TEEDEKLASTER
ESTONIAN ROAD CLUSTER

TALLINNA TEHNIKAKÕRGKOOL
TTK UNIVERSITY OF APPLIED SCIENCES

Mobile Mapping in Infra BIM Projects

RoadBIM Seminar
11.09.2013 Tallinn

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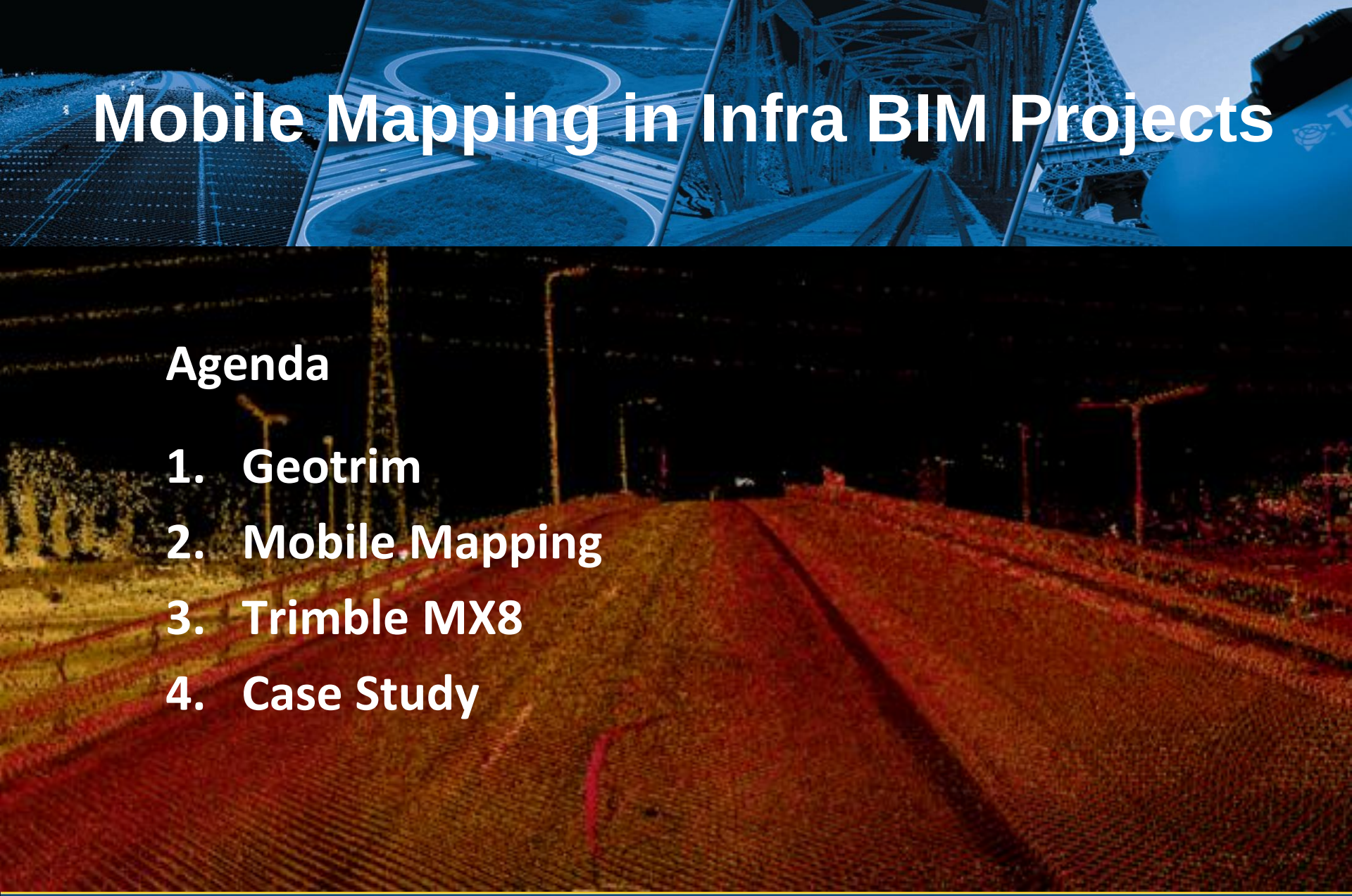
Geotrim Oy

Euroopa Liit
Euroopa Regionaalarengu Fond

Eesti tuleviku heaks

Mobile Mapping in Infra BIM Projects



Agenda

1. Geotrim
2. Mobile Mapping
3. Trimble MX8
4. Case Study

Geotrim

GEOTRIM ratkaisut mittaamattomaan maailmaan

Trimble

Geotrim and Mobile Mapping

- 2 years of experience
- Available to All
- Dealer of Trimble MX8 in Scandinavia

Mobile Mapping

- A way to gather xyz-information effectively
- Laser scanning and imagery done from a moving vehicle
- Point cloud and Images
- Applications:
  - Planning
  - Construction
  - Maintenance
  - Inventory
  - Documentation

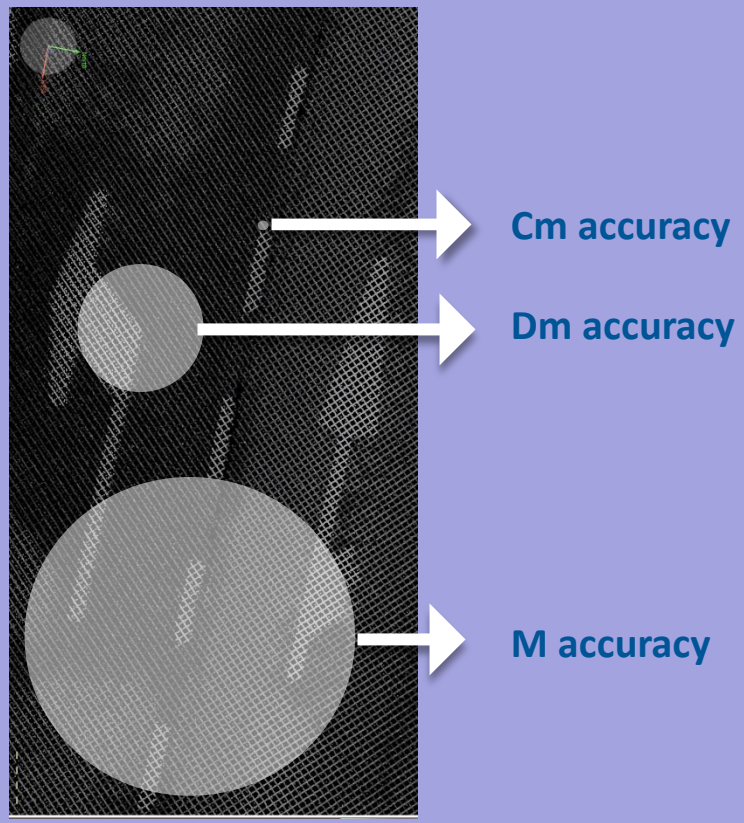
Why Mobile Mapping?

Usability of Mobile Mapping

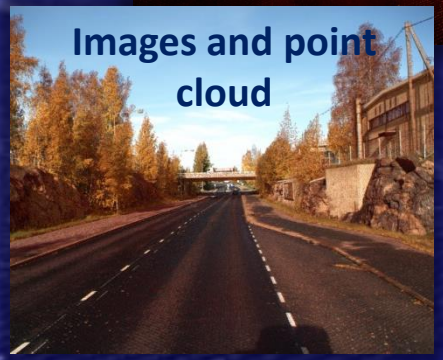
SIZE OF TARGET AREA

vs.

ABSOLUTE ACCURACY



DATA COLLECTION



Application: Property Management

- Inventory
- Maintenance

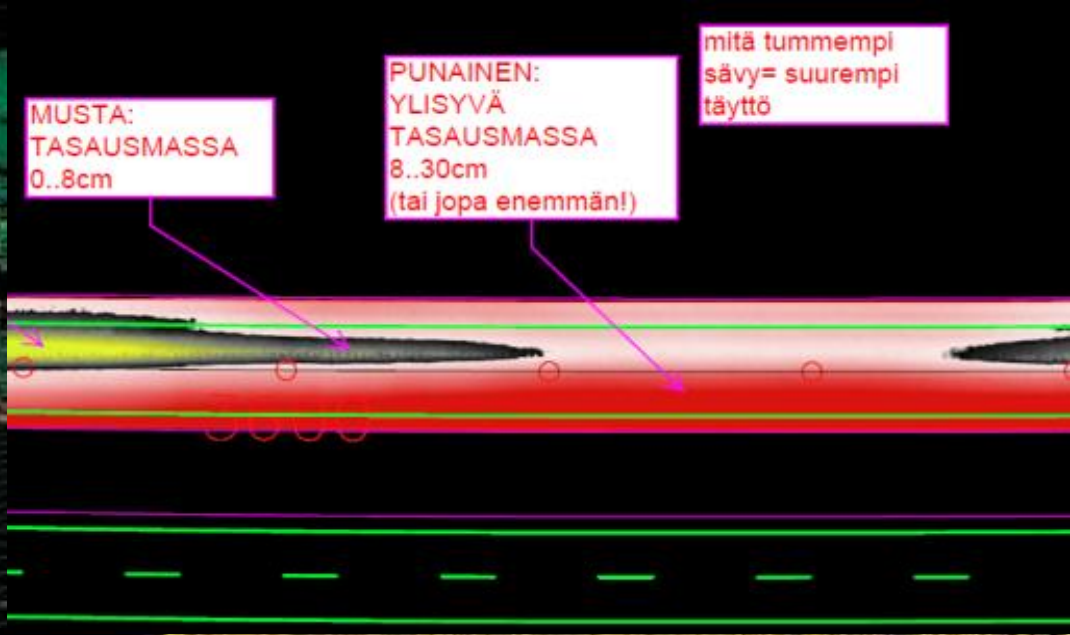
Road Signs

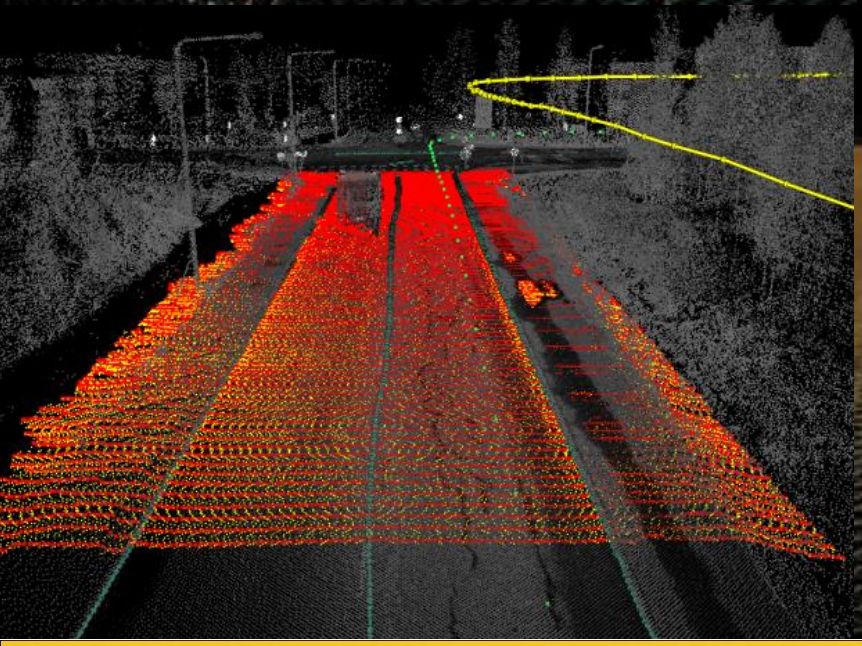
Structures

Paint Markings

Application:
Road Modeling

- Gradients
- Cross-sections
- Surface Models





Application:
Road environment

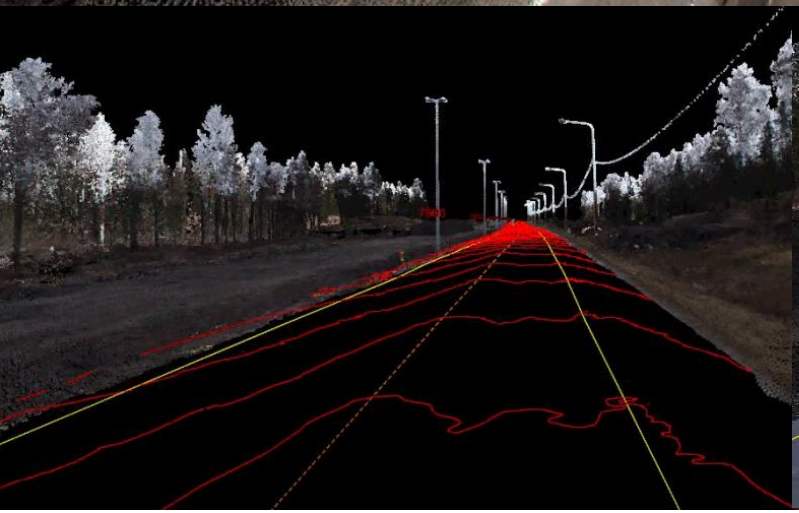
- Clearance measurements
- Sight measurments

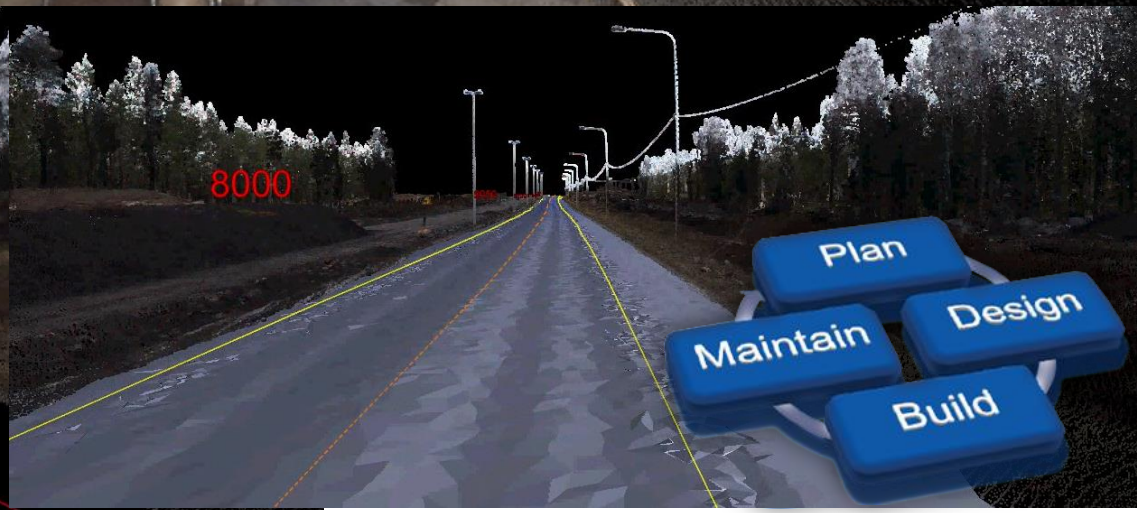
Application:
Change Detection

- Structural Movements
- Other Changes
- Damages

Application: Modeling

- City Models
- Road surface Models
- Terrain Models
- Structural Models
- Utilities

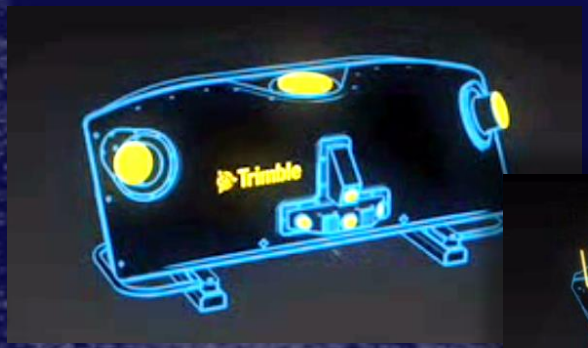


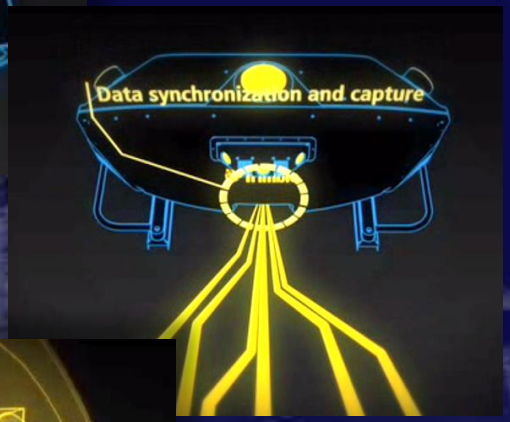


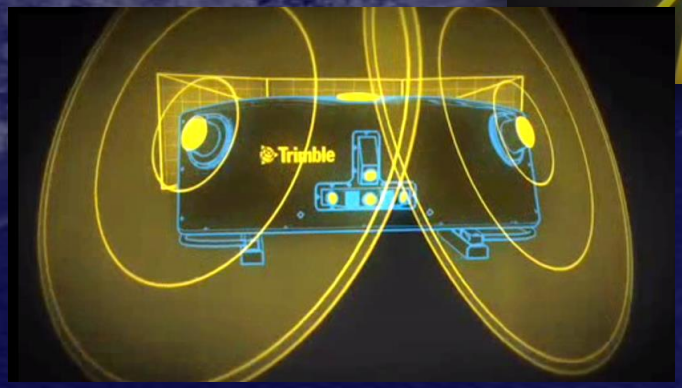
Trimble MX8

- 2 x 360˚ Laser scanner
- 15 Mpix Panorama Camera System
- 5 Mpix Pavement Camera
- Applanix POS-LV 520 – Positioning System
- Multiplexer Synchronization System

Trimble MX8







Sensor Integration
→ Accurate Calibration

Syncronization of Data Collection
→ Syncronized Data

Quality Control
→ Results matching expectations


RESULTS IN GOOD QUALITY GEOSPATIAL
INFORMATION

Case Study INFRA FIN BIM

3D-Milling with Trimble Machine Control Based on Mobile Mapping Data

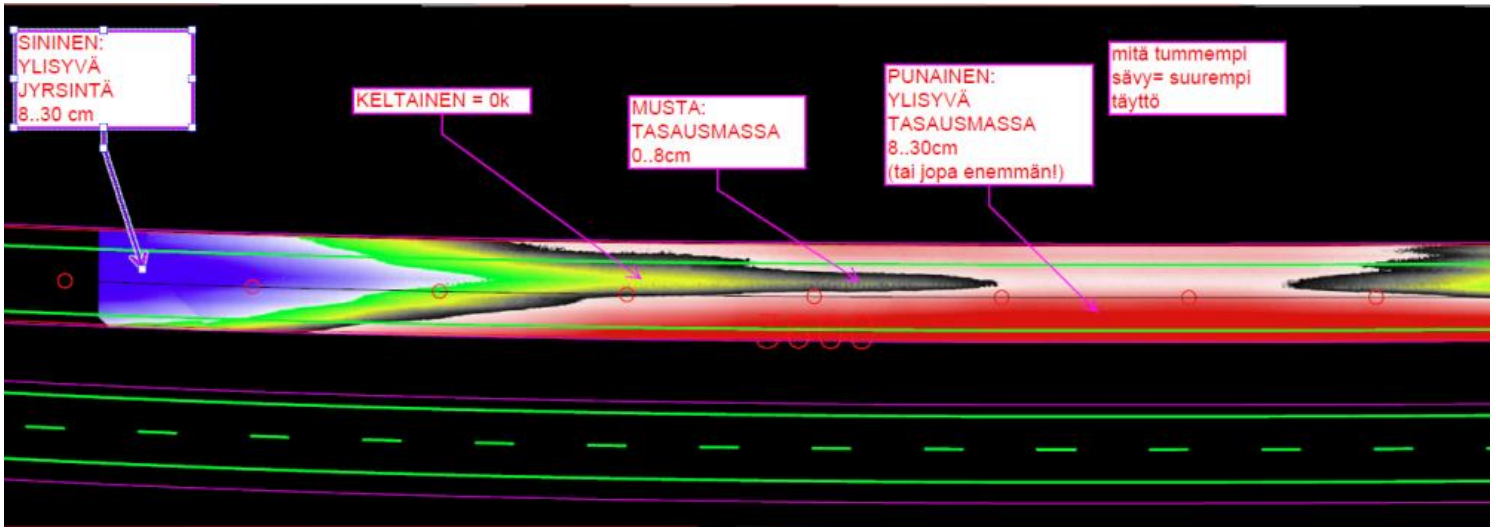
Highway 51-project

Project Location:
Kirkkonummi, Finland

Highway 51 — Finland

Main contractor — **Destia Ltd.**
www.destia.fi

3D Milling — **NCC Roads Ltd.**
www.ncc.fi



Purpose of the Project

Infra FINBIM

- Development of data model based road network management and maintenance process

2 Lane road => 4 lane Highway

Project time frame

25.4 – 27.4 Reference points made

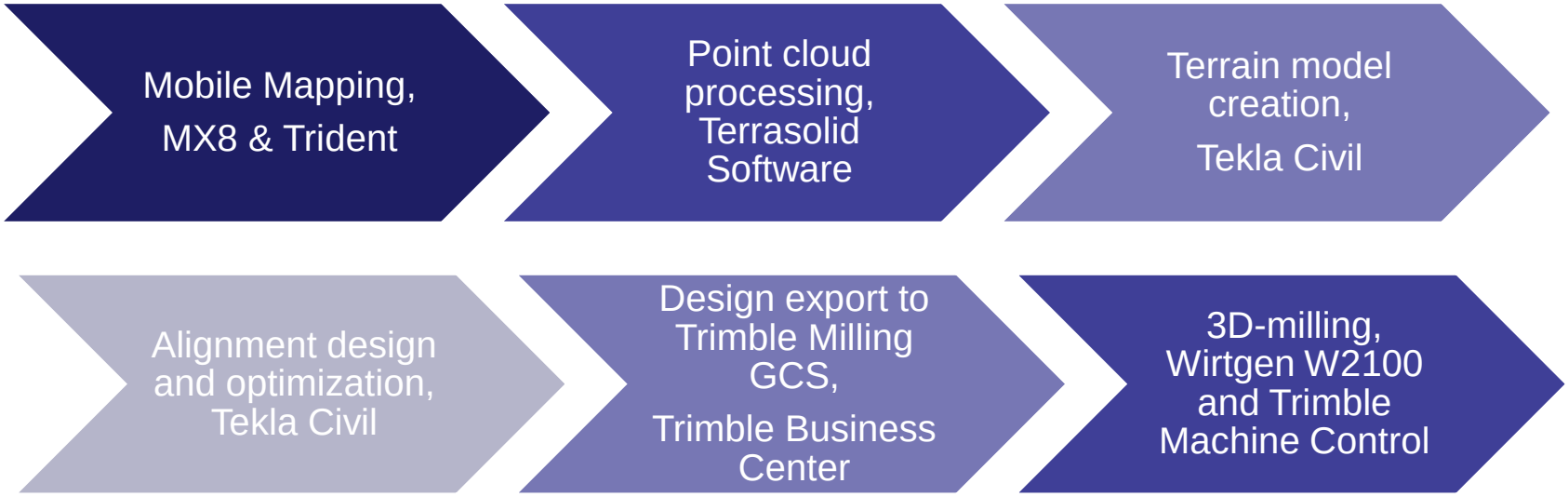
26.4 Mobile mapping

2.5 Point cloud and images delivered to client

31.5 Road planning and machine control models completed

7.6 – 8.6 3D-milling

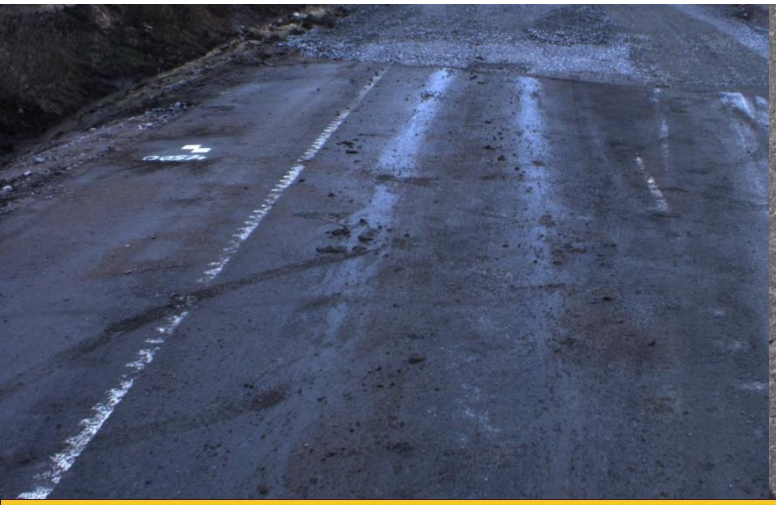
Project Workflow

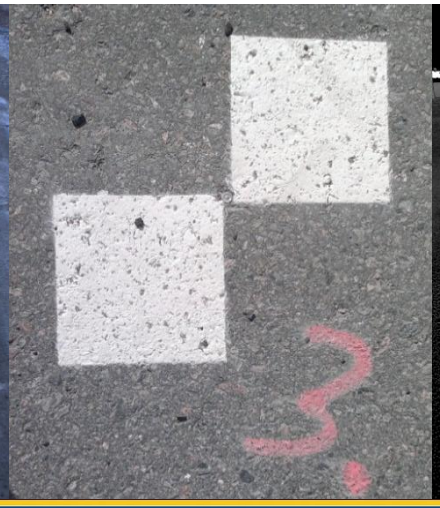


Mobile Mapping Details

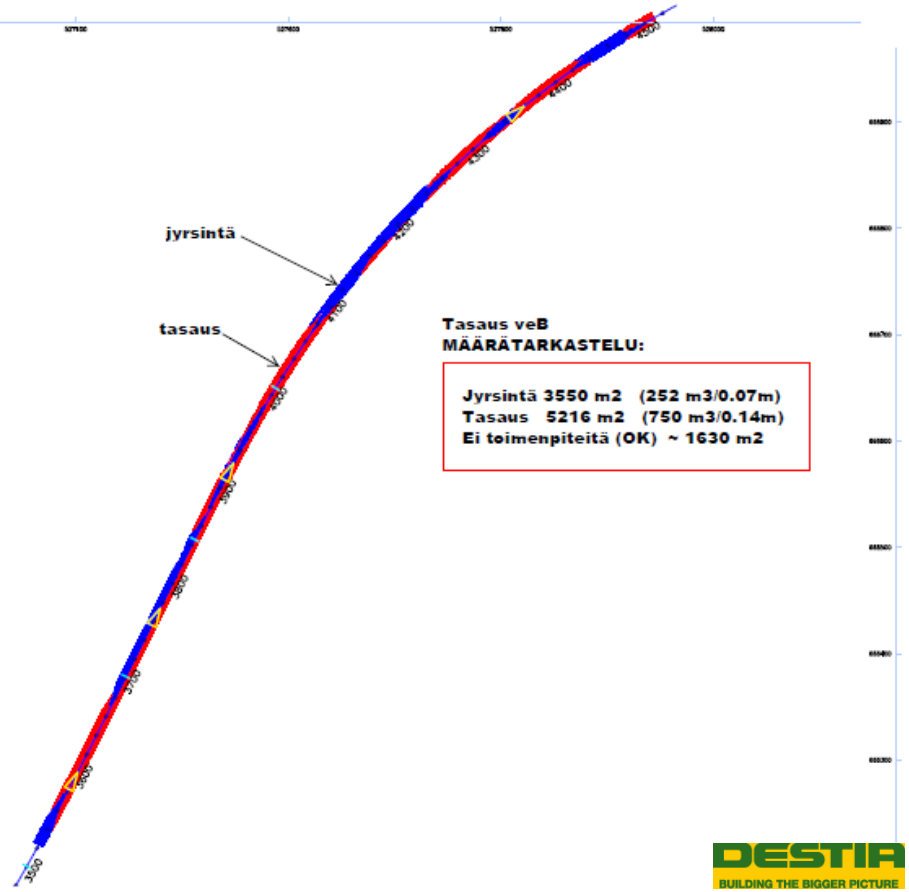
Mobile Mapping

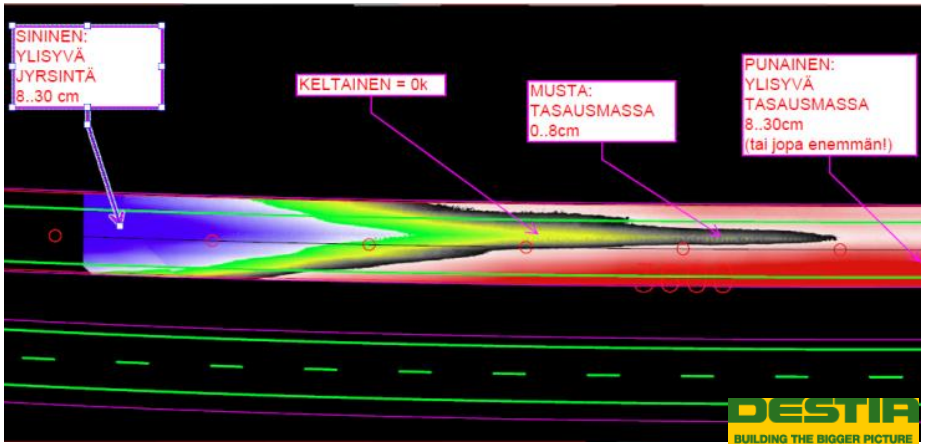
- Reference points
  - 200 m apart
- 1 h of mapping



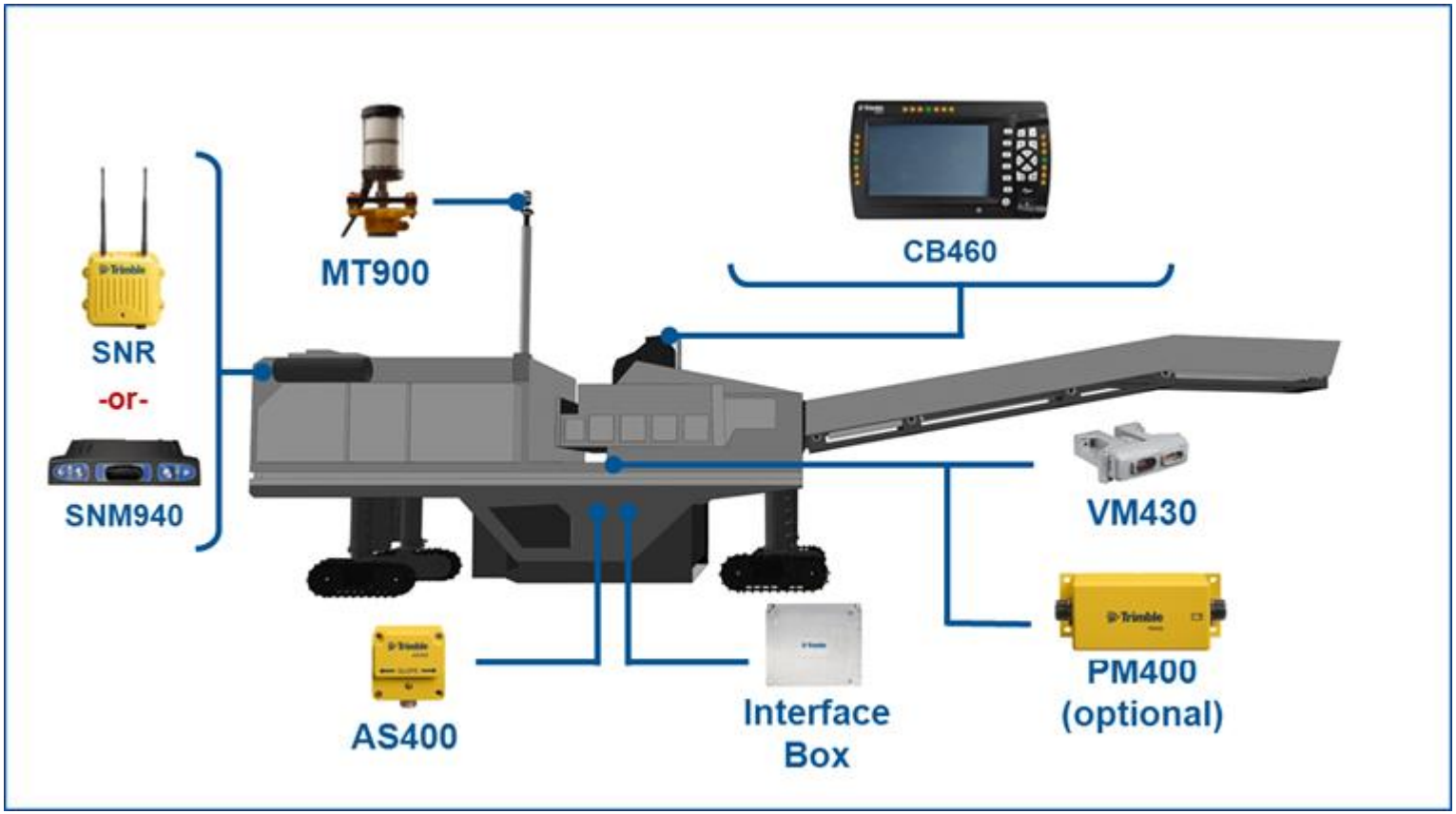


3D-Milling plan





3D-Milling Details



SPSx30 Universal
Total Station

3D-Milling in Action

7th – 8th of June