



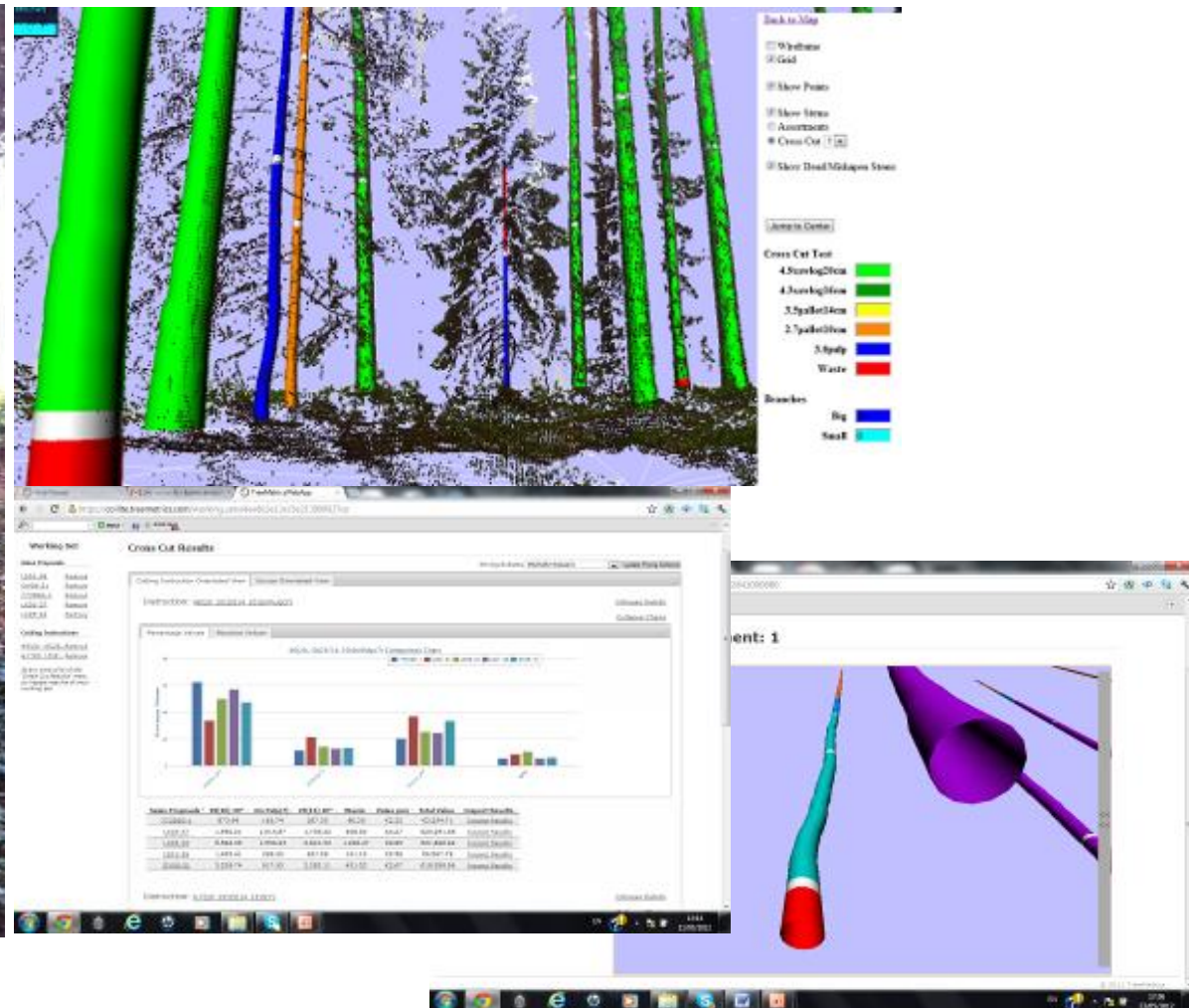
# **ICF National Conference**

**TreeMetrics Ltd**

**April 27th**

# TreeMetrics History

## Pioneered Forest Terrestrial Laser Scanning



# Our Present Tools for the Wood Supply Chain



**FORESTHQ**

strengthening linkages in the supply chain

# The Competitive Advantage of Strong Linkages

“The **stronger the linkages** between the primary and secondary producer the greater the source of competitive advantage for all”

Clayton Christensen - Harvard Business School

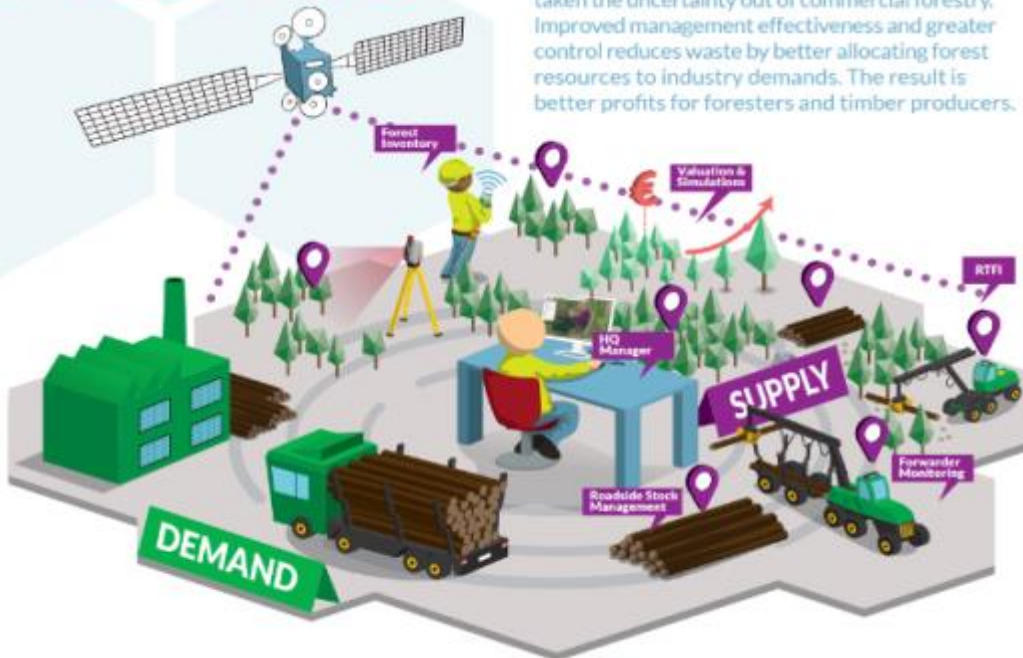


# Strengthen the Linkages with Better Information

## TREEMETRICS FOREST HQ

Forest HQ transforms what is possible in centralised management of operations.

Through simple to use, interconnected systems and always-on communications, Treemetrics have taken the uncertainty out of commercial forestry. Improved management effectiveness and greater control reduces waste by better allocating forest resources to industry demands. The result is better profits for foresters and timber producers.



## FOREST HQ

A cloud based, forest management platform that offers full, realtime, centralised visibility and communications for all essential forestry processes

One Platform, Flexible Modules - Select the ones you need



**TREEMETRICS**

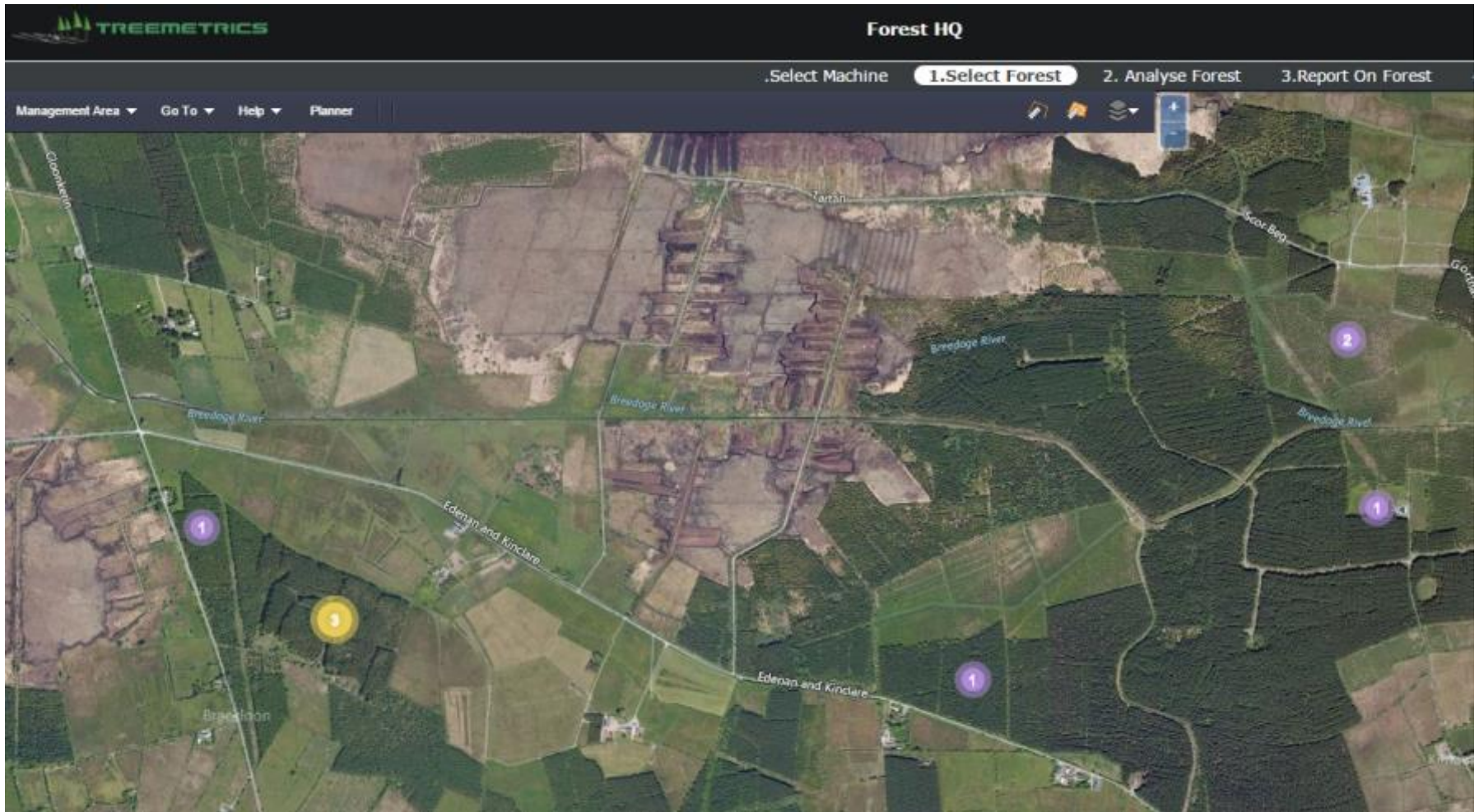
- Ease of Use**  
 Easy to use and integrate with existing systems. Designed by foresters for foresters.
- Resource Efficiency**  
 Supports more informed decision making for greater efficiency and profitability. Share projects across teams to communicate and work more effectively.
- Security**  
 All data is encrypted to ensure security.
- Interconnectivity**  
 The ability to remotely access the ForestHQ platform and work offline with mobile devices enables greater efficiency.

# Manage Tasks & Operations

## Search & Filter Results

The screenshot displays the TREEMETRICS Forest HQ interface. At the top, there are navigation tabs: ".Select Machine", "1.Select Forest" (active), "2. Analyse Forest", and "3.Report On Forest". Below the tabs is a "Management Area" dropdown and a "Go To" field. The main content area is titled "Forest Planning Window" and contains links for "Create Licence Tracker", "Create Operation", and "Create Other Task". A search bar is present with the placeholder text "type to filter tables". Below the search bar, there are two buttons: "Operations (111 Live)" and "Show Archived (4)". A table with the following columns is visible: "In Management Area", "Name", "Type", "Creator", "Assignee", "Files", "Year", "Notes", "Map", "Show", "Edit", and "Archive". The table is currently empty. Below the table is a map of the United Kingdom and Ireland, overlaid with numerous circular markers in orange and yellow, each containing a number. The markers are distributed across the country, with higher concentrations in the south and east. The map also shows major cities and geographical features like the North Sea and the Irish Sea.

# View Operations at the Forest Level



# Document & Licence Management

## - Add Documents, Images and Licenses

The screenshot displays the TREEMETRICS Document Manager interface. On the left, a sidebar shows 'Site: Demo' and '1 Operations in Demo'. The main area is titled 'Document Manager' and features a 'File Upload' window. Below the upload window, there are tabs for 'User Files (8)', 'Field Files (1)', and 'System Files (5)'. A table lists the files, including 'testfile.txt', 'gradientA.png', 'lightred.gif', and 'main\_ember\_style\_variables.txt'. The background shows an aerial map with a white outline of a field.

Folder	File Name	Download	Date	User	Operation	Select	Delete
User Files							
	testfile.txt		2016-Apr-18	Admin	NSC_16	<input type="checkbox"/>	
another garret folder							
another	gradientA.png		2016-Apr-18	Admin	NSC_16	<input type="checkbox"/>	
Imagery							
blabber	lightred.gif		2016-Apr-15	Admin	testone	<input type="checkbox"/>	
blanner							
blanner	main_ember_style_variables.txt		2016-Apr-18	Admin	NSC_16	<input type="checkbox"/>	
icon							



# Strengthen the Link to Measurement



**FORESTHQ**

strengthening linkages in the supply chain

# Measurement HQ Inventory Planning Management

The screenshot displays the Measurement HQ software interface. At the top, there is a navigation bar with the following elements: ".Select Machine", "1. Select Forest", and "2. Analyse Forest". Below this is a menu bar with "Management Area", "Go To", "Help", "Files", "Planner", and several icons. The main area is a satellite map of a forest management area, with a white outline indicating the selected area. On the left side, there is a sidebar titled "Management Area: Kiskeam" containing "Forest Levels", "Operations", and "View Levels" (with "Management Area" and "Edit" buttons). At the bottom, there is a data panel titled "Kiskeam : ( 1 Blocks, Area: 10.75 ha. )" which contains a table with the following data:

Kiskeam Block	Species (List)	Date Planted	Area (ha)	Kiskeam Block Info (notes)
1	SS - Sitka Spruce	1979	10.75	

# Automated Productive Area Mapping

.Select Machine **1. Select Forest** 2. Analyse Forest

Management Area ▼ Go To ▼ Help ▼ Report ▼ Files Planner Simulations ▼ ⓘ ⚙️ 🔄 🖱️ 1

Management Area: Kiskeam  
Operation: Kiskeam

Forest Levels

Kiskeam

Operations

▲ View Levels

- Management Area
- Block Edit
- Productive Area** Edit
- Strata Edit
- Plots Edit

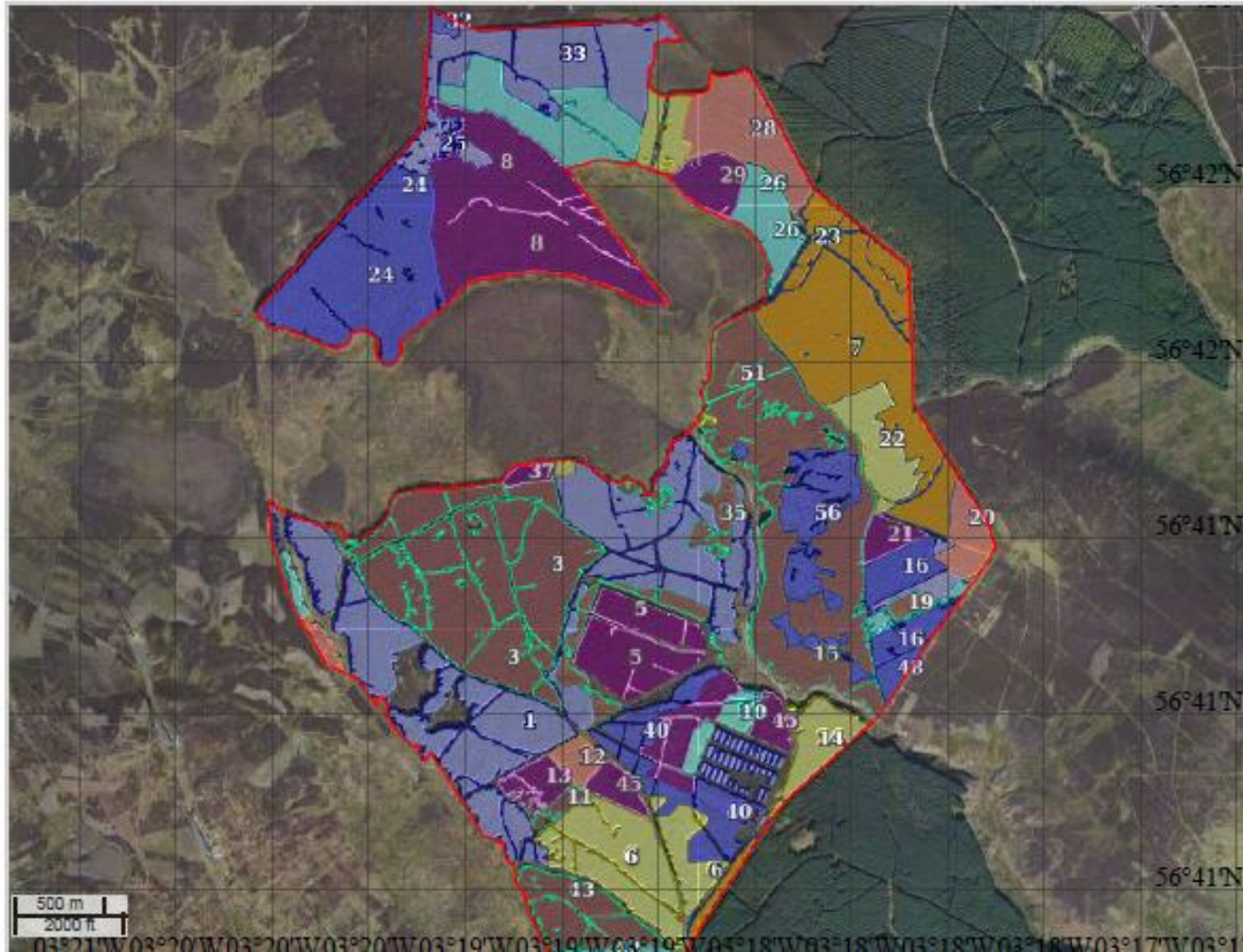
Forest Analysis Tools

Kiskeam : ( 1 Blocks, Area: 10.75 ha., Productive: 6.15 ha., 4 Strata )

Kiskeam Block	Species (List)	Date Planted	Area (ha)	Prod. Area (ha)	Nr. Strata	Planned Nr. Plots	Kiskeam Block Info (notes)
1	SS - Sitka Spruce	1979	10.75	6.15	4	13	Strata 1 is the best timber but the ...

# Stratify Your Forest

## Complex Strata Management



# Select Plot Locations for Inventory

The screenshot displays the Treemetrics Forest Assessor software interface for a demo project named "Ardcolagh, ESA\_Demo1". The interface includes a top navigation bar with the following steps: 1. Select Forest, 2. Analyse Forest (currently active), 3. Report on Forest, and 4. Forest Measurement. A user is signed in as "testerccn" with options for "Admin" and "Map".

The main map area shows an aerial view of a forested area. A large section of the forest is highlighted in purple and labeled "Block 1". Within this block, 14 numbered plots (5 through 18) are marked with blue circles. The interface also features a "Forestry Analysis Tools" panel on the left, which includes a "Forest Levels" section. This section has a "Select Operation" button and a "Select View Levels" list with the following items: Management Area, Block, Productive Areas (checked), Strata, Plots (checked), Distribution Maps, Species, Voronoi, and Post Inventory Strata. Below this list is a "Prod. Area EO: Bing" button and a "View EO Data" dropdown menu.

At the bottom of the interface, a status bar provides the following information: "Finished vorroni for ESA\_Demo1 in 00:00:06.", "Area of selected feature: none selected", "X: -8.29259, Y: 53.90389", and "Scale = 1:3386". The bottom left corner shows the ID "0.142184072" and the bottom right corner shows the copyright notice "Powered by Treemetrics. © 2008-2015 Treemetrics".

# Utilise Laser Scanning or Calliper



# Bring the Information to the Forest – Offline Input Data via Bluetooth



demo forest

Forest settings and species info demo forest

- Forest: demo forest
- Block: 1
- Strata: 1.0
- Plot: 1
- Plot: 2
- Plot: 3

Save

Done

Species Info

Species: Silver Spruce

Stocking: Count: 25 (250 stems/ha)

Parcel area (hectare): 16.0

Set Stocking...

Species

Silver Spruce	22.4	Edit	Del
Pododot Pine	20.0	Edit	Del

DBH (cm): 22.4

Add DBH to Transect...

DBH transect pairs

Height (m)	DBH (cm)	Edit	Del
25.0	20.0	Edit	Del
25.0	20.0	Edit	Del
25.0	24.0	Edit	Del

Add DBH / Height pair...

Height (m): 26.2

DBH (cm): 25

Done

# Stemfiles Created for all Trees Measured

The screenshot displays the AutoStem software interface. On the left, a table lists 13 stems with their respective DBH and Height values. The main window shows a 3D wireframe model of a tree trunk in green. The bottom panel contains a warning log and a configuration area for a specific stem.

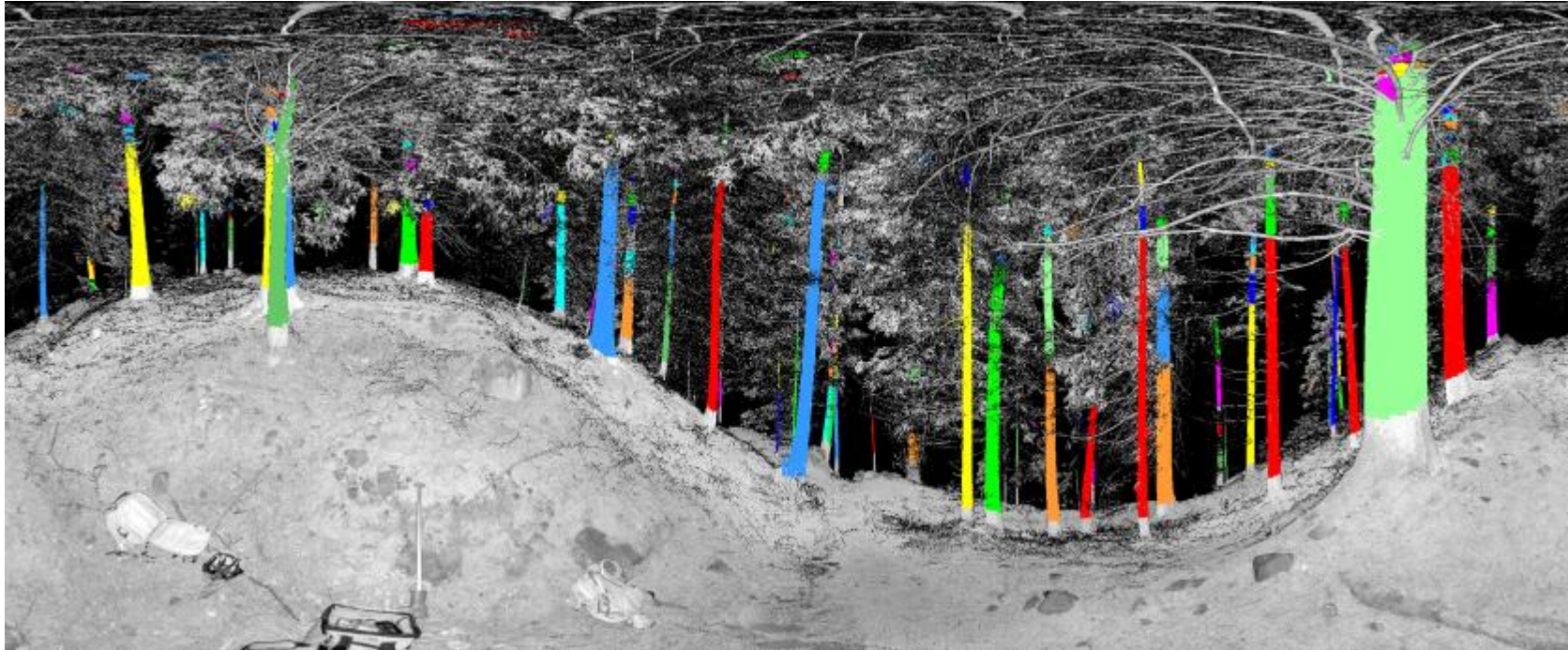
Name	DBH	Height
Stem 1	0.587278	26.2'
Stem 2	0.269393	28.3'
Stem 3	0.379865	28.4'
Stem 4	0.405264	31.4'
Stem 5	0.414697	25.5'
Stem 6	0.724337	27.4'
Stem 7	0.553302	30.6'
Stem 8	0.553387	34.8'
Stem 9	0.419147	30.2'
Stem 10	0.381580	24.9'
Stem 11	0.337391	26.2'
Stem 12	0.381934	27.6'
Stem 13	0.385359	25.2'

Warning Stem 4 Height 765  
Warning Stem 5 Height 503  
Warning Stem 6 Height 779  
Warning Stem 7 Height 760  
Warning Stem 8 Height 792  
Warning Stem 9 Height 791  
Warning Stem 10 Height 79  
Warning Stem 11 Height 80  
Warning Stem 12 Height 76  
Warning Stem 13 Height 78

Species: Spruce Start Height: 0  
 Show Tapered Predictions Timber Height: 1890  
404 399 407 397 376 374 381 382 381 369 364 361 355 347 341 329 332 330 34  
APT Identity: UntitledID APT File Name: UntitledID.apr

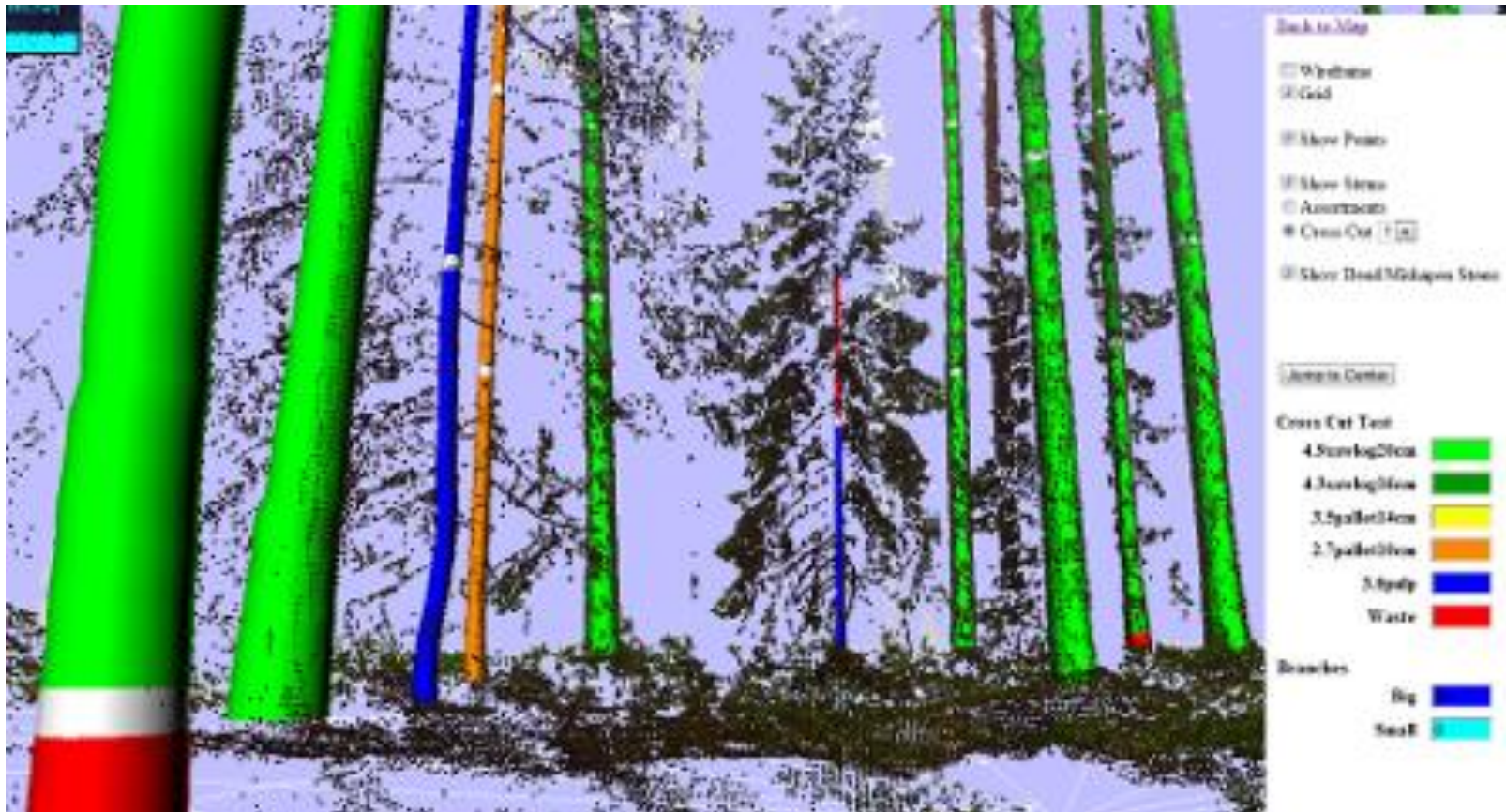


# Terrestrial Laser Scanning Inventory



## 3D Stem Profile

# Terrestrial Laser Scan Tree Profiling



# Simulated Harvesting

## Log Product

\* required fields

Name\*:

Length (m)\*:

Min Sed (mm)\*:

Max Sed (mm):

Min Led (mm):

Max Led (mm):

Log Type:

[Show Species Restrictions](#)

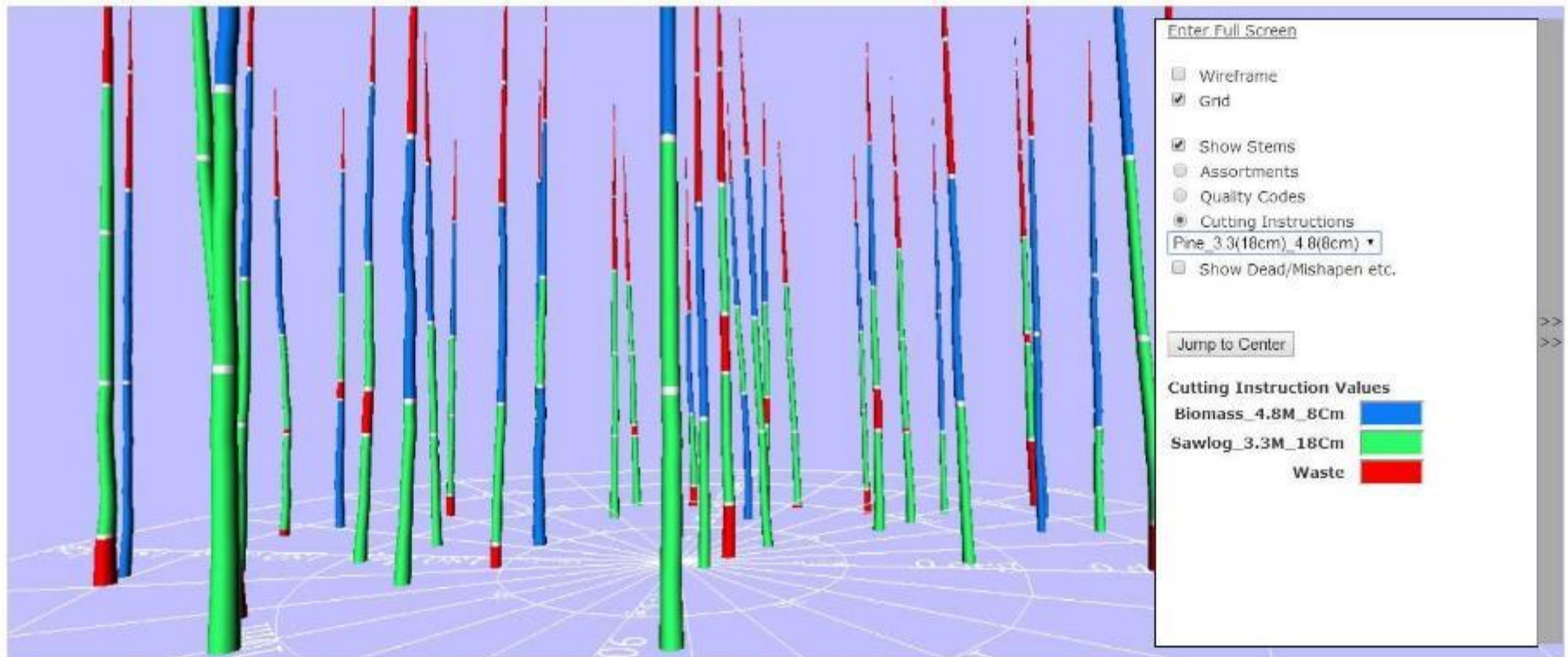
[Add Sweep Config](#)

[Create Log product](#)

[Back](#)



# Harvest Simulation System: View the Log Products



#245589121  
© 2011 TreeMetrics

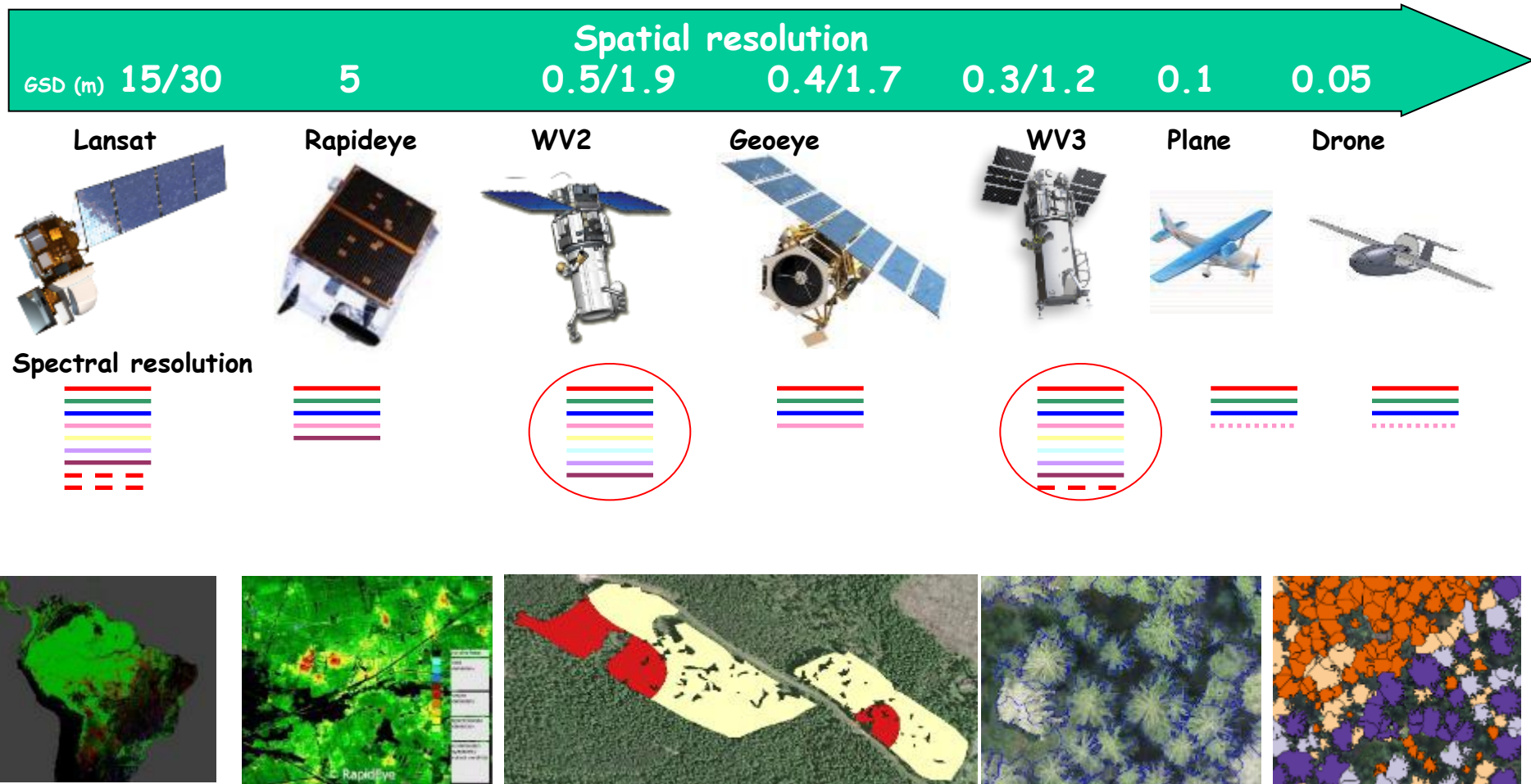
# View the Post Inventory Information as a Report and Heat-Map

Strengthen the Links in the Supply Chain

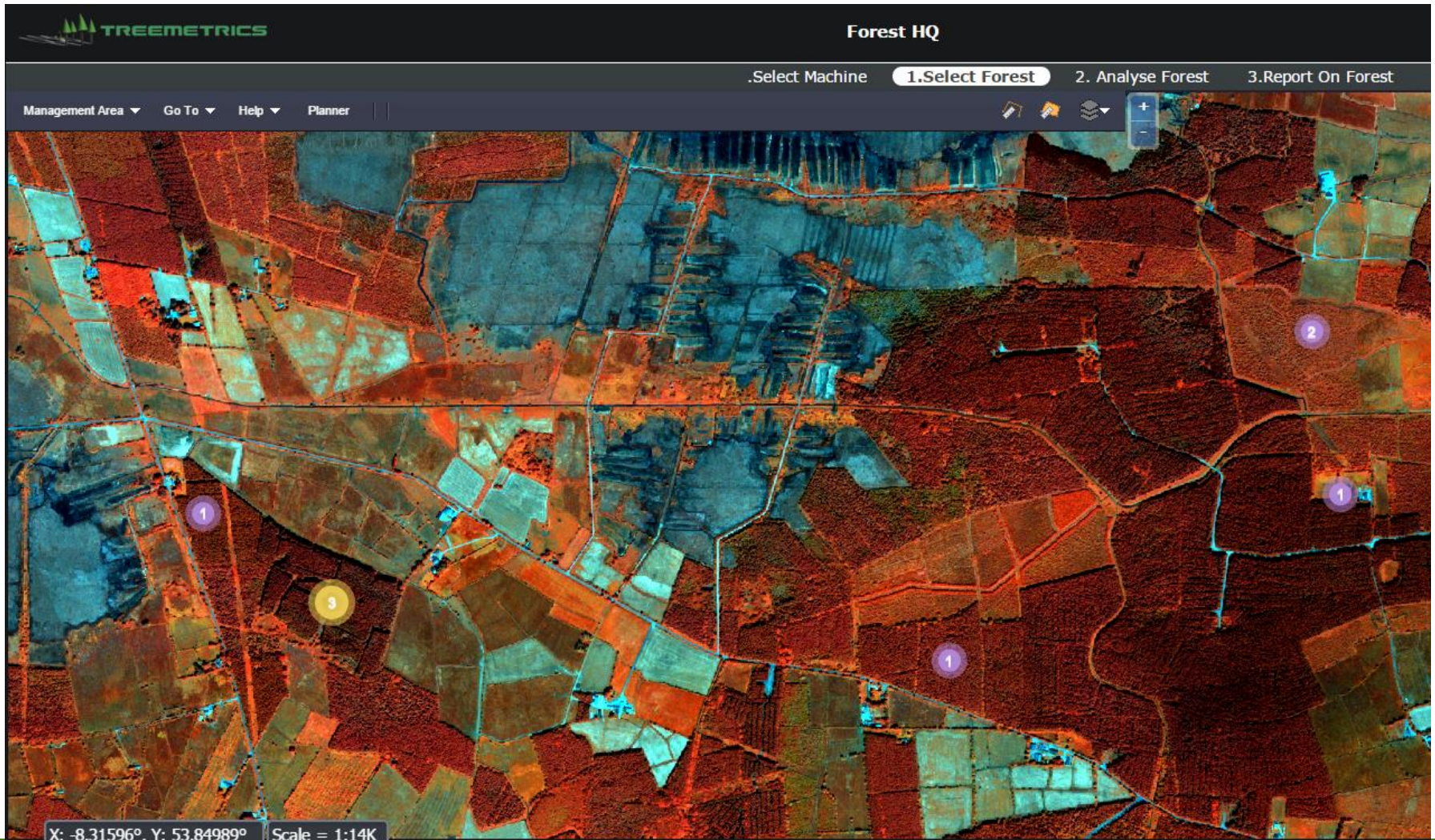
The screenshot displays the TREEMETRICS software interface. The main window shows an aerial view of a forest management area with a heat map overlay. The heat map is divided into several numbered plots (1-10) in various colors (yellow, orange, red, green, blue). The interface includes a top menu bar with options like 'Management Area', 'Go To', 'Help', 'Report', 'Files', 'Planner', 'Simulations', and 'Select Machine'. The '1. Select Forest' tab is active. On the left, there is a sidebar with 'Management Area: Kiskeam' and 'Operation: Kiskeam'. Below this, there are sections for 'Forest Levels' and 'View Levels' with options for 'Management Area', 'Block', 'Productive Area', 'Strata', 'Plots', and 'Distribution Map'. At the bottom, there is a table with the following data:

Kiskeam Block	Species (List)	Date Planted	Area (ha)	Prod. Area (ha)	Nr. Strata	Planned Nr. Plots	Kiskeam Block Info (notes)
1	SS - Sitka Spruce	1979	10.75	6.15	4	13	Strata 1 is the best timber but the ...

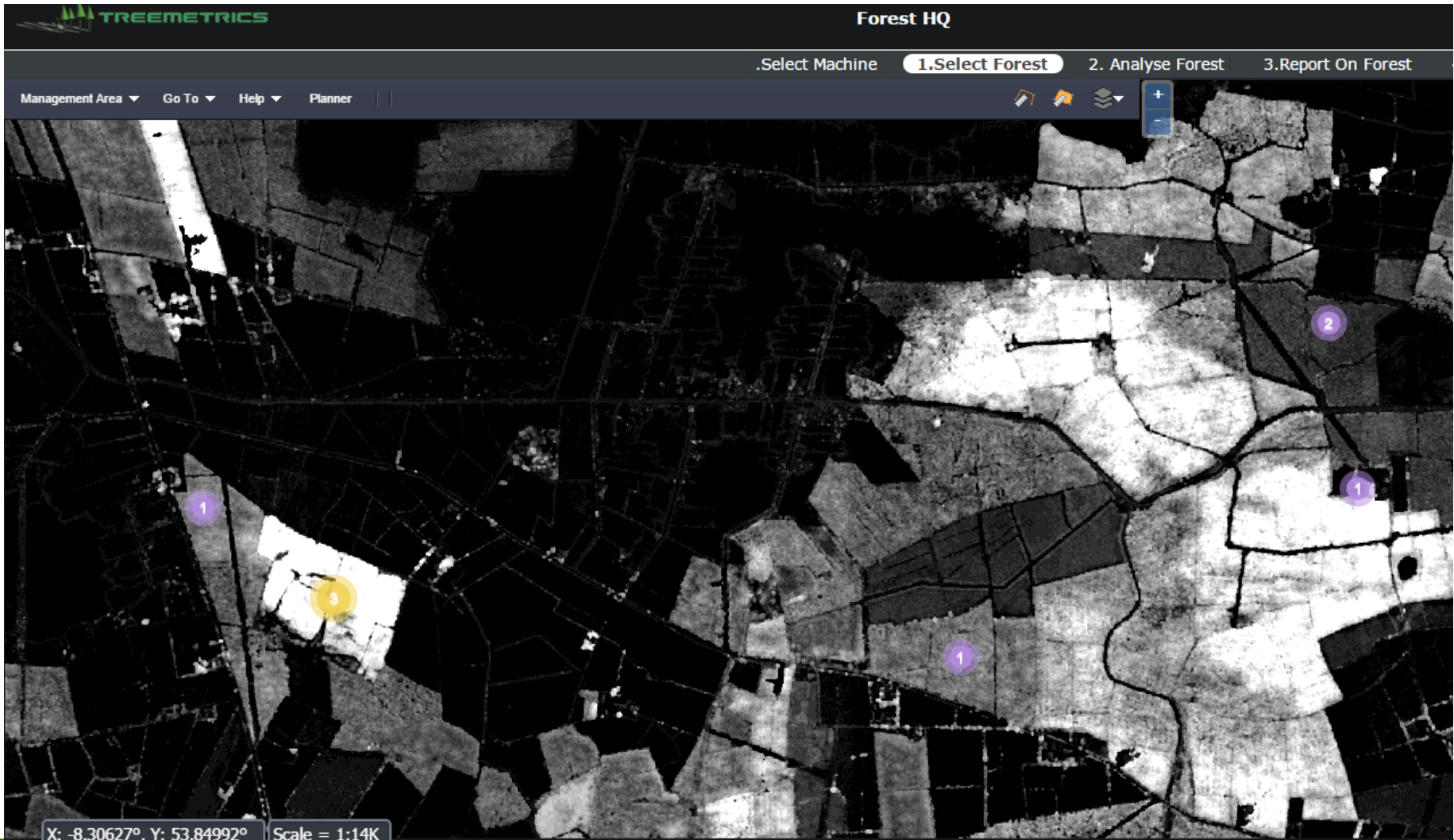
# Other Functionalities : Access Multisource Imagery: Satellites, Planes, Drones



# Use Imagery for Productivity (Near Infra Red)

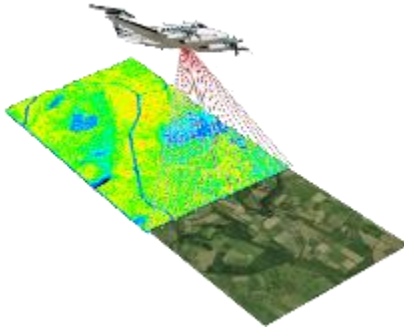


# Canopy Modelling using Satellite

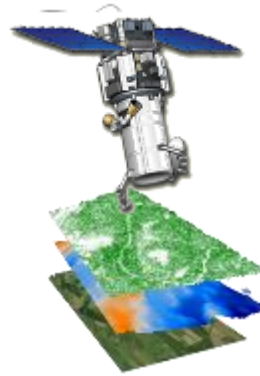




# Upload your own Data and Utilise Algorithms



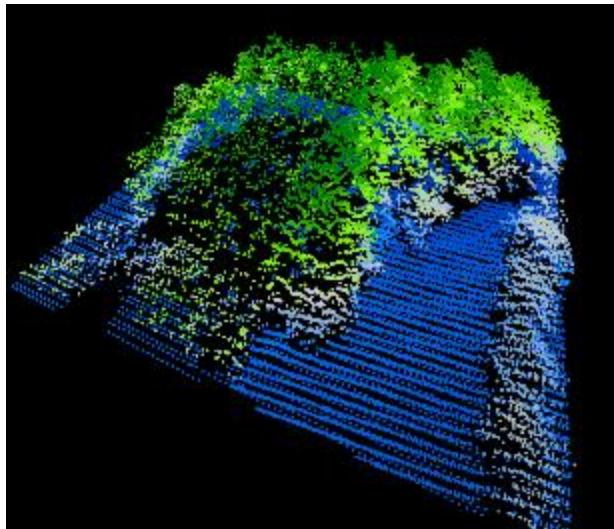
Aerial LiDAR



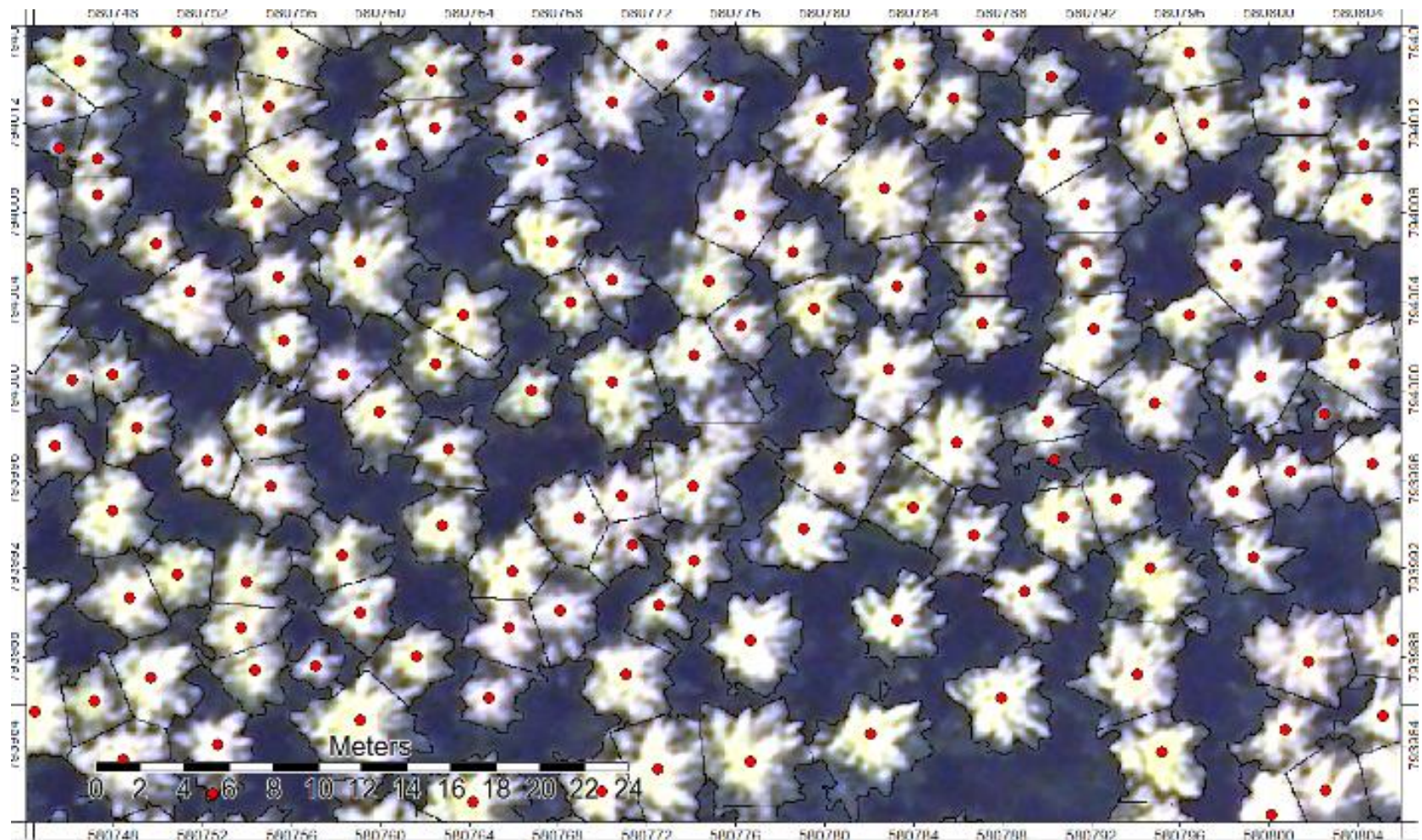
Satellite



UAV / Plane

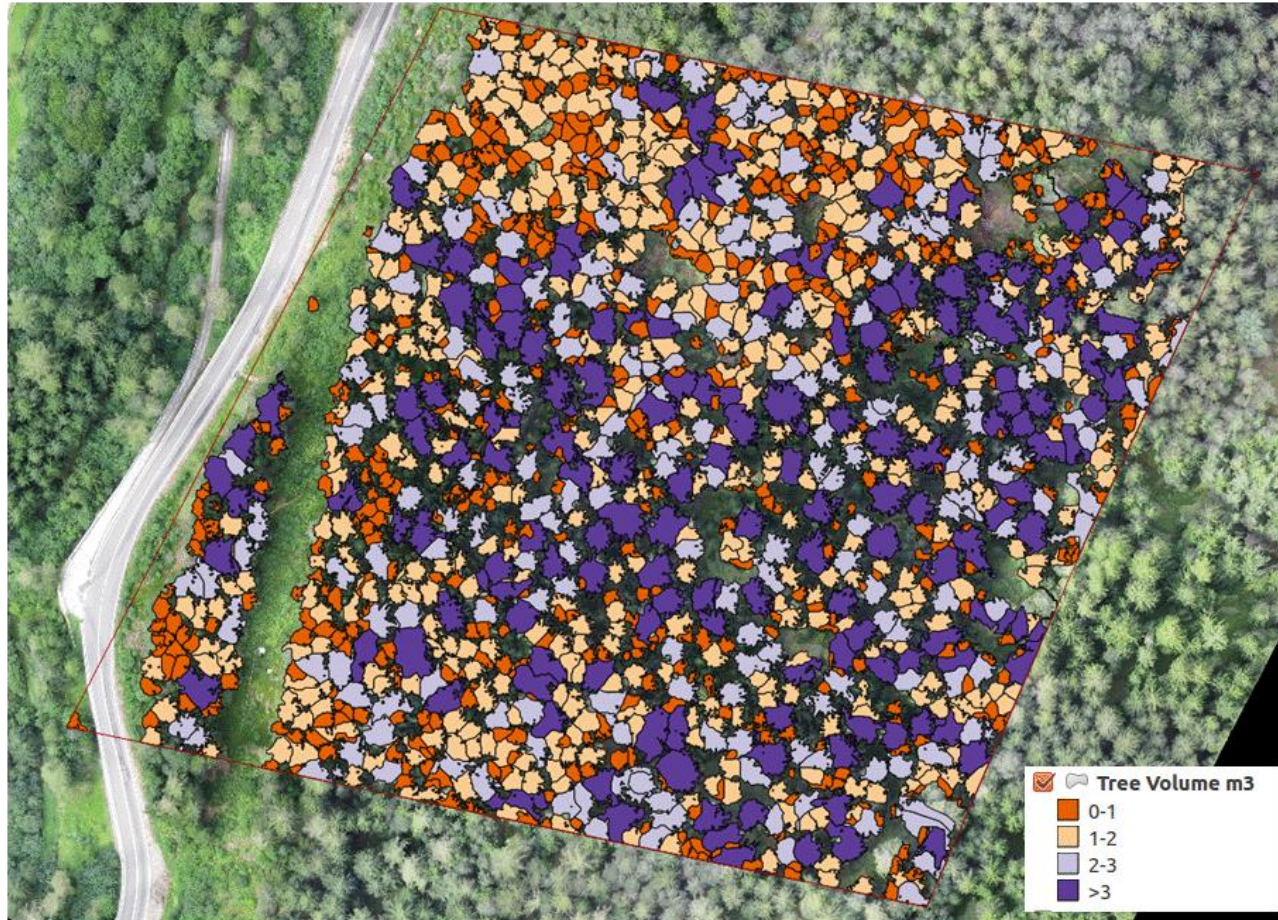


# Automated Stem Counting Using Imagery



# Measure Tree Crowns

## Volume Prediction



# Strengthen the Link to Harvesting



strengthening linkages in the supply chain

# TreeMetrics In Vehicle Harvester Device

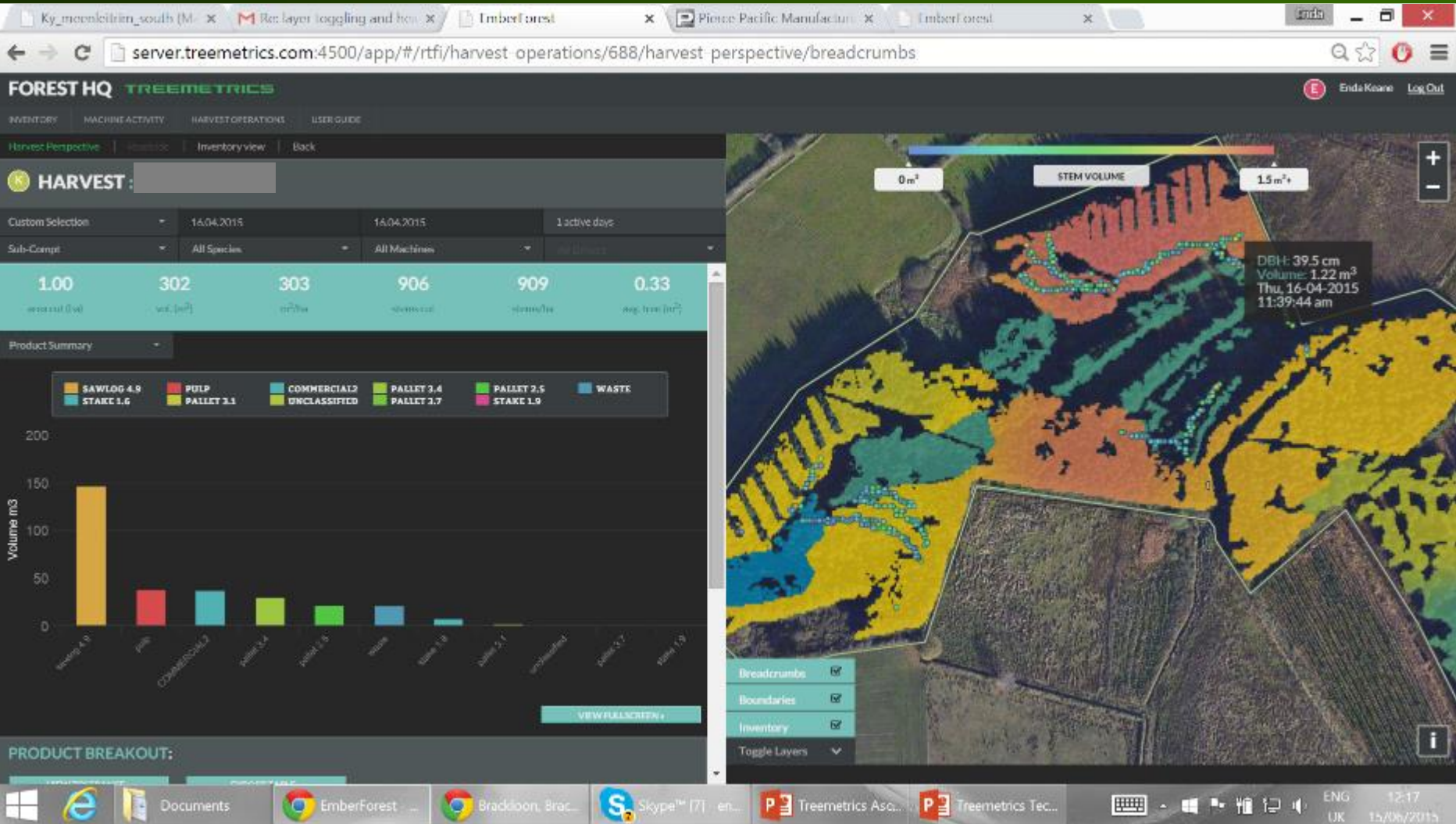
## 100% 2 Way Communications via Satellite & GPRS



- Enables Live Harvest Management
- Sending Imagery to the Forest Machine
- Improves Operator Performance



# Integrate Live Harvesting with Inventory Information



# Live Harvester Information

# Location and Production

**FOREST HQ TREEMETRICS**

INVENTORY | MACHINE ACTIVITY | HARVEST OPERATIONS | USER GUIDE

Harvest Perspective | Roadside | Inventory view | Back

**K HARVEST:** [REDACTED]

All dates: 04.12.2014 - 23.04.2015 | 12 active days

Sub-Compt: All Species | All Machines | All Drivers

7.32	2,112	289	6,935	948	0.30
area cut (ha)	vol. (m <sup>3</sup> )	m <sup>2</sup> /ha	stems cut	stems/ha	avg. tree (m <sup>3</sup> )

Product Summary

- SAWLOG 4.9
- PULP
- COMMERCIAL2
- PALLET 2.5
- WASTE
- PALLET 3.4
- PALLET 3.1
- STAKE 1.6
- UNCLASSIFIED
- UNKNOWN
- STAKE 1.9
- SAWLOG 5.5
- PALLET 3.7

Product Type	Volume (m <sup>3</sup> )
Sawlog 4.9	900
Pulp	350
Commercial 2	300
Pallet 2.5	150
Waste	120
Pallet 3.4	100
Pallet 3.1	80
Stake 1.6	50
Unclassified	20
Unknown	10
Stake 1.9	5
Sawlog 5.5	5
Pallet 3.7	5

VIEW FULLSCREEN

PRODUCT BREAKOUT:

VIEW TOLERANCE | EXPORT TABLE



# Track Harvester Progress Over Time

The screenshot displays the 'FOREST HQ' interface by Treemetrics. The browser address bar shows the URL: `server.treemetrics.com:4500/app/#/rtfi/harvest operations/688/harvest perspective/breadcrumbs`. The user is logged in as 'Erinda Keenan'.

**Harvest Perspective:** The interface includes a navigation menu with 'Inventory', 'Machine Activity', 'Harvest Operations', and 'User Guide'. The 'Harvest Perspective' is active, with sub-options for 'Real-time', 'Inventory view', and 'Back'.

**Harvest Summary:** A 'HARVEST:' section shows a 'Custom Selection' of '16.04.2015' to '17.04.2015' with '2 active days'. A 'Sub-Comp' dropdown is set to 'All Species'. Key metrics are displayed: 1.74 area cut (ha), 585 vol. (m<sup>3</sup>), 336 m<sup>3</sup>/ha, and 0.33 avg. tree (m<sup>3</sup>).

**Product Summary:** A bar chart shows the volume (m<sup>3</sup>) for various products. The legend includes: SAWLOG 4.9 (orange), PALLET 3.1 (yellow), PULP (red), STAKE 1.6 (cyan), COMMERCIAL2 (light blue), UNCLASSIFIED (green), and PALLET 5.4 (light green). The chart shows a significant volume for SAWLOG 4.9, followed by PULP and COMMERCIAL2.

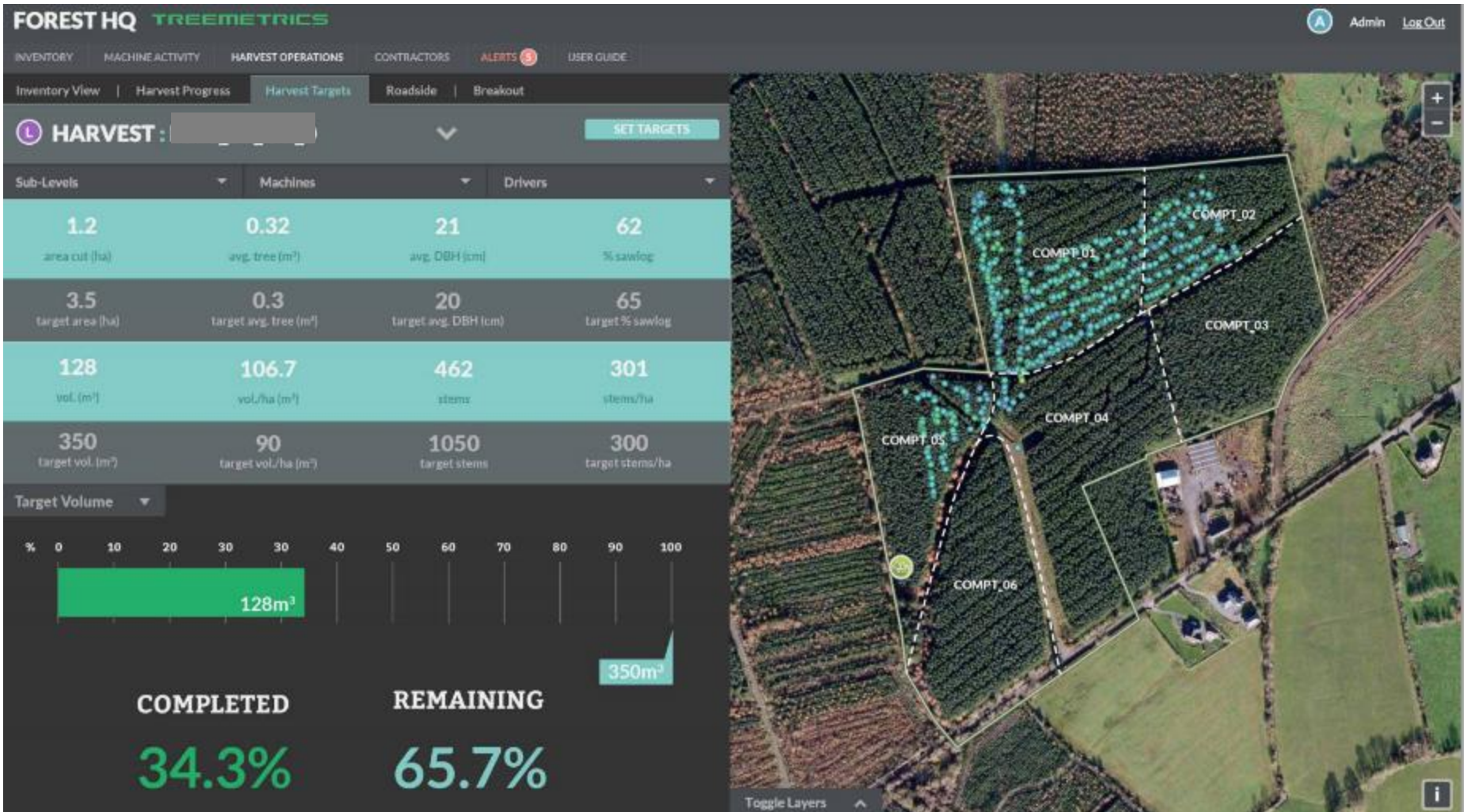
**Calendar:** A calendar for April 2015 is shown, with the 17th highlighted in red, indicating the current harvest date.

**Map:** An aerial map displays the forest area with a color-coded 'STEM VOLUME' scale from 0 m<sup>3</sup> to 1.5 m<sup>3</sup>. The map shows various tree clusters and a stream. A 'Breadcrumbs' panel on the right lists 'Boundaries', 'Inventory', and 'Toggle Layers'.

**Taskbar:** The Windows taskbar at the bottom shows open applications: Documents, EmberForest, Brackdon, Brac..., Skype™ (7) en..., Treemetrics Asa..., and Treemetrics Tec... The system tray shows the date and time: 15/06/2015, 12:18.

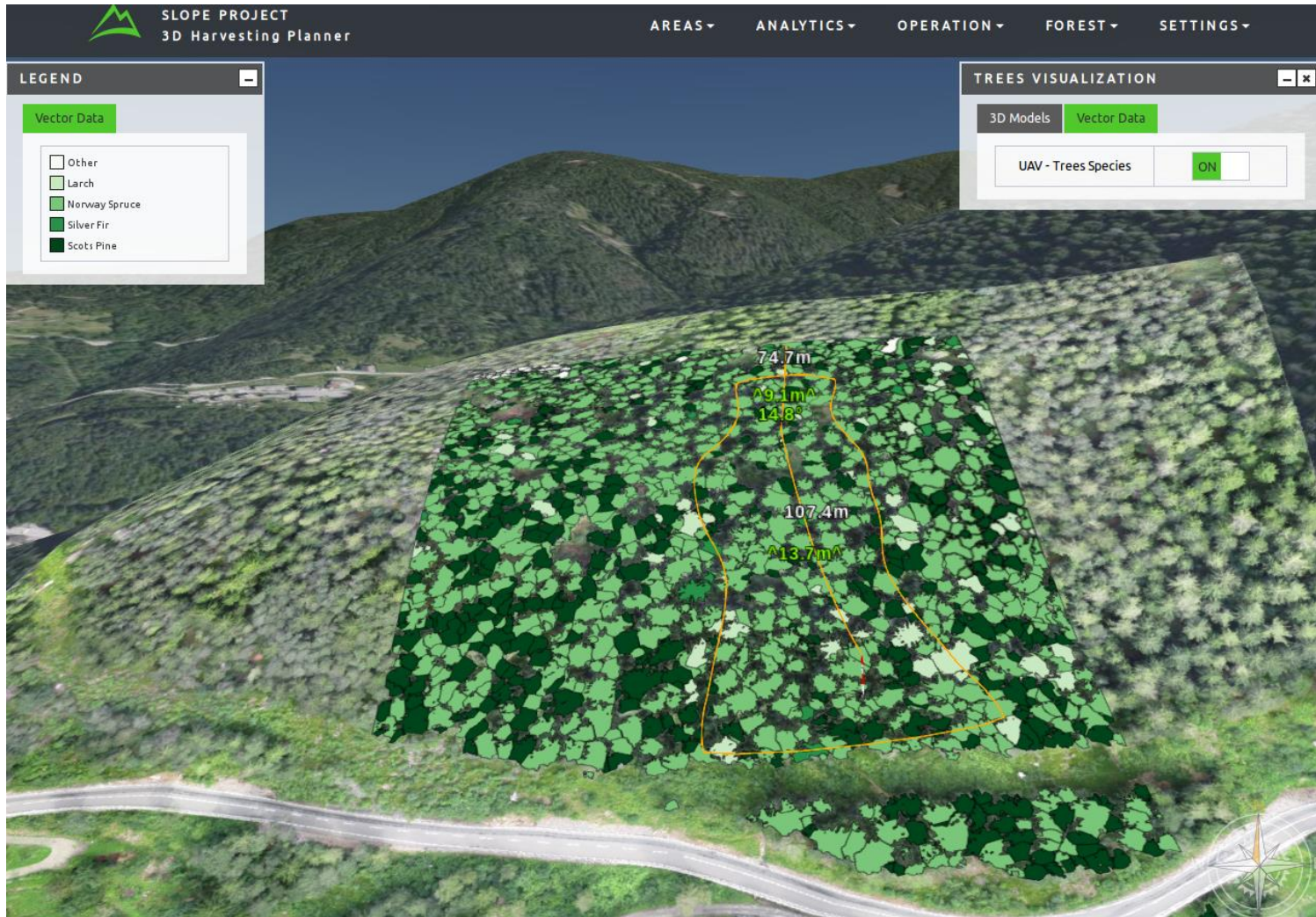


# Remotely Manage the Production Set Targets

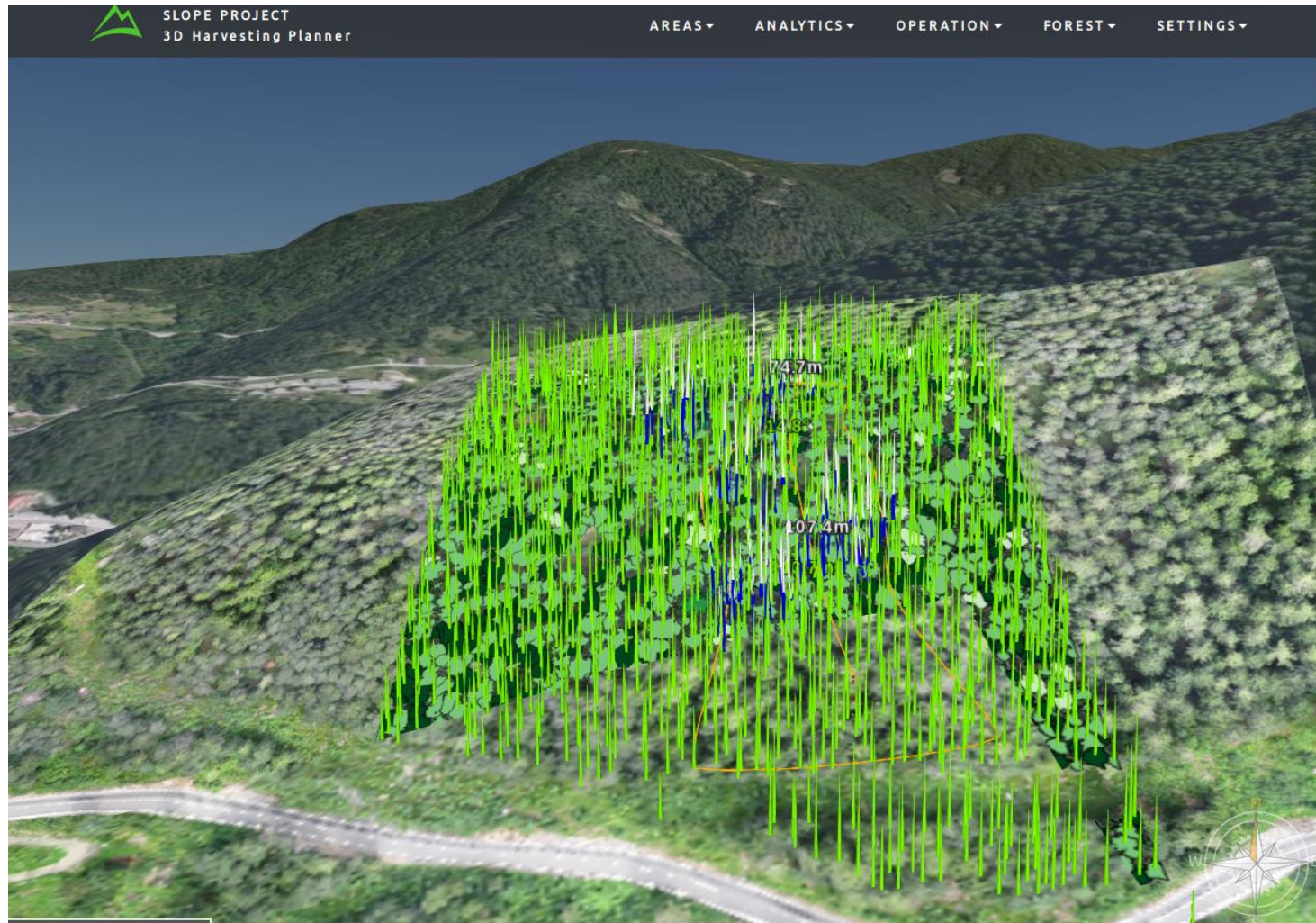


# Developing a Solution for Cable Planning

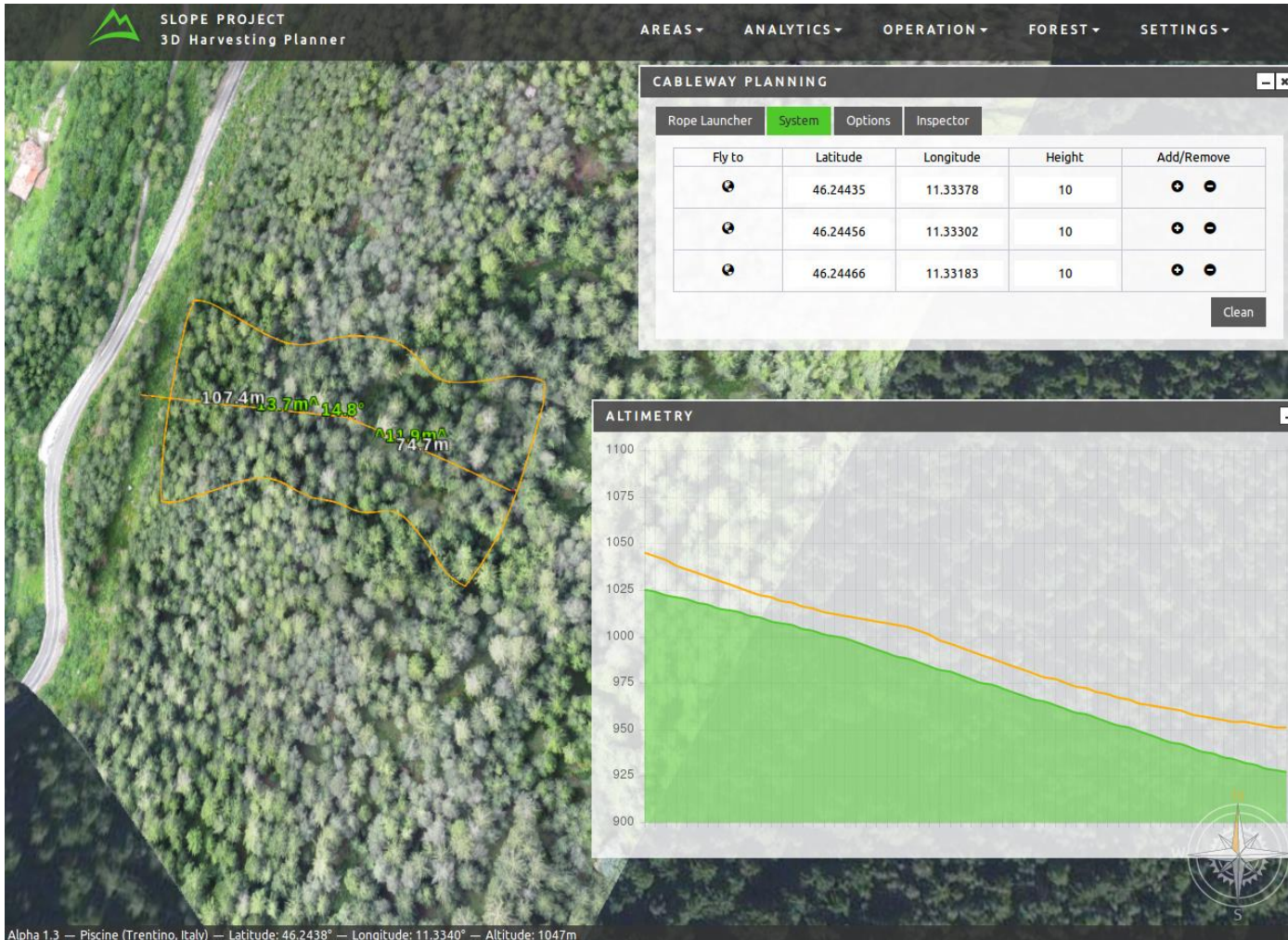
## SLOPE – EU Project



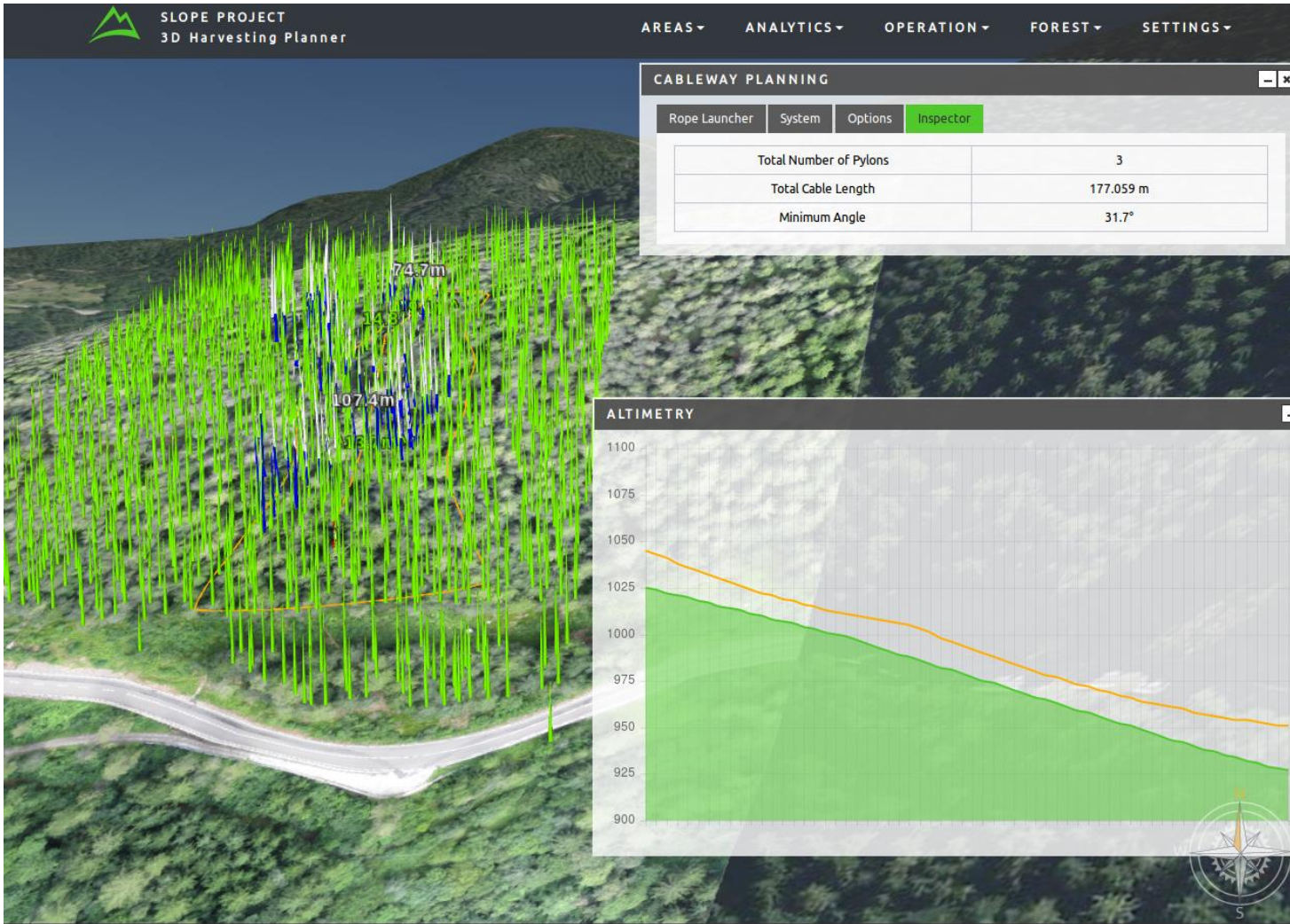
# Improved Visualisation



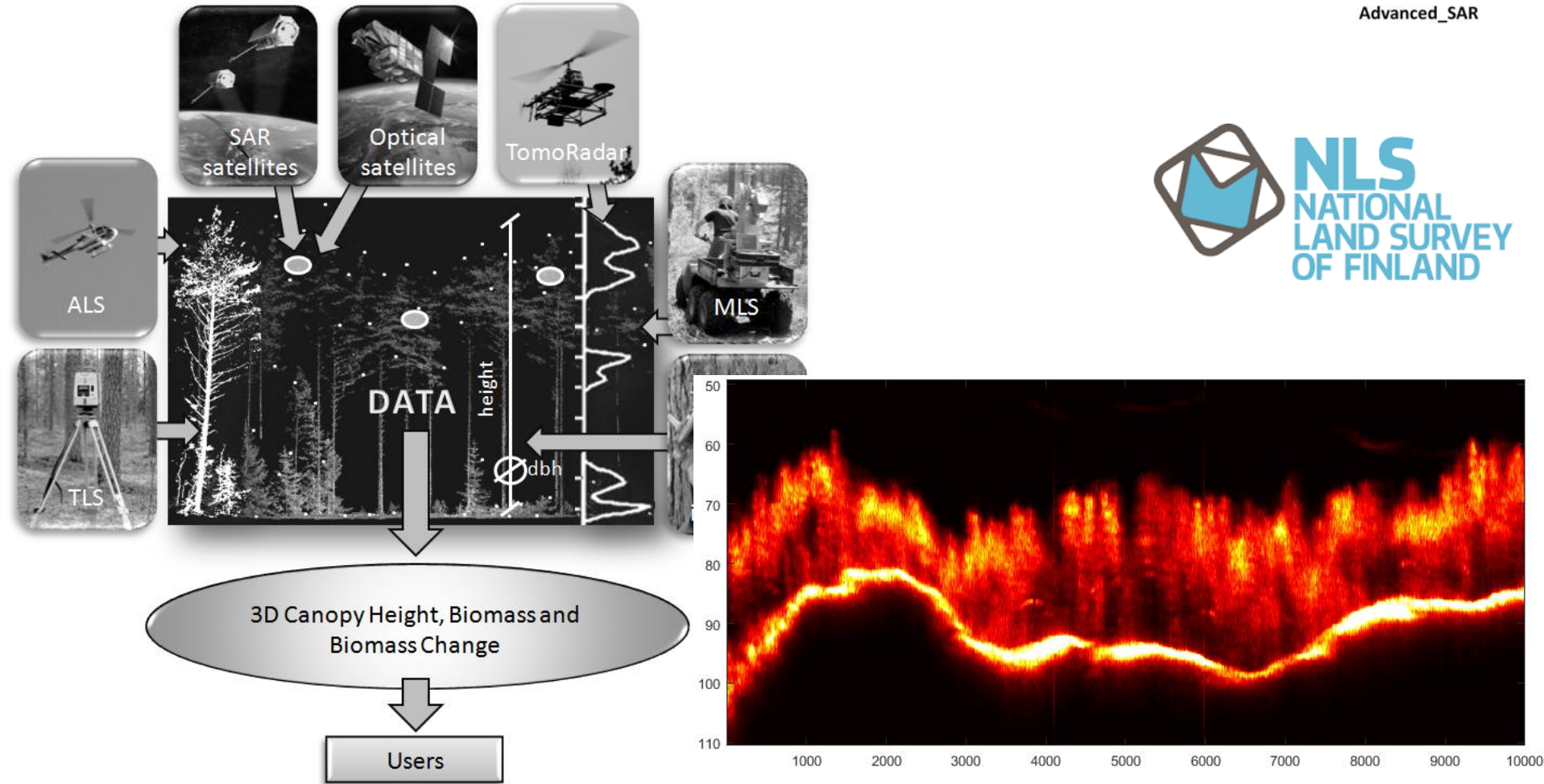
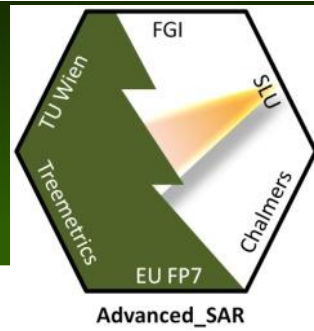
# Using Imagery & DTM For Cable Planning



# Planning Cable Tower Locations



# Advanced SAR Project - Radar



# Summary

**Manage Better**  
**Measure Better**  
**Harvest Better**  
**Communicate Better**



strengthening linkages in the supply chain

# SUMMARY OF FOREST HQ

- End to End Solution
- Built for Small and Large Users
- Improved Linkages Between Stakeholders
- Integrate Customer Features
- Incorporates Converging Technologies
  - Imagery, Mobile devices, Satellite Communications,
  - Big Data Analytics, Cloud Platform

**Manage Better**

**Measure Better**

**Harvest Better**



# Thank You

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- [www.treemetrics.com](http://www.treemetrics.com)