



Stonex targets vs Detail points

Cube-3d

Tutorial




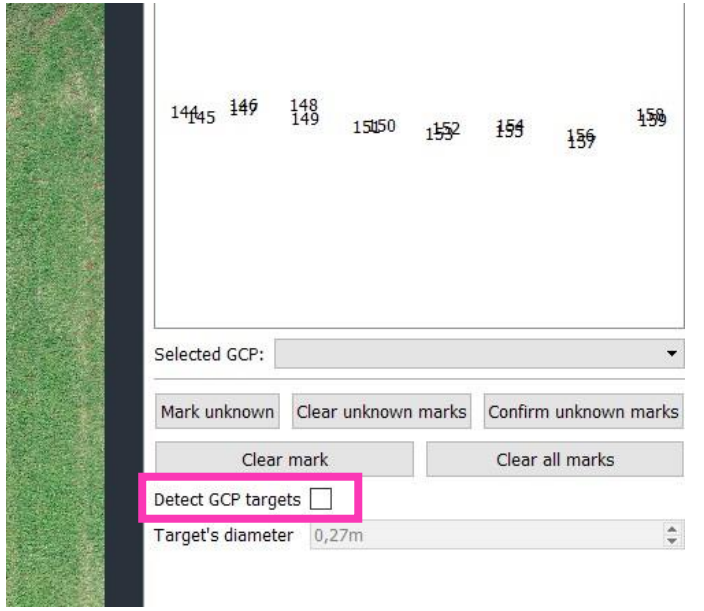
When deciding whether to use our ground control points or to use detail points that are already on the ground, it is advisable to consider some of the details described in this document. Ground control points are used to orient the model and to improve the accuracy of the calculated model. Use Stonex ground control point templates ([link for download](#)) to use as GCPs, place them on the ground before flight and measure them with a GPS (GNSS) or total station. In this case, use the advanced automatic orientation in Cube-3d. For most cameras, target sizes are best seen from 40-120 m. In case you fly higher, we recommend printing larger targets.

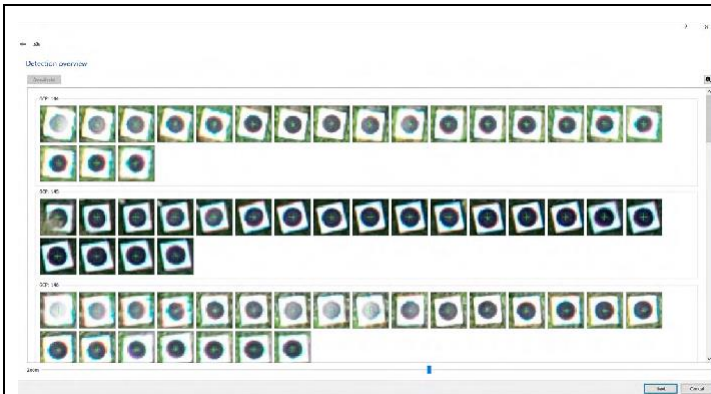
A few steps to follow when using GCPs:

- In case of uneven (or rough) terrain, it is strongly recommended to place GCPs on the lowest and highest points of the area of interest.
- For surveying accuracy, place GCPs 50-100 m apart. A higher density of GCPs also means greater accuracy of the final results.
- Place 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.).

If Stonex targets are not used, any characteristic point in the area of interest can be measured, such as manholes, curbs, road signs, etc. This still allows you to do the orientation in Cube-3d, but in this case semi-automatically.

Procedure when using GCPs or detail points

Using GCPs	Using detail points (no GCPs)
 <p>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.</p>	 <p>In this case you will have to manually centre the detail points.</p>



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

- + Advantage
- Disadvantage

Stonex targets	Detail points
<ul style="list-style-type: none"> + You can place them wherever you want + Easy to use on terrain where there are no artificial details + Good visibility + No need to do sketch/photo of the target you have recorded + Procedure of orientation is almost completely automatic 	<ul style="list-style-type: none"> - The placement of the GCP depends on the existing elements (manholes, road marks, building corners...) - On the terrain where there are no artificial details it is very difficult to choose them - If there are few manholes close one to another, it is easy to mix them up on the terrain you have to do a sketch of the detail points that were measured

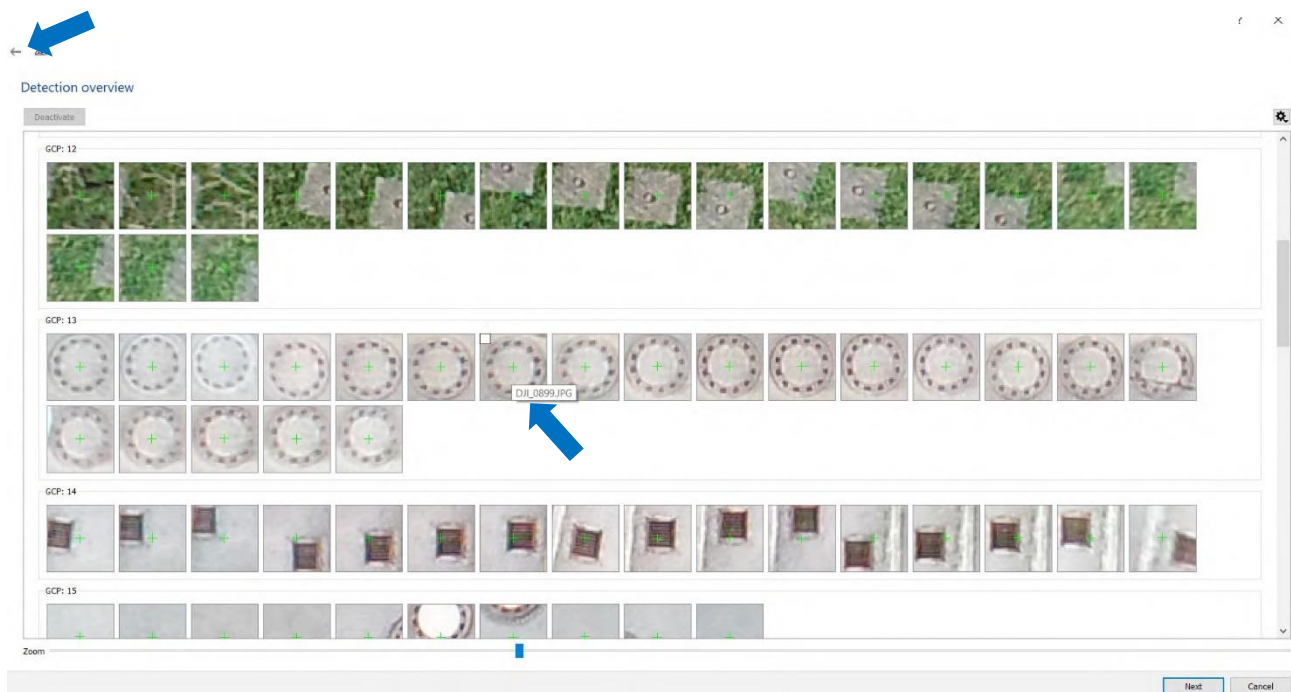
- Targets need to be placed and picked up on the terrain
- Targets can be accidentally be moved during the measurement
- + No danger that detail point would be moved

Tips & tricks

In both cases, with or without Stonex 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 Stonex 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.





STONEX® SRL

Viale dell'Industria, 53 - 20037 Paderno Dugnano (MI)

Tel: +39 02 78619201

www.stonex.it | info@stonex.it