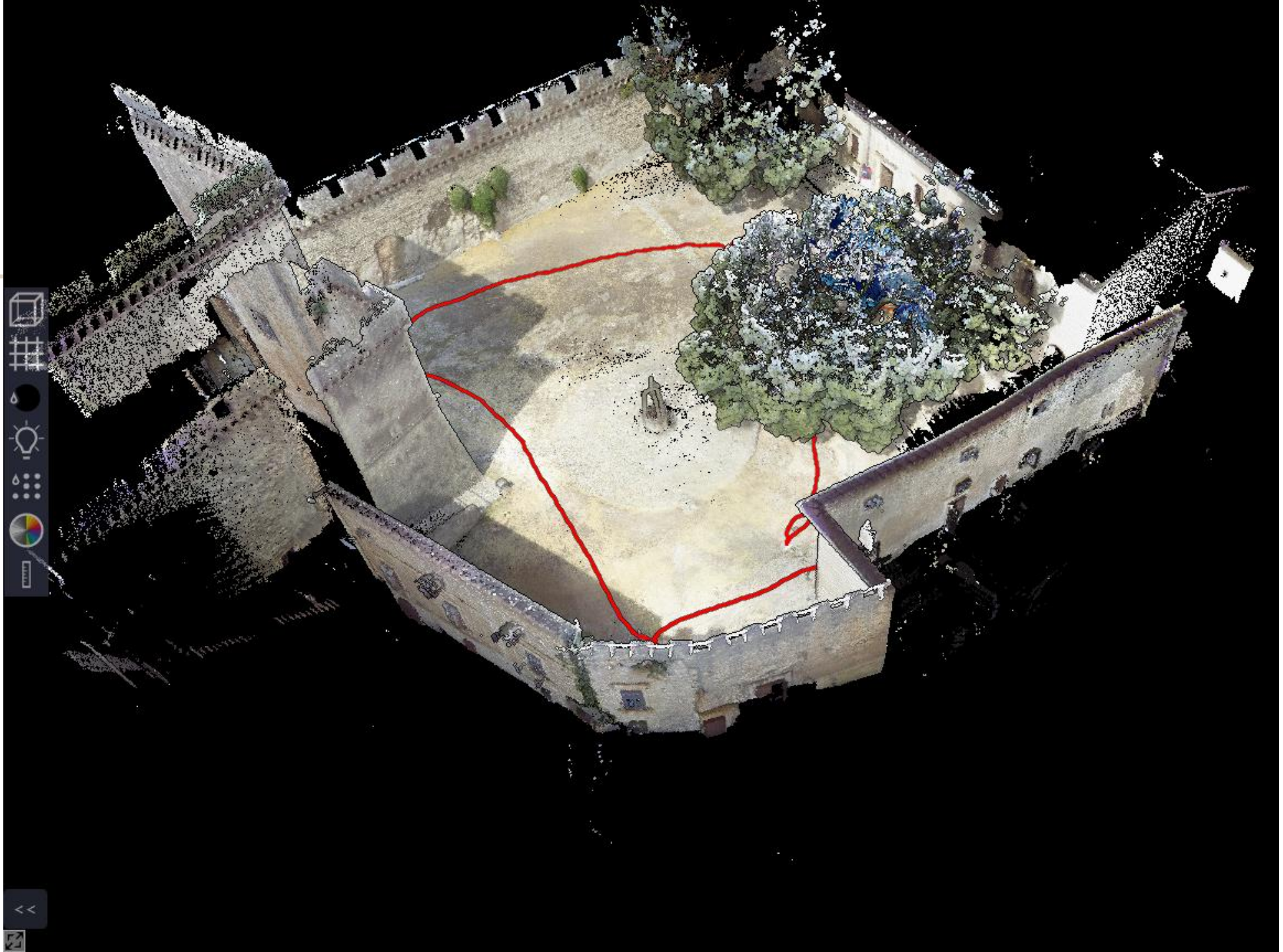
The next step is the «stop and go Alignment», if you took the right amount of stop and go points you can register each pathway on the Master pathway and all the cloud will be correctly oriented. Usually the accuracy is within a range of 2-4 cm, that for the kind of work we do it is usually ok.

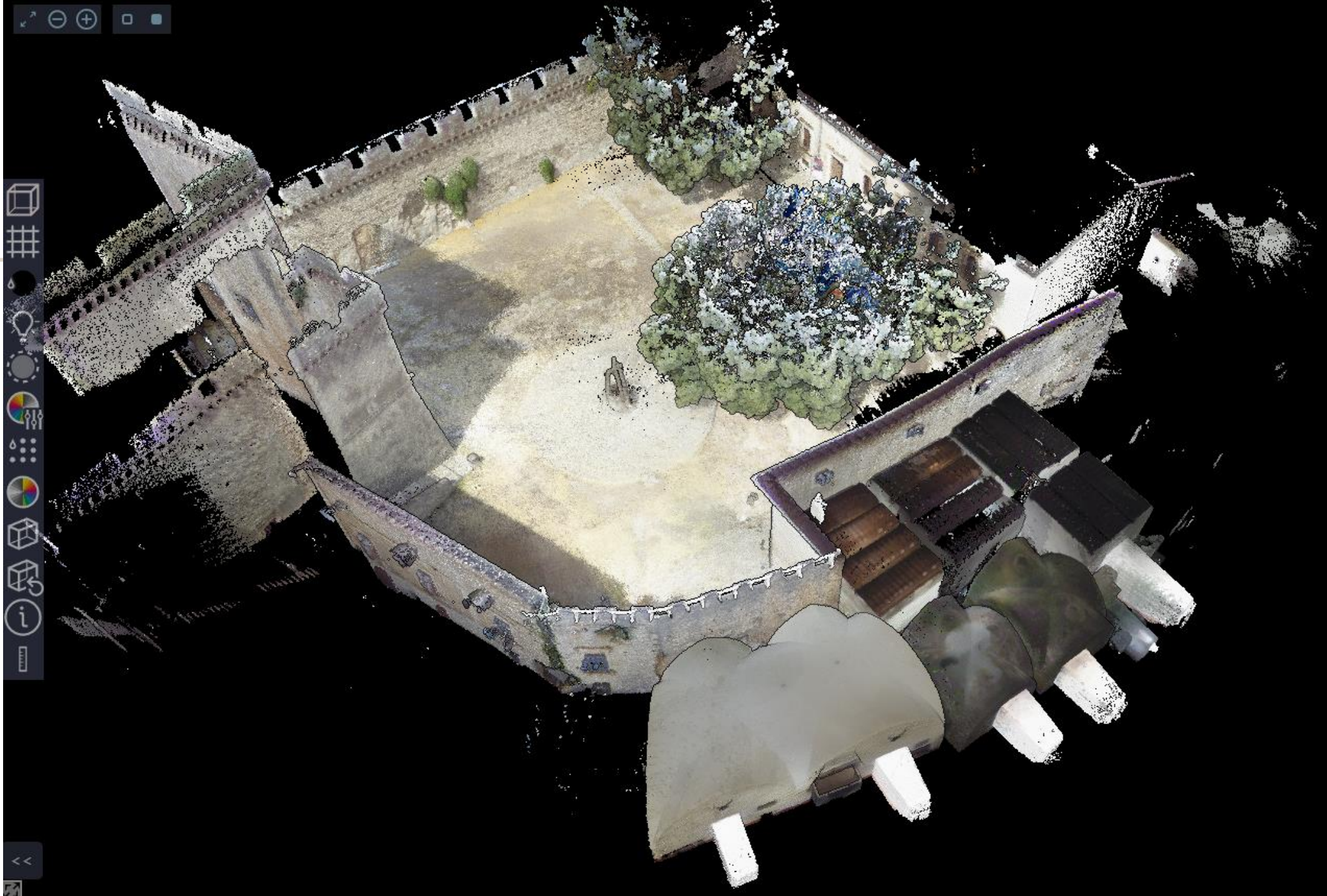


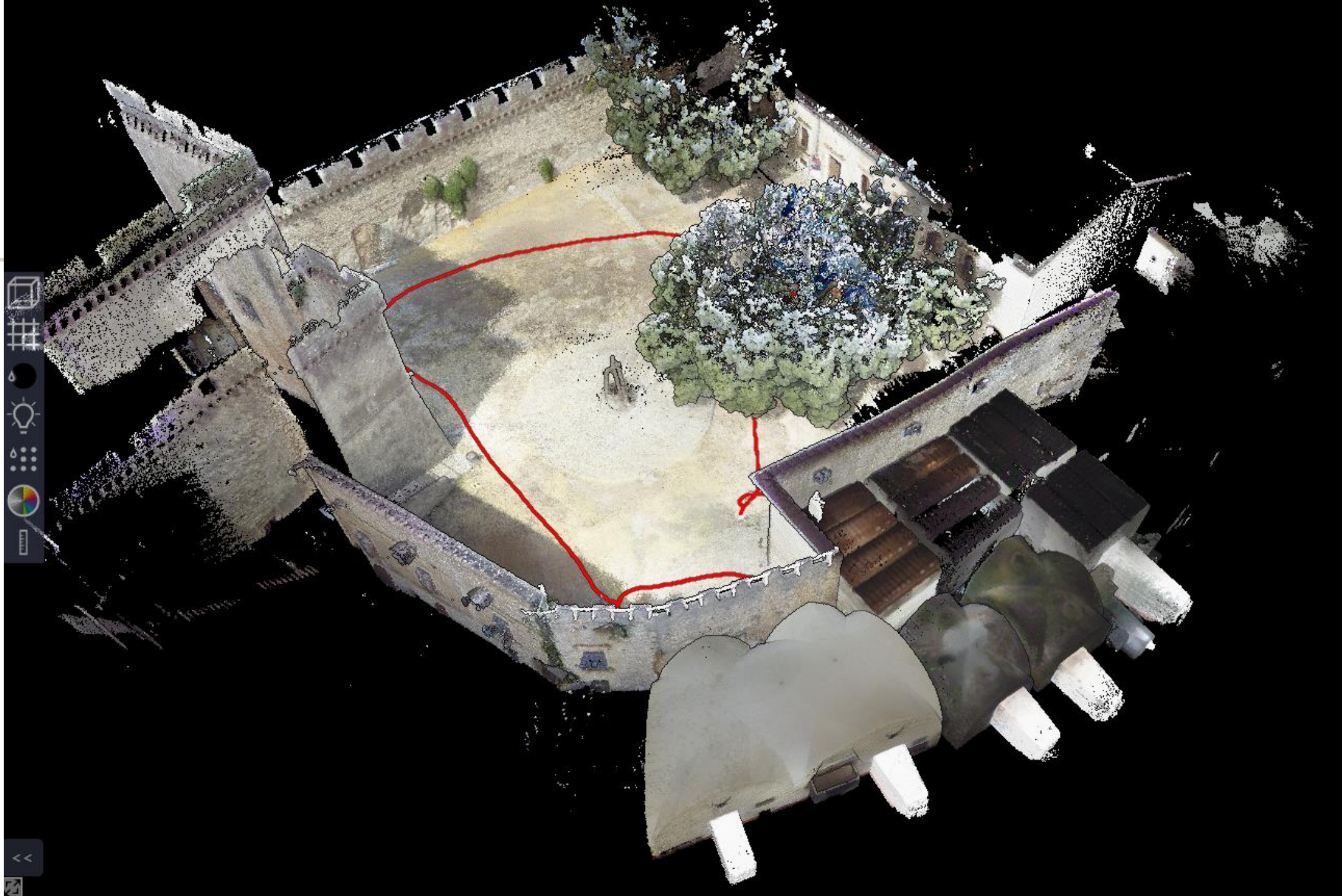
The Post processing pipeline

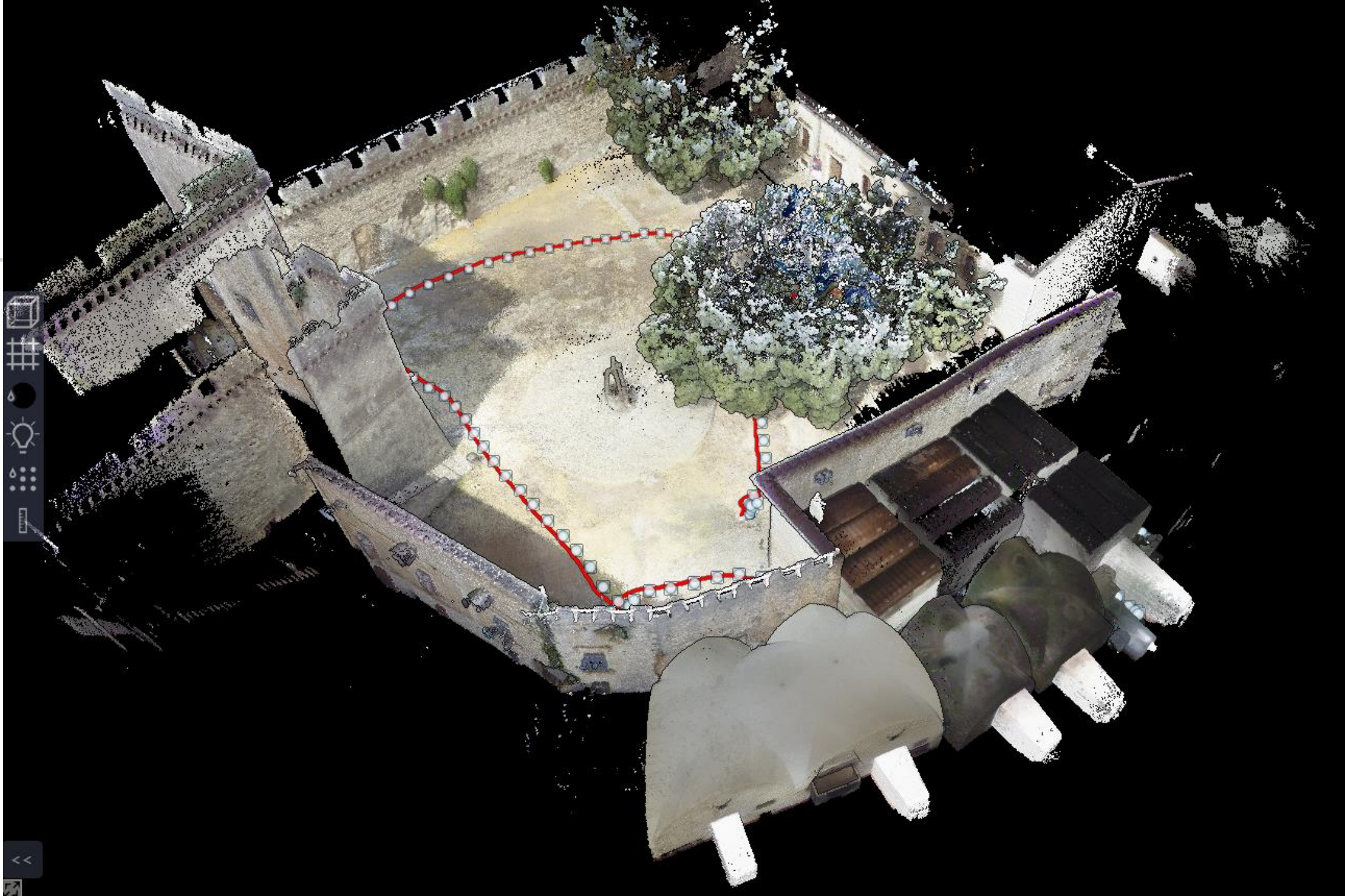
In the registration phase you are asked to input the .laz file and the .traj file of the trajectory for the reference cloud and the cloud to be aligned. This phase take up to 10 minutes

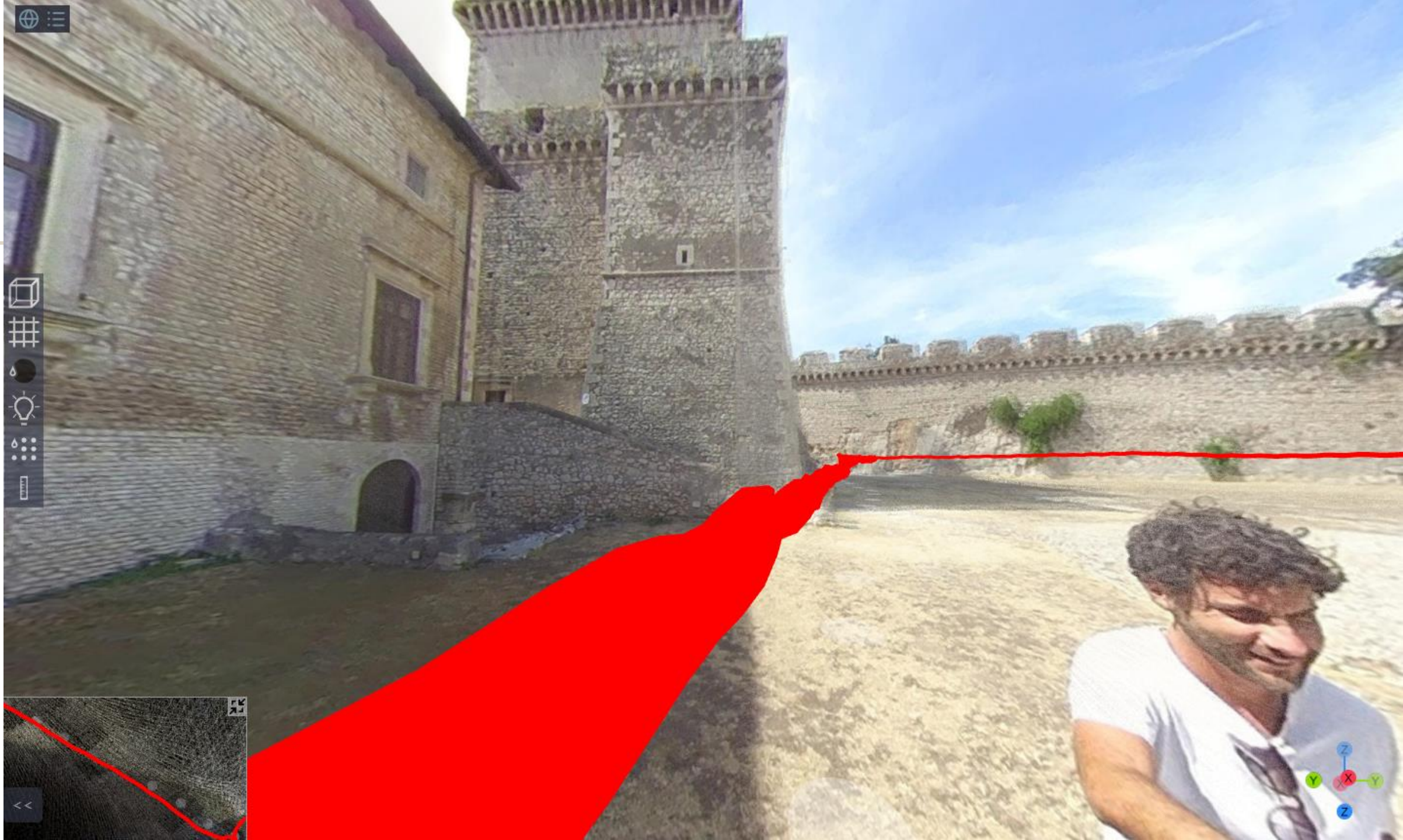


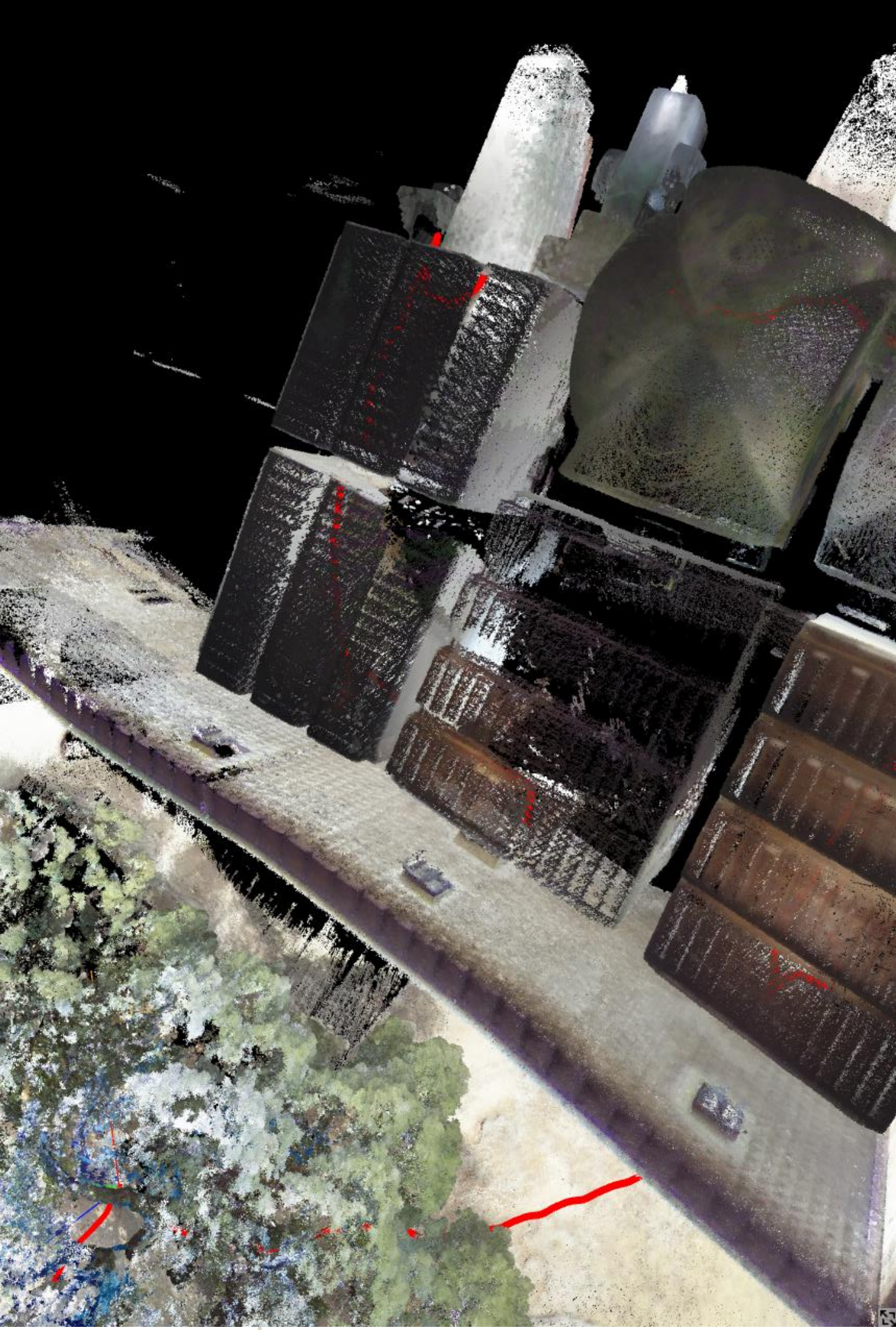






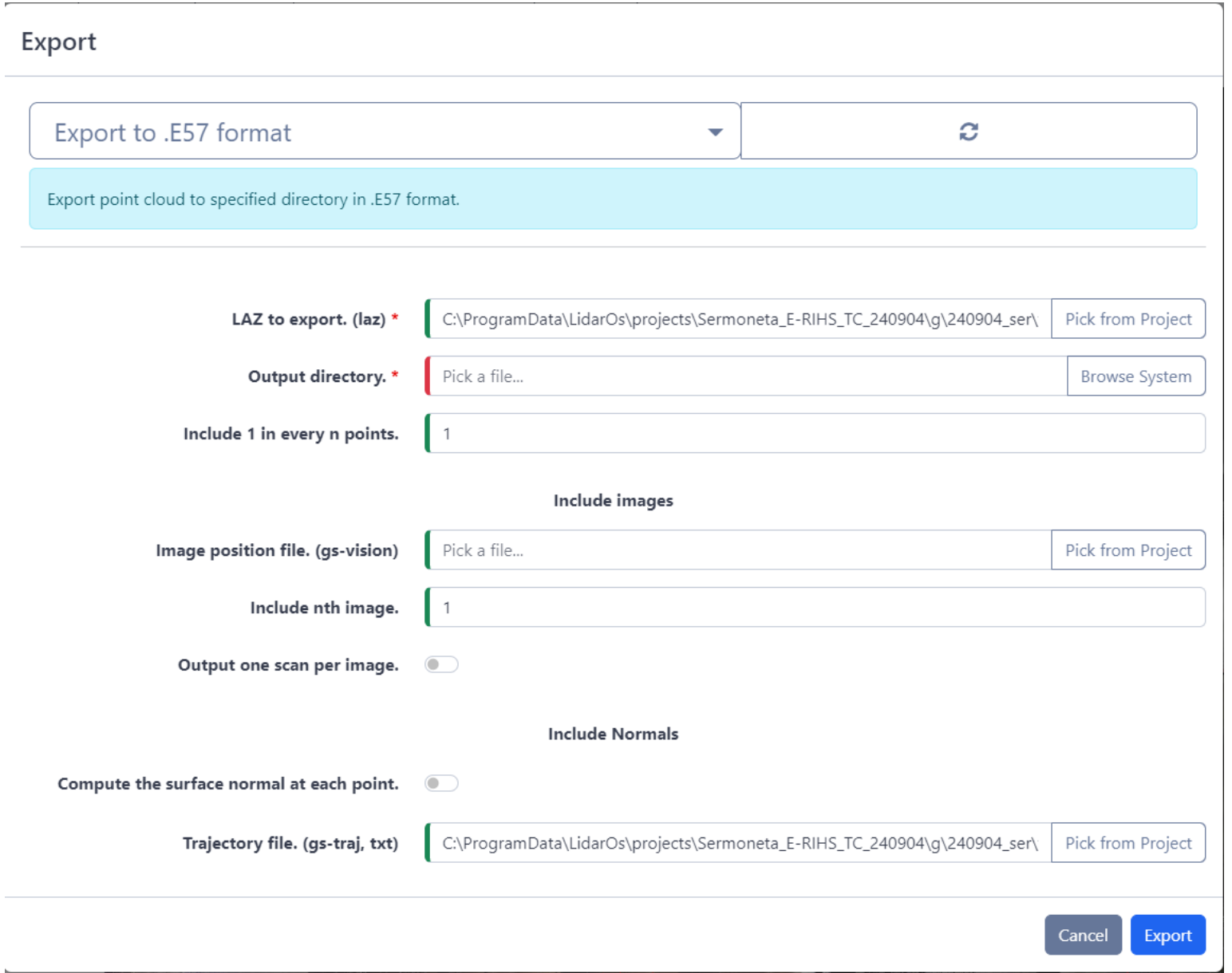






The Post processing pipeline

Afterwards you can export to check for any inconsistencies, you could do it inside other software of the Faro suite (Faro Draw) or in Cloud Compare.



The Post processing pipeline

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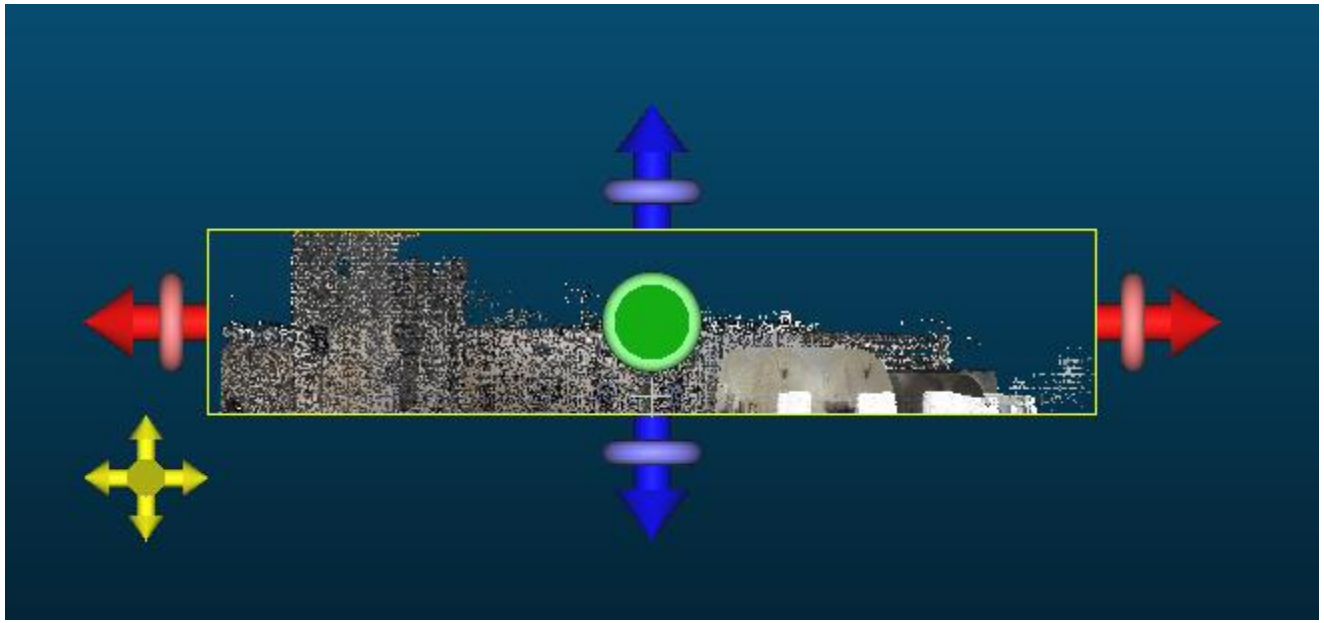
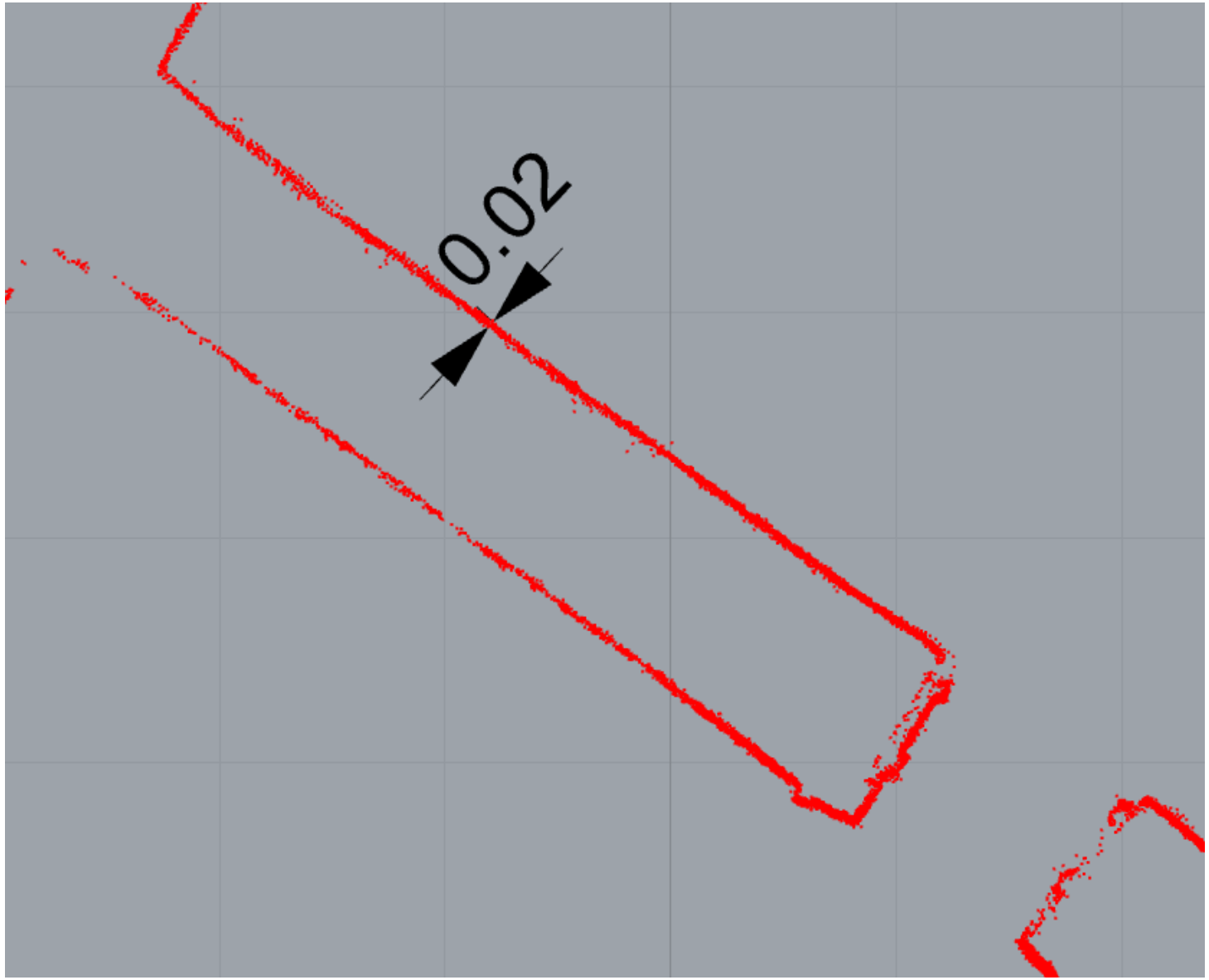


The Post processing pipeline

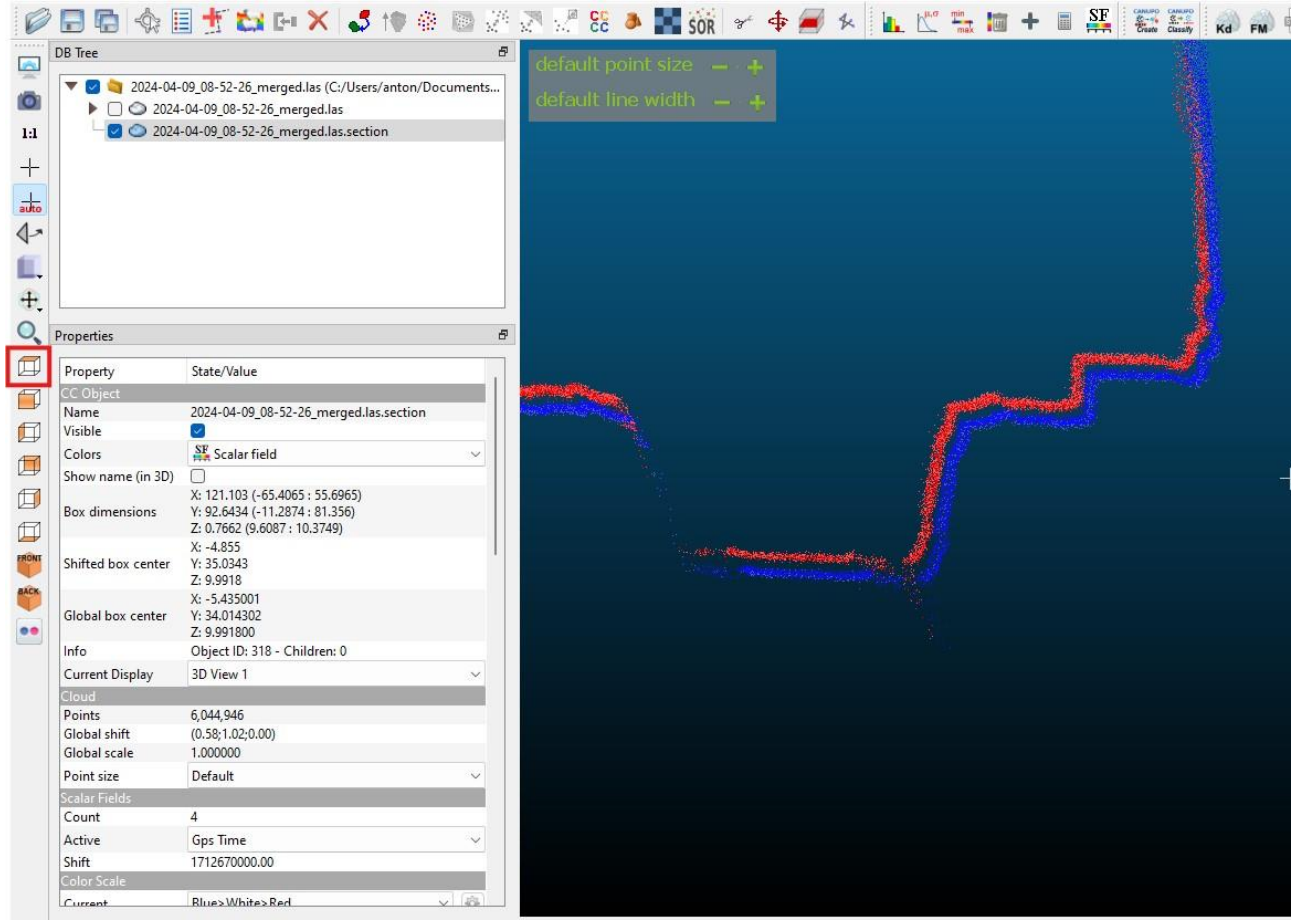
In this case we have a «blur» on the wall surface of around 2cm

That is coherent with the accuracy of the tool and with the precision of architectural workmanship.



Why the black box complain

Everything is quite straightforward the pipelines are few BUT, if something goes wrong and you find some strange behaviour (it is rare but can happen) then trying to figure out what happened is on another level of expertise needed. And it is usually done working on reprocessing the .geoslam file which is the longest part of the procedure.



Let’s talk about it!

Everything is quite straightforward the pipelines are few BUT, if something goes wrong and you find some strange behaviour (it is rare but can happen) then trying to figure out what happened is on another level of expertise needed. And it is usually done working on reprocessing the .geoslam file which is the longest part of the procedure.