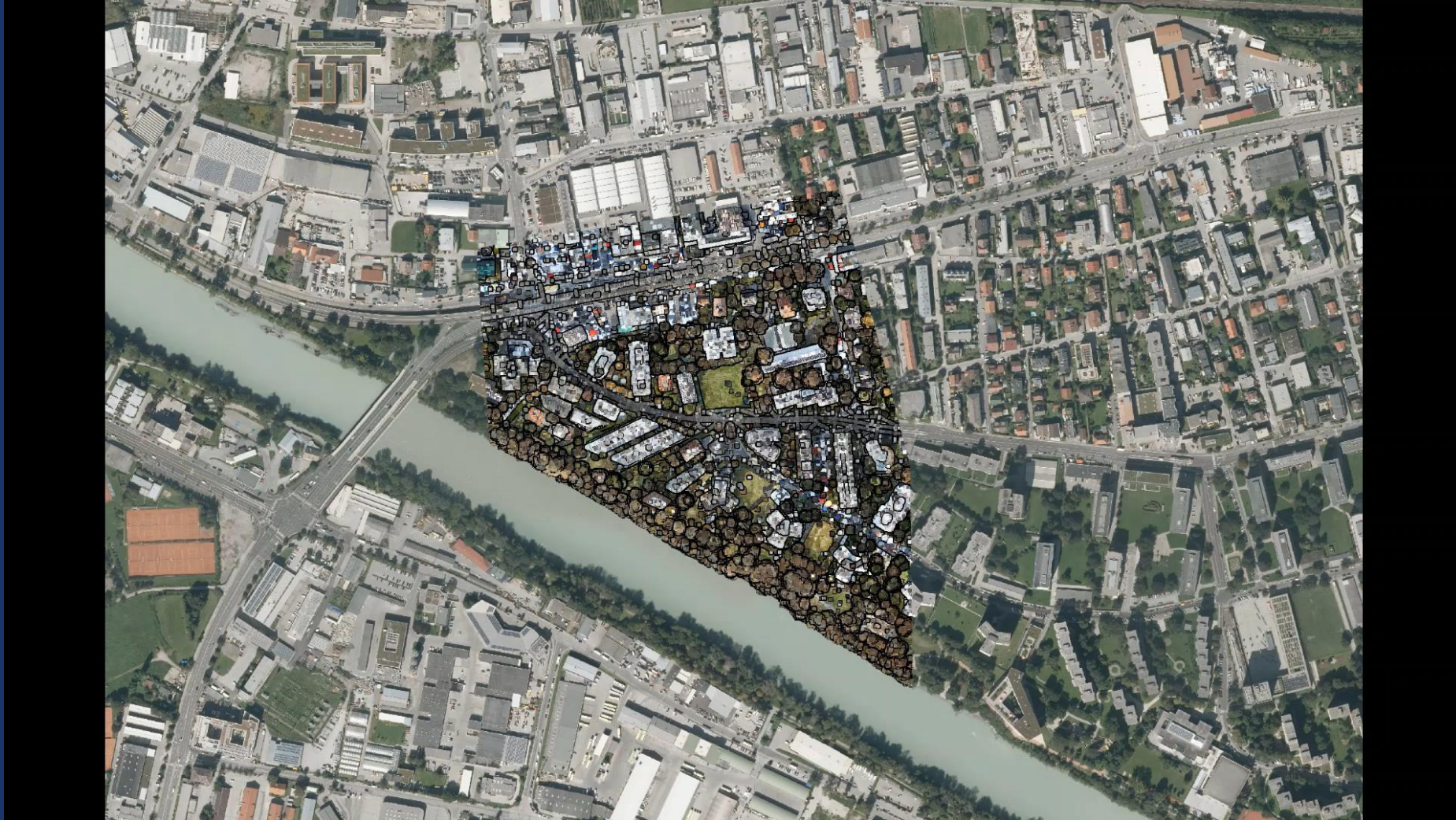




AUTOMATIC POINT CLOUD PROCESSING WIZARD FOR UAV LIDAR

Dr. Ana Puttonen | ana.puttonen@terrasolid.com

POINT CLOUDS FOR BETTER DECISION-MAKING



OUR COMMUNITY



100

COUNTRIES

2,700

+

CUSTOMERS

20+

NMA

50+

REGIONAL
AGENCIES

MAIN

CONSULTING
FIRMS

5,000

+

TERRASCAN

8

INDUSTRY
TOOLSETS

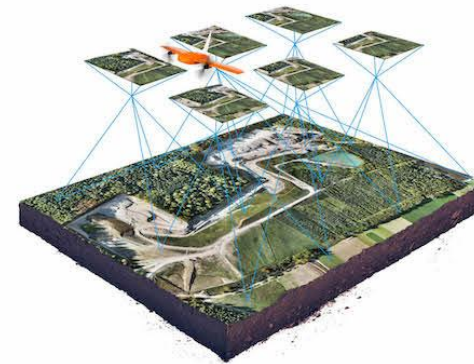


THE INDUSTRY STANDARD SOFTWARE FOR POINT CLOUD AND IMAGE PROCESSING



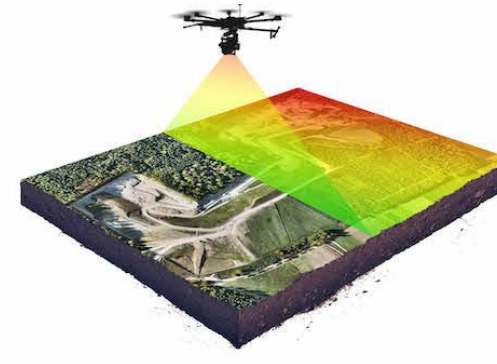
REALITY MODELLING

**ALL POINT
CLOUDS
NO MATTER THE
SOURCE
NO MATTER THE
SENSOR**



PHOTOGRAMMETRY

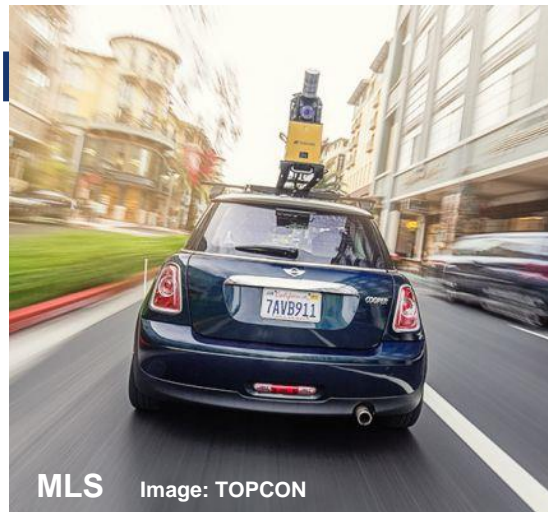
Image: Wingtra



LASER SCANNING



ALS Image: HELINET



MLS Image: TOPCON



UAV Image: Phoenix LiDAR



HANDHELD Image:

COMPATIBLE WITH



DATA PROCESSING WORKFLOW

FROM SURVEY TO END PRODUCTS





Step 01

+... xls. ●



• BASIC PROJECT SET-UP INPUT

- Initializes blank design file
- Manages coordinate set-up
- Reads in laser data
- Reads in trajectory data



New Drone Project

Scanner system: DJI L1

Project name:

Create default point classes

Laser input:

Input system: 4326 >> 4326 WGS84 longitude & latitude

Input elevations: Ellipsoidal

Remove duplicate points

Assign color to black points

Sort points for speed

Trajectory input:

Input system: 4326 >> 4326 WGS84 longitude & latitude

Input elevations: Ellipsoidal

Target system: 3134 >> 3134 ETRS89 / ETRS-GK27FIN

Target elevations: Orthometric

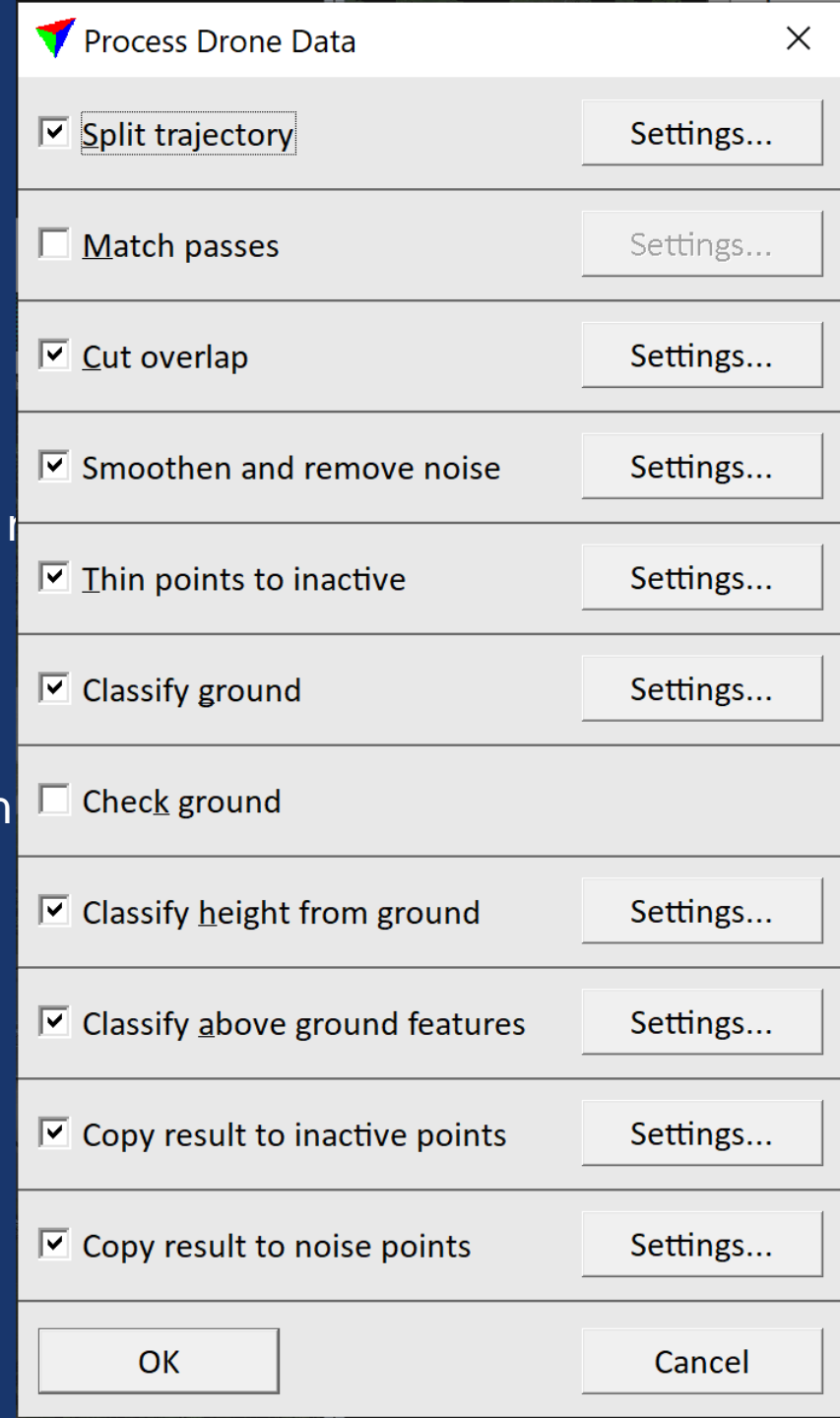
Geoid model: Finland - FIN2005

E26.91 N67.15
-> E496058 N7451460

Storage folder: C:\Users\TerraSolidAna\Desktop\Introduction to UAV Wizard\raw\

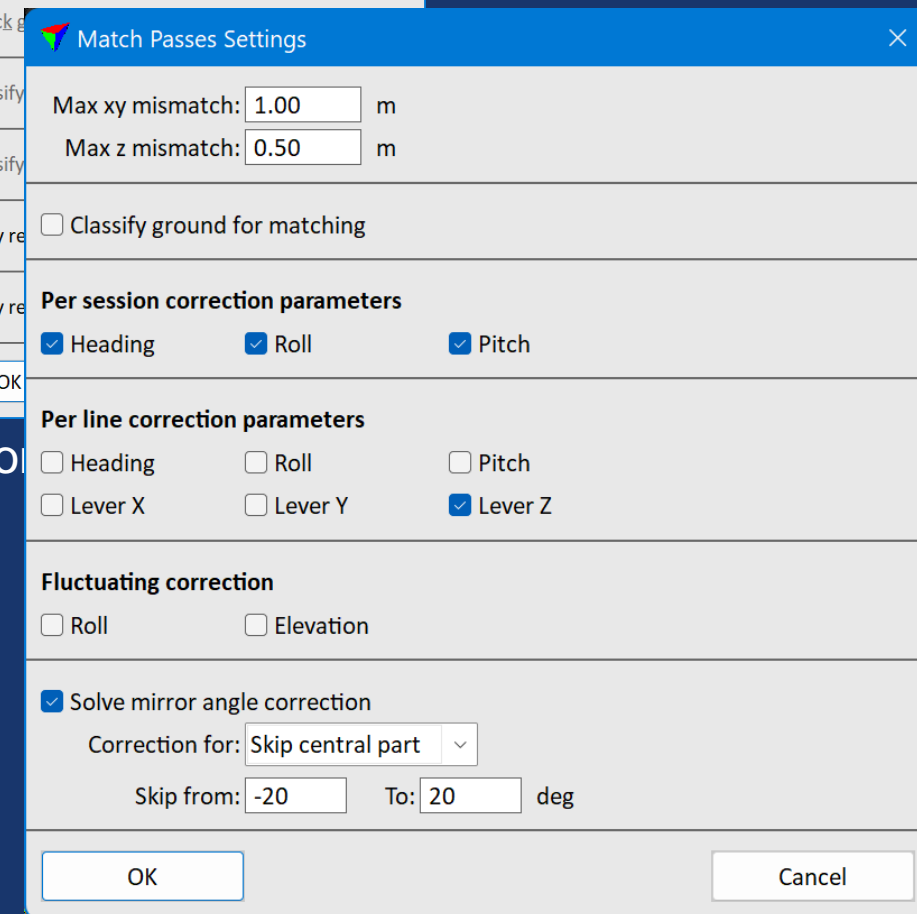
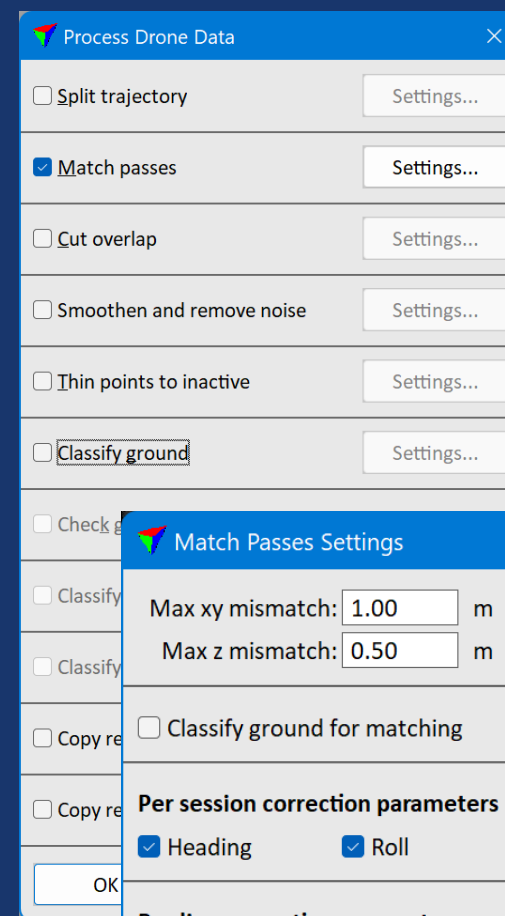


- Combines processing steps to one dialog
- All can be run at once though manual inspection between steps is recommended
- A click away from a DTM export
- A step away from application specific processing



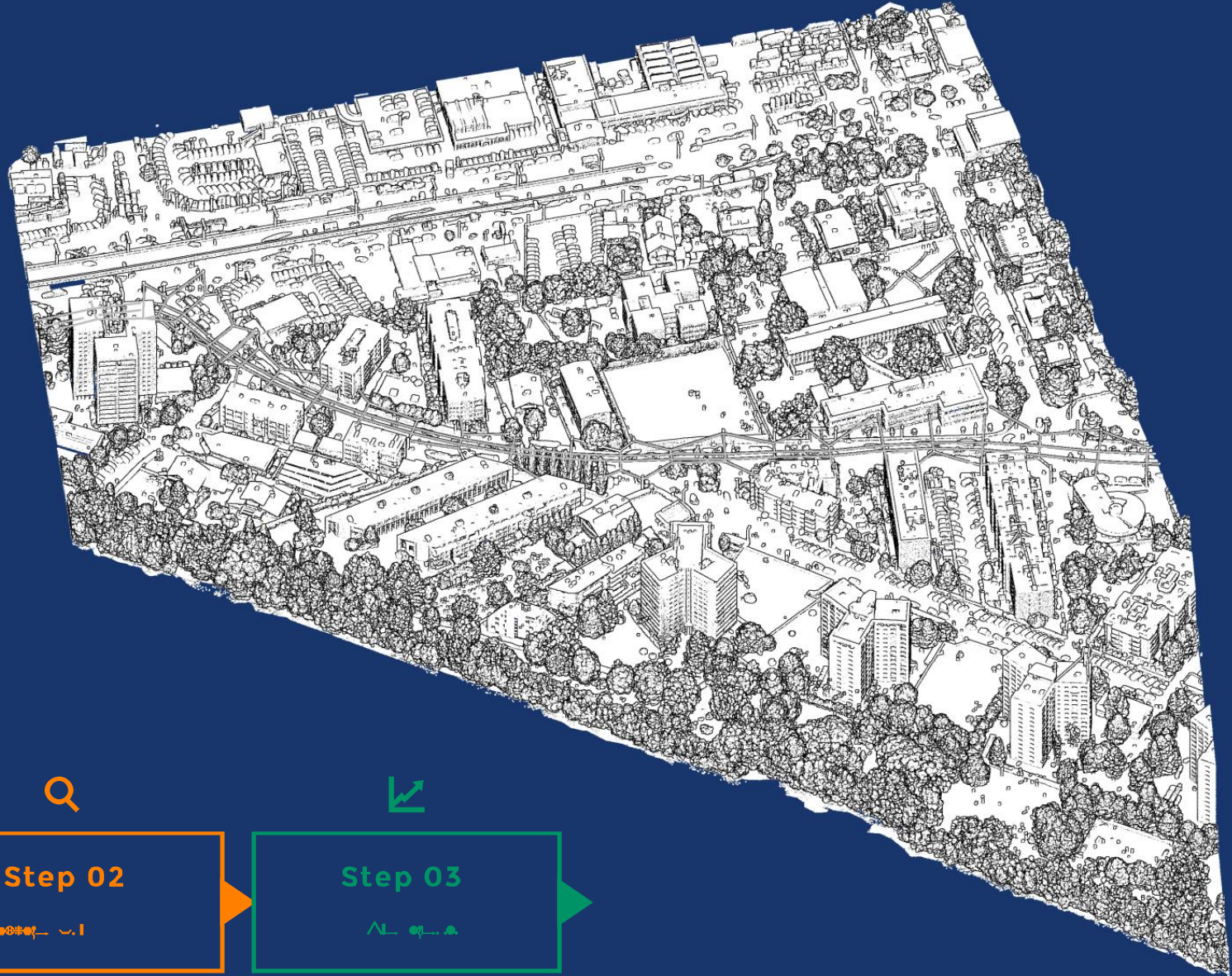
Match Passes Step Introduction

- Step in TerraScan **Process Drone Data** tool
- Runs automatic matching of flight passes to each other
- Requires TerraMatch or TerraMatch UAV license to run
- Collects tie line observations for three different correction levels:
 - Heading + roll + pitch per flight session (=trajectory group)
 - Heading + roll + pitch + x + y + z per line
 - Fluctuating roll + z
- Solves and applies **Mirror Angle** correction curve
- Saves matching report, tie line and correction files:
 - ✓ matching_report.txt
 - ✓ tielines_start.til, tielines_per_session_done.til, tielines_per_line_done.til, tielines_fluctuating_done.til
 - ✓ 01_per_session_hrp.tms, 02_per_line_z.tms, 03_fluct_z.tms, 04_mirror_angle.tms



RAW DATA

Step 03
AL 0.1.1



Step 01

Step 02

Step 03

+000 x2s. ●

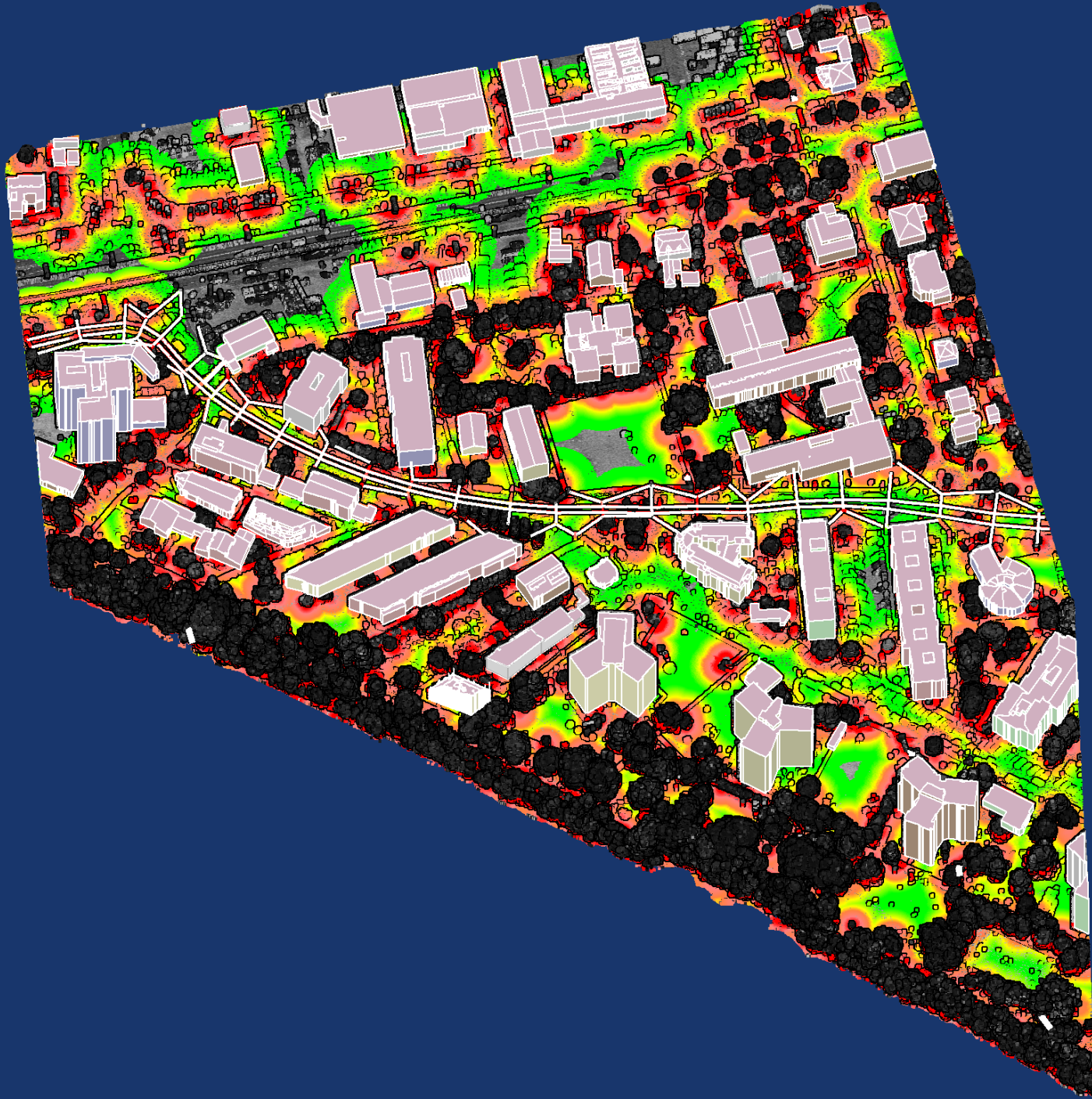
●0*01_ √.1

^L 01.1

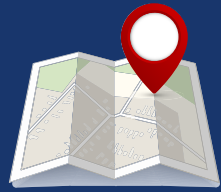


Step 04

Project Logo



KEY BENEFITS



MORE INFORMATION >> Terrasolid.com/products/Terrasolid-uav/



POINT CLOUD INTELLIGENCE

AUTOMATIC POINT CLOUD PROCESSING WIZARD FOR UAV
LIDAR

Dr. Ana Puttonen | ana.puttonen@terrasolid.com

Terrasolid International Training Event
September 13-15 2023 in Ljubljana, Slovenia

**Thank you for your
attention!**

Welcome to booth #19 

TERRASOLID SOFTWARE RUNS ON CAD



MicroStation, PowerDraft,
etc.

Channel Partner

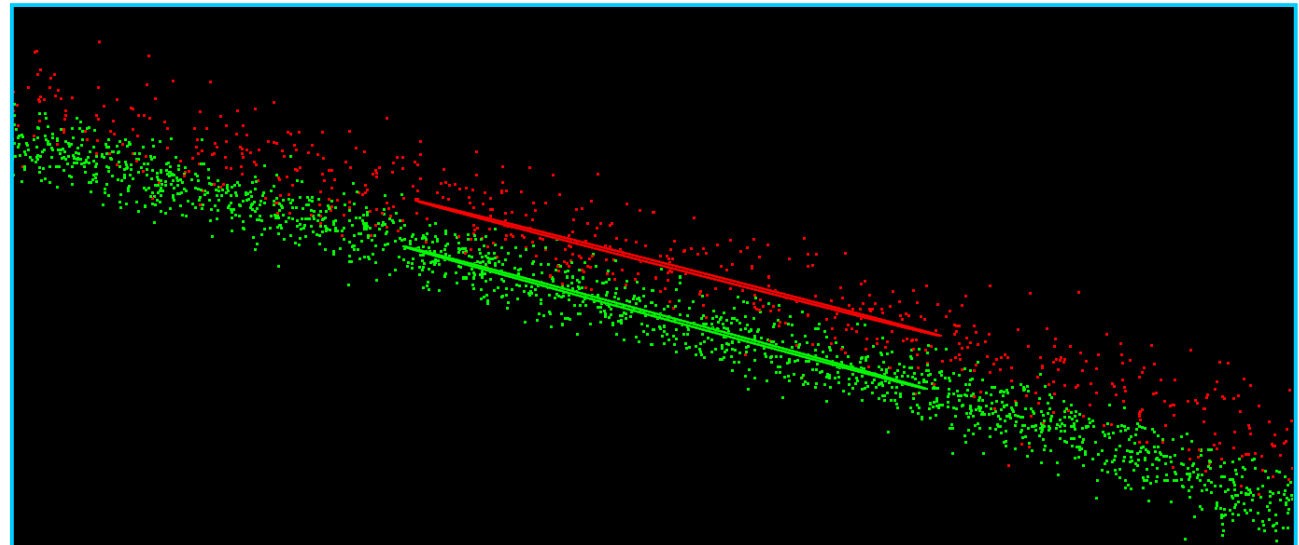
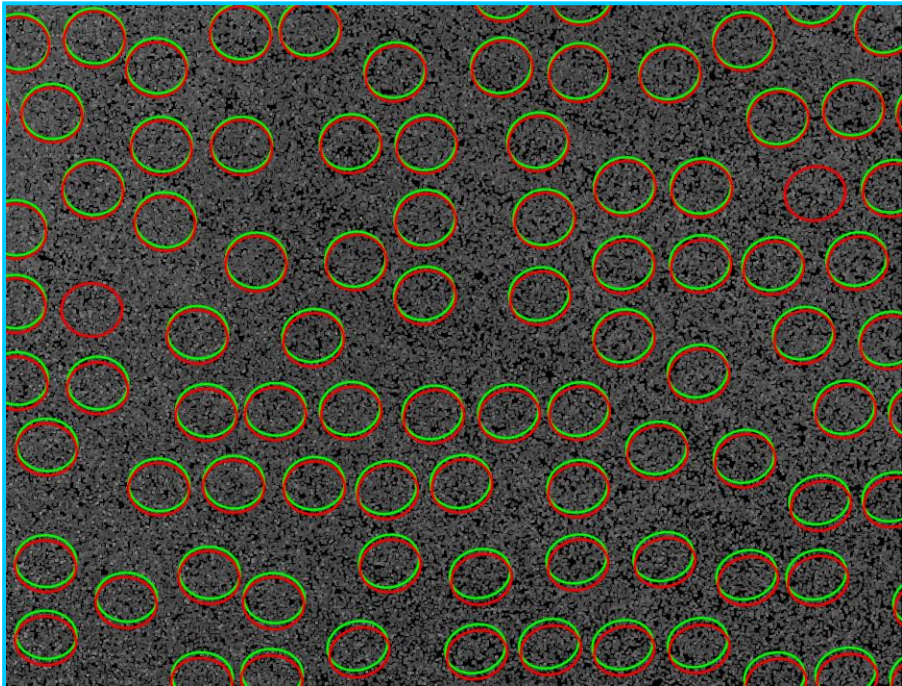
Product Robustness



Integrated
Customizable
Inexpensive

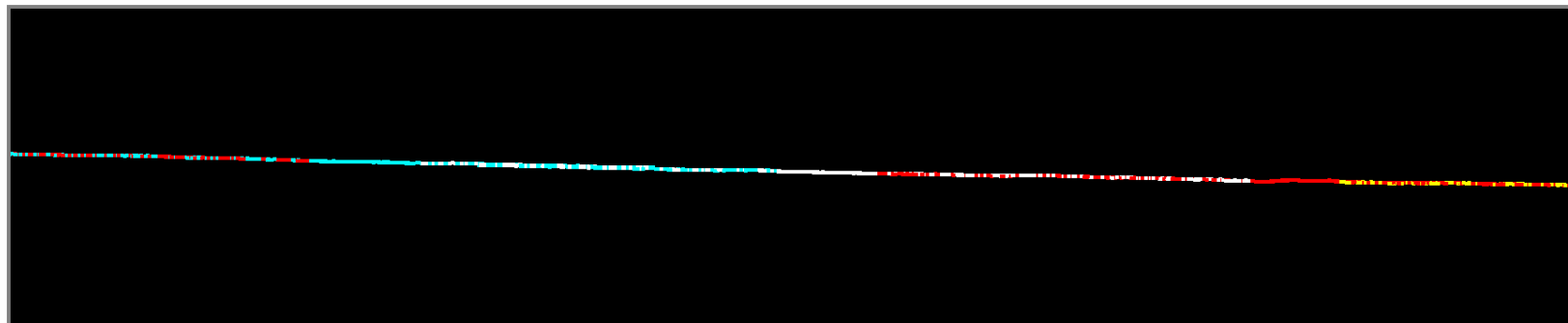
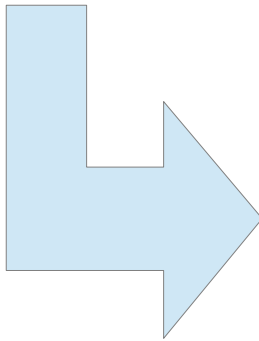
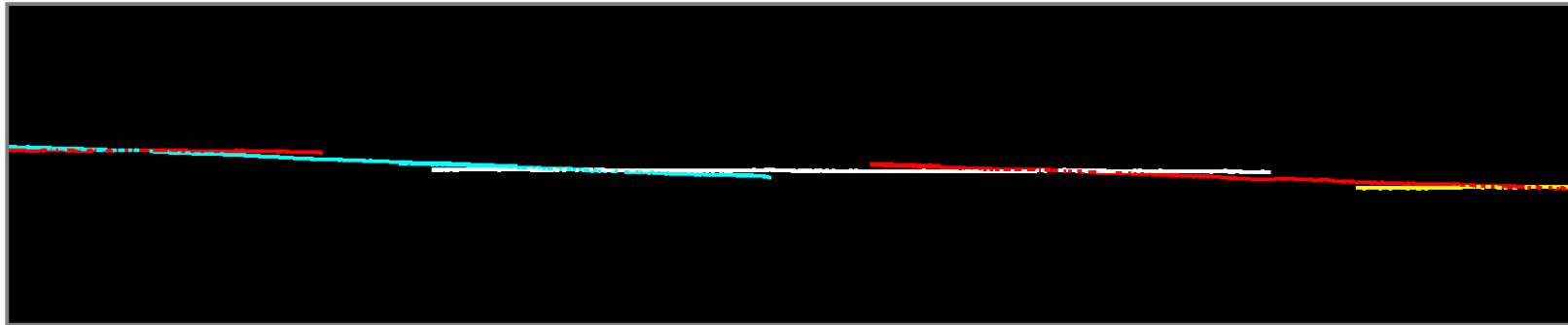
Match Passes Observations

- Match passes uses points classified **1 – Default**
- If **Classify ground for matching** is on, it classifies points temporarily into **2 – Ground**
- Observations collected are **Plane equation** type:
 - Plane fitted to circular area of points from one flight pass
 - Circle radius depends on point spacing and settings – typical value 0.30 m
- Solutions try to minimize the differences between local plane equations derived from different flight passes



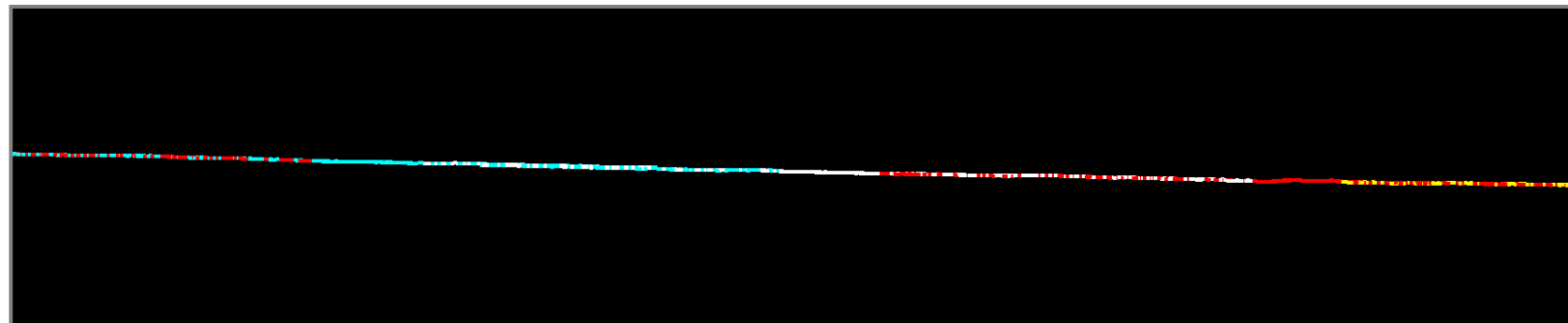
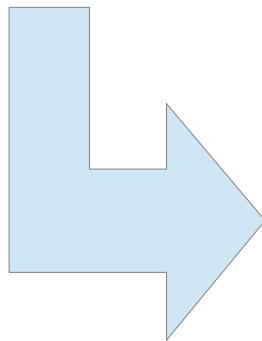
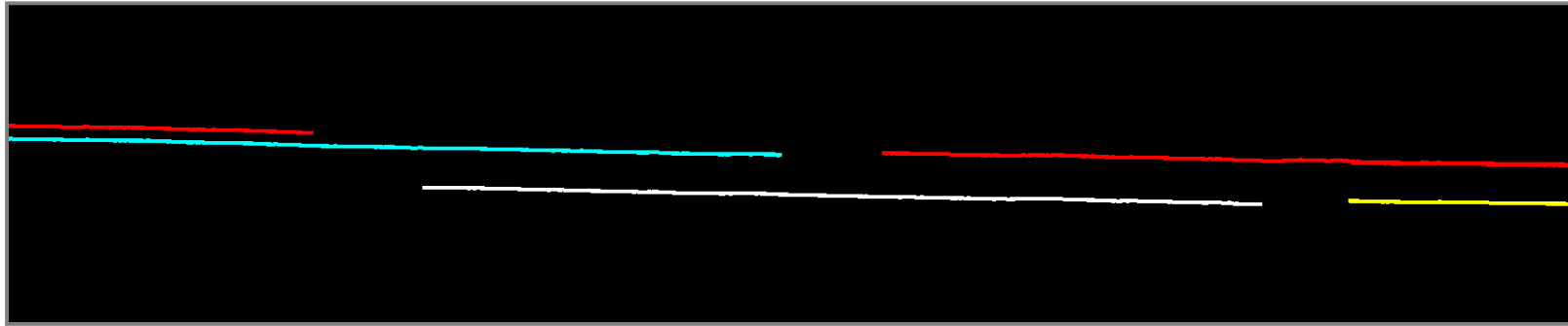
Per Session Correction

- Default setting is to solve heading+roll+pitch per session
- Most data sets improve with this correction



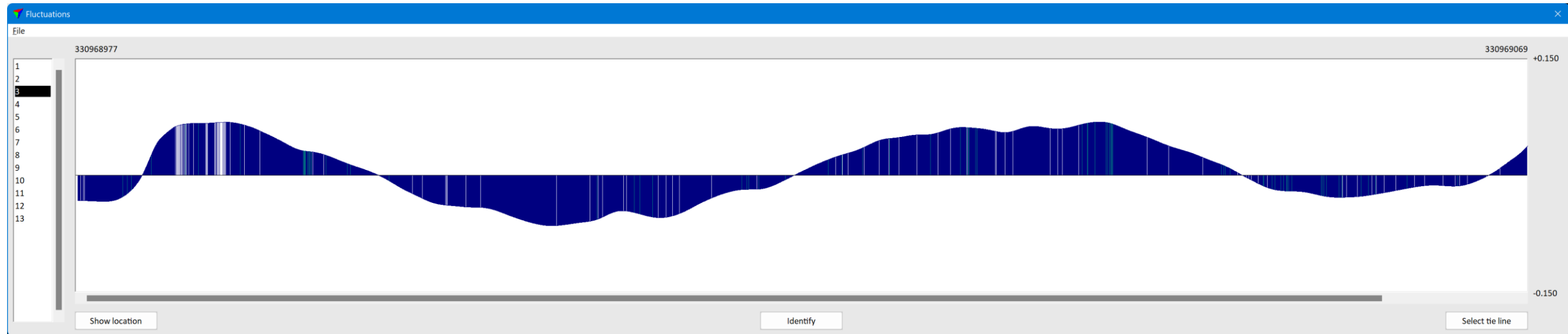
Per Line Correction

- › Default setting is to solve **Lever Z** per line
- › Many data sets improve with this correction
- › You may consider solving other parameters per line as well – roll is the most likely



Fluctuating Correction

- Correction which changes all the time
- Solve only if majority of data set is bare ground without vegetation
- Makes a significant improvement on many data sets



Mirror Angle Correction

- Correction for left-right angle being off
- Mirror angle flaw can be seen as a smiling face or as a sad face effect

