

Real-time Thinning Assessment Workplan

Presenter: David Herries

Meeting Date: 7 October 2022



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BACKGROUND

■ Status Quo

- Thinning completed by manual or mechanised operators with limited vision within their environment, and short-term incentives, yet the outcome can have significant impacts on the final value of a stand.
- Pre and post thinning assessment currently conducted as a manual plotting activity with limited sample and timing which does not provide for direct management intervention.
- By the time you know a bad job is done the stand is irreversibly compromised.

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BACKGROUND

- **What is the problem to solve?**
 - How can we prescribe a better pre-thinning directive for thinning operators?
 - How can we use drones to better provide information to manage thinning operations in real time?
 - How could this information be easily made available to the thinning operators onsite to make effective management intervention.

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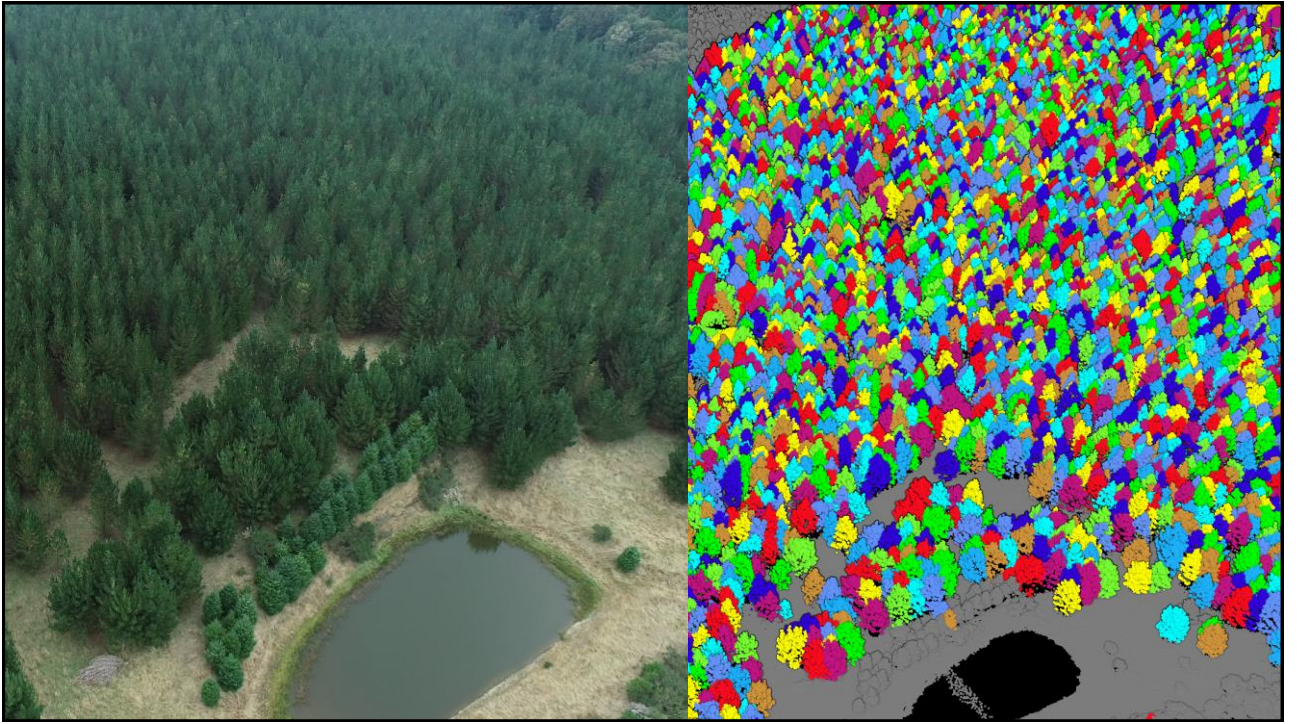
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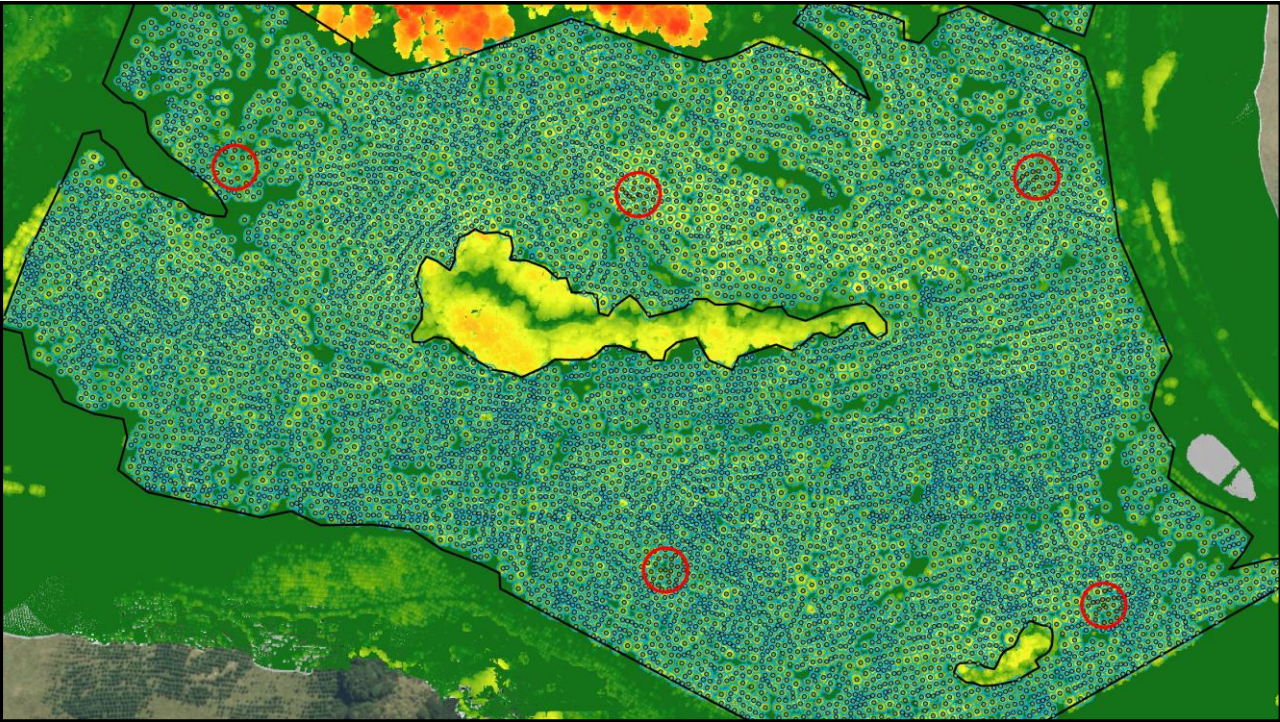
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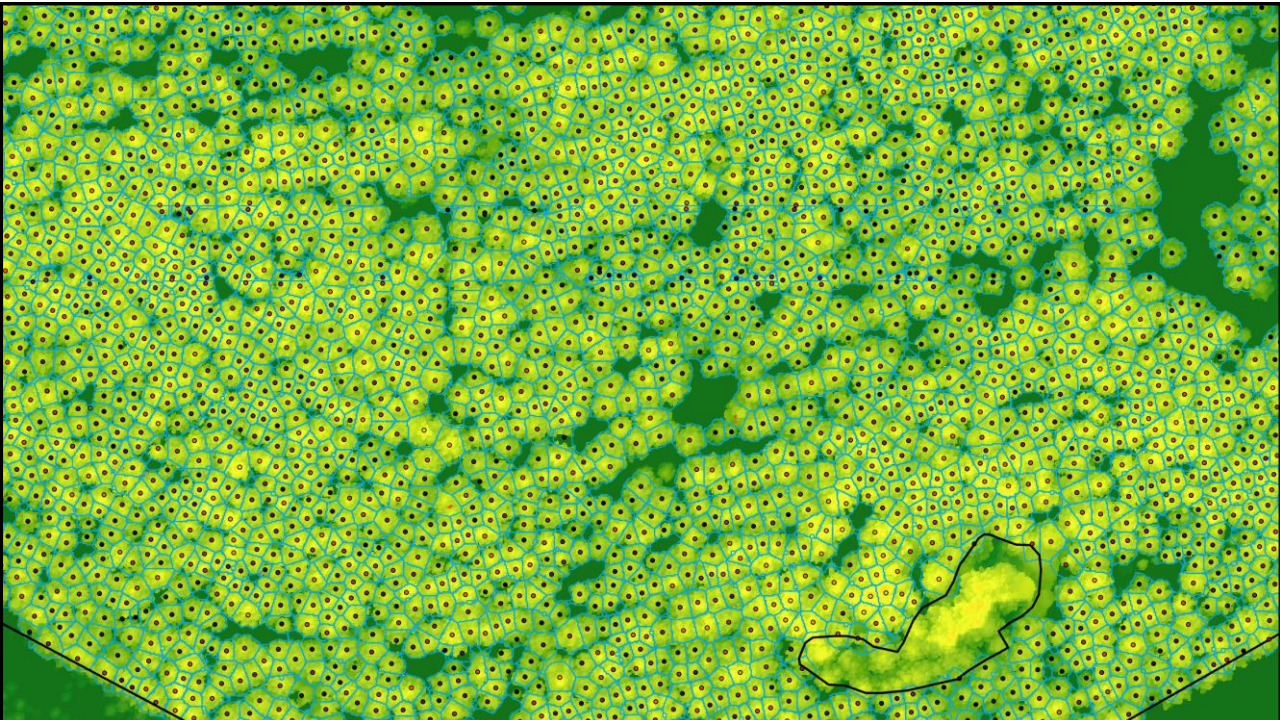
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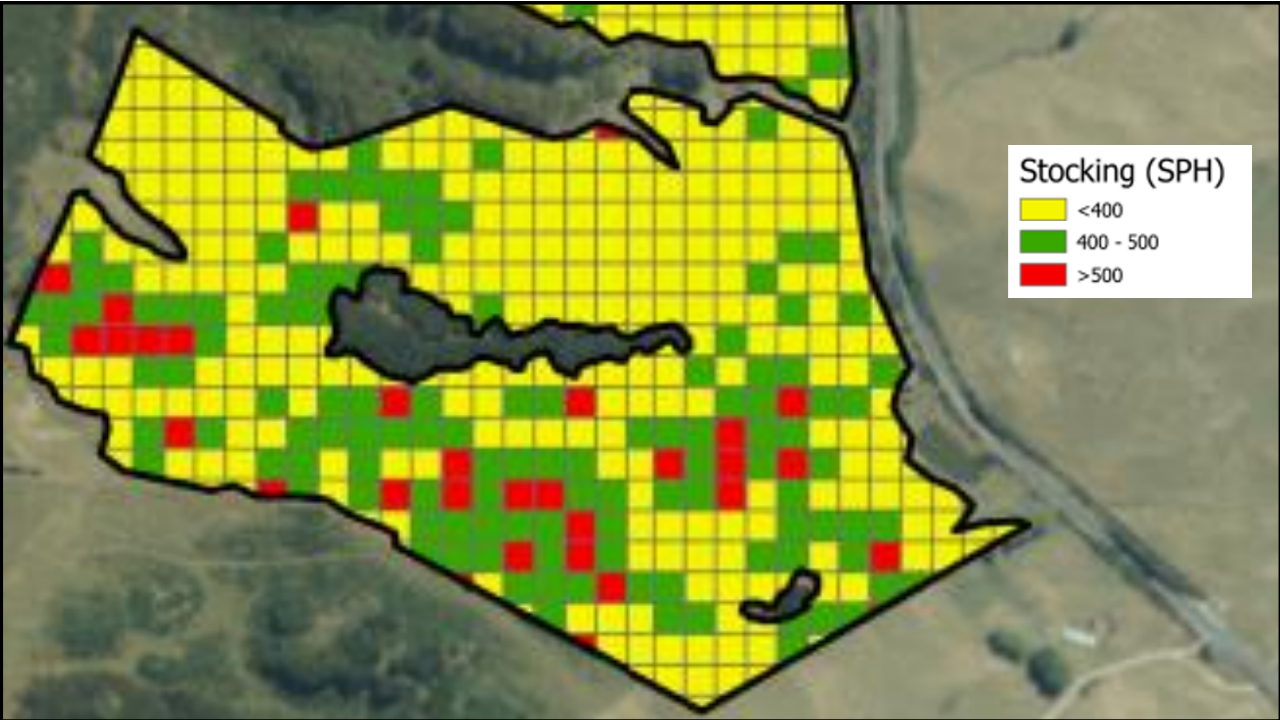
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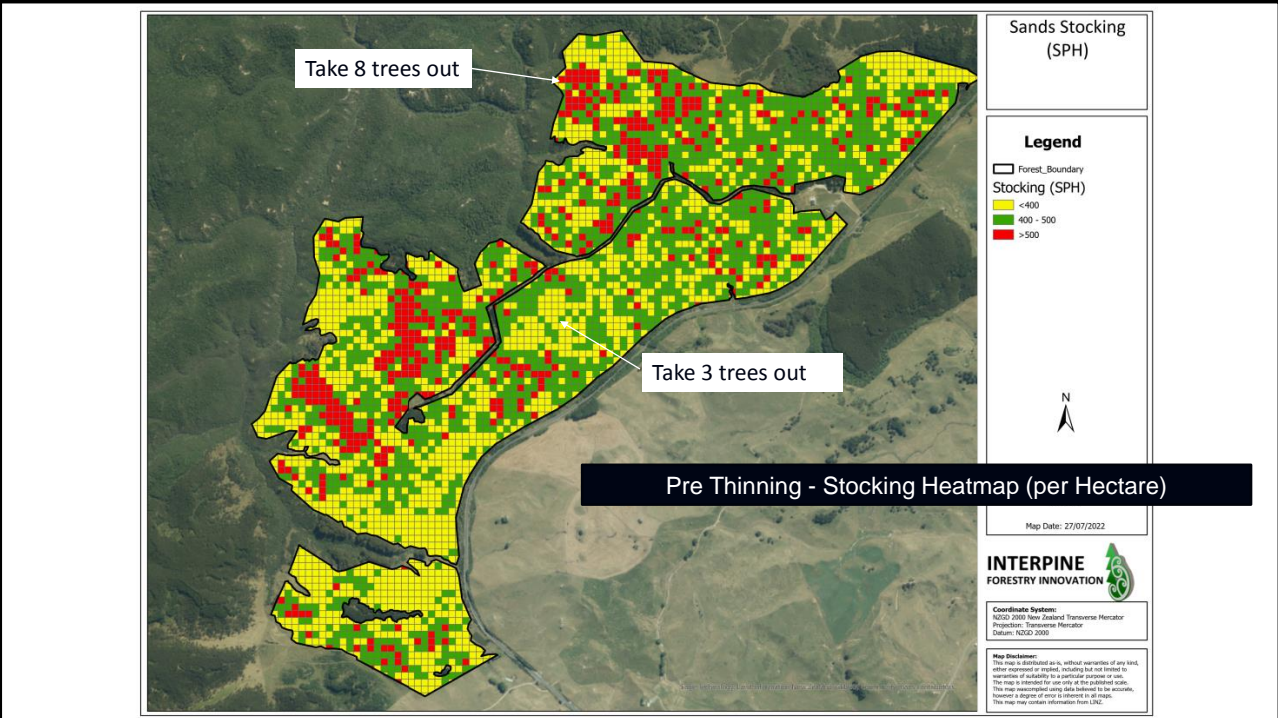
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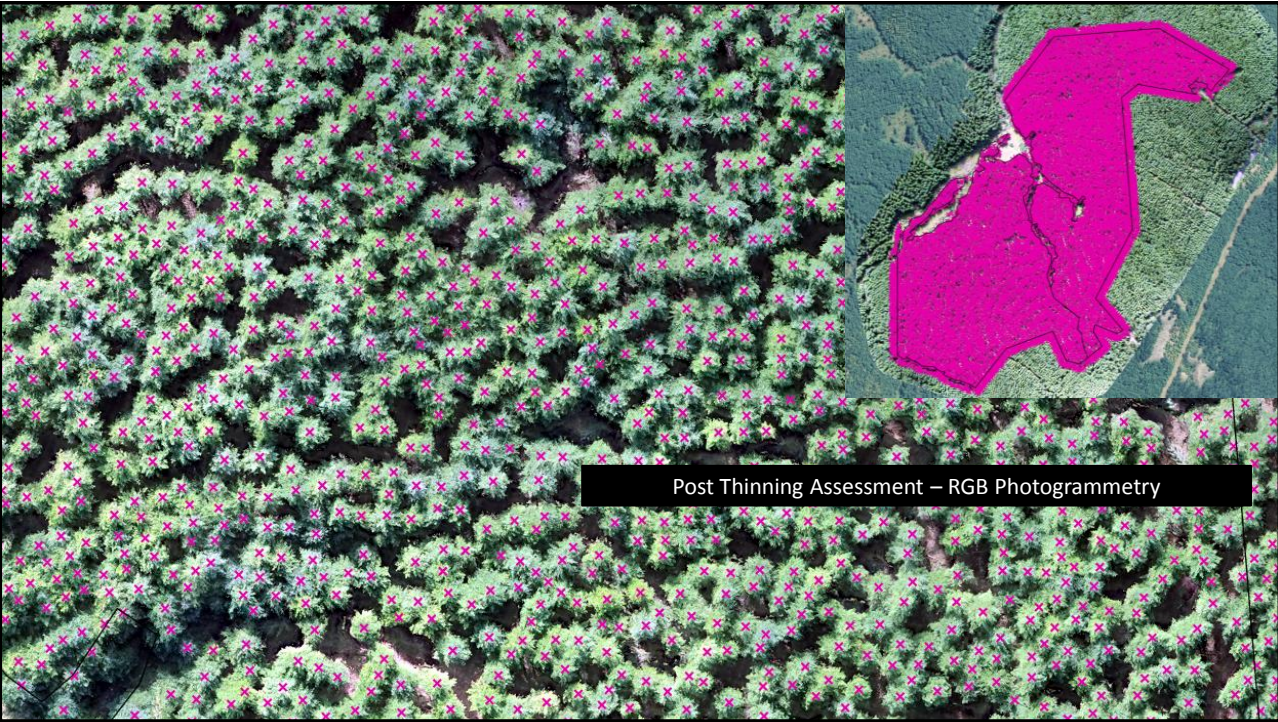
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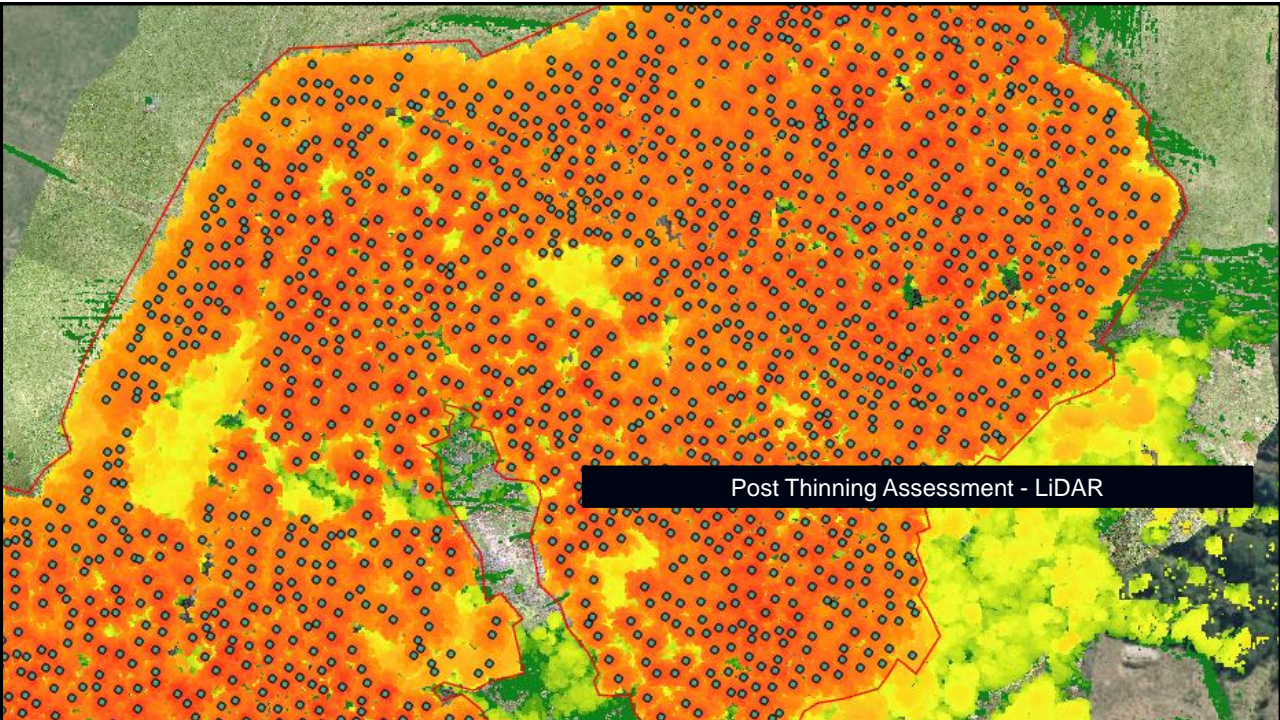
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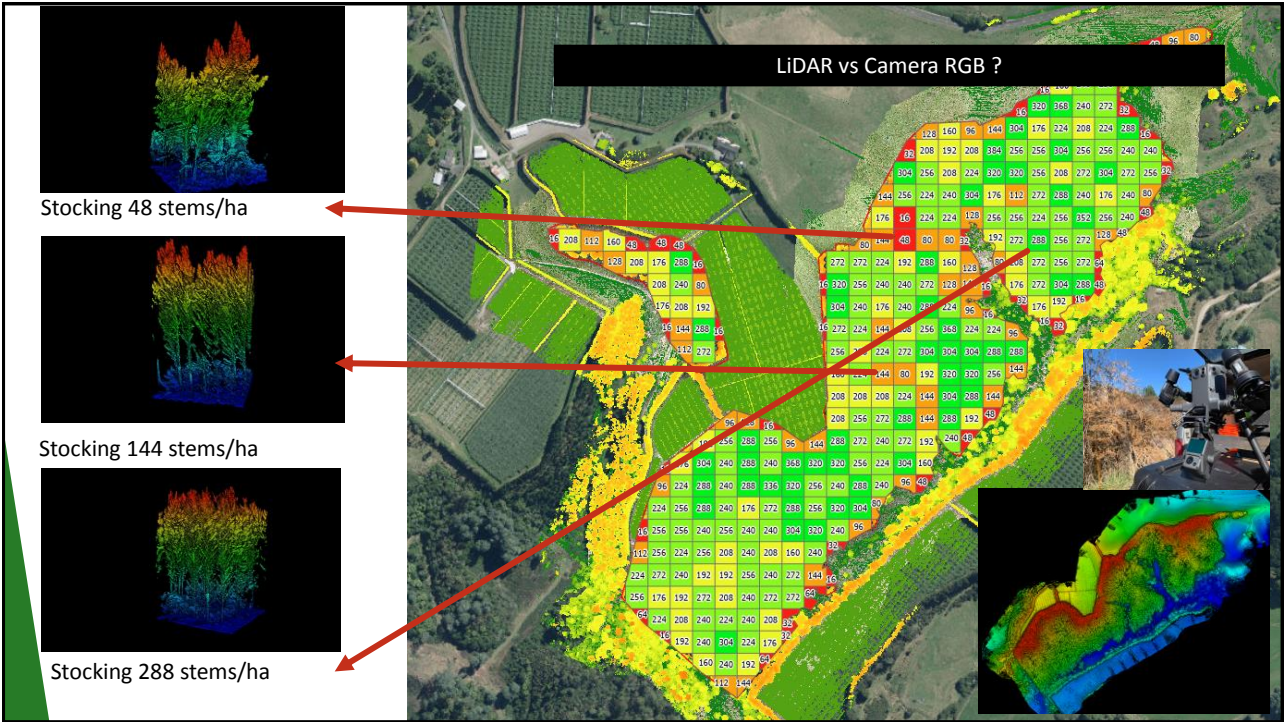


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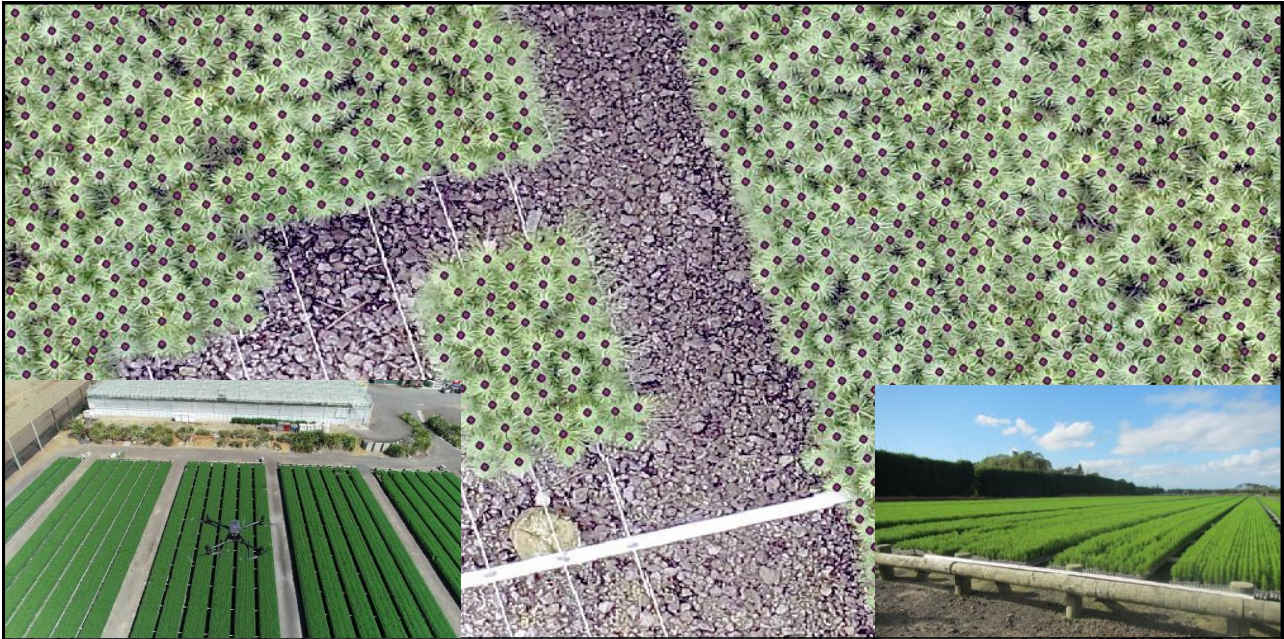


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Drone based tree nursery seedling inventory

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PLANNED WORK

- Create a Real-time or Near Real-time in field workflow for pre and post thinning assessment of tree stocking (and related key metrics)
- Stage 1 - workflow deployment for infield laptop near real-time
- Stage 2 - development of an “app” based approach for real-time or close to real-time
- Focused Metrics
 - Tree Location > Stocking (with derived gap analysis)
 - RGB camera drone approach
 - Tree Size > Height and Crown Area (with imputed DBH and Volume)
 - LiDAR drone sensor approach

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Example Real-time AI Application

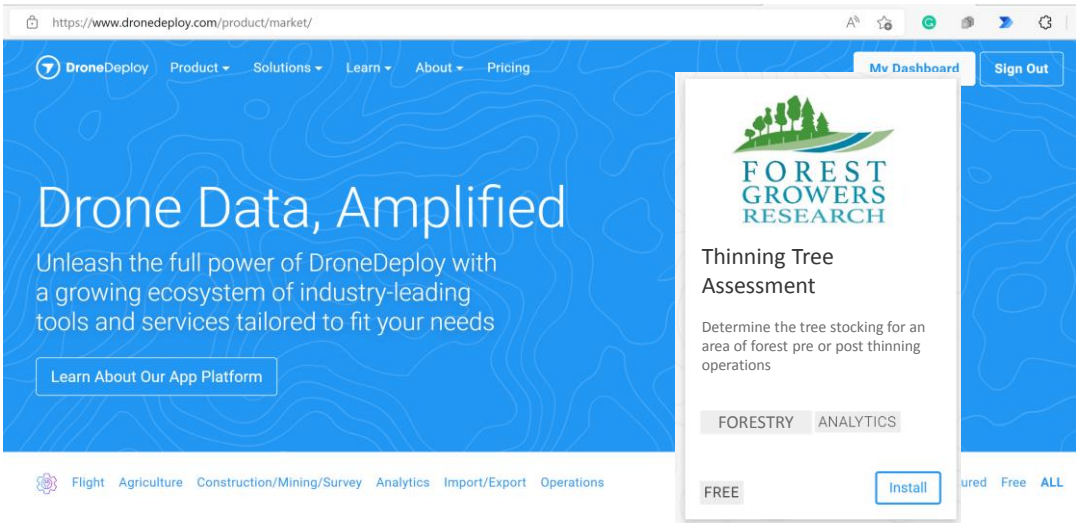


Interpine’s FRG Project on Real-time Sweep and Length Measurement
(30 FPS stem detection and measurement)

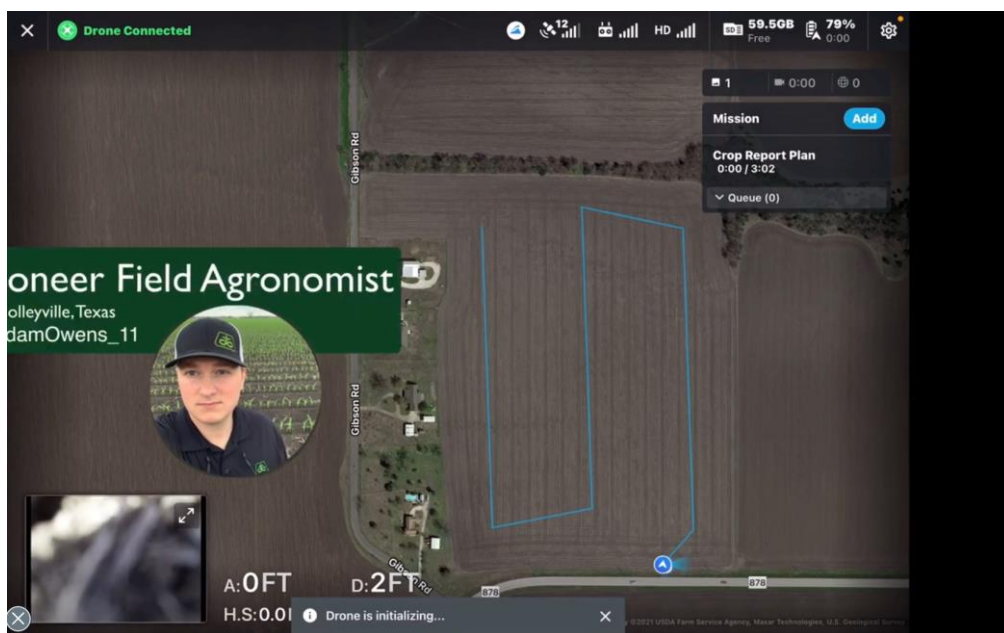
Scion Research Example of Video based Tree Nursery Assessment



Example App Based AI Application



MOCK-UP ONLY – CONCEPTUAL WITHIN EXAMPLE EXISITING DRONE APP MARKET



MOCK-UP ONLY – CONCEPTUAL EXAMPLE WITHIN AGRICULTURAL INDUSTRY

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KEY MILESTONES AND TIMING

Milestone	Start	End	High Level Description
1. Workplan + Contract	1 Nov 22	30 Dec 22	Workplan completed and service agreement signed
2. Brainstorm	1 Dec 22	15 Jan 22	Meeting with FRG stakeholders, app platforms, science institutes, contractors. Includes collating feedback on collecting data collection advice for using RGB, or LiDAR drone technologies, analysis platforms preferences, online vs offline integration, and expectations for precision requirements.
3. Develop Spec	16 Jan 23	16 Feb 23	Develop functional specification for development
4. Create Laptop Workflow	17 Feb 23	30 Jun 23	Proof of concept model will be designed into a laptop capable model. Whereby results can be presented in field immediately post or even during data collection.
5. Patent - optional	1 Jul 23	30 Sep 23	FRG Task if deemed appropriate by FRG
6. Create App Workflow	1 Jul 23	30 Sep 23	Deploy an app-based approach suitable for deployment in exisiting drone based app platforms.
7. Field Testing	1 Jul 23	30 Nov 23	Initially based around field testing the laptop based workflow, and then app based workflows.
8. Beta Release	1 Jul 23	31 Oct 23	Beta release in July for the laptop based workflow, followed in Oct by the app based workflow.
9. Final Release	1 Nov 23	15 Dec 23	Final release packaging of deployment, including manuals and video tutorials
10. Industry Workshop	1 Nov 23	30 Nov 23	Linked to ForestTech conference 2023, where a industry based workshop is conducted alongside the conference as an extra day or ½ day, training foresters to use the tools.
11. Project Report	1 Dec 23	15 Dec 23	Final reporting

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KEY MILESTONES AND TIMING

Milestone	Costs
1. Workplan + Contract	\$3,745
2. Brainstorm	\$3,745
3. Develop Spec	\$3,745
4. Create Field Laptop Workflow	\$18,725
5. Patent (FRG Cost) - optional	0
6. Create Field App Workflow	\$18,725
7. Field Testing	\$14,980
8. Beta Release	\$14,980
9. Final Release	\$3,745
10. Industry Workshop and Training Manuals / Videos	\$7,490
11. Project Management and Final Report	\$7,490
TOTAL	\$93,625

INVOLVEMENT FROM INDUSTRY PARTNERS

Title / Function	Name
FRG Project Leader	TBA
FRG Technical Supervisor	TBA
Technology Developer	Interpine
Forest Company Representative	Timberlands / Matariki Rayonier
Science Research Representative	Scion
Contractor – Manual	TBA
Contractor – Mechanical	TBA
App Workflow – Platform	TBA e.g Drone Deploy Market Place
Laptop Workflow – Platform	TBA e.g ESRI ArcPro

Precision Silviculture Partnership

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Ministry for Primary Industries
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