MS57 Training guide: Structure light scanning with Mantis F6SR and ECHO (RMCA)

1. Start the scanner

Install ECHO software on your computer. ECHO is a free software; therefore, it can be installed on as many computers as you want.
For scanning, we use the Mantis F6SR with a Microsoft Surface Pro. This allows us to hold the screen while scanning, to see what we are doing without cranking our neck to see a laptop or desktop screen.

- Open ECHO, then plug the scanner to the tablet and press the button to turn it on.

2. Scanning

- Create a new project. Now, on your screen you will see a preview of what the scanner sees. You can switch between IR, 2D and 3D views.

- At the bottom-left corner of the screen, click on the parameter button (little mechanic wheel). With the different menus you can parameter your white balance, your exposure, etc. On the right side of your window you can set your scanning distance.

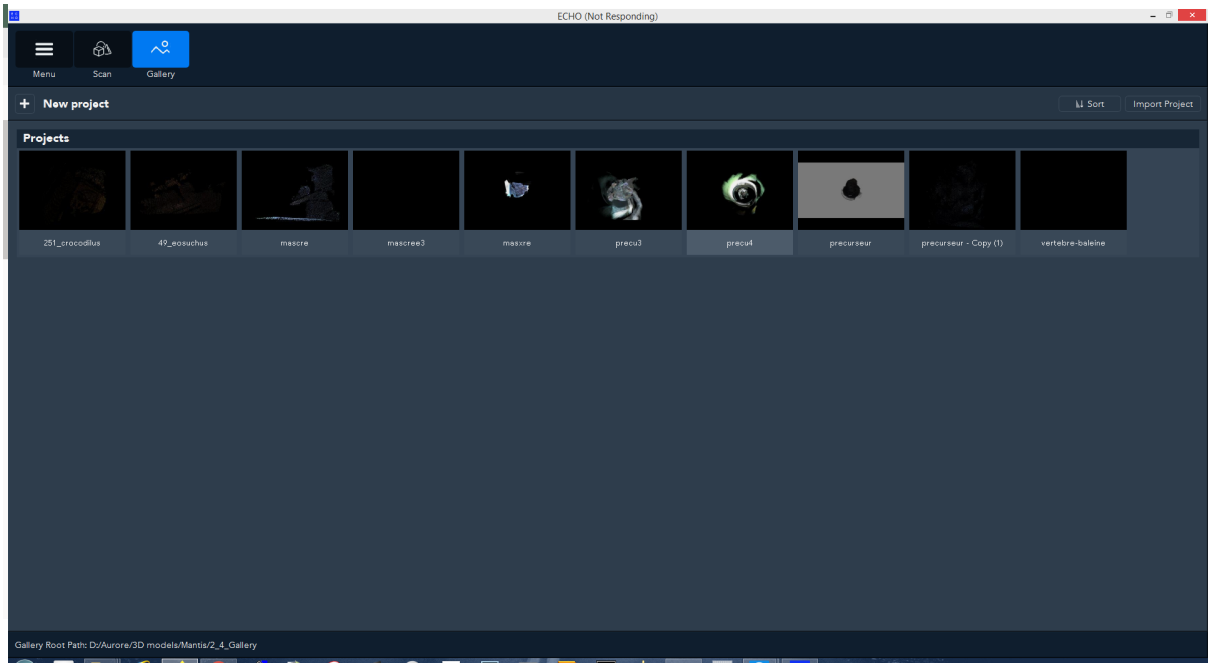
- Once you are happy with the parameter, go back to the 3D view and start scanning. For that, press the button on the scanner. You can also select 3D+ to have your total acquisition in real time (in case of big projects this might result in software crashes).

- To scan you can either turn around the object or use a motorized turntable.
- To stop scanning, press the button again.
- Perform as many scans as you need.

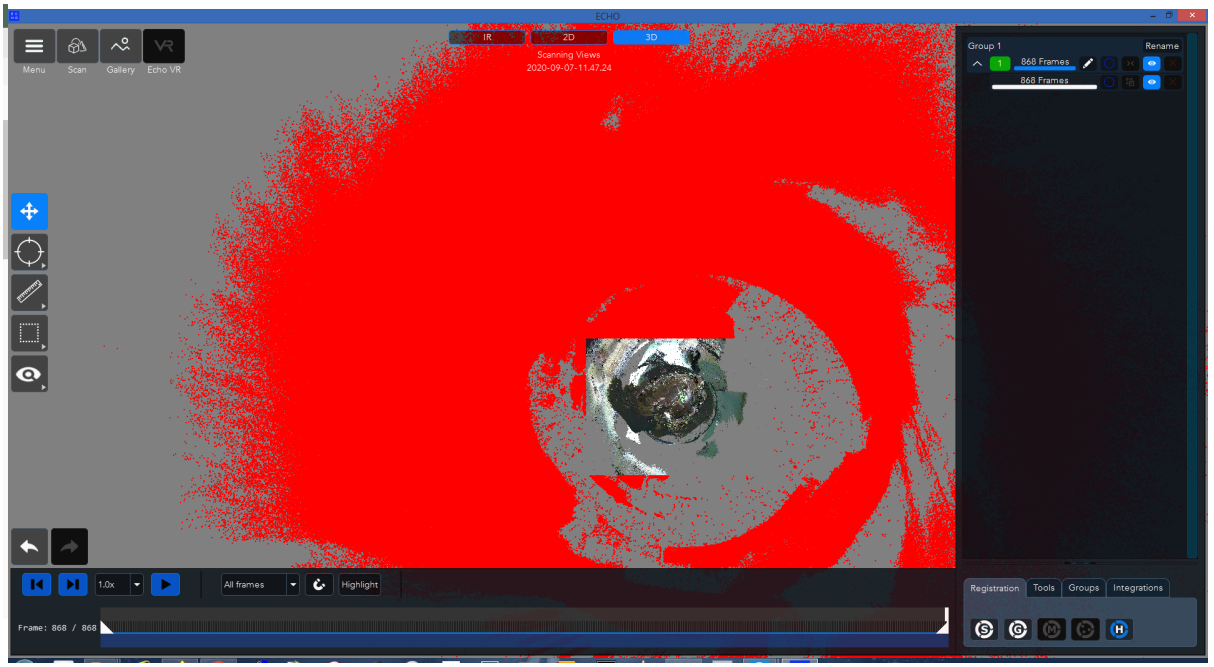
3. Processing with ECHO

For processing, we recommend transferring your data to a powerful desktop PC.
This will enable quicker processing than the one on Microsoft Surface Pro.

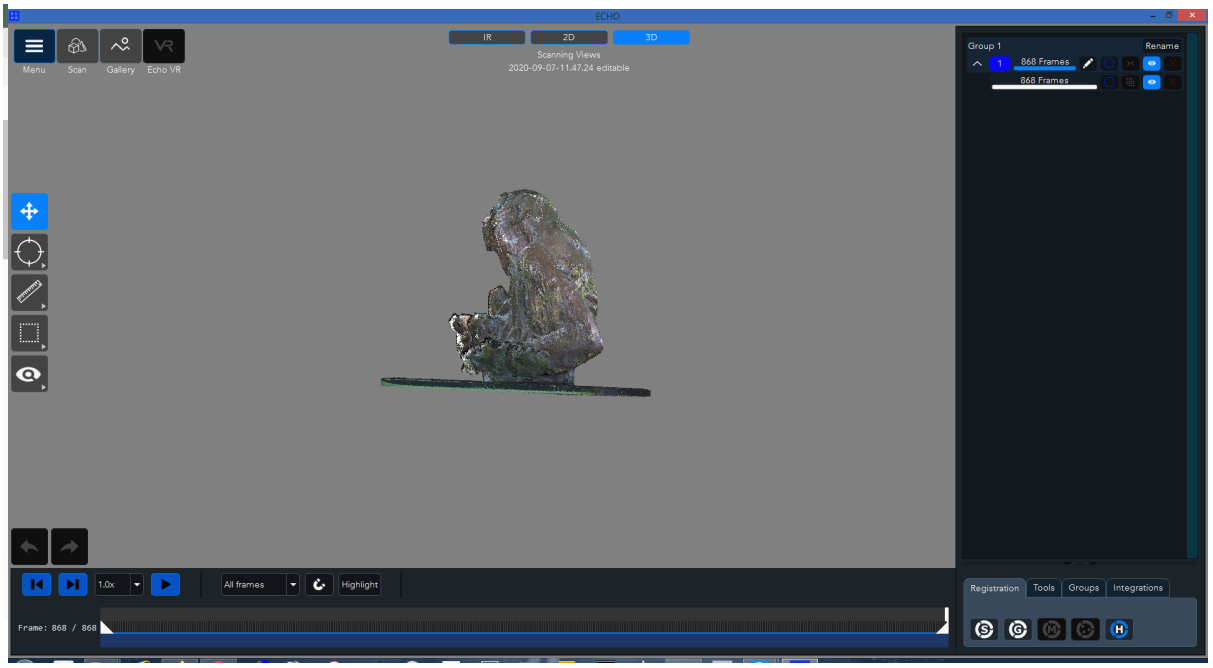
- If, like us, you use a surface pro and a powerful computer, you will need to transfer the data, right click on your project, and select “export project”.
  Then “import project” in the gallery of the other computer.
  This is time consuming as projects are very large, favour an SSD drive.
  Another option is to set up the external SSD drive as a source for both software.
- In the Gallery, select the project you want to process and select the scan data.



- Once your scan data is loaded, the first thing you need to do is clean your data. Select and remove unwanted areas.



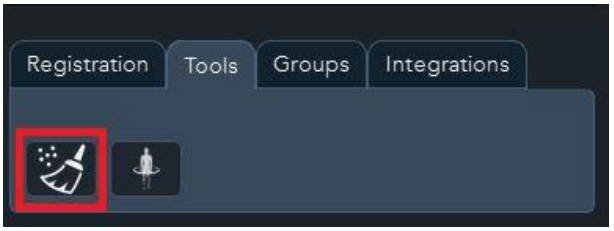
- Register your scan data with sequential registration (button with the S).
  Poor quality scan data will be separated from the main data.
  Select the trashcan and remove all scan arrays with less than 10-20 scan in it.
  The threshold will depend on your data.



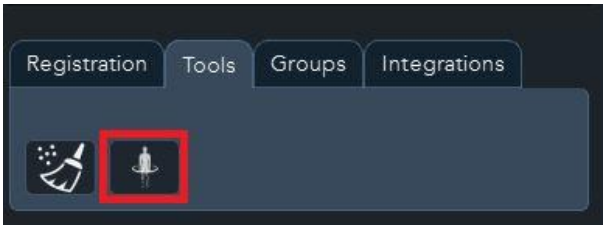
- If you still have different chunks of data, you will need to manually register them.

- Once all scan data appears more or less register, select global registration.
  This will perform accurate registration of scan data.

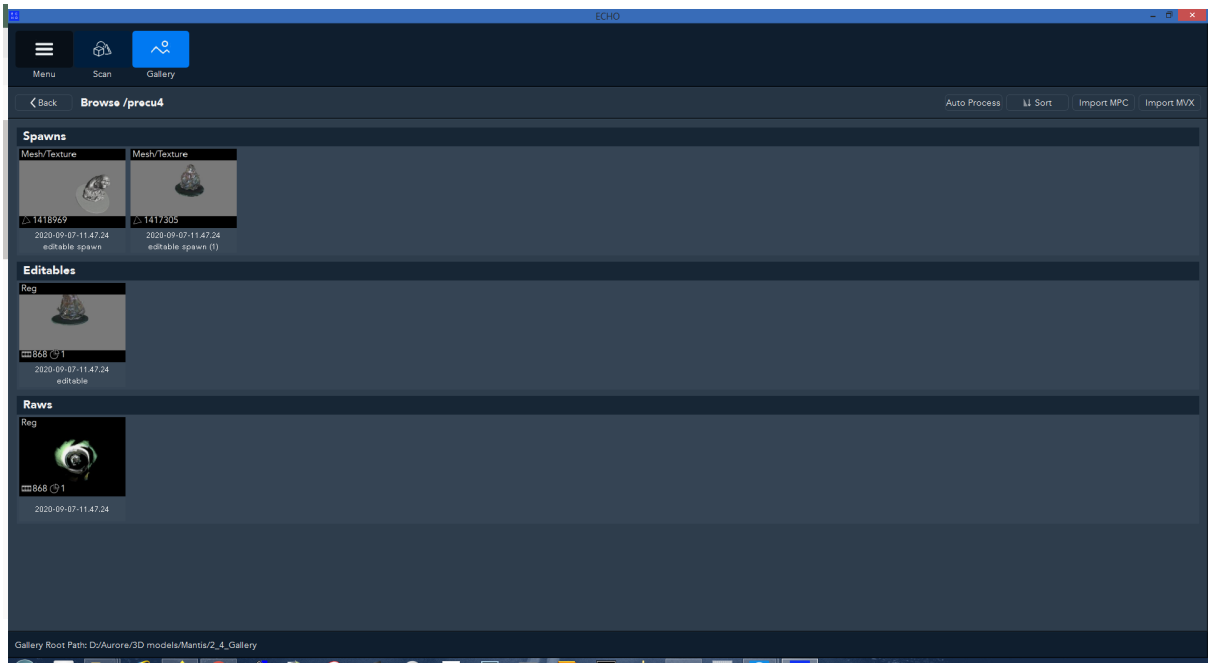
- Remove noise.



- Create spawn.
  You can either create a mesh or a point cloud.
  In some cases, exporting the point cloud to mesh it in another software will give you a better result.



- Go back to Gallery, your spawn result is in your Gallery.



4. Tips

- For scanning, perform a smooth movement.
  Sudden movement will result in the scanner losing registration and this will terminate the

scan.

- Remove scanning distance to avoid having too much data.

- If you use a turntable, it is essential not to capture the background behind otherwise the scanner might align on the background. Set up the scanning distance accordingly.

5. Reference

A user manual of ECHO software is available here:
https://612366-1984988-raikfcquaxqncofqfm.stackpathdns.com/wp-content/uploads/2020/02/Mantis-Vision-Echo-Software-User-Guide-Rev.-3.0.3.pdf

6. Credits

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