3Dsurvey

3DSURVEY GCP TARGETS VS DETAIL POINTS
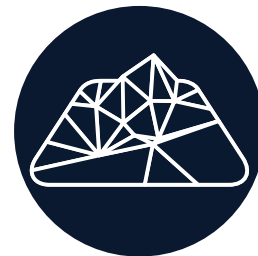

DETAIL POINT

GCN

When deciding whether to use our Ground Control Points or instead using detail points that are already on the terrain, it is advisable to consider between a few details described in this document. Ground control points are used to orientate the model and to improve the accuracy of the calculated model. Use 3Dsurvey ground control target templates (http://www.3dsurvey.si/downloads/) to be used as your GCPs, place them down on the ground before the flight and measure them with a survey-grade GPS (GNSS) or a total station. In this case, use the advanced automatic orientation in 3Dsurvey. For most cameras the size of the targets that are available on our page (you also get them automatically when you buy the 3Dsurvey licence) are best seen from 40-120 m. In case you will fly higher, we advise you to print larger targets.
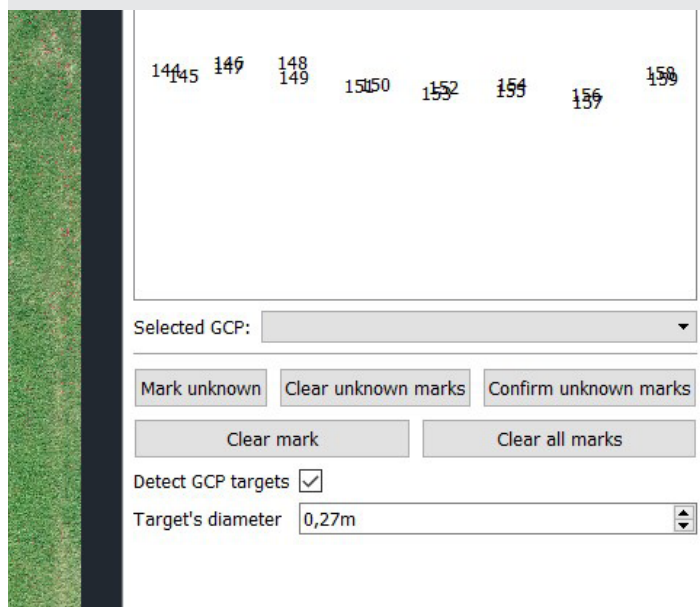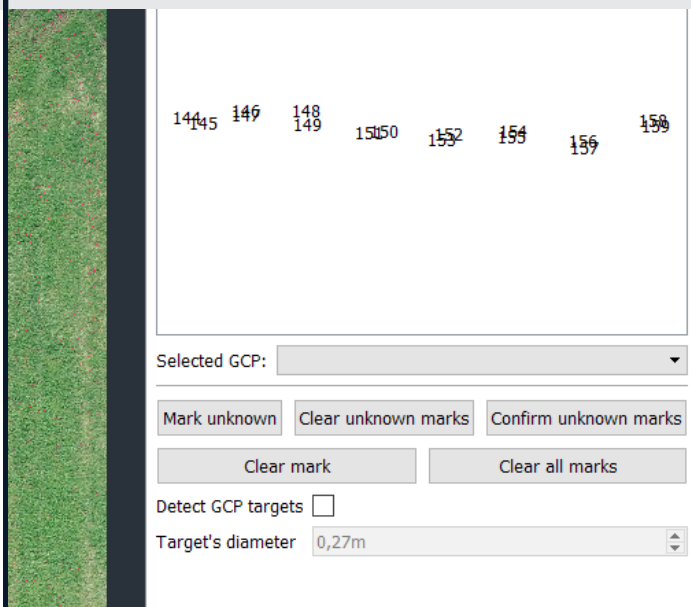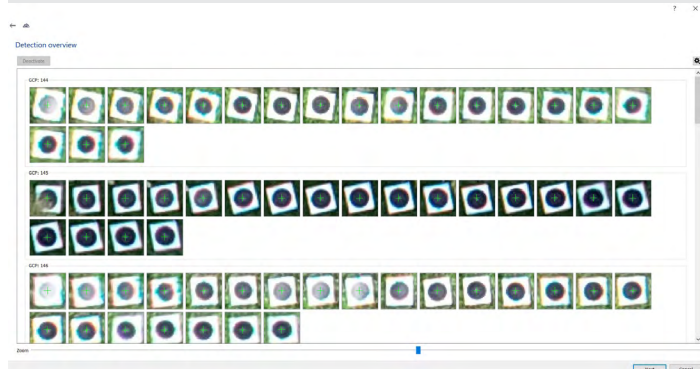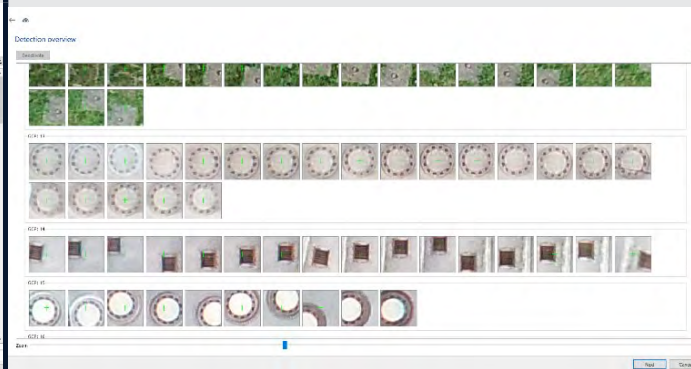
Few steps to follow in case if you use GCPs:
- In case of uneven (or rugged) terrain it is highly recommended to place GCPs on both low-est and highest points of your area of interest.
- To achieve survey-grade accuracy, place your GCPs 50-100 m apart. Higher density of GCPs also means higher accuracy of end results.
- Set up GCPS in pairs every 50 – 100 m – one to the left and one to the right of the object of interest (road, railway, river bank, etc).

In case you are not using 3Dsurvey ground control target template you can measure any character-istic point in the area of interest, such as manholes, curbs, road markings, etc. That still enables you to do the orientation in 3Dsurvey but in this case semi-automatic.

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DIFFERENCE IN PROCEDURE WHEN USING GCP-S OR DETAIL POINTS

Using ground control points	Using detail points (no CGPs)
Choose "Detect GCP targets"	Deselect "Detect GCP targets"

In the next step, the targets will be centred by the software. There is no need to manually do it. Just check if it is done correctly and the work is done.

In this case you will have to manually centre the detail points.

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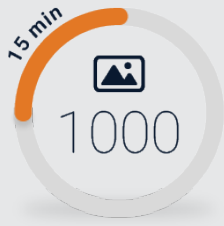| Using ground control points	Using detail points (no CGPs)
When you finish click on Finish and you will get the accuracy of the orientation.	You will also have to centre every detail point to fit the square (left mouse clicks and move the image so that the green cross is in the middle of the GCP point). However, if there are 500 images in the project that would mean 500 clicks. The result should look like this:
	When you finish click on Finish and you will get the accuracy of the orientation.

TABLE OF COMPARISON +/-

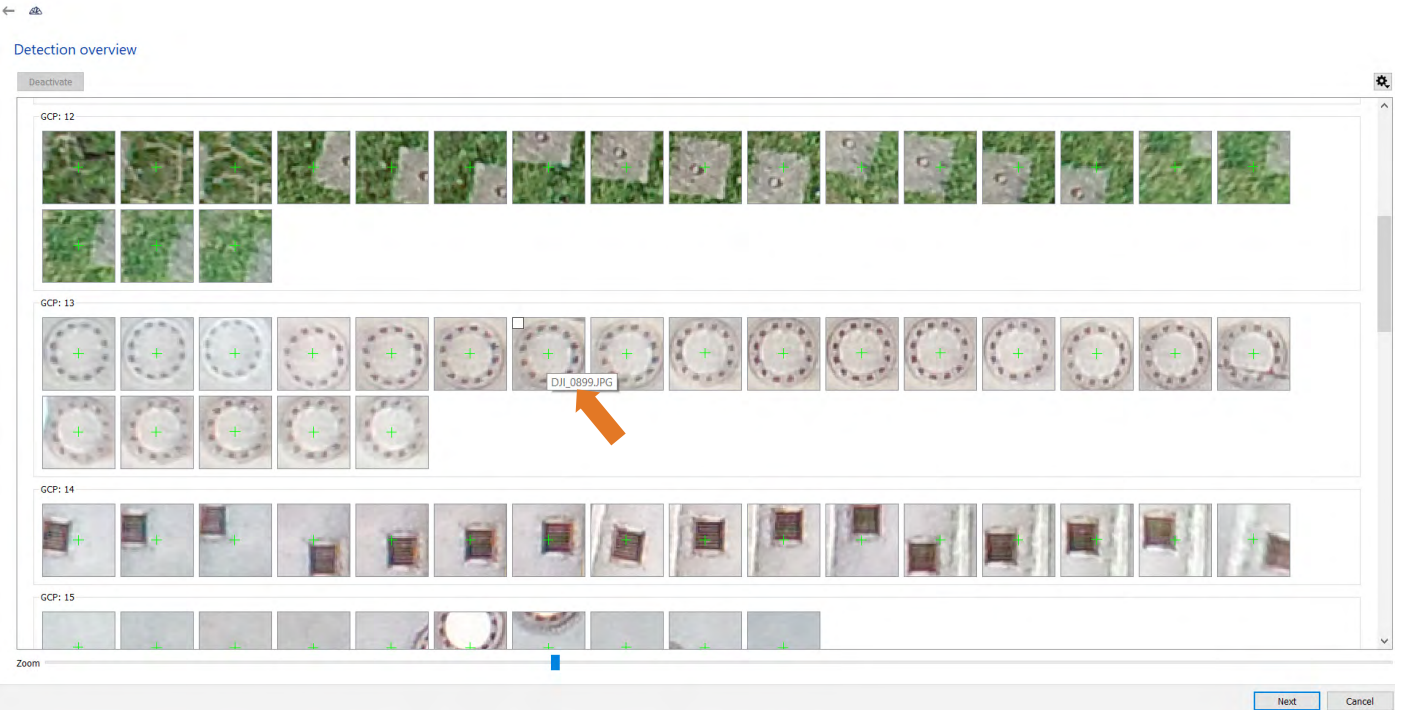| 3Dsurvey targets	Detail points
+ You can place them on any area of your choice.	**-** the placement of the GCP depends on the existing elements (manholes, road marks, building corners…)
+ easy to use on the terrain where there are no artificial details that could be used as GCPs **+** good visibility on such terrains	**-** on the terrain where there are no artificial details it is very difficult to choose them, so you need additional marks (such as colour, marking poles…)

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3DSURVEY TARGETS	DETAIL POINTS
+ the target is pre-set – mistake is not an option	**-** if there are few manholes close one to another it is easy to mix them up
+ no need to do the sketch of the measurement of the targets that have been recorded	**-** on the terrain you have to do a sketch of the detail points that were measured
+ the procedure of the orientation is almost completely automatic in case of 3Dsurvey targets the centring is done automatically	**+** When orientating you will need to do some manual work
10 min 360 15 min 1000	35 min 360 1h 15min 1000
- Targets need to be placed on the terrain and after the measurement picked up = double work !	**-** Detail points are measured on the terrain and there is no need to pick them up.
- Targets can accidentally be moved during the measurement (car/bicycle/ fork-lift lorry can drive over it)	**+** There is no danger that detail points would be moved.

"TIPS AND TRICKS"

In both cases (with or without) 3Dsurvey targets you will get better results of centred images if you check out the position of the automatically detected targets in the first step of orientation – in "Locate GCPs" step and improve the automatic detection. How to do that most easily:

After you get the estimated position of the targets/detail points in "Detection overview" step, cross it with your computer mouse and you will see on which image is the target/detail point. Do this for every target/detail point which is not perfectly centred. Write down the image names not to forget them. Then go one step back to "Locate GCPs" step and improve the position for each Target/Detail points on known images – use the image list on left side – do this for every target/detail point and this will result in an almost perfectly centred image position in the next step - "Detection overview" step.

The result will be:

When you use 3Dsurvey targets the time needed to do the orientation will be much shorter. The possibility to do the mistake in choosing the target that is not correct is eliminated, however this can happen quite often when using detail points. On the terrains where there are not many detail points, we can simply place them ourselves. The downside of using the targets is that after the measurement is done, they have to be picked up, which doubles our field work.