Manual for Mobile Scan

June, 2022

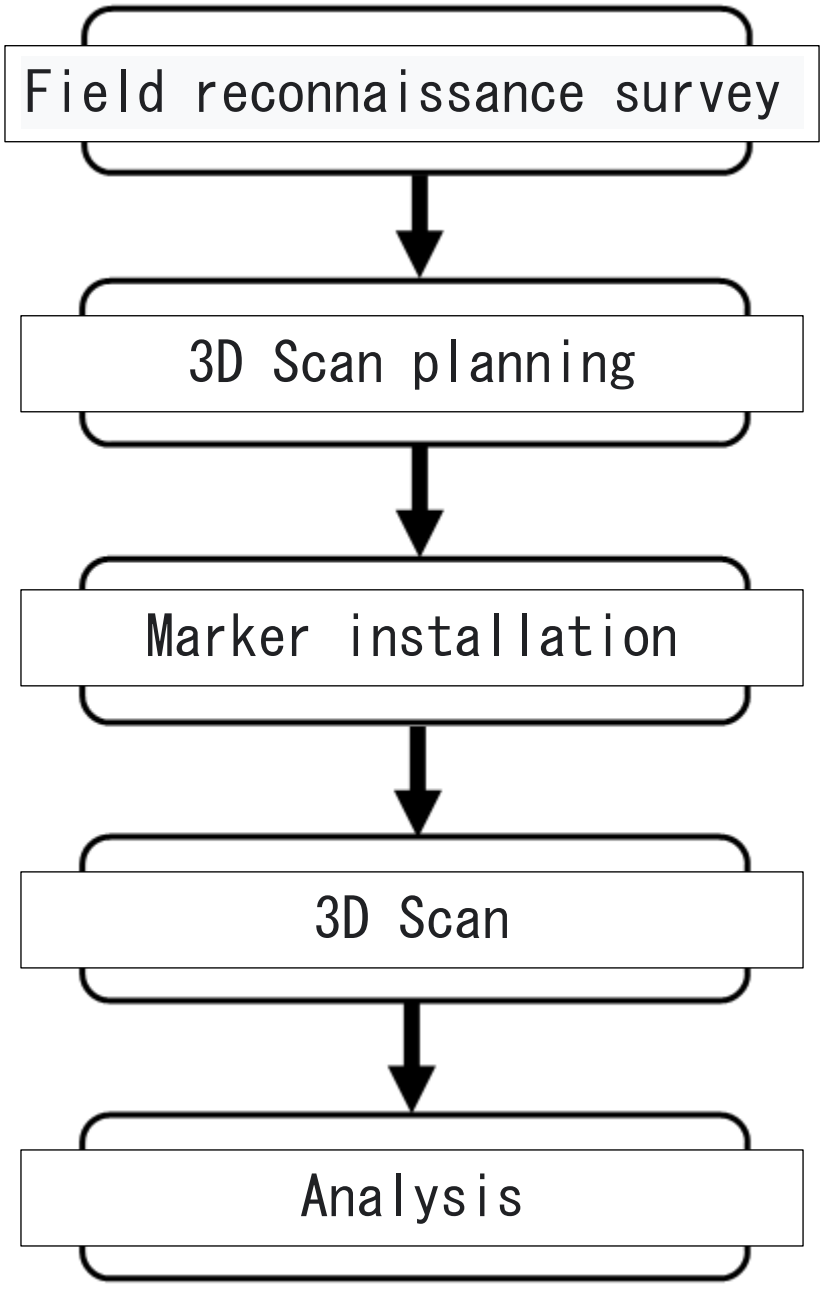
Mobile Scan Association

https://mobilescan.jp

Agenda

1. 3D Scanning Workflow
2. Safety checks
3. Scanning range
4. Placing Control Points
5. ”How-to” 3D Scan
6. Tips for 3D Scan
7. Coordinate alignment
8. Reference video

1. 3D Scanning Workflow



2．Safety checks

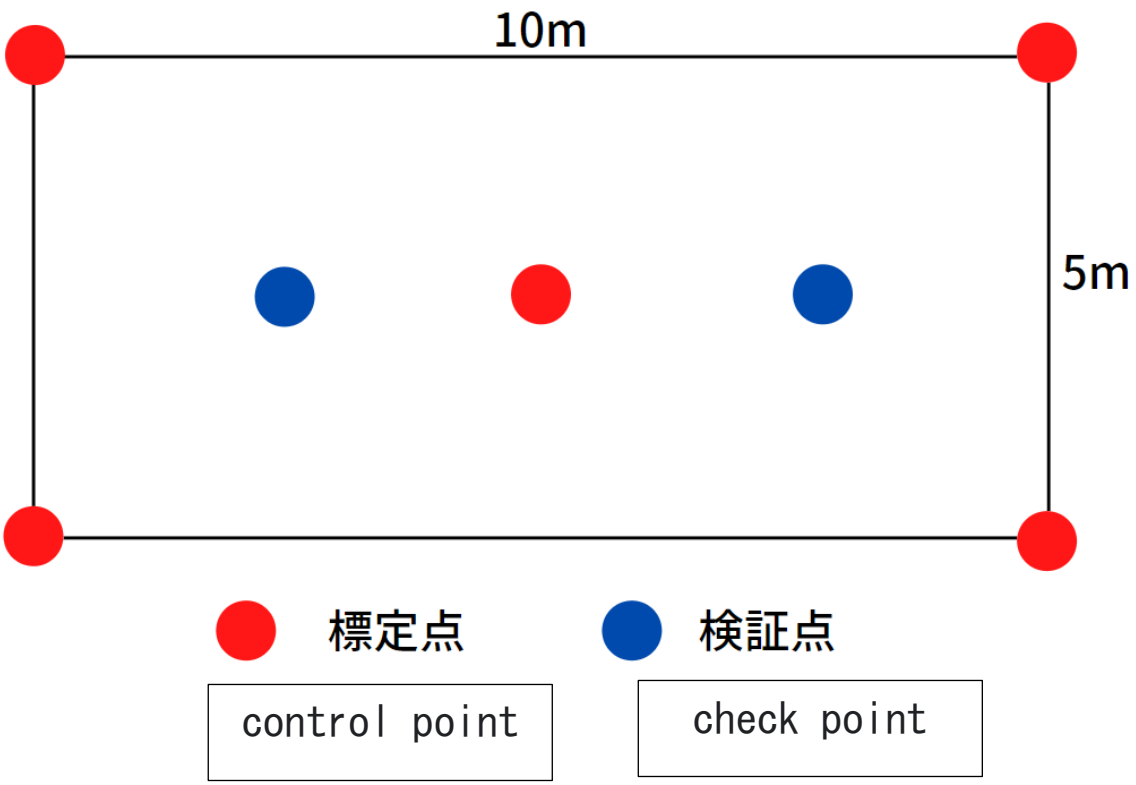
- Check the scanning area and make sure the area has no risk of falls and tipping over.
  If the risk remains, you should abort the operation.
- When using a selfie stick or mobile device stabilizer, make sure the mobile device is firmly secured.
- Make sure no one / machinery are coming into the scan area by setting off-limits signs or so.
- Do not stare at the mobile device while scanning. When checking the scanning status, do so after standing still.

3．Scanning Range

- The scan area should be limited to 10m (length) x 5m (width) x 3m (height difference) per section.
- If the section is exceeding the size, it is recommneded to either conduct the scan more than once or divide the section into two sections, and merge those later in point cloud editing software.

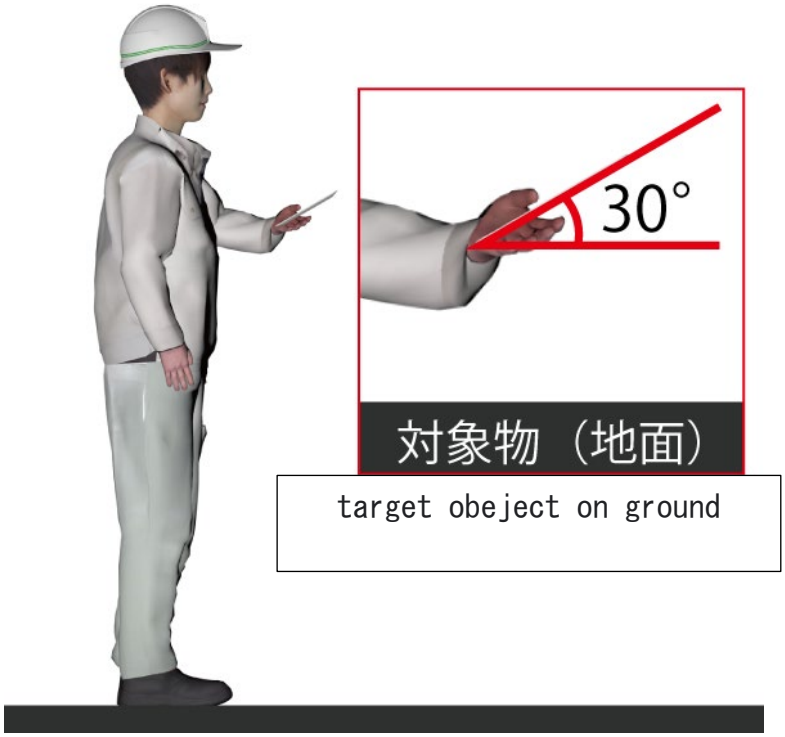
4．Placing Control Points

- The control points should be placed around the perimeter of the object. The outer control points should be placed at four corners within a distance of 10 x 5m, and one inner control point should be placed in the center of the object. Two check points should be placed inside the scan area.

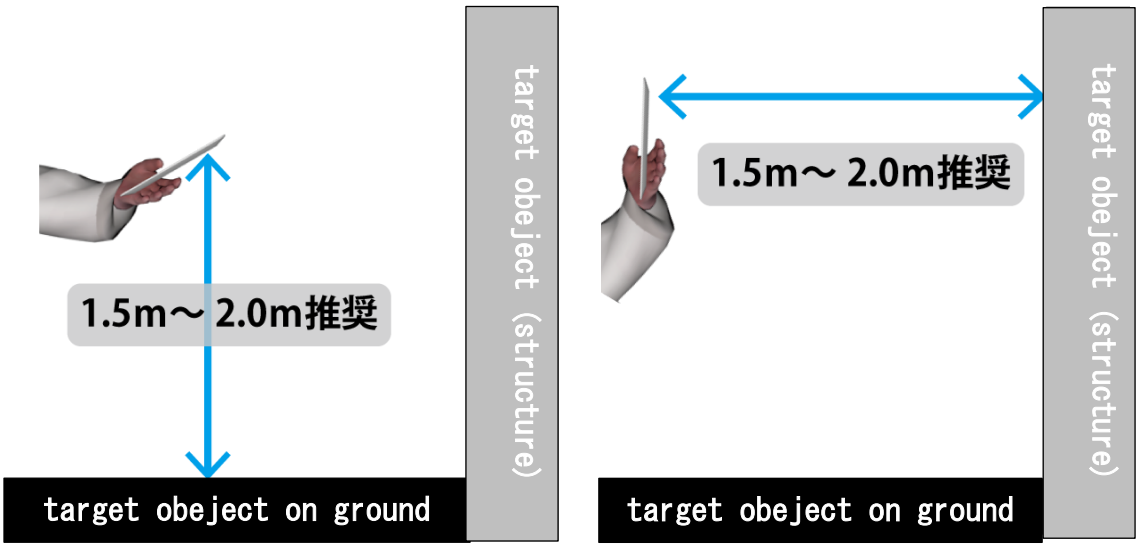
- 

5．”How-to” 3D Scan

- Facing forward to the object.
    - Even if you cannot face the object squarely, make sure that the internal angle does not exceed 30 degrees.

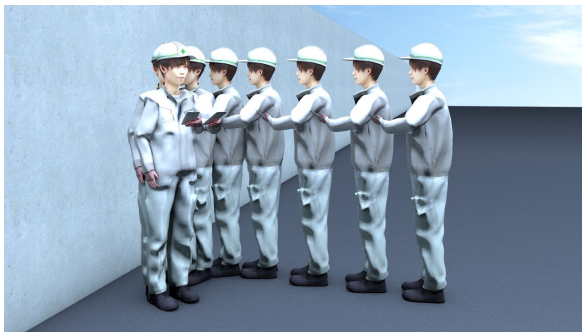


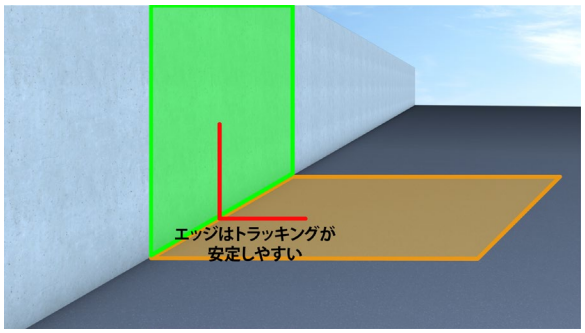
- The distance from the target object is recommneded to be between1.5m and 2.0m

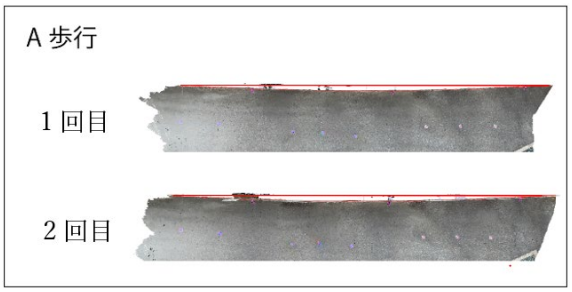


When walking, bring it to recognize the floor surface.If there is an edge, stopping at the edge may stabilize tracking and improve the accuracy of the 3D shape. Pattern A is reco mmended over Pattern B because it can improve the accuracy of the 3D shape.

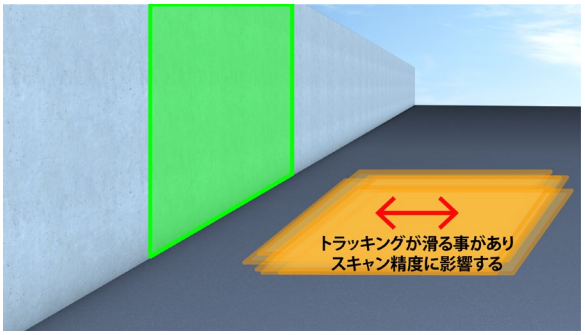
Walking Pattern A

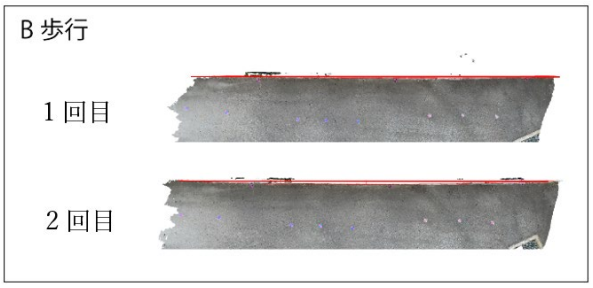






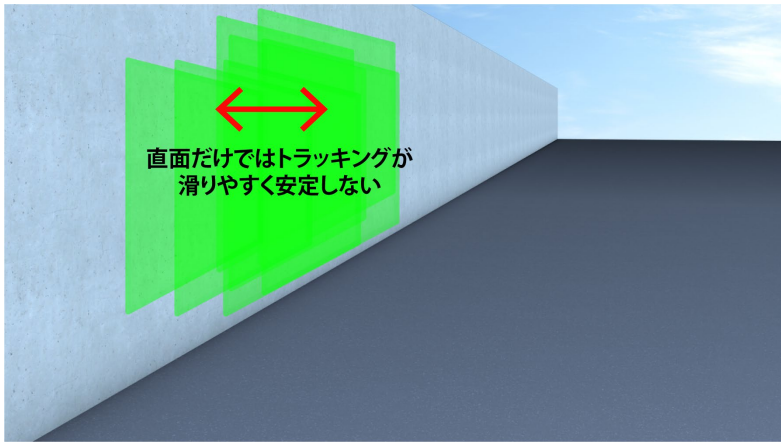
Walking Pattern B





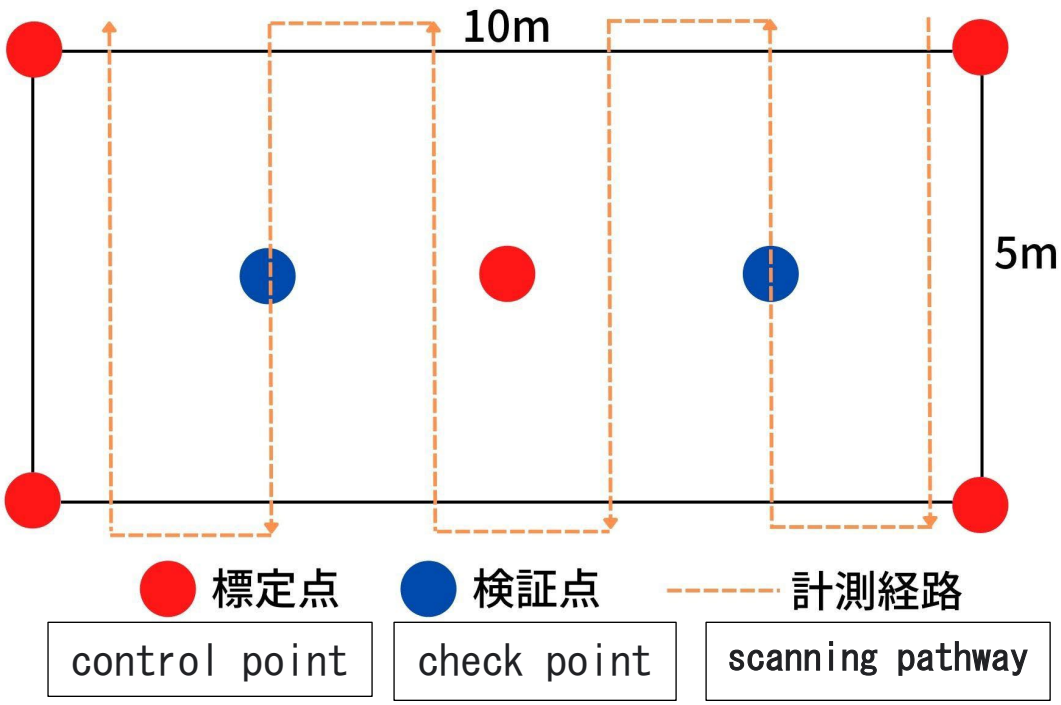
※The images above shows the views directly from the above, in which Patter A shows R-shape of the wall surface more precisely while Pattern B shows linear.

- Appendix) it is not recommended to just take the flat surface of the wall because it would cause the drifting much.

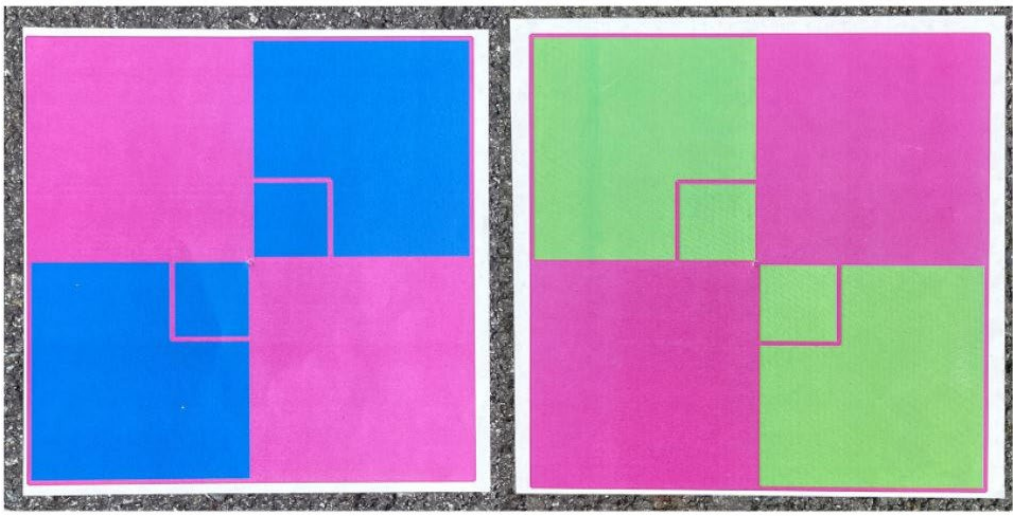


6． Tips for 3D Scan

- Keep moving foward, and try to avoid backward or sideways as much as possbile
- Do not make a quick/sharp turn, rather ensure that the area to be screened is larger when turning.
- Move along the shorter side of the area, not along the longer side



- Marker on cotrol / check points shoukd be larger than 10cm sqauer and its colors are recommended the combination of pink & blue or pink & yellow-green.
    - Try not use black color as it cause the error in scanning



- When scanning Near the ground, cover also the ground (flat surface) in the scanning.
    - Try not scan tree and plants as much as possible
    - Try not to get very close to the target because it would cause the scanning error.
- Do not scan when the device battery is less than 50% (* this is becyase OS may limite the app capability that also cause scanning error.)
- Do not scan when the mobile device is overheating. (* this is becyase OS may limite the app capability that also cause scanning error.)
    - Overheating may occur even in 20°C, cloudy, light wind environment.
    - Also not recommended to connect mobile buttery whle scanning because it also canse overheating.

※Recommendation

    - remove mobile device covers
    - use something like cooling fan to cool down the device.
    - try not to expose the device to direct sunlight by using sun shade
- Do not turn the sensor parts to the water surface / sun
- Use the best quality setting for processing
- You need to scan as if you were stretching the scan area.
- Try not to scan two separated areas at once.
- For the use of tablets in scanning, keep in mind the camera is on the corner and the an gle tends to move bigger than smartphone when turning around.
- Some scanning apps may not be optimized for tablets.

7． Coordinate alignment

Use Helmert transformation on the control points in a point cloud processing software to align the coordinates.

8． Reference Videos

- How to Scan wirth Mobile devices
  - https://www.youtube.com/watch?v=nKK_9y8p1bI
- Helmert transformation in CloudCompare
  - https://www.youtube.com/watch?v=cPNgqqweHM8

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※We assume no responsibility for any actions taken using the information in this manual.

※We will not respond to inquiries regarding the contents of this manual.