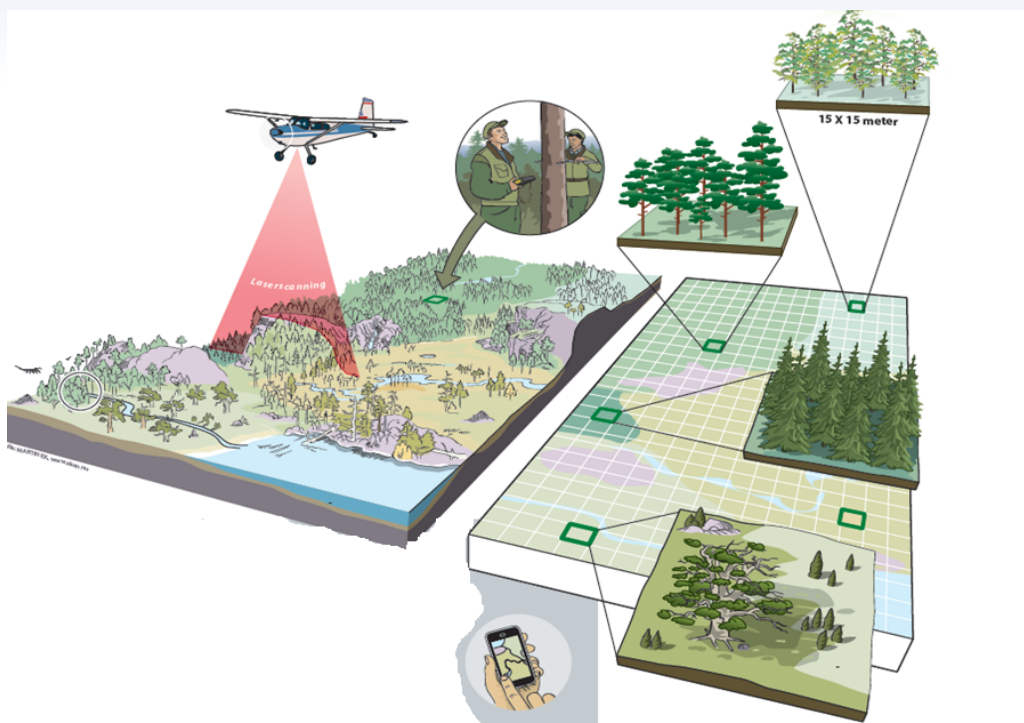




# Forest Inventory and Land Use Mapping

## Remote sensing and GIS-technology in forestry and land survey

In order to manage natural resources in an efficient and environmental way it is necessary to have good data and maps to describe all the “where and what”. Norwegian Forestry Group provides forestry, environmental institutions and government agencies a broad range of services related to forest inventory and land use mapping. In our unique production environment, we use state-of-the-art technologies for remote sensing data-capture, fieldwork/inventory, GIS-analysis and powerful ways to present forest- and nature data.



### Objectives

The objective of a project is to develop the most cost efficient method to collect, analyse and present information about forestry, nature and environmental conditions. To achieve this we combine different sources of data (satellite, LIDAR, Radar, fieldwork, image interpretation etc.) to the required product and quality level.

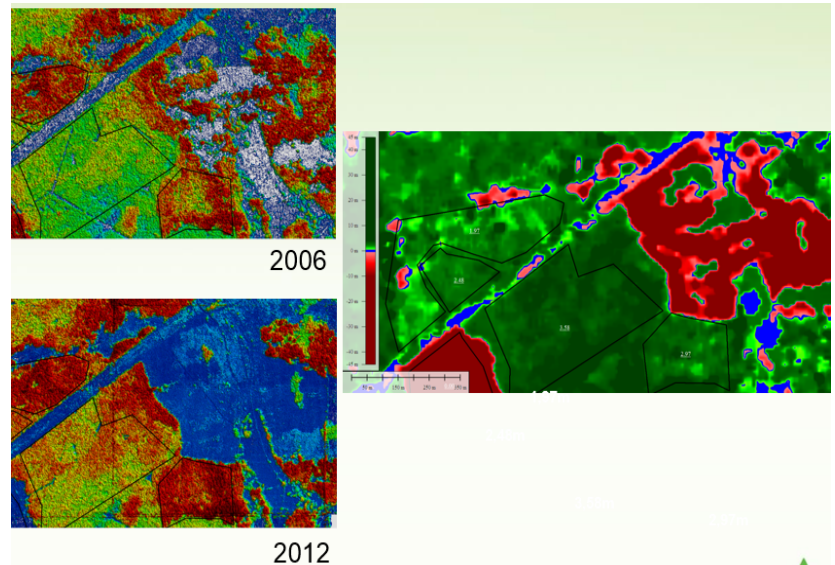
### Target groups

Government authorities, Forestry associations, Forest owners, Land users, farmers, tree growers, community development agents, professionals, NGO and civil society, environmentalists and nature conservationists.



## Growth and change detection

By comparing datasets from different years a growth and change detection analysis can be done. In the picture below image datasets has been 3D-oriented and coordinate point clouds extracted showing the vegetation height above ground in 2006 and 2012 respectively. By combining these two datasets a growth analysis can be presented. This could be used to monitor illegal harvesting or to estimate growth functions in the forest.



## Mobile GIS-data

NFG have good knowledge in how to distribute and use data in mobile GIS applications on smartphones, tablets (iOs, Android or Windows).



## References and previous projects

- Forest Management Plan, Latvian State Forest: Forest inventory of all Latvian State forest, 300 000 hectares. Airborne laser scanning and measuring of individual trees for calculating stand information and establishing a new forest management plan.
- LUCAS: In 2012 NFG-member worked as the Swedish partner of Eurostat (Statistical unit of the European Commission) in the project "LUCAS" (Land Use/Cover Area Survey). LUCAS is one of the largest field surveys that have been executed in Europe. Land-use, land-cover and landscape change was monitored at 24 341 sites spread all over Sweden.
- FlexWood - "Flexible Wood Supply Chain ": under the EU's 7th Framework Programme. NFG-partner was involved in research on forest inventory at the level of individual trees, especially the classification of tree species by remote sensing with laser and hyperspectral images (2009-2012).
- Terrain maps for reduced soil impact: Cooperation with Forestry Research. (2010-2011, 2013-2014).



- Ditch Inventory: Seminar and dialogue with the Department of Agriculture about the usefulness and usability of laser remote sensing for mapping of ditches and walls for inventory and implementation of cross compliance.
- Tree Vitality: An EU-funded remote sensing projects in cooperation with the "Institute for environmental solutions" (IES) in Latvia. ([www.videsinstitut.lv](http://www.videsinstitut.lv)). Research and development of new methods for the detection and mapping of the health of individual trees based on data from the laser and hyperspectral imaging sensor , laser data to find the trees and spectral data from the images to determine the species and health status. (2009-2010)
- Tree species classification of individual trees using high-resolution satellite imagery: A project of using part of the Swedish Space Board's R & D program (2008) in collaboration with Metria (experts in the management and georeferencing of image data).

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