

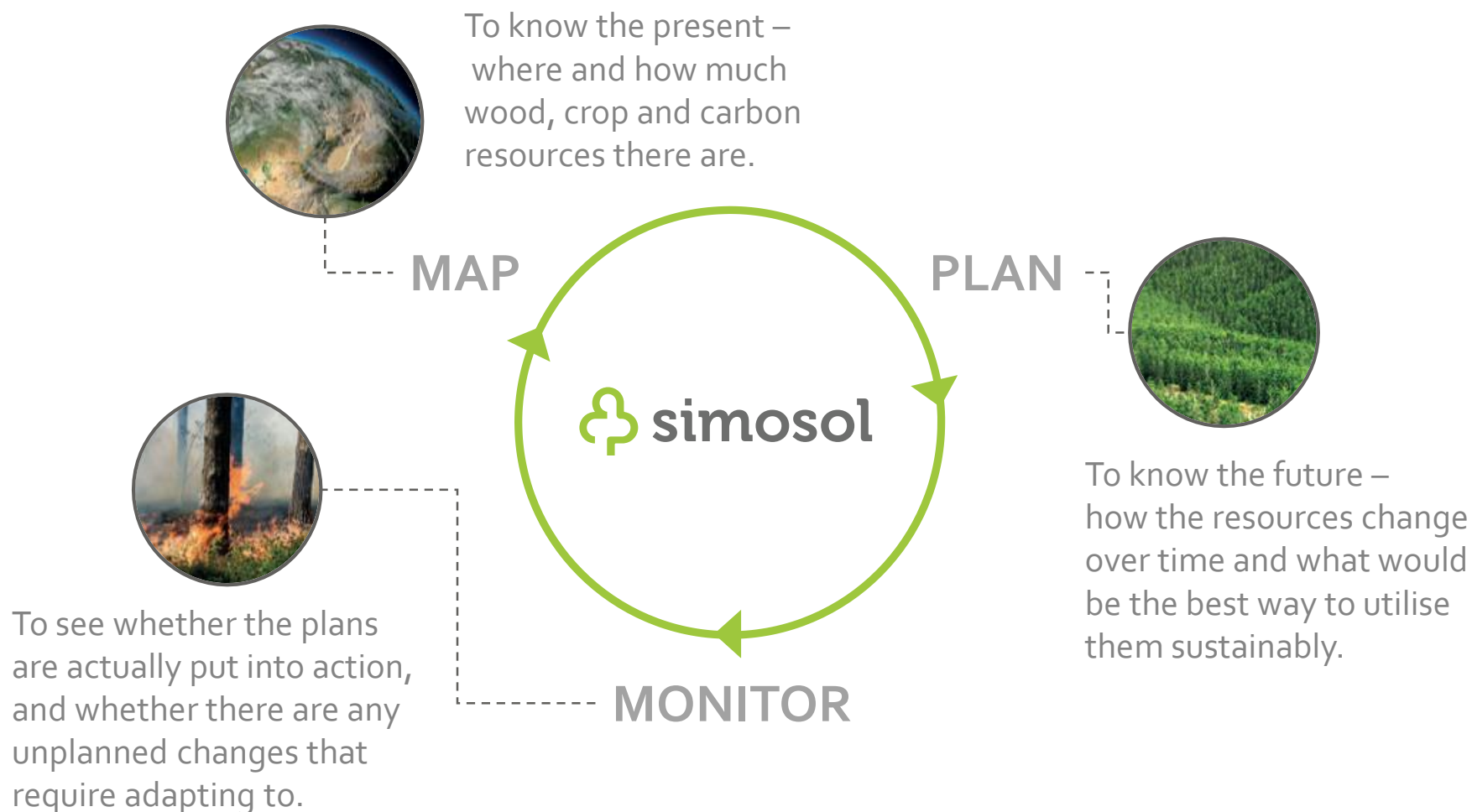


USING GIS TO FURTHER  
THE SUSTAINABLE  
DEVELOPMENT

GOAL 15, LIFE ON LAND.



# SIMOSOL – INTEGRATED SCOPE OF SERVICES



# COMPANY PROFILE

## About Simosol Oy

Simosol Oy is a global leader in customized IT-based solutions for the forestry sector based in Finland. The key services include:



Mapping and inventory



IPTIM software family



Forest valuations



Carbon services

**15**  
million hectares

Supported by our  
forestry solutions

**40**  
billion EUR

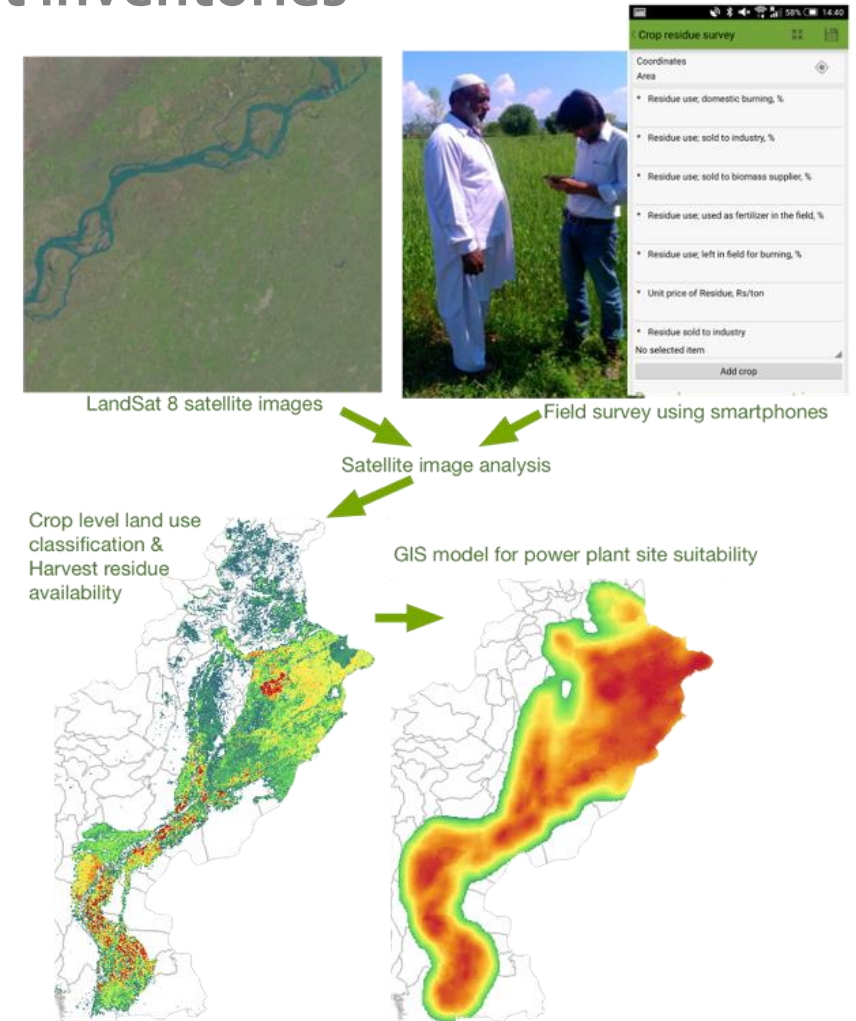
The value of the  
assets supported  
by our forestry  
solutions

# MAPPING AND INVENTORY

## From nation-wide assessments to tree level forest inventories



- Satellite image analysis is the most cost-efficient way to measure forest/biomass resources and how these change.
- Region/nation-wide mapping of resources.
- Defining the most suitable locations for plants considering biomass productivity and logistics.
- Optimization allows an accurate assessment of the feasibility or long-term sustainability of an investment.

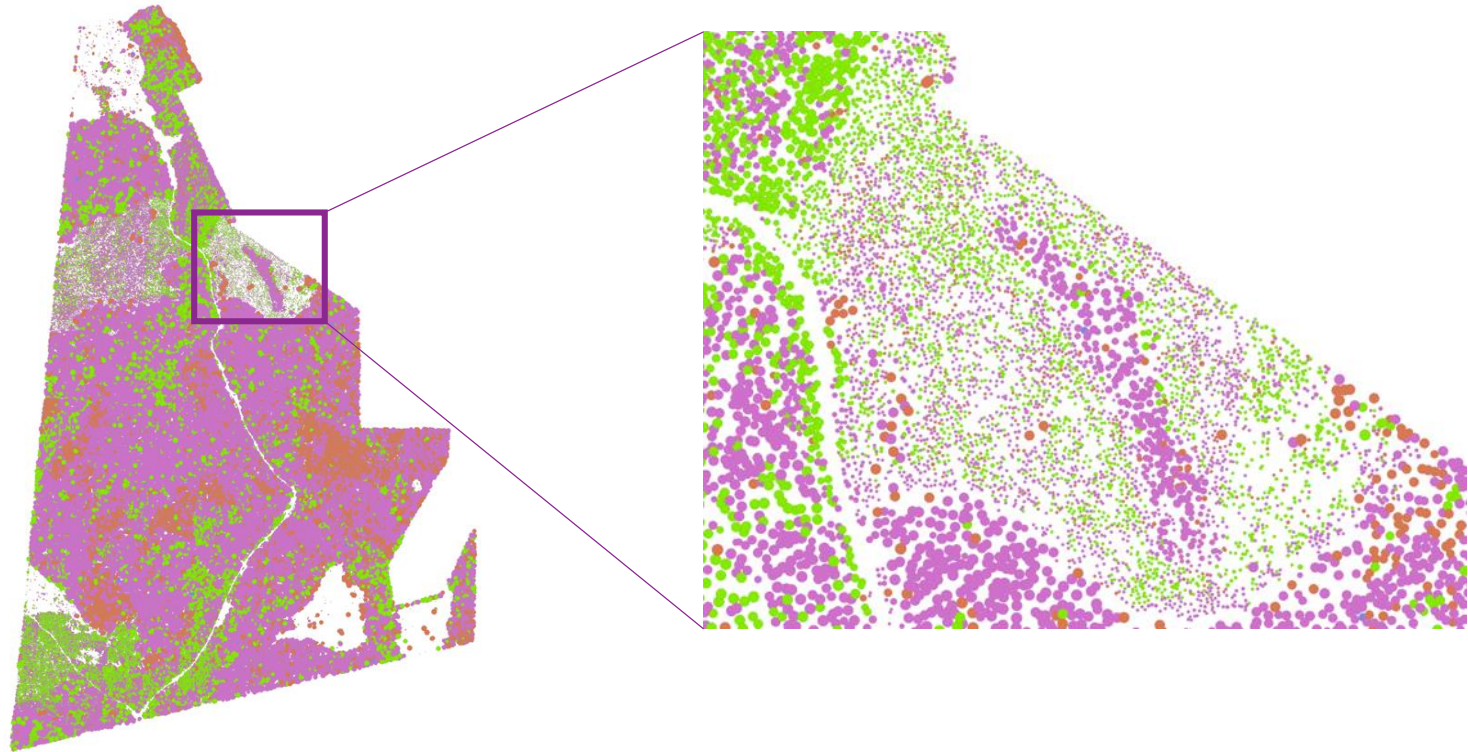
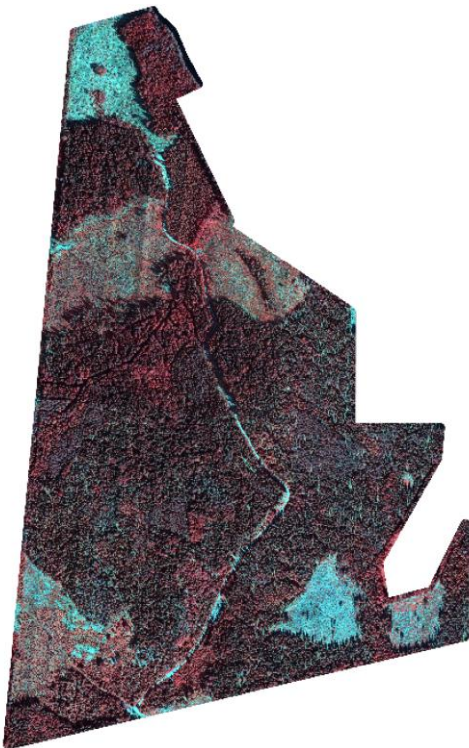




# ✚ MAPPING AND INVENTORY

## Tree by tree measurement and planning

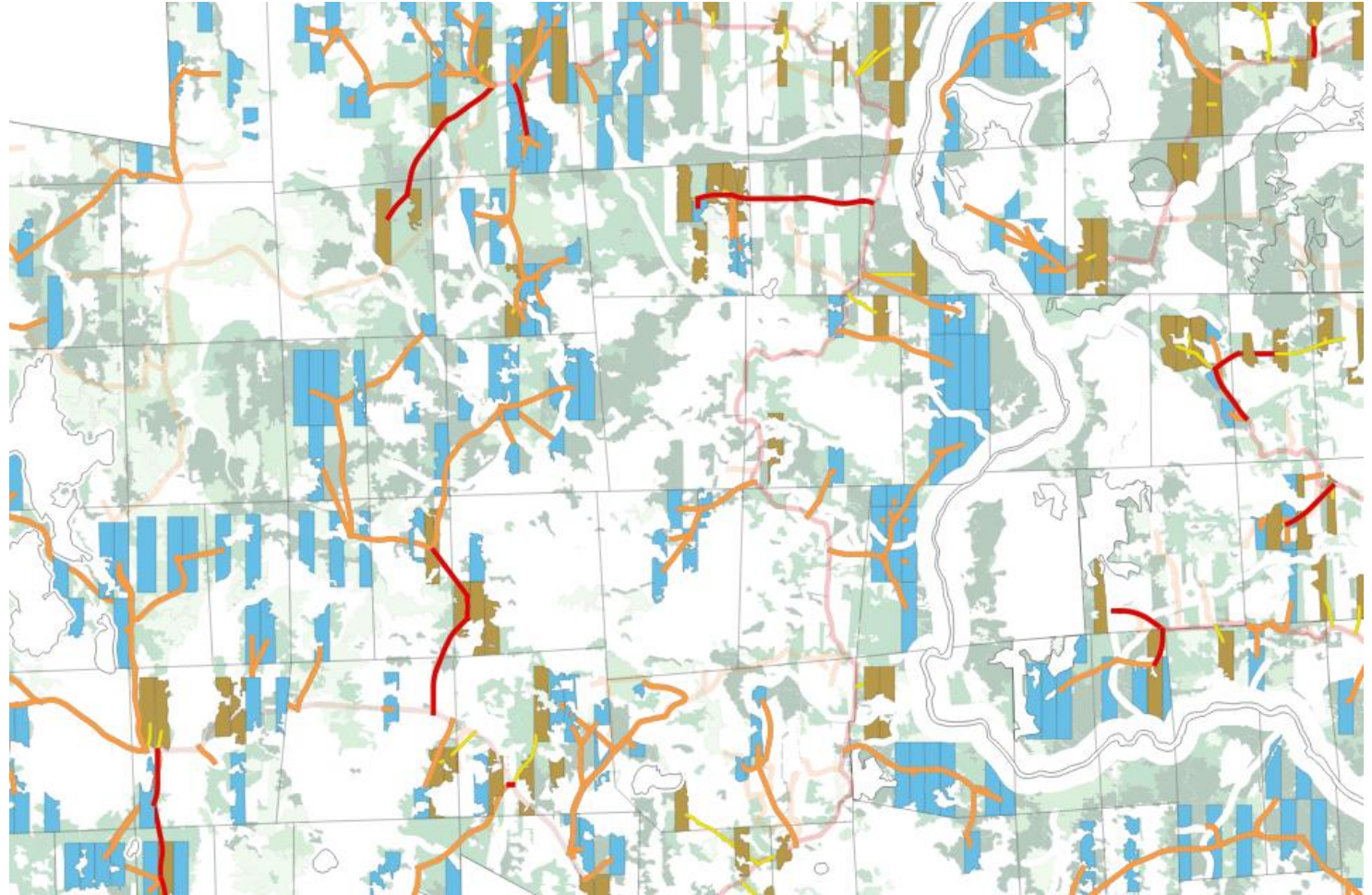
- Point clouds from drone measurements  $\Rightarrow$  individual tree detection
- Optimized management plans based on tree level data



# MAPPING, INVENTORY (AND OPTIMISATION)

**For Metsä, we delivered:**

- Mapping of forest resources in 150,000 ha in Russia.
- Mapping of existing road network.
- Inventory of spruce stock using remote sensing and ground reference data.
- Optimized harvest schedule per stand (considering accessibility).
- Optimized road construction and maintenance plan.







# MANAGEMENT PLANNING

## The need

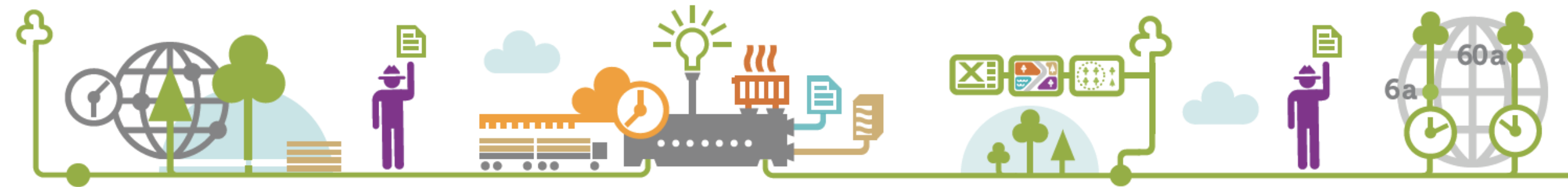
- For the trees to survive, they need to have value
- The most efficient way to add value to trees is to create a functioning timber market
- Value adding processing becomes critical



# MANAGEMENT PLANNING

## The need

- Value adding processing needs a predictable wood supply
- We need to bring the manufacturing industry and the small scale forest owners together to create the predictable supply







# MANAGEMENT PLANNING

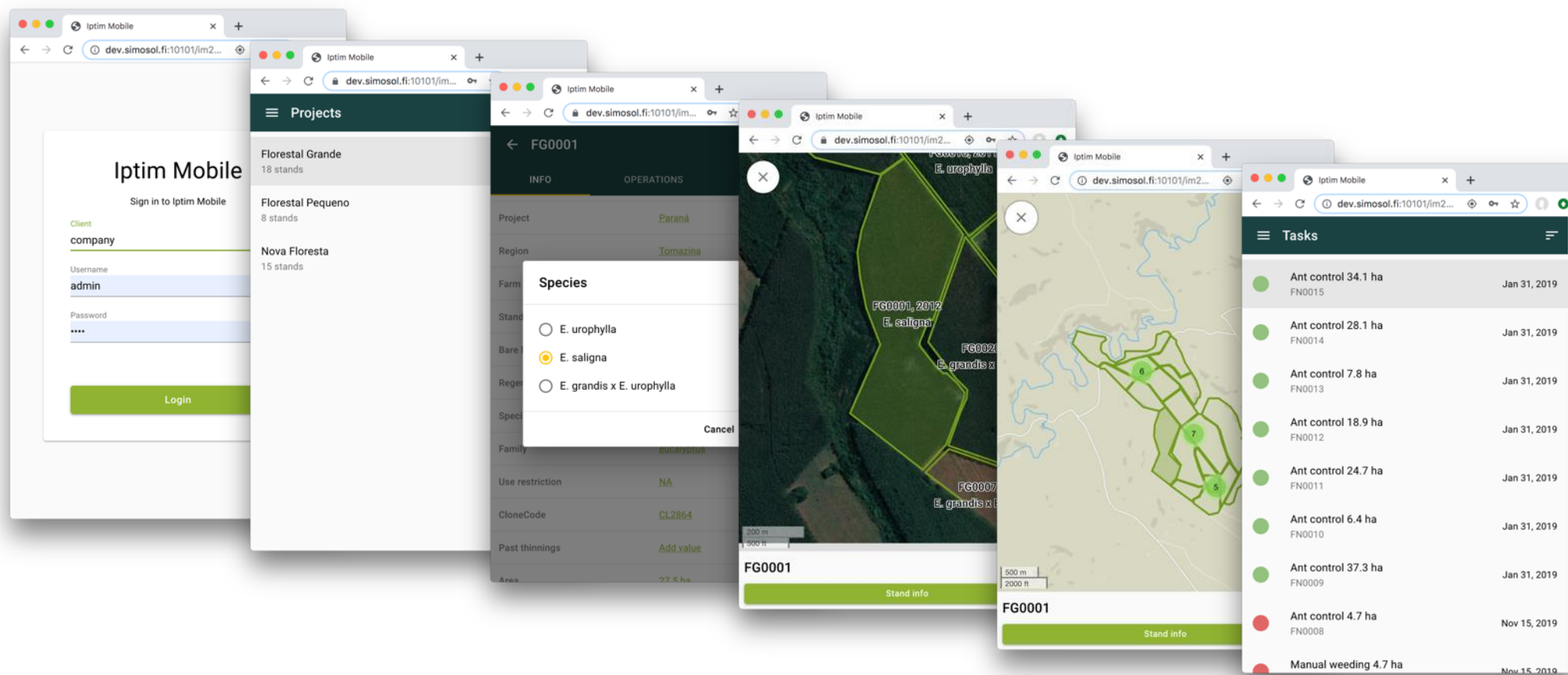
## The Solution

- This interaction can only be scaled cost-efficiently with technology
- In Finland, companies have been working to show forest owning families what the value of their forests is
- Light weight way of doing that: use mobile phones to reach the forest owning families



# PRIVATE FOREST OWNER SERVICE

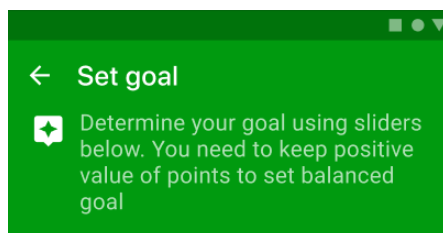
## Iptim Mobile





# PRIVATE FOREST OWNER SERVICE

## eTapio – Mobile Application for Forest Owner Engagement



**Treatment of your forest**

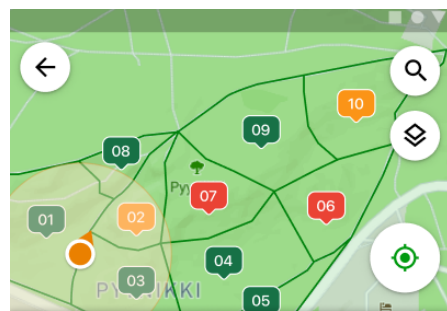
6 point left

**Economic values** ⓘ  
Not important

**Carbon sequestration** ⓘ  
Important

**Recreational value** ⓘ  
Not important

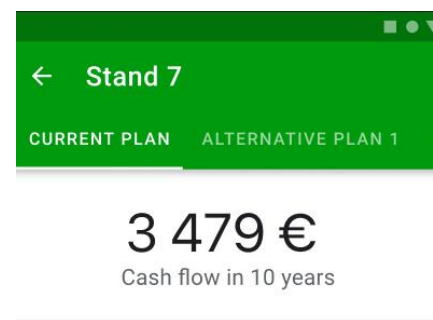
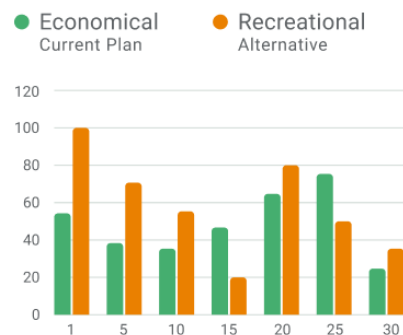
**Nature value** ⓘ  
Less important



### Säynänsalo estate

The Säynänsalo is located in Riihimäki, has a total area of 50 ha and contains 10 stands. The predominant Forest Site class usually provides an average growth potential but it is better than the rates found in that region.

### Net Income (€)

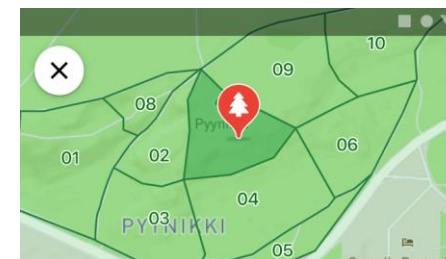


### Next operations

- History**
- Clear felling · 2020 ⓘ  
+5 000 €
  - Planting of pine · 2020 ⓘ  
- 860 €
  - Mounding · 2021 ⓘ  
- 460 €



7 from 15 ha  
are mounded (47%)



### Offer details

- Stand 4 Viitaniemi**
- Insects detected in stand. I made work item offer for the site and one seedling stand thinning also? Can we do these?
- ☒ Thinning · 2019  
+5000 €
  - ☐ Seedling stand thinning · 2019  
-650 €

**Order this work**

# FOREST AND TREES

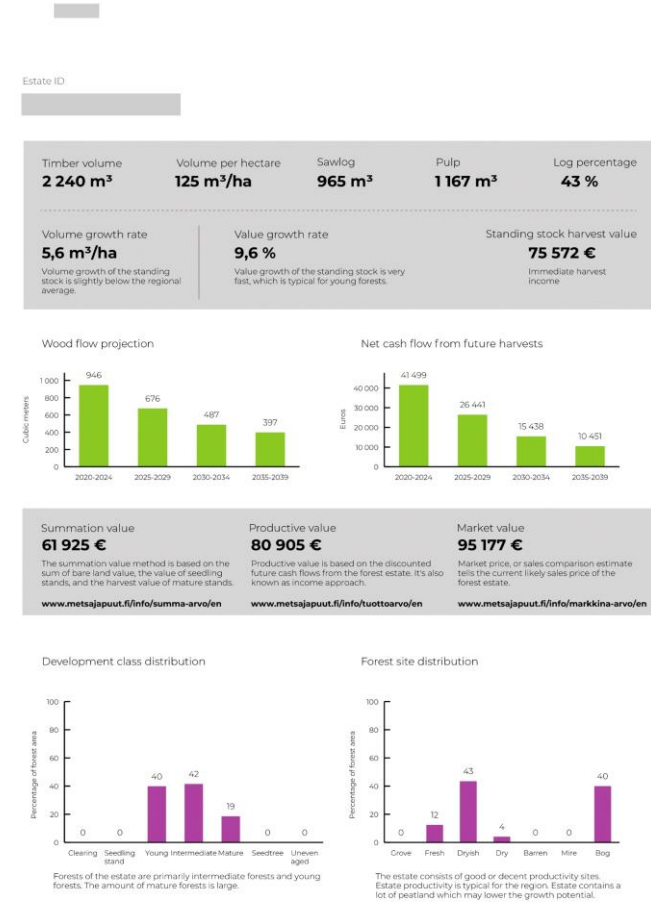
## Automatic forest estate valuation

- Utilizing open source data of forest assets (in Finland)
- The market value is estimated forest inventory data from Metsään.fi service, up-to-date market data, and Simosol's own simulation and optimization software

### Forest Estate Valuation



<https://metsajapuut.fi/?l=en>



Disclaimer: The values, figures and forecasts in this forest valuation report are indicative estimates and are not intended to be used as the sole basis for any transaction decision. The estimates are based on forest resource information provided by Metsään.fi. Simosol Oy is not responsible for the accuracy of the estimates provided, nor for any possible direct or indirect damages to users of this report or others due to errors, omissions or other inaccuracies in the estimates.

 **simosol**

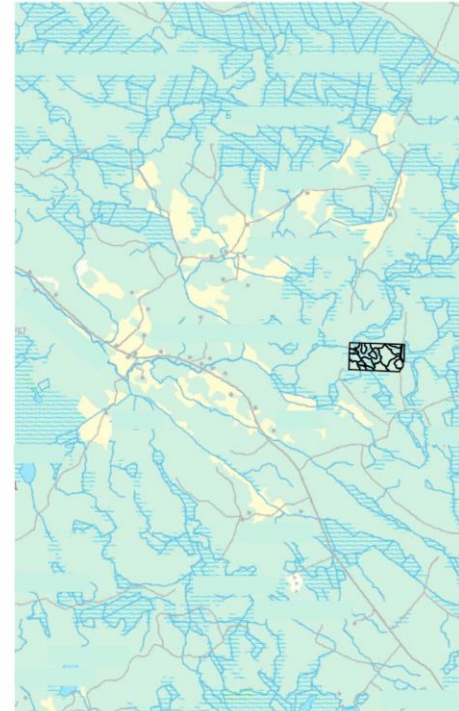


# FOREST AND TREES

## Automatic forest estate valuation

- Obtains the market value, summation value, and productive value of any forest asset in Finland
- The methods have been audited both in Finland and internationally by leading accountants
- Other applications that utilize open source data: OP Metsä, GEO by Bitcomp, Karttaselain, ProMS Mobile Arbonaut

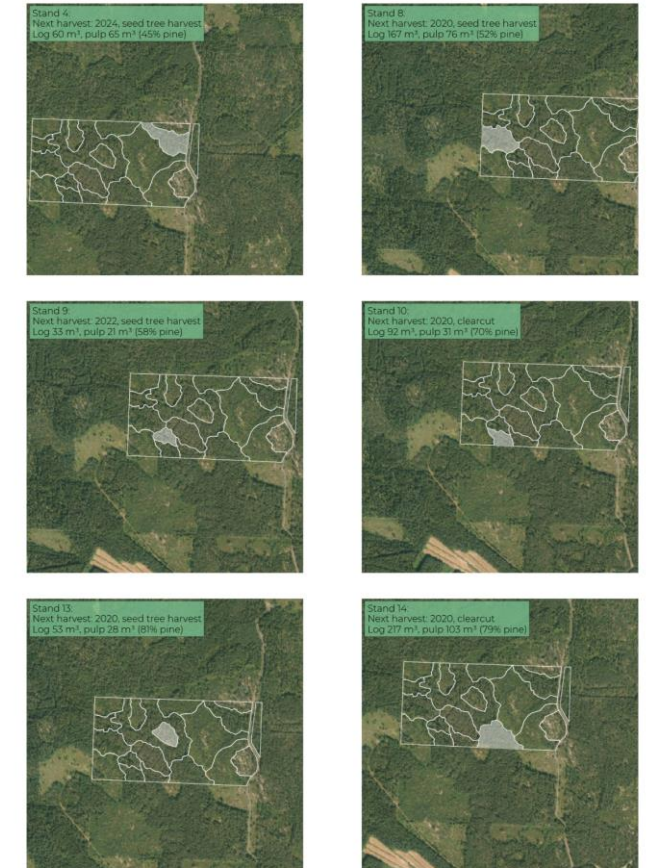
Stand map



<https://metsajapuut.fi/?l=en>

### Harvest opportunities

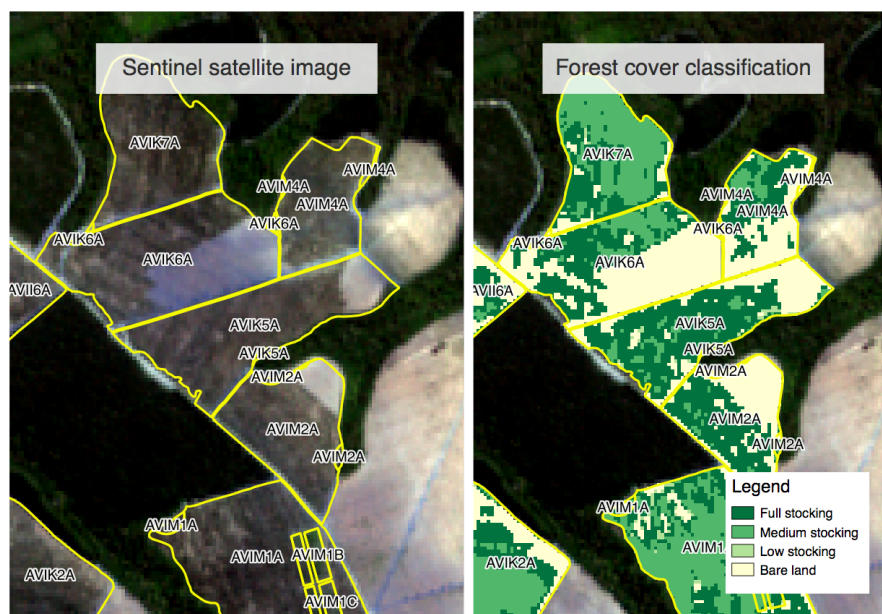
Stands, which are harvestable during the next five years



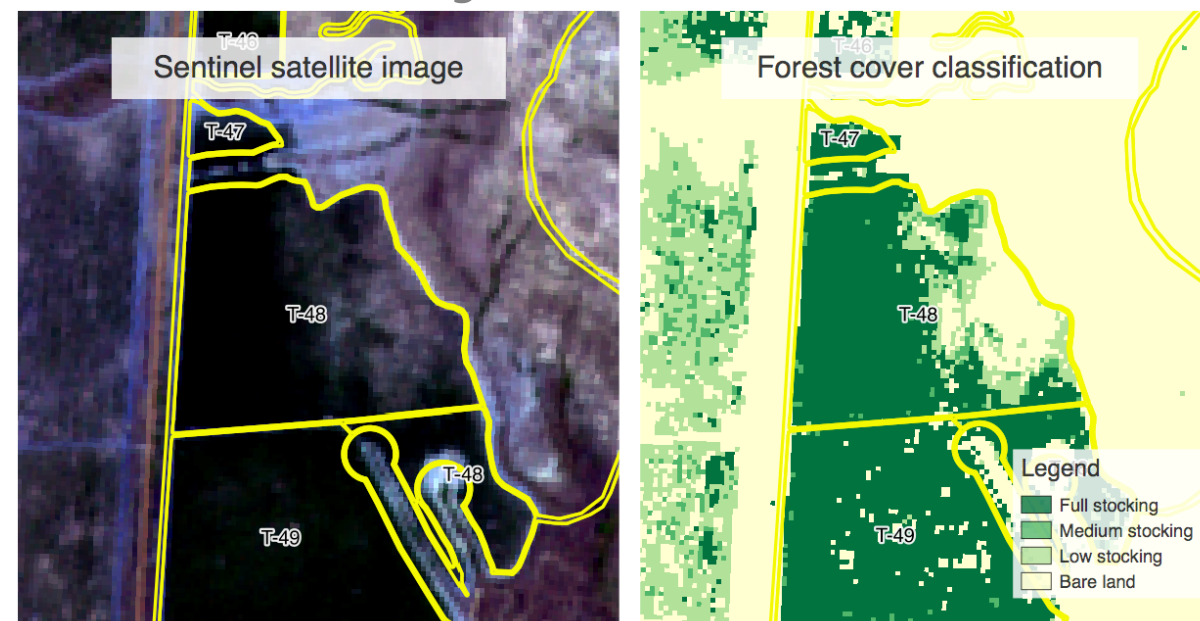
# RESOURCE MONITORING

## Monitoring plantations using Sentinel-2 images

Monitoring of replanting due to  
ant damages



Identification of severe mortality due to  
drought on shallow soils

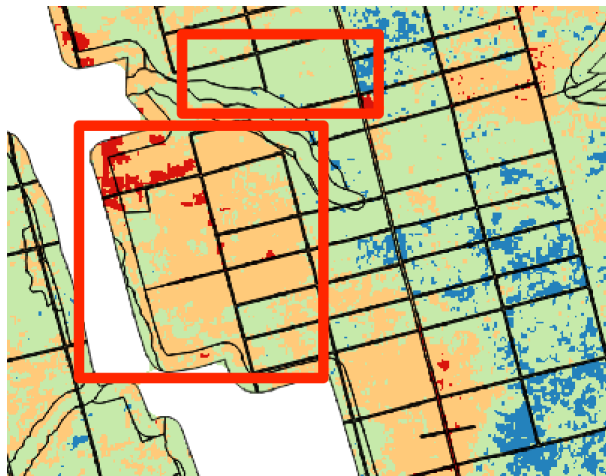




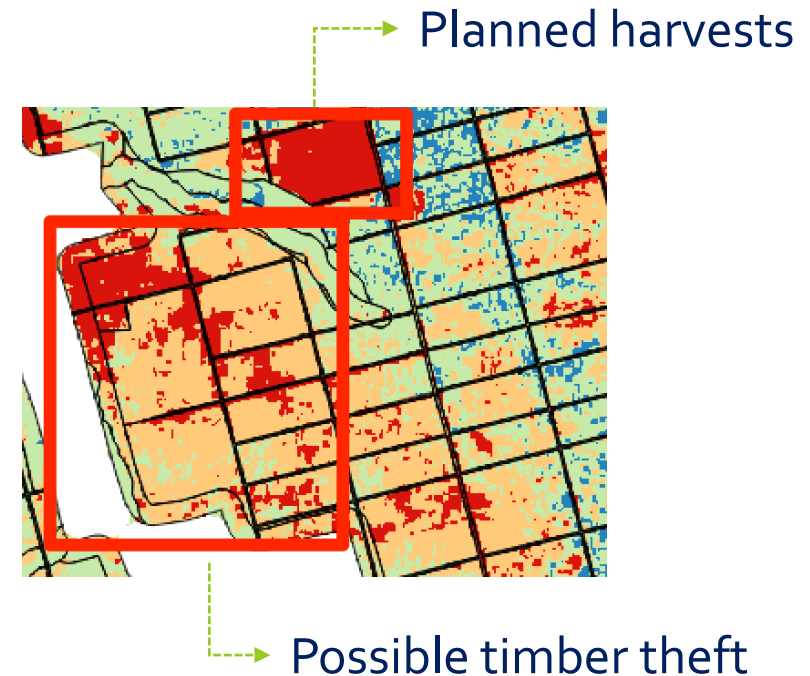
# RESOURCE MONITORING

## Monitoring theft using Sentinel-2 images

- Continuous change detection using Sentinel-2 images. The cycle can be, for example, monthly or annual.
- This is an example of detecting timber theft for an African client project in a bi-monthly change detection service.



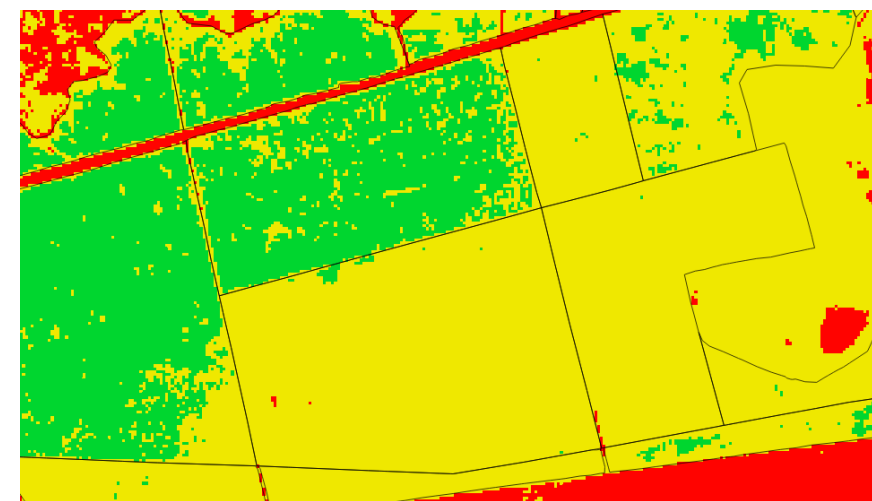
2 months later



# RESOURCE MONITORING

## Cost-efficient forest verification

- Satellite image based verification of forest canopy cover and identification of potential gaps or other issues with forest quality
- Selection of field visit locations based on the satellite image analysis results



 unstocked     heterogeneous     homogeneous



# GLOBAL PARTNERSHIPS



**“It is a pleasure to execute forestry IT projects with Simosol. They know from half a word what we want and need, and deliver it”**

*- Risto Laamanen, Information Systems Manager, Metsähallitus*

# Thank you!

Contact at Simosol

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**Breno Gil**  
Product Manager  
[breno.gil@simosol.fi](mailto:breno.gil@simosol.fi)

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[www.simosol.fi](http://www.simosol.fi)