

The Current Status of 3D

EuroSDR 3D Workshop

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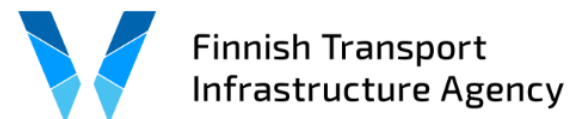
The National Aerial Photography and Laser Scanning Programme

- The First National Programme (KALLIO) 2020-2025
 - Completed
- The Second National Programme (KALLIO2) 2026-2035
 - Upcoming



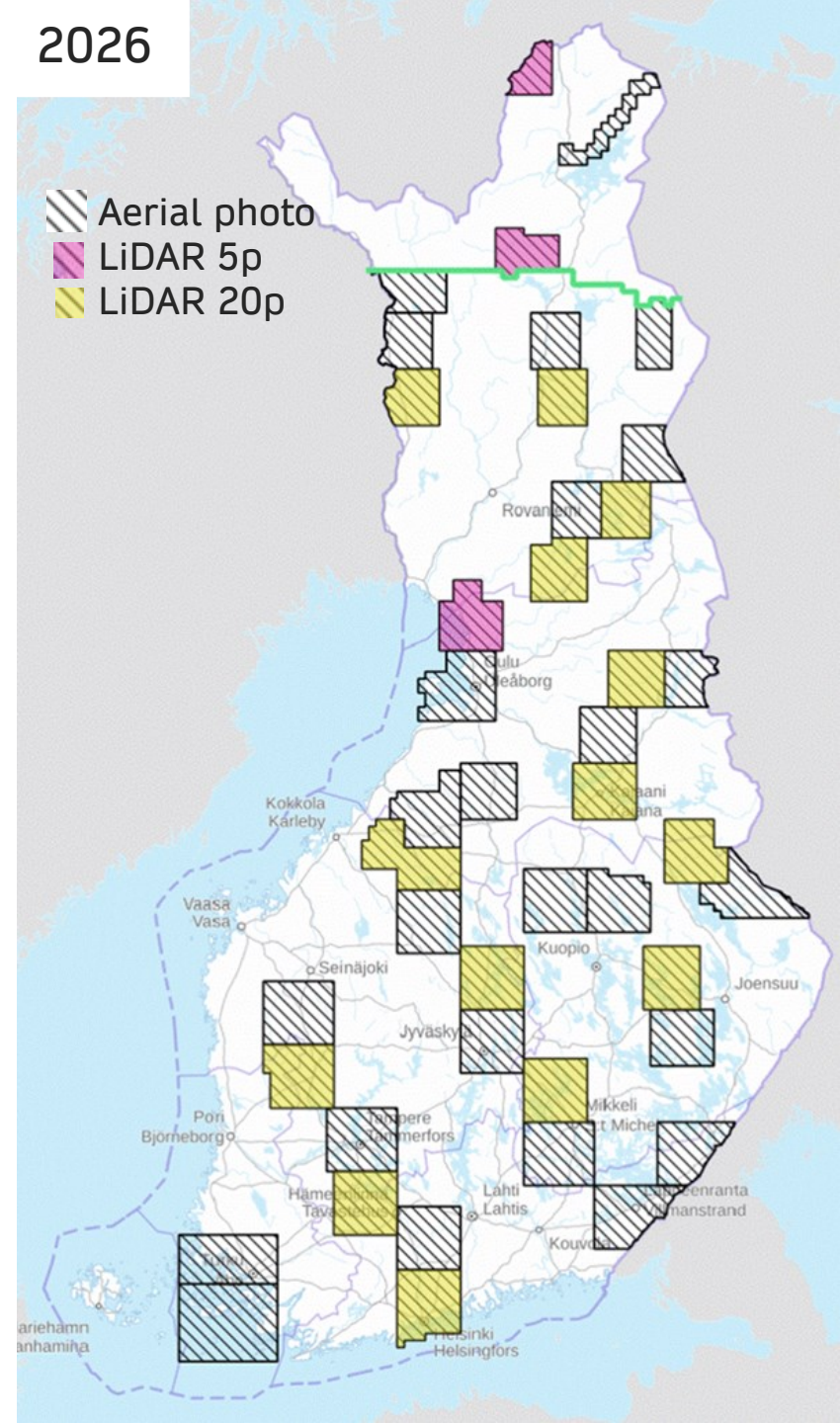
The National Aerial Photography and Laser Scanning Programme 2026→

Organisations:



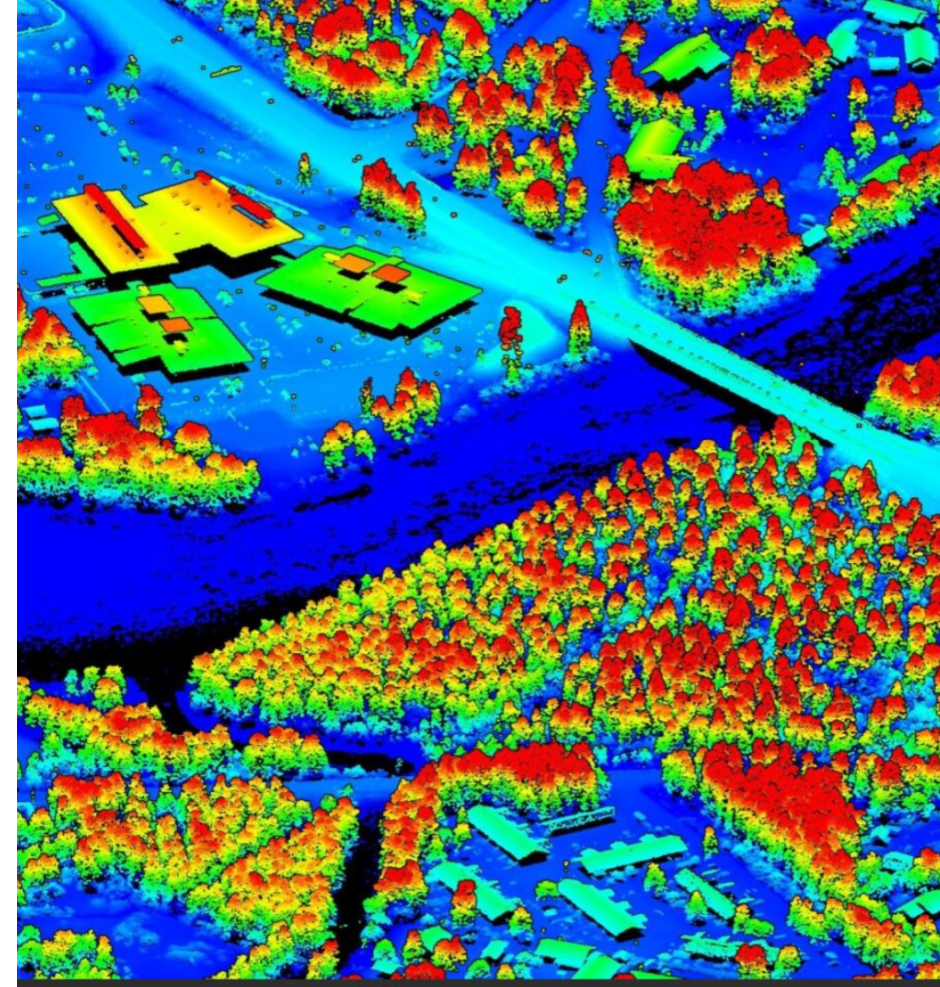
The National Aerial Photography and Laser Scanning Programme 2026→

- Aerial photography production, resolution 30 cm
 - 3 years cycle, $\sim 110\,000\text{ km}^2/\text{year}$
- LiDAR production, point density $20\text{p}/\text{m}^2$
 - 9 years cycle $\sim 37\,000\text{ km}^2/\text{year}$
- LiDAR production, point density $5\text{p}/\text{m}^2$
 - only specified areas



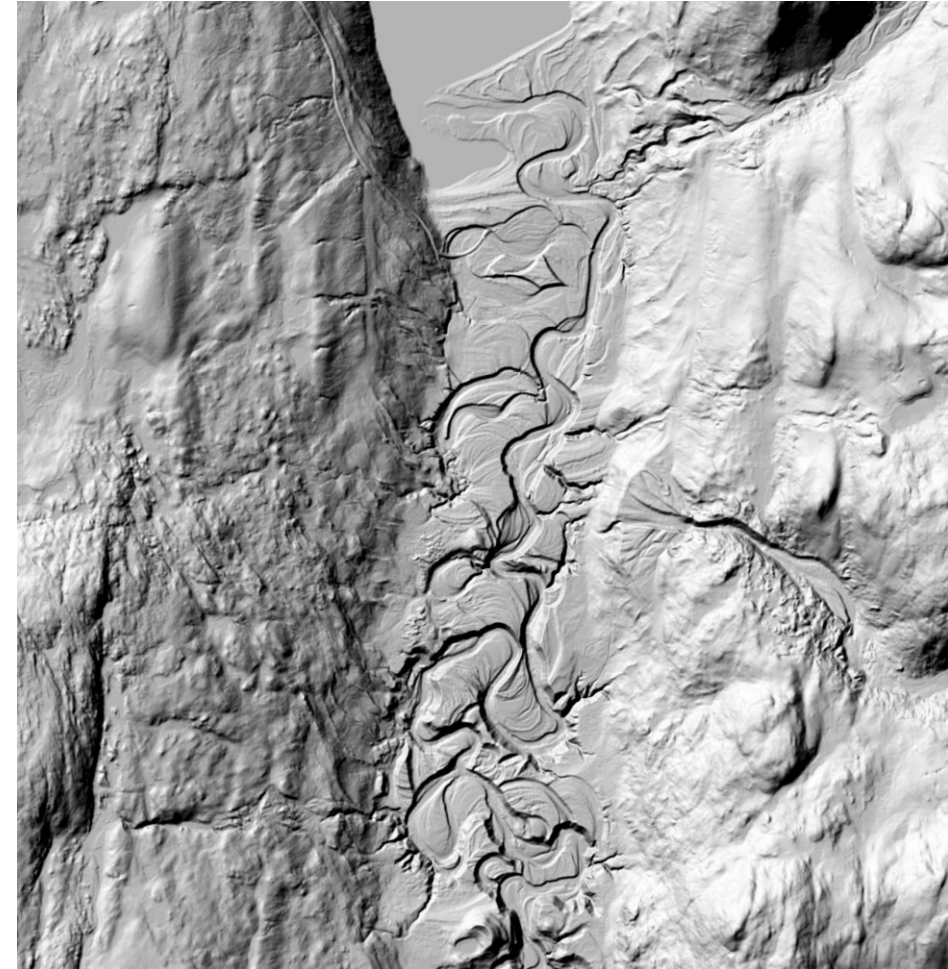
Status in 3D: LiDAR

- Preparations for the 20p/m² production
 - More points in the point cloud
 - More data, more processing time
- Automatic LiDAR classification
 - **Now:** ground + height-based vegetation (e.g. bridges in ground class and buildings in vegetation class)
 - **Future:** Maybe new classes: building, bridges, water,...Not decided yet



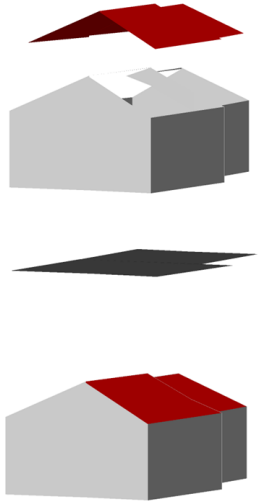
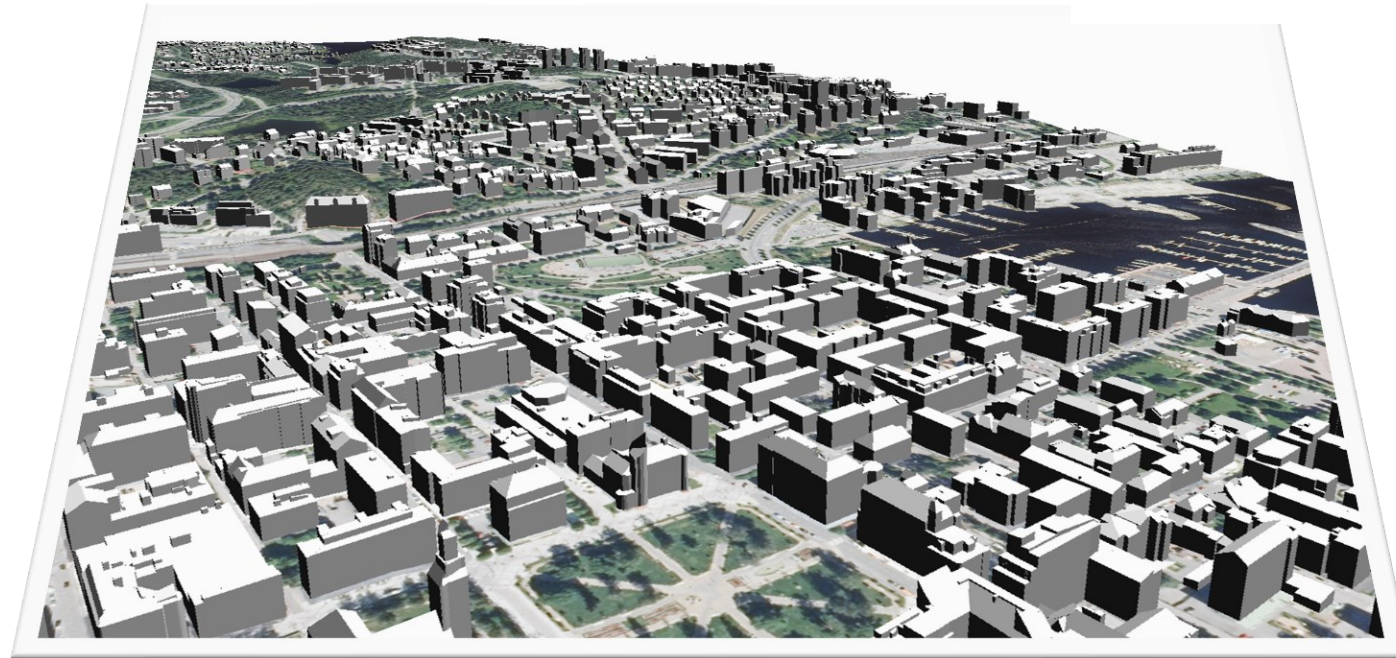
Status in 3D: Digital Elevation Model

- Digital Elevation Model (2-meter grid) is based on LiDAR
- Change detection: New LiDAR ground points are compared to previous DEM
- Maintenance requires manual work
- Planning of the new process has started
 - New national programme, 20p LiDAR
 - More automated workflow
 - Challenge: automatic bridge & water classification from LiDAR



Status in 3D: 3D buildings

- Less than 50% from Finland is covered with 3D buildings
- Level of Detail 2 (LOD2)
- Input data:
 - 2D: buildings from National Topographic Database
 - 3D: LiDAR point cloud



Status in 3D: 3D buildings

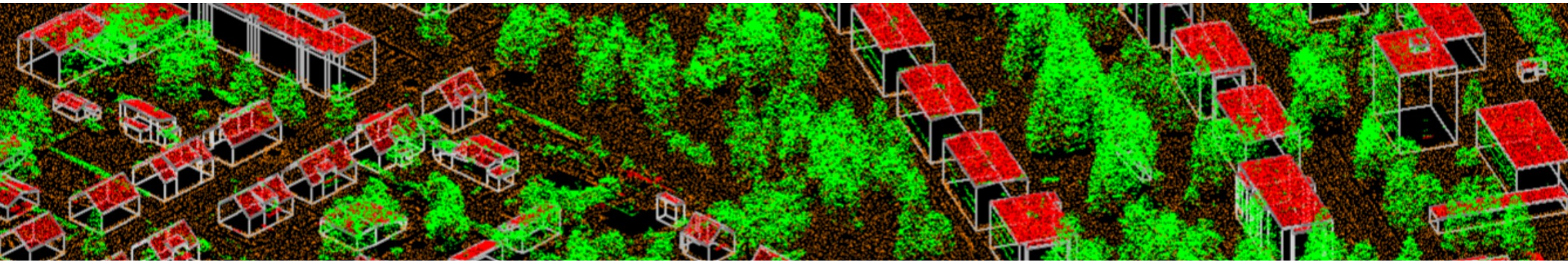
- Challenges to overcome
 - Maintenance
 - Topographic database 2D buildings are based on stereo photogrammetry (roof edge, NLS) and field measurements (wall, municipalities) [different kind of data sources]
 - 3D Building production process is separate, topographic database is not updated based on LiDAR or 3D buildings (mismatch between the 2D and 3D)
 - Aerial photography cycle 3 year versus LiDAR cycle 9 year
 - Process itself
 - The process requires manual work, should be more automated
 - Data quality
 - Mainly caused by the input data, e.g. roofs with low point density

Status in 3D: 3D buildings

- NLS have made a survey for customer needs. Some topics from survey:
 - 3D Buildings should be updated more frequently (Cycle)
 - There should be 3D buildings from the whole Finland (Process)
 - 3D geometry does not match with the real building (Data Quality)
 - Data interoperability issues e.g. with the municipality data (Maintenance, Data quality, file formats/services)
- Next steps for resolving these topics in 3D building process will be decided in spring 2026!

From 3D data to Digital Twin?

- Currently, there is no clear future vision for Digital Twin in NLS (yet)
- National Land Survey of Finland 3D products are available from downloading website ([MapSite](#)) and file sharing services ([services](#))



We know the Earth
– we secure the future

