3D/4D Precision forestry in Finland

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Laboratory of Forest Resources Management and Geo-Information Science
http://blogs.helsinki.fi/4d-gis/
http://blogs.helsinki.fi/marv-gis-en/

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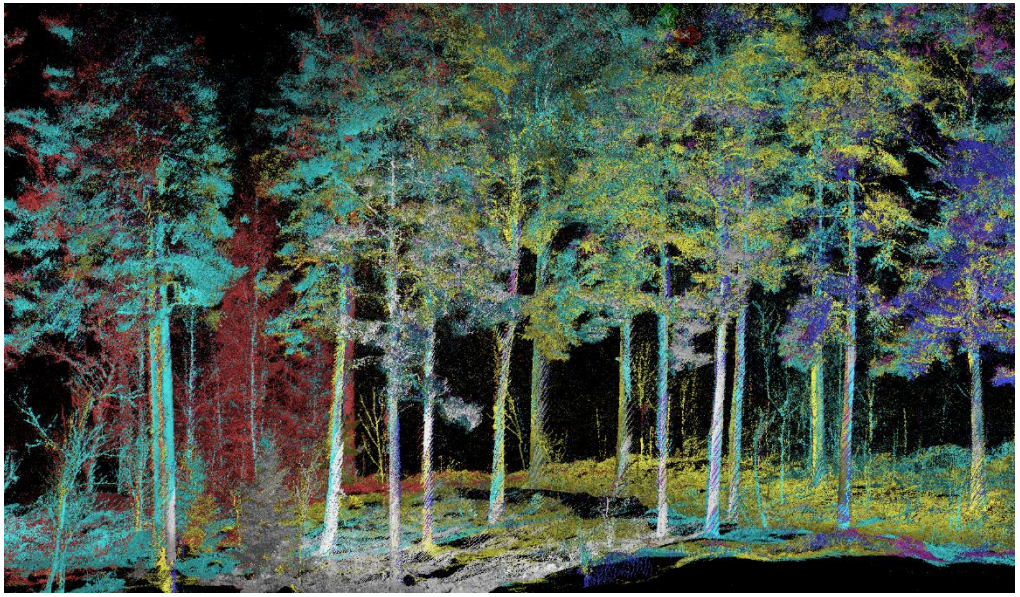
http://laserscanning.fi/



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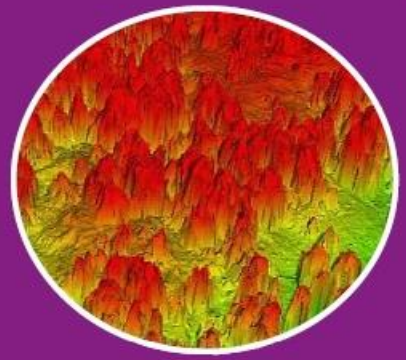
Centre of Excellence in Laser Scanning Research: "Together what is otherwise impossible"



Hardware-driven approach

Pulsed time-of-flight laser radar

Juha Kostamovaara
Univ. Oulu

Mobile and ubiquitous Laser Scanning

Juha Hyyppä
FGI

Laser scanning for precision forestry

Markus Holopainen
Univ. Helsinki

Laser scanning for built environment

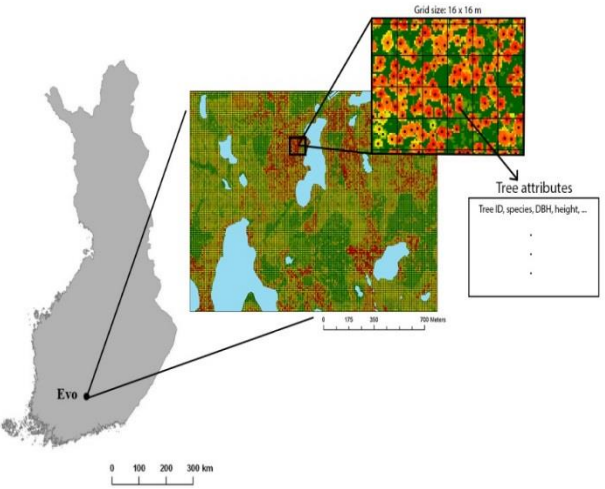
Hannu Hyyppä
Aalto Univ.

International benchmarking studies

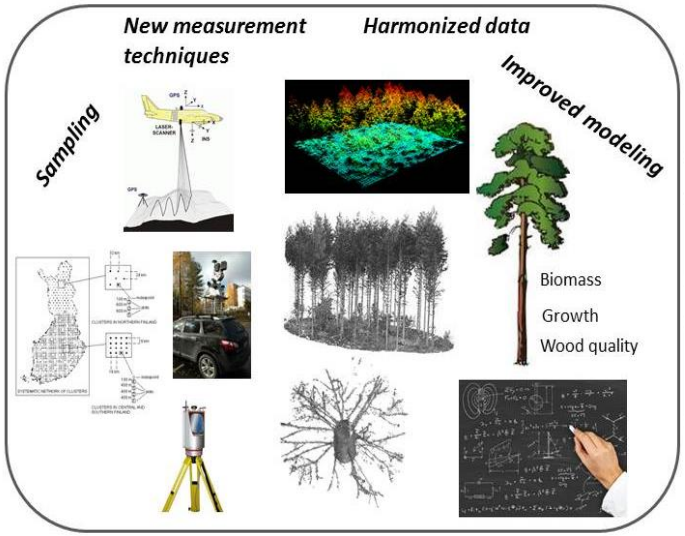
CoELaSR/ University of Helsinki

Research directions

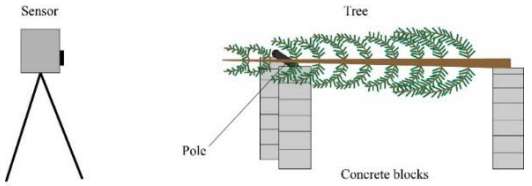
3D/4D Precision forestry

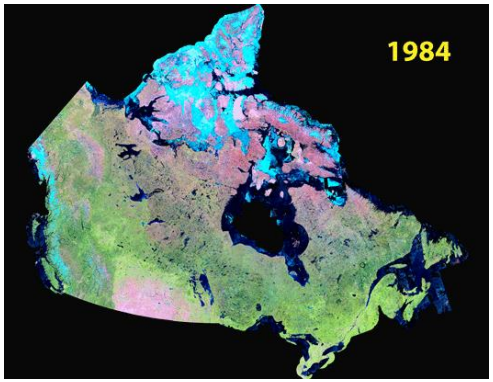


Towards comprehensive tree attribute modelling using 3D point clouds



Forest health, above ground biomass and biodiversity assessment by improved mapping and monitoring





Operational applications in forestry

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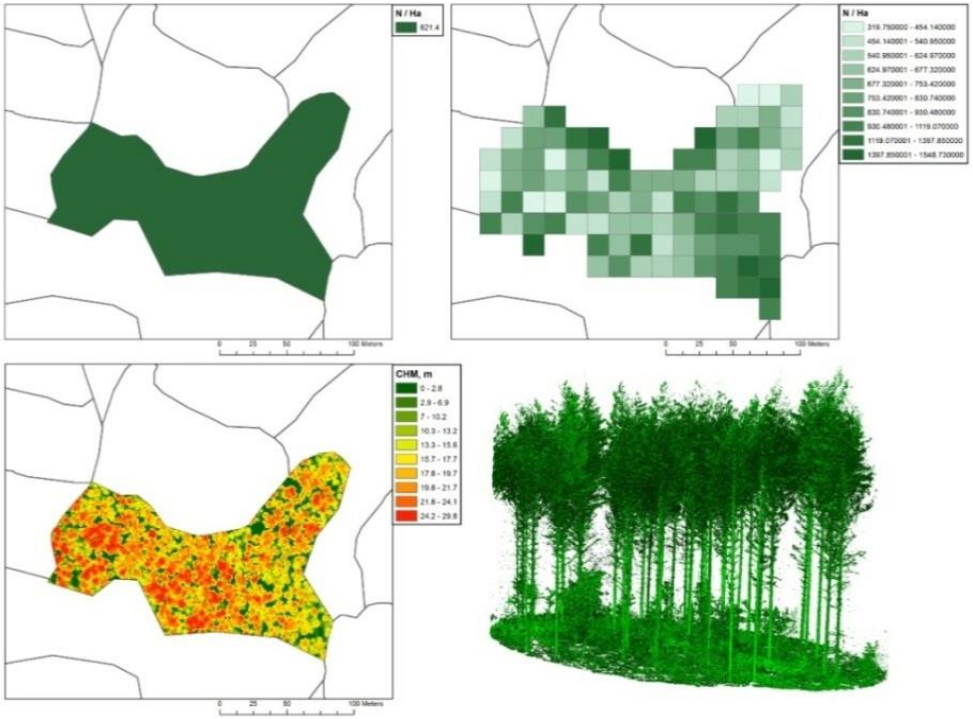
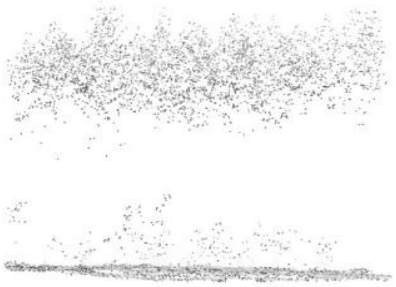
FINNISH GEODETIC INSTITUTE

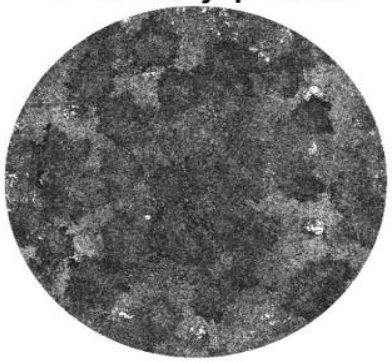
Vision: More accurate forest information – from stand to tree (branch) level

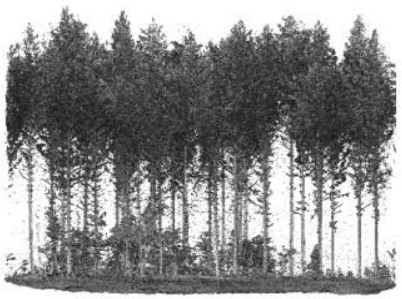


ALS
n. 10 200 pistettä



TLS
n. 138 milj. pistettä





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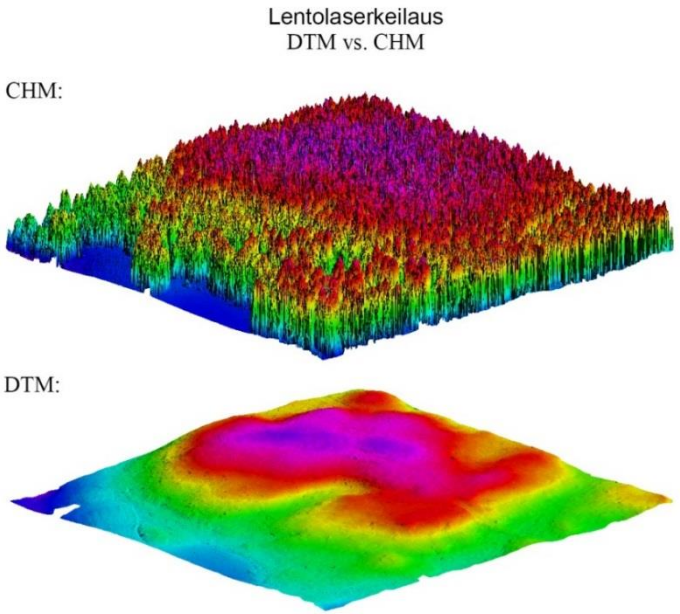
3D/4D precision forestry

- 3D information allows precision forestry concept that can be utilized from tree level to national level applications.
  - Precision Forestry = ”Use of accurate 3D information to improve forest management planning, harvesting planning and wood suply chain accounting the ecological aspects of forests”
- In the future multitemporal LS data sets (4D)
- Added value to forest owners & forest industry:
  - More precise, detailed, cost-efficient and up-to-date forest resource information
  - Improved logistics and timings in wood raw material supply chain
  - Accurate determination of forest value, bucking of trees and wood quality
  - Spatially detailed growth, disturbance, logging, biodiversity and carbon storage monitoring
  - Accurate base for spatial analyses and modelling



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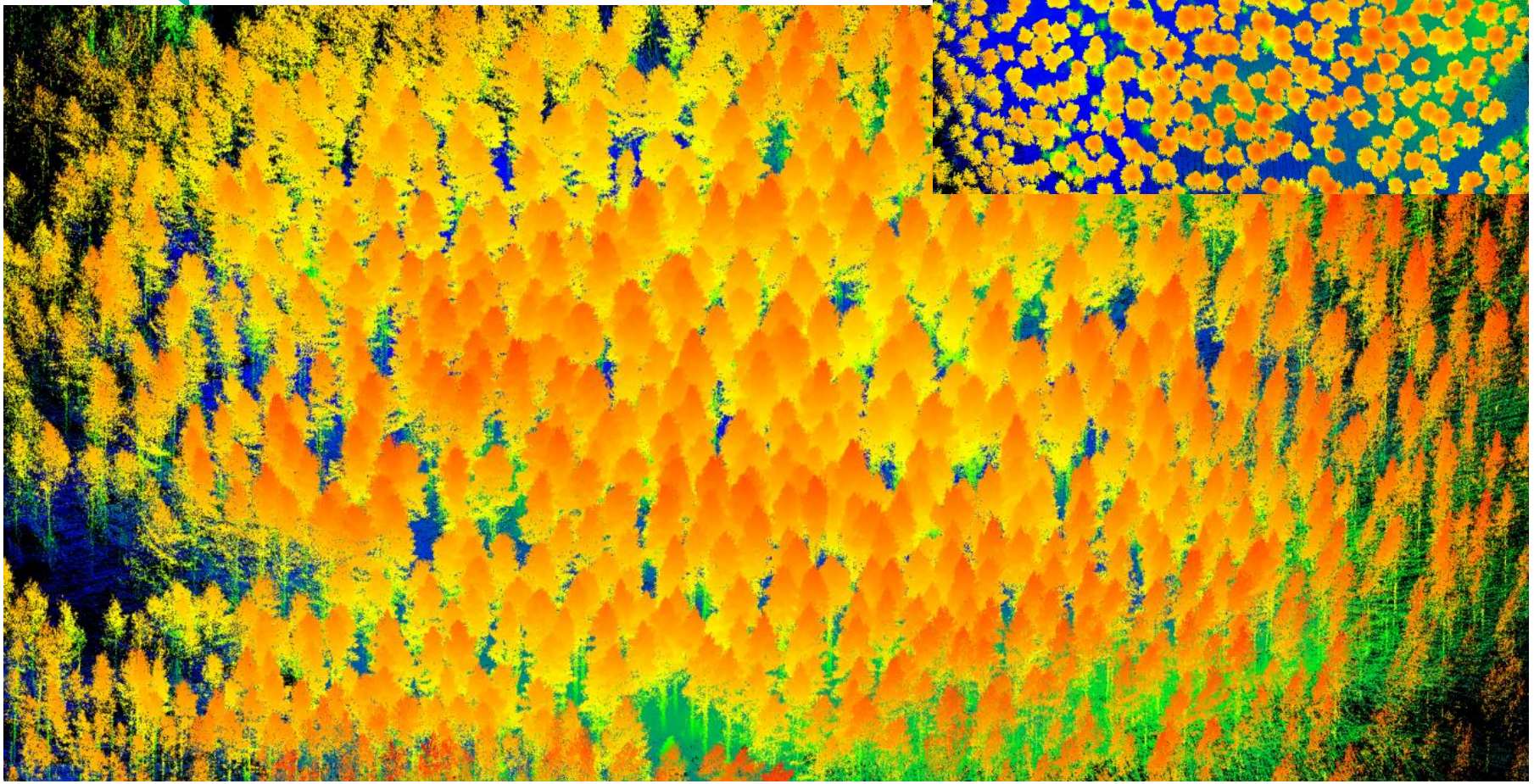
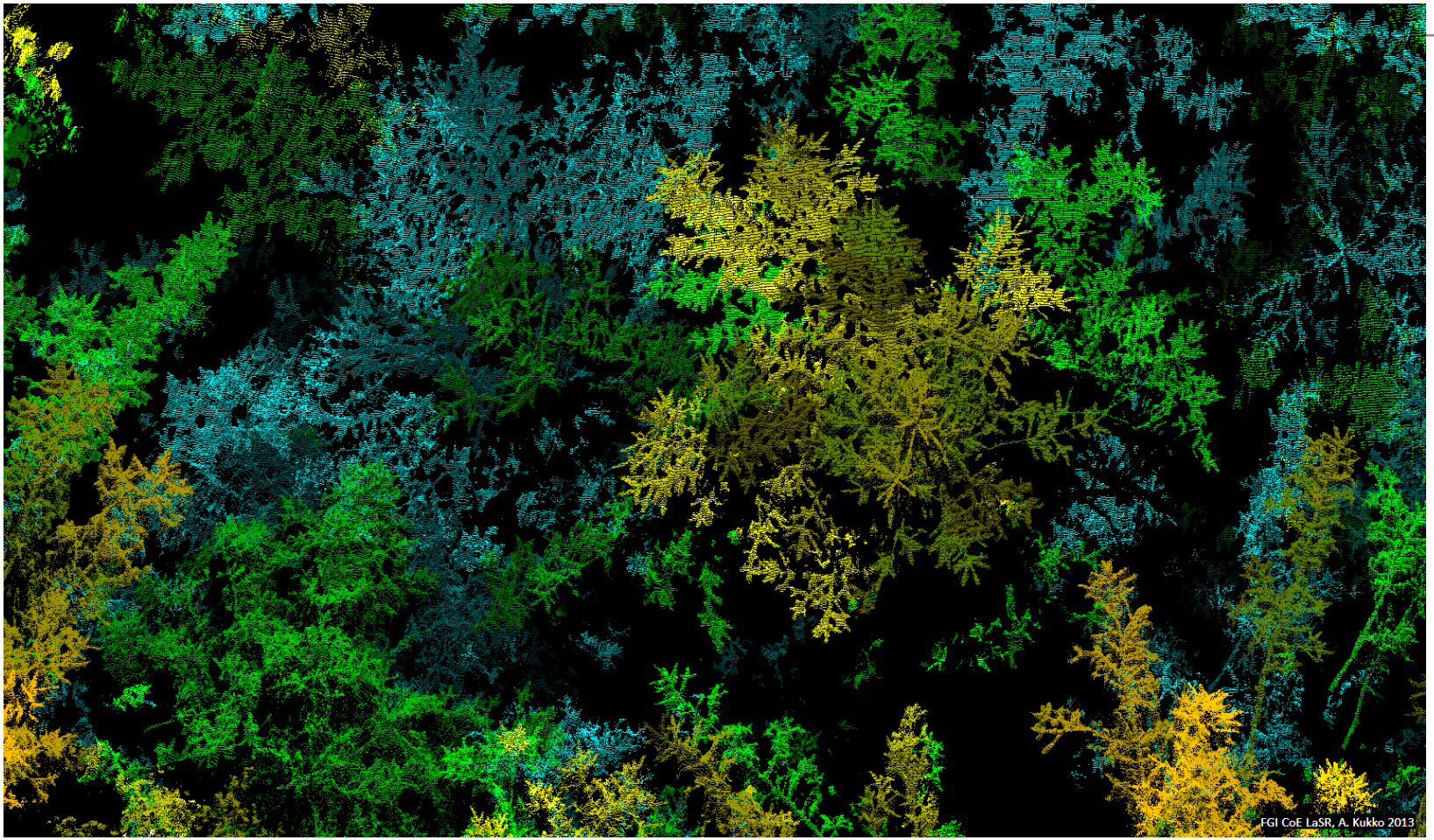
UAV-LS for Forestry

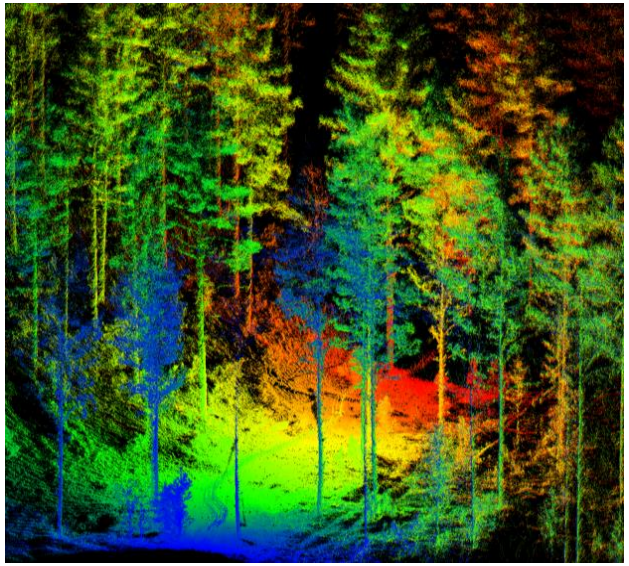


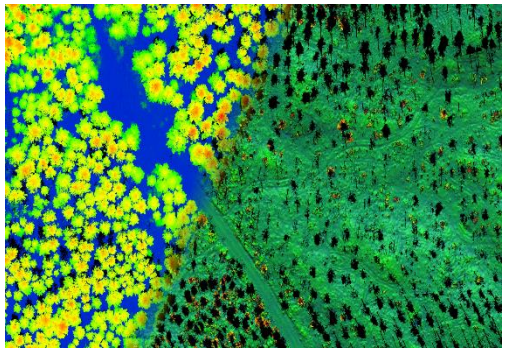
Backback MLS

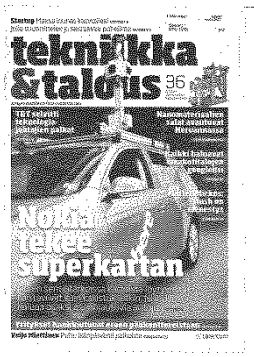
Quality of our data

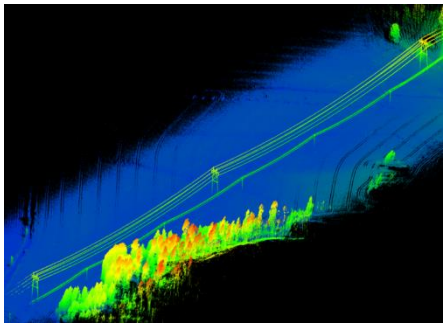


Affecting society deeply in all continents









Thank you for your time!