



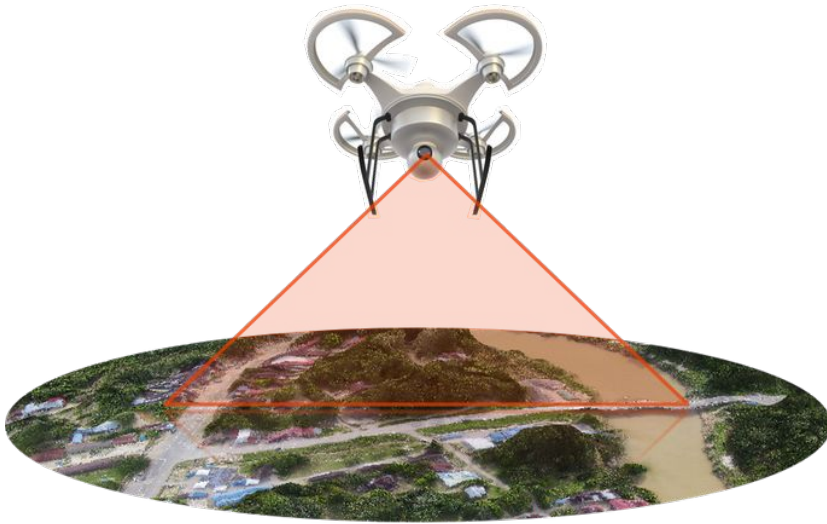
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DRONES in “Greening the Service Sector”
Roderick Ruhl, CTO NexDrone (GDI)

Why do drones matter to sustainability?



- Cost effective method to collected vast amounts of data across large areas
- Up to 900 times more precise than satellites (1cm vs 30cm)
- Information can be shared across governments and NGOs
- **Ground Truthing** using a FieldApp helps to confirm data on the ground
- Track changes over time



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Why Ground Truthing?



- Confirm analysis with ground data (calibration of analysis)
- Human factor (close-up interpretation)
- Report changes as they happen (recent logging activity)
- E.g. Potholes (work completed)



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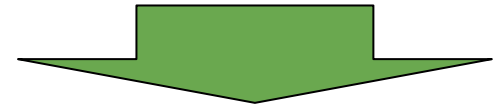
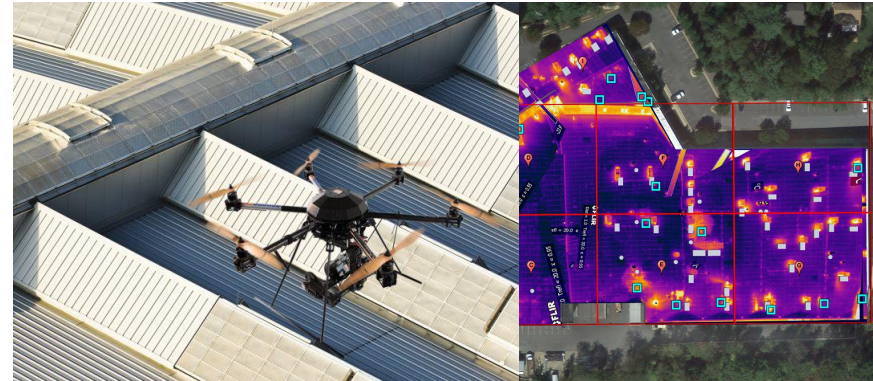
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#1: Large Scale Heat Loss Inspections

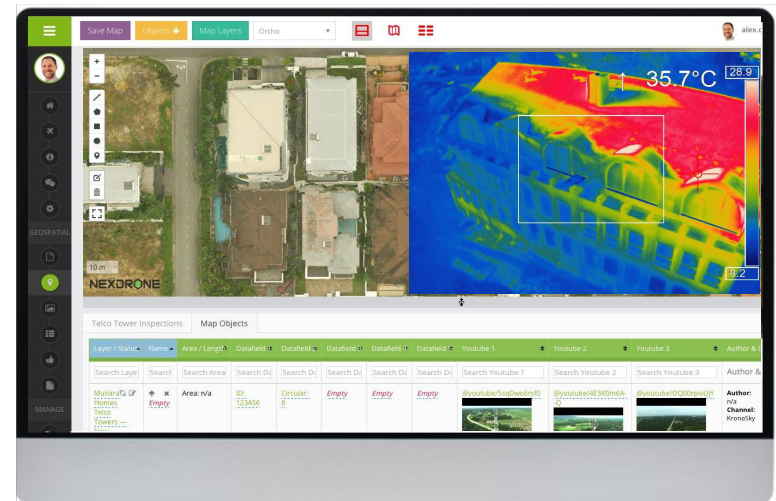
Service:

- Reducing CO₂ emission is often most efficiently done via proper building insulation (40%)
- Drones equipped with Infrared Cameras can identify structural heat losses across entire cities
- Identify large public structures that waste energy



Benefits:

- No need to send inspection teams up the facade on every occasion
- Collect , identify, track and report issues effectively
- Reduce CO₂ and public resources



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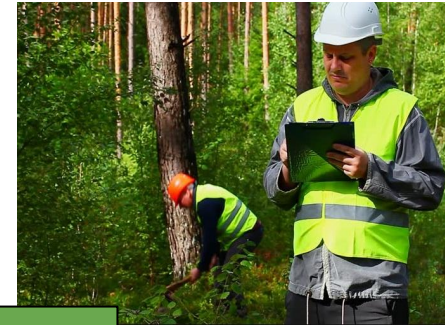
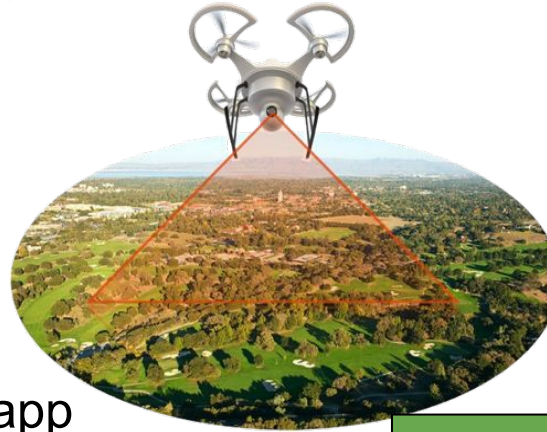
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#2: Tree Mapping / Biodiversity

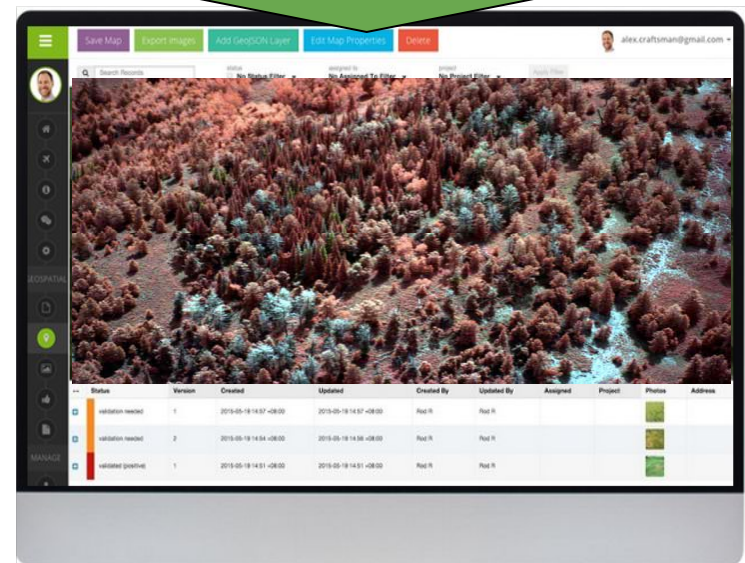
Services:

- Mapping Services:
 - Automated Tree Counting
 - identify sick trees (nutrient deficiency, fungus, pesticide)
- Ground Truthing:
 - NGO or local teams use field app to report back issues in real time



Benefits:

- Estimate CO₂ sink
- Identify encroachment into public forests (plantations)
- Identify illegal logging activities
- Empower NGO to feed their data onto to a shared map



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#3: Municipal Management

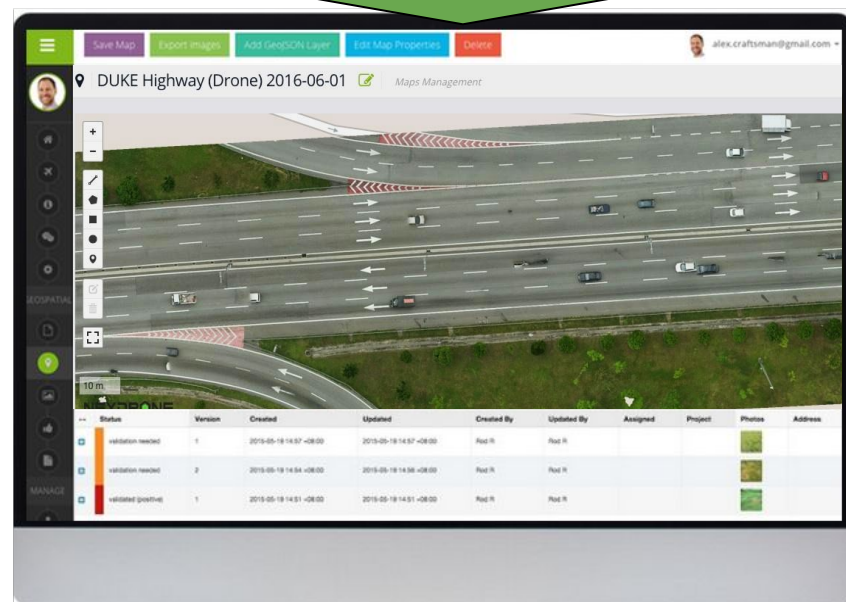
Services:

- Mapping Services
 - maps of public infrastructure
 - spot vegetations Encroachment
 - Identify stagnant water bodies
- Field App
 - report infrastructure damages
 - report dengue / zika risk zones
 - report clogged drainage canals



Benefits:

- Manage public infrastructure
- Minimize mosquito breeding areas
- Ensure water management



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#4: Post Disaster Management

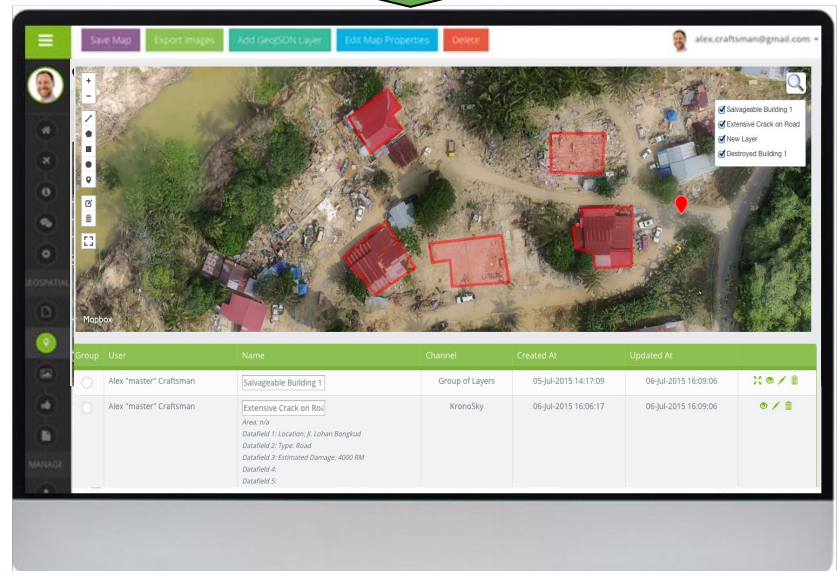
Services:

- Mapping Services
 - Capture post-disaster situation
 - identify worst hit areas
- Field App
 - report detailed damages
 - estimate rebuilding cost
 - manage claims



Benefits:

- NGOs and governments can share information to create a complete picture
- Maximise efficiency of relief efforts
- report back to sponsors



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#4: Post Disaster Example:



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Geospatial Drone Data - Unrealized Potential

Big Data:

- Drones provide **Big Data** with...
- ...valuable **Geolocation!**

This can be analysed to give ***Decision Advantage/Insights*** intended to:

- **monitor legislation implementation** over large areas
- **prevent** surprises
- provide time to **adapt to a changing situation**

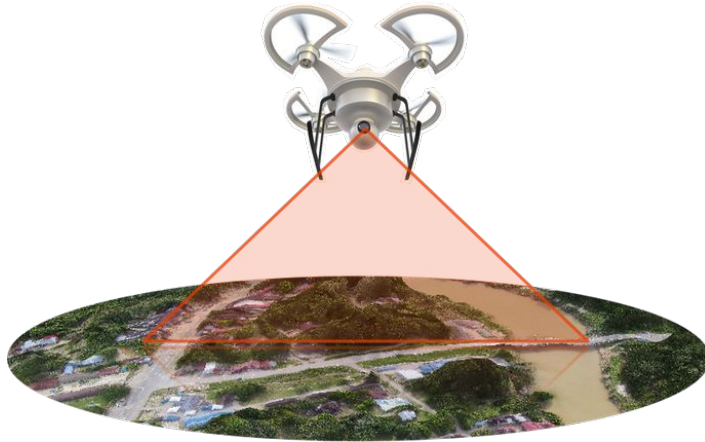


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The Future - Public Geospatial Data Portal



Government:

- Satellite Imagery (Landsat, Sentinel)
- Lidar Imagery

Private:

- Satellite Imagery

NGOs:

- Drone images

Government:

- Public survey data

NGOs:

- NGO field work reports



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Geospatial Intelligence Cycle

