Forest Biosecurity Workshop 2015

Remote Sensing – What we can do now, What is possible in future

Technology

Add Value

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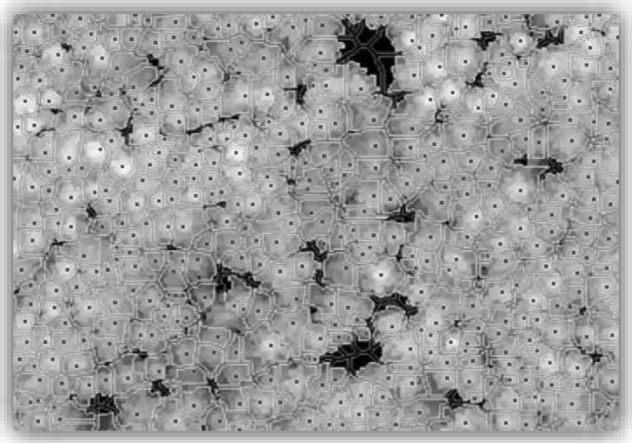
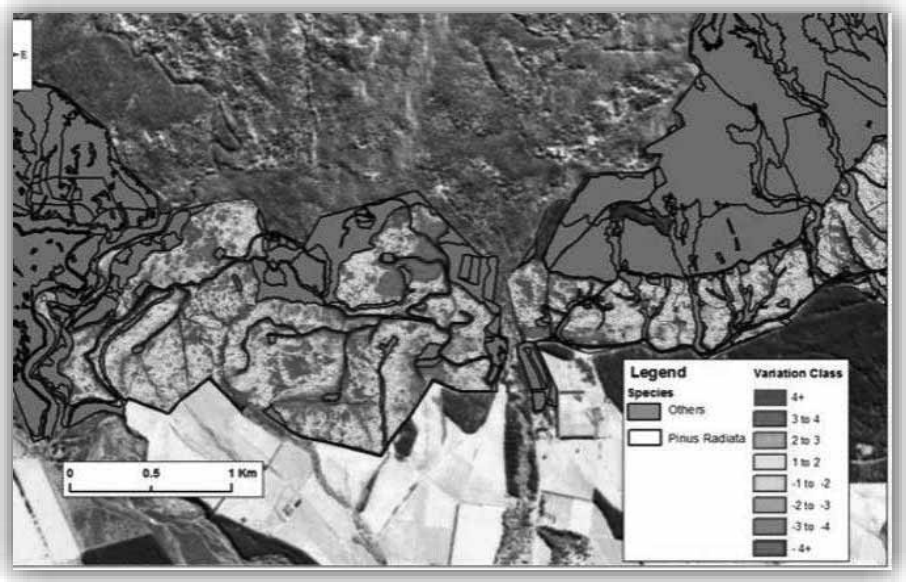
What can we do Today

- Image Analysis





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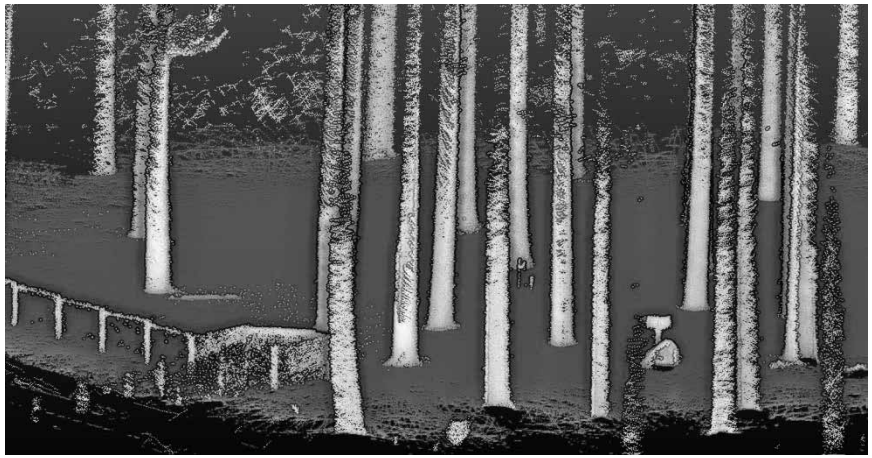
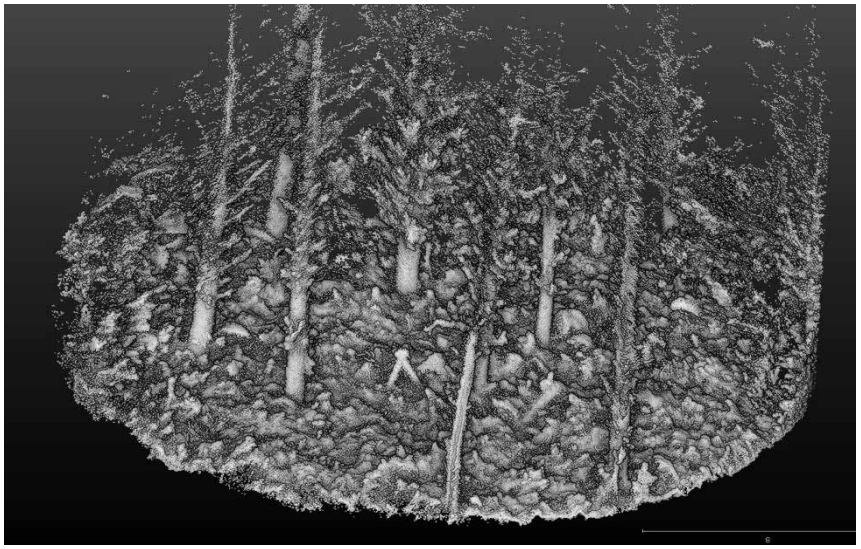
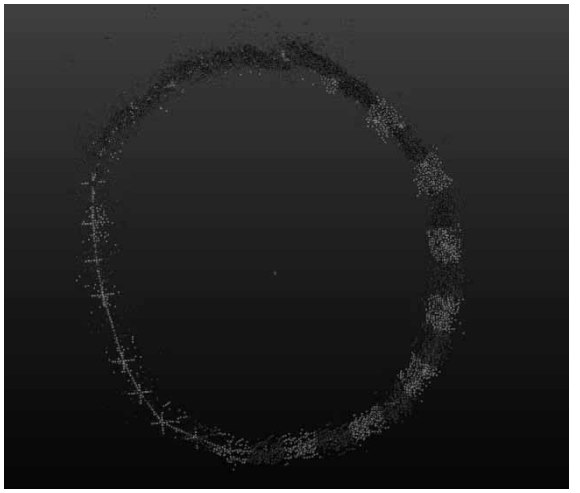
What can we do Today

- Point Clouds







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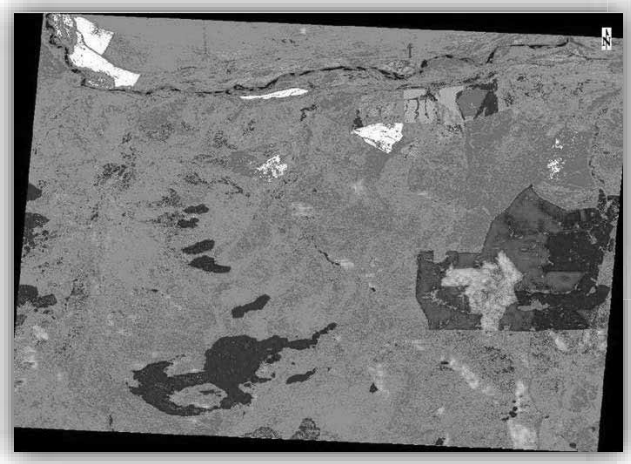
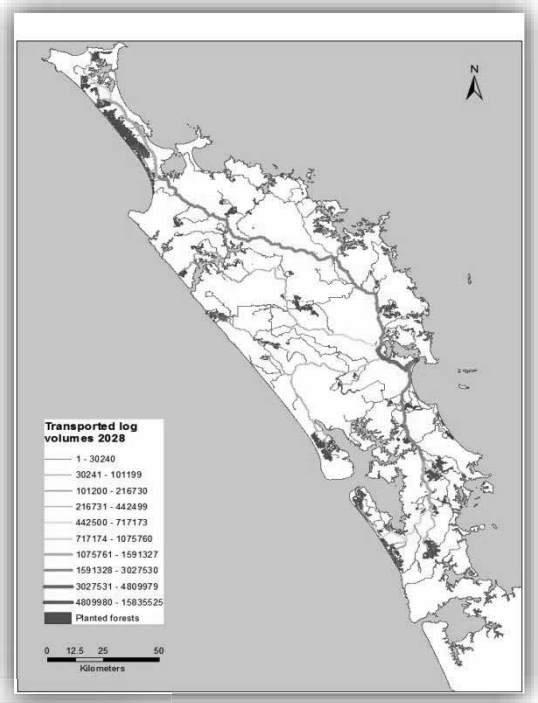
What can we do Today?

- Decision support systems





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What could we do Tomorrow?

- Satellite
  - Higher resolution (World view 3)
  - Platform as a service
  - Google Earth
  - LiDAR Satellite
  - HD Video

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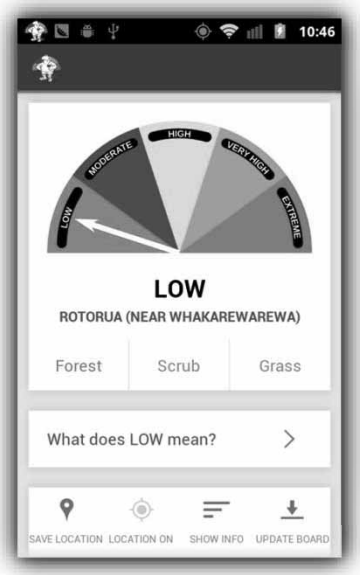
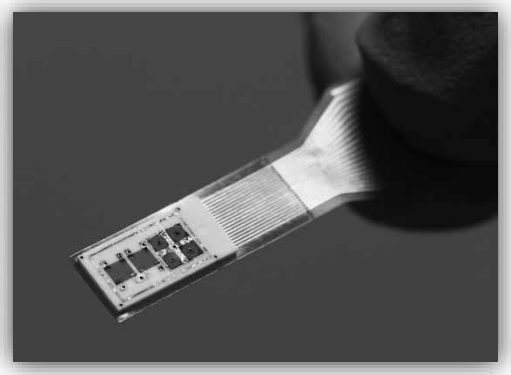
What could we do Tomorrow?

- Skybox
- https://www.youtube.com/watch?v=fCrB1t8MncY

What could we do Tomorrow?

- Mobile as a data source
  - Smart Phones – a huge array of sensors
  - Sensor Networks – A sensor on every tree? Trap?
  - Internet of Things





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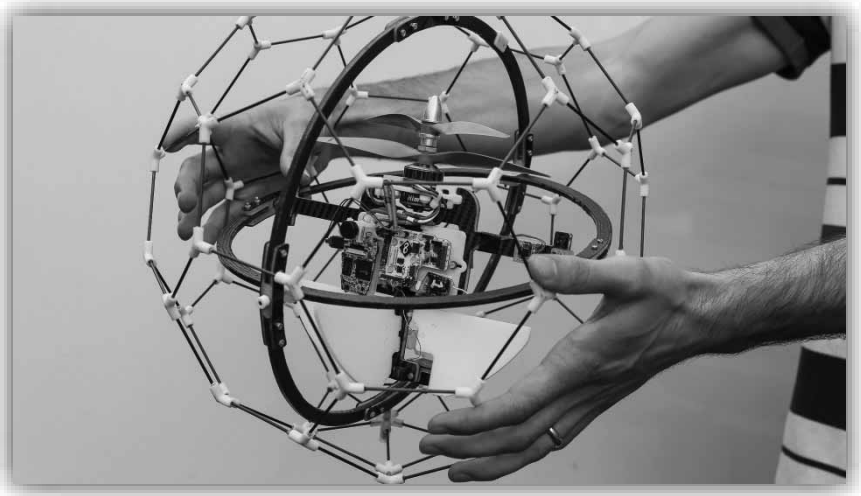
What could we do Tomorrow?

- UAV's
  - Just a platform…
- Scion example
  - Video
  - LiDAR
  - Near Infra-Red
  - Hyper-Spectral



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What could we do Tomorrow?

- Scion Example
  - Autonomous flight under canopy
  - Autonomous forest edge following
  - Target Spraying
  - Mid range surveillance (500-1000Ha)
  - LiDAR acquisition at mid range
  - Robotic Sampling arm (Auckland University student)

What could we do Tomorrow?

- Systems approach
  - Not just one technology, rather a combination of them
  - Combining technologies to drive a decision, response
    - Weather
    - Satellite
    - UAV
    - Sensor network
    - Mobile
    - Boots on the ground
  - A move towards real time information and monitoring.

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Summary

- Systems approach
  - Not just about one technology on it’s own
- Major advances in data acquisition
- Major advances in decision support systems
- Need to be cautious of chasing the hype

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Thank you

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“Sadly, it's much easier to create a desert than a forest.”
James Lovelock

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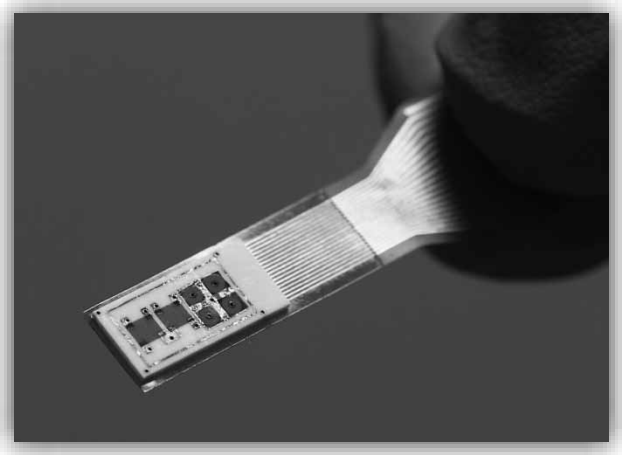
Scenario

1. A moth flies past a pheromone detection sensor
2. The trap sends out a notification saying “we have a problem”
3. A swarm of UAV’s is deployed to the area, and people in the area are notified
4. In the office a system has collated all the information for a 3km block around the site. Weather data, terrain information, historical data, and imagery are pulled together to generate a 3d “world”.
5. Biosecurity personnel use their 3d headsets to move through this world to see what the UAV swarm is seeing, look at the simulations in real time, and make a decision about next steps.

Scenario



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