

Unmanned Aerial Systems: Technologies and Applications - Ateneo Innovation Center Roadmap and Vision

Capabilities, state of the art, partners and multi-year technical roadmap

Nathaniel Libatique
Convergent Technologies Center, CTC 314
Ateneo de Manila University
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UAV R&D Consortium Roadmapping
PCIEERD-DOST

Ateneo Commitment to 4 Major Areas

Environmental Monitoring

- ◆ Lakes and river systems. Water Reservoirs
- ◆ Mangroves
- ◆ Reforestation, Logging
- ◆ DOST, DENR, UN World Food Program, Laguna LGUs

Precision Agriculture

- ◆ Infrared cameras and NDVI
- ◆ Rice, Corn, Pineapple
- ◆ World Wildlife Fund, Philrice, Isabela LGUs

E-Government

- ◆ Infrastructure - Roads, Bridges, Flood Control Structures, Power Systems
- ◆ Forestry
- ◆ Cadastral Mapping
- ◆ LGUs: Aklan, Leyte, Eastern Visayas, CHED

Disaster Risk Reduction

- ◆ Damage assessment, relief, recovery
- ◆ Risk and Vulnerability Assessments
- ◆ Earthquake fault survey, Phivolcs Quick Response Team embedding
- ◆ Resilient Communications
- ◆ Manila Observatory
DOST ICT Office,
Toyota, TTC, APT,
LGUs, CHED

Platforms, Imaging, Ground Truth, End to End Data Delivery & Analysis

Environmental
Monitoring

Precision Agriculture

E-Government

Disaster Risk
Reduction



Models: both fixed wing and multirotor platforms

Powertrain: 5000 to 10000mAh lithium polymer batteries

Flight time:

15 to 25 min. - multirotor

45 to 60 min. - fixed wing

Resolution: 3 to 20 cm per pixel

Coverage (typical):

3 to 4 sq. km. at 10cm/pixel using fixed wing

Altitude: 100 to 500m

Payload: regular and modified consumer cameras

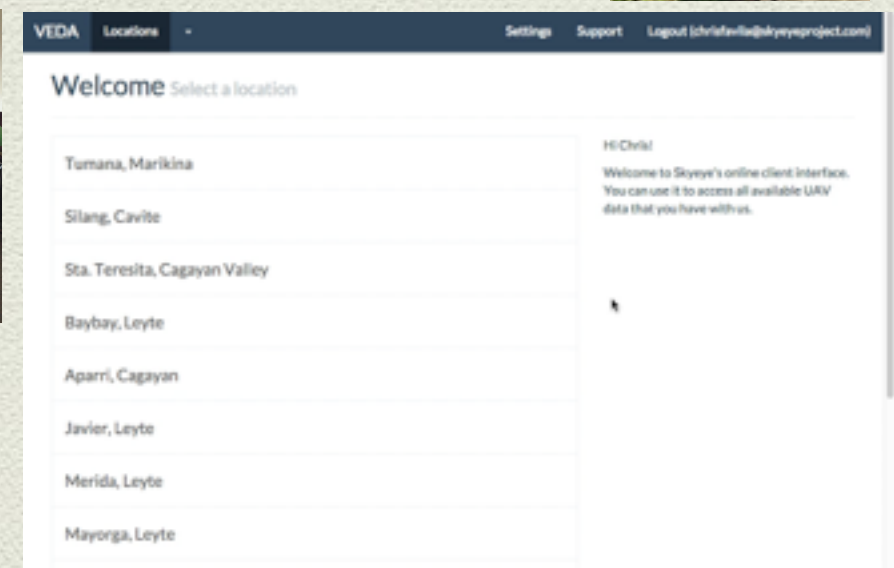
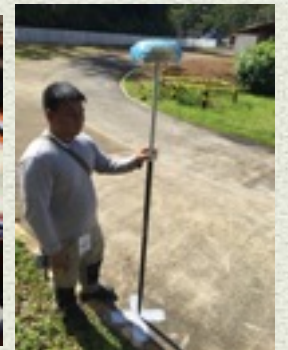
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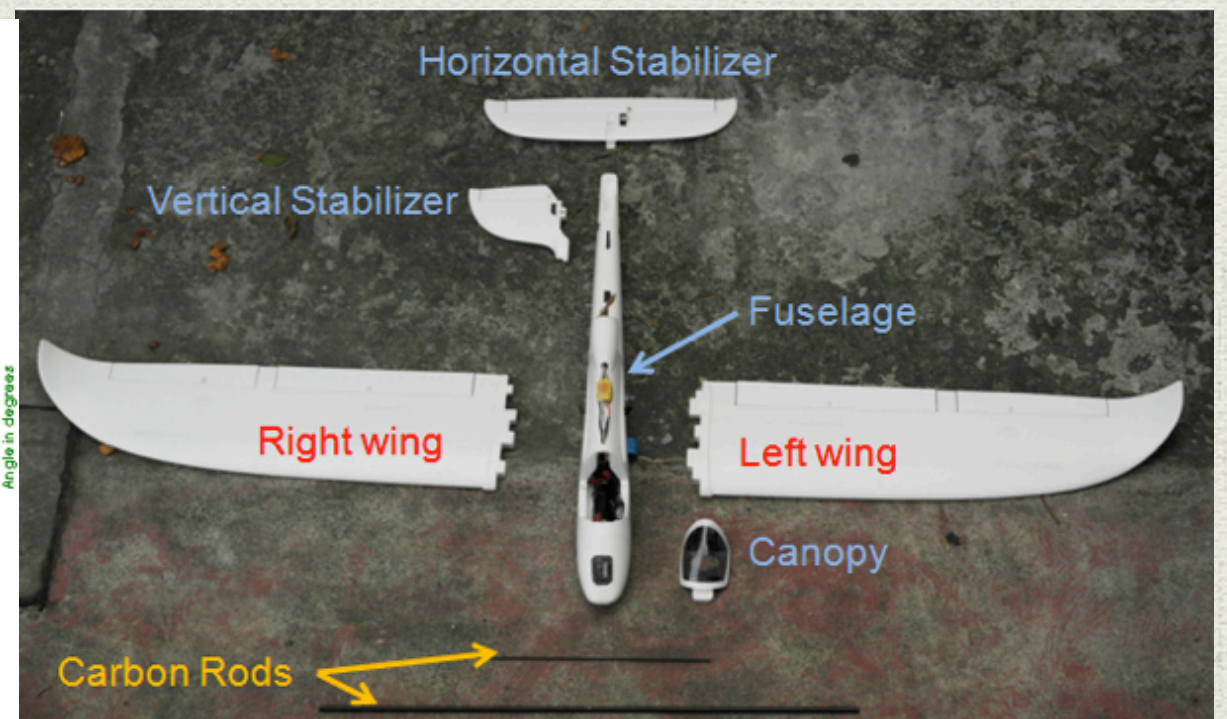
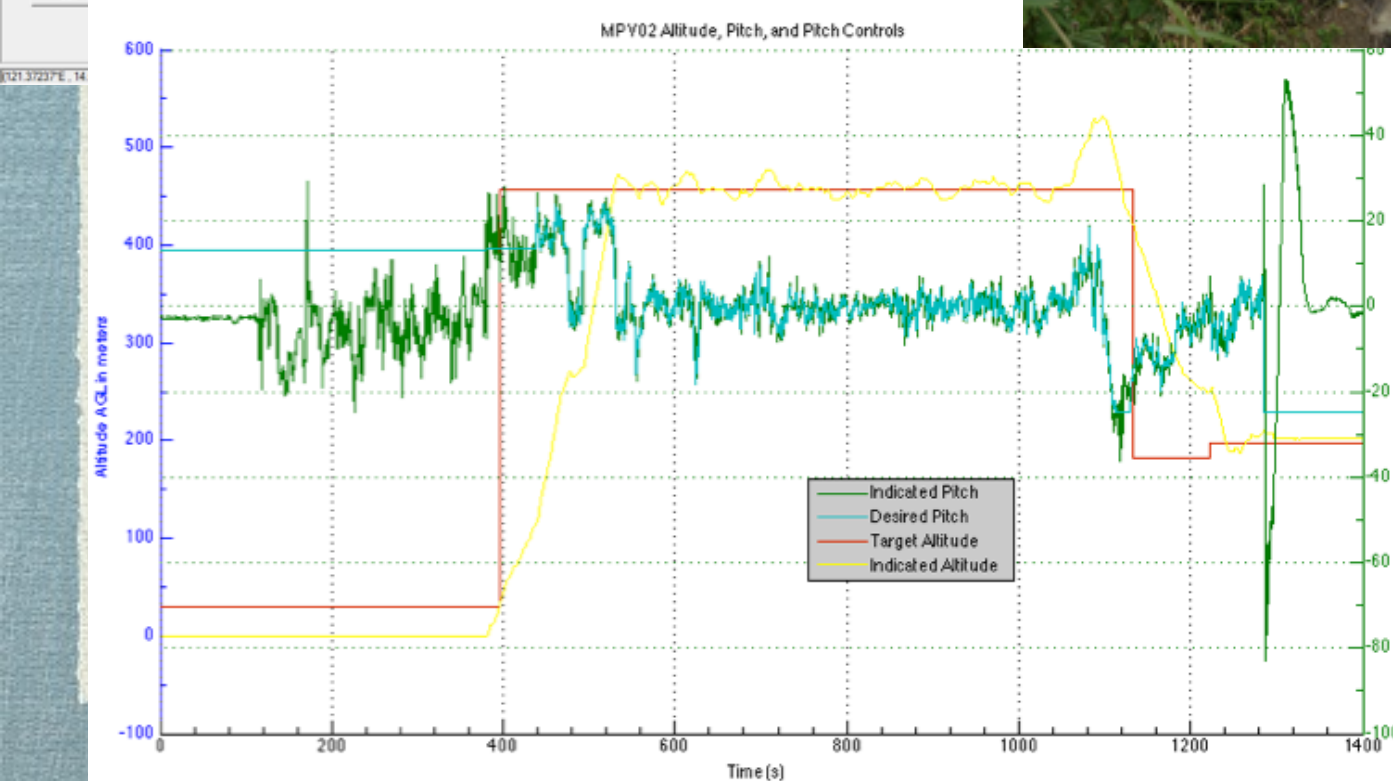
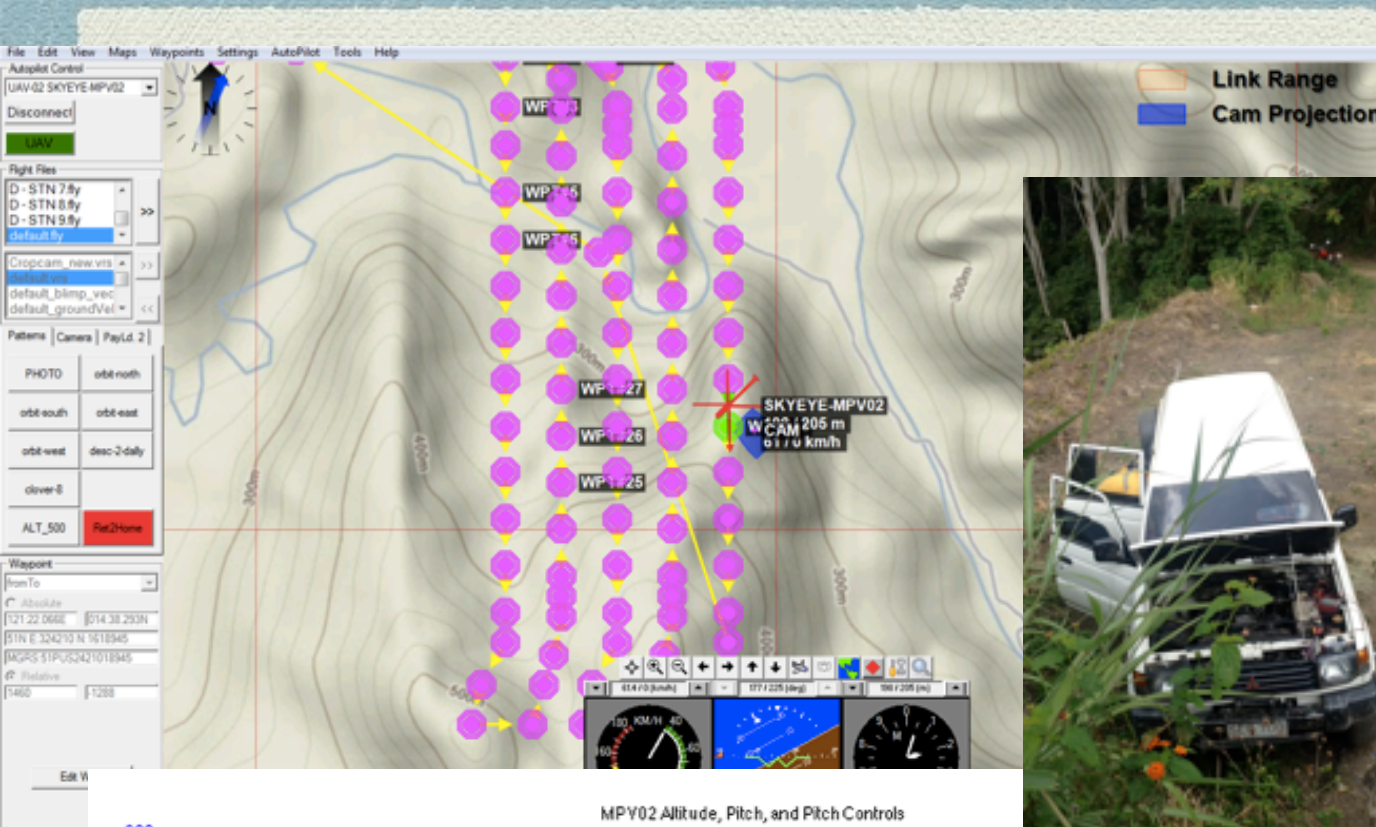
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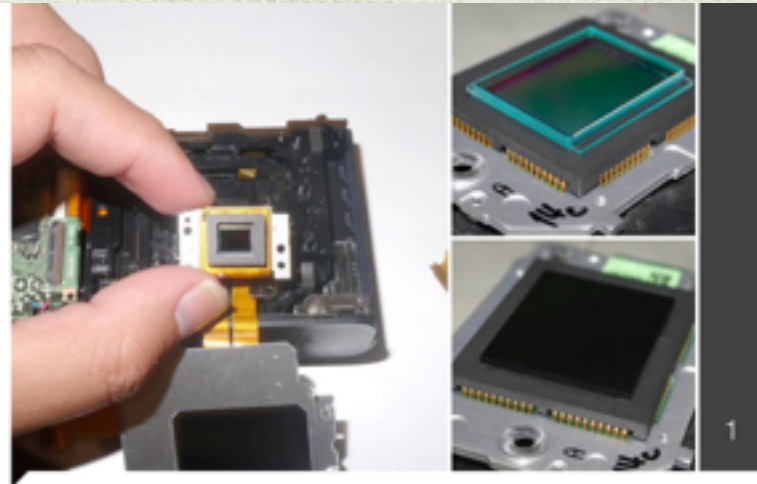
Disaster Risk
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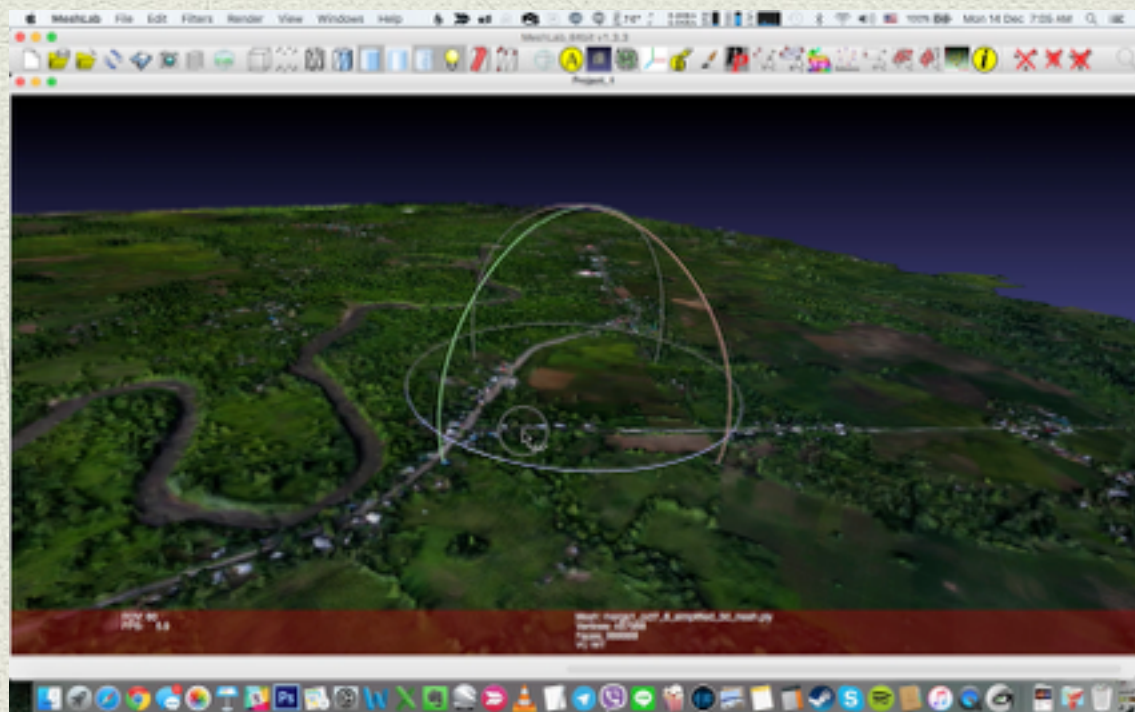
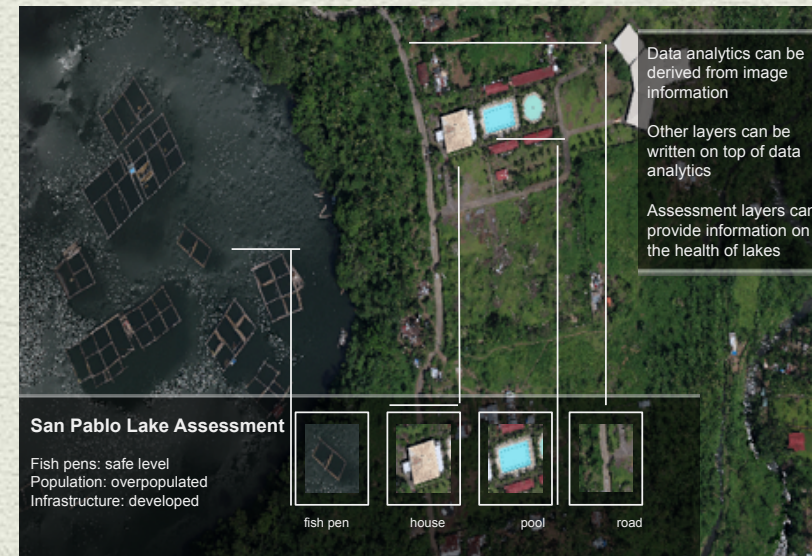
more than 6,000 man-hours (3,000 flight hours) over the last 3 years

More than 5,000 GBs of raw data collected

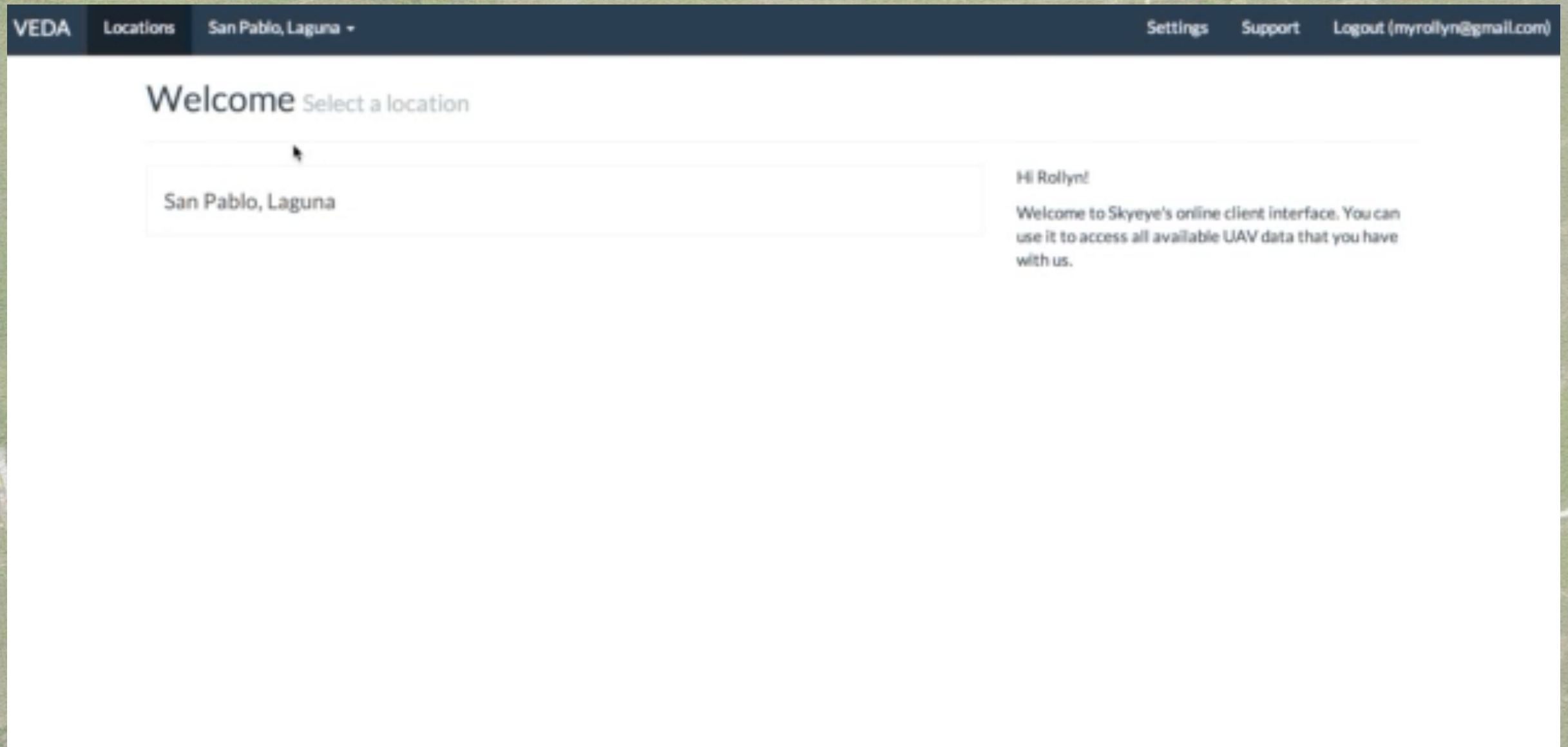
More than 200,000 hectares mapped



Imaging Sensor and IR Block Filter



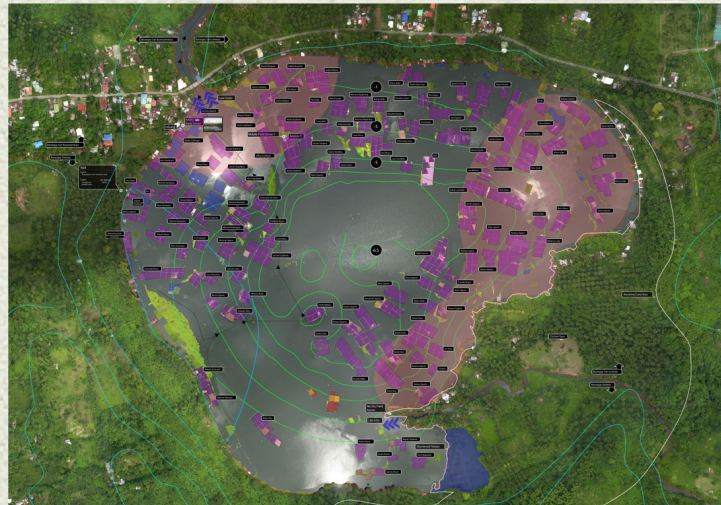
Fully Integrated System for Stakeholder to access information



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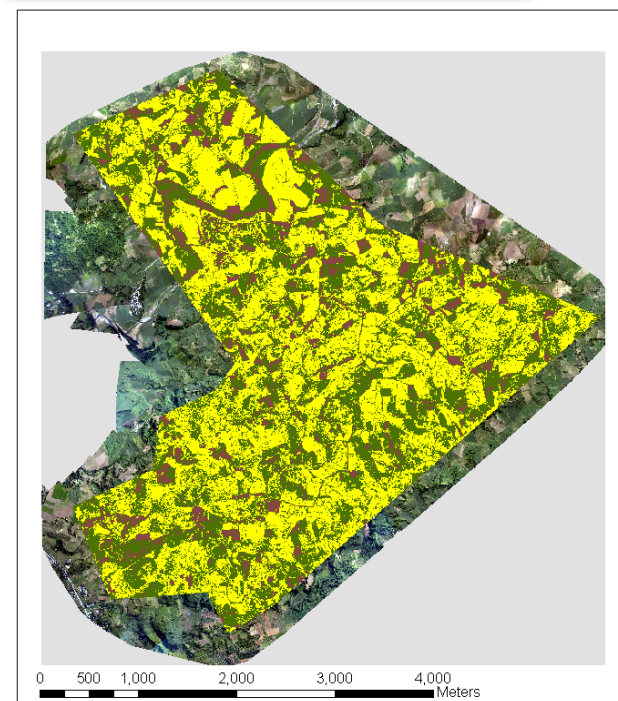
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Legend

Corn Field Classification 011516

Class_Name

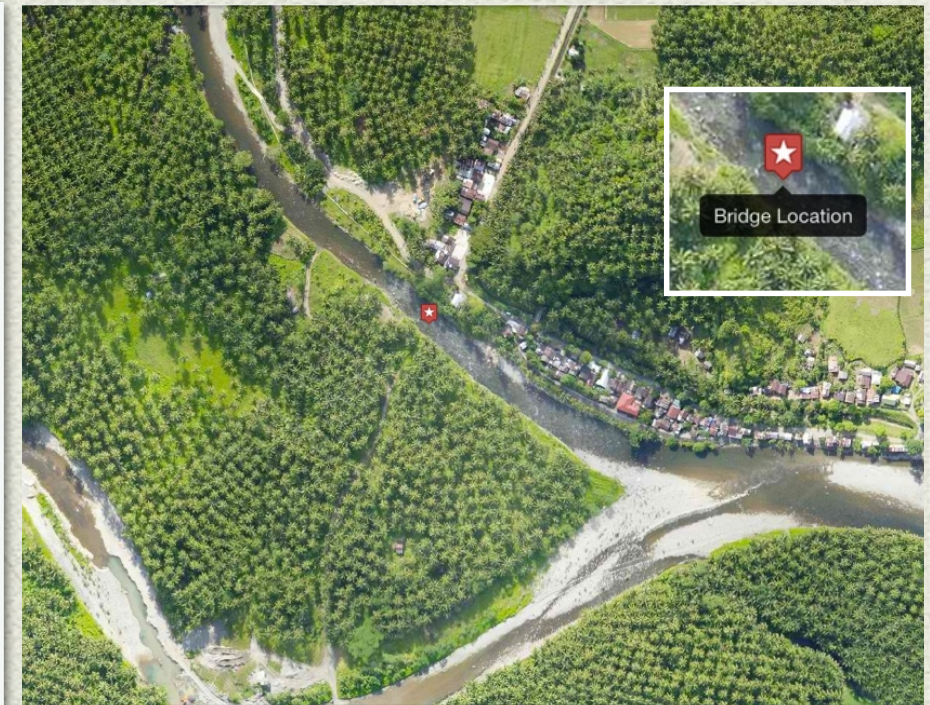
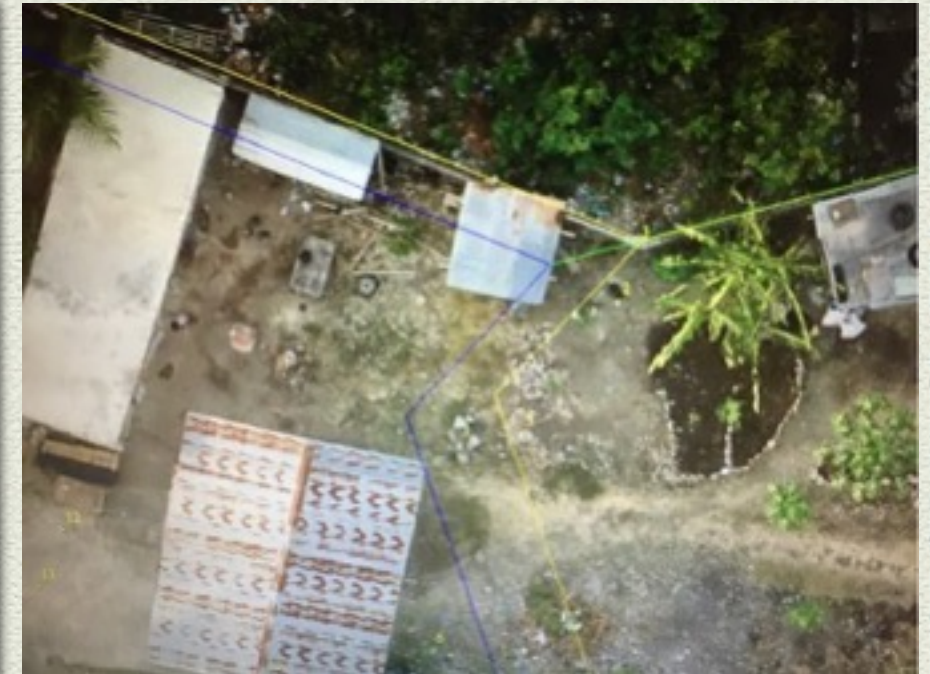
- (B1+B5+B6) 20-30 Days Old Corn
- (B2+B3+B4) 60-85 Days Old Corn
- (B7) Bare Soil



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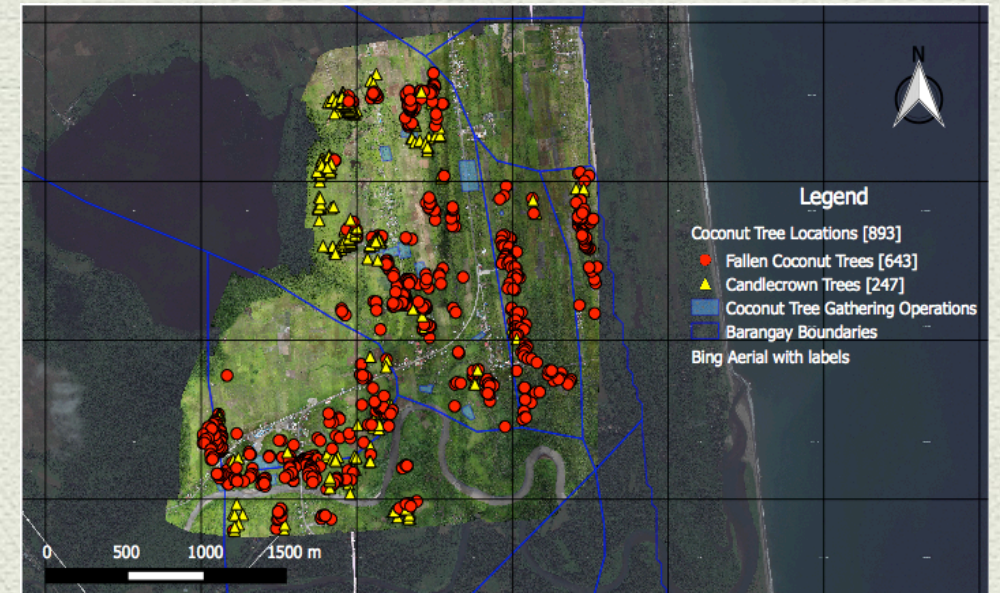
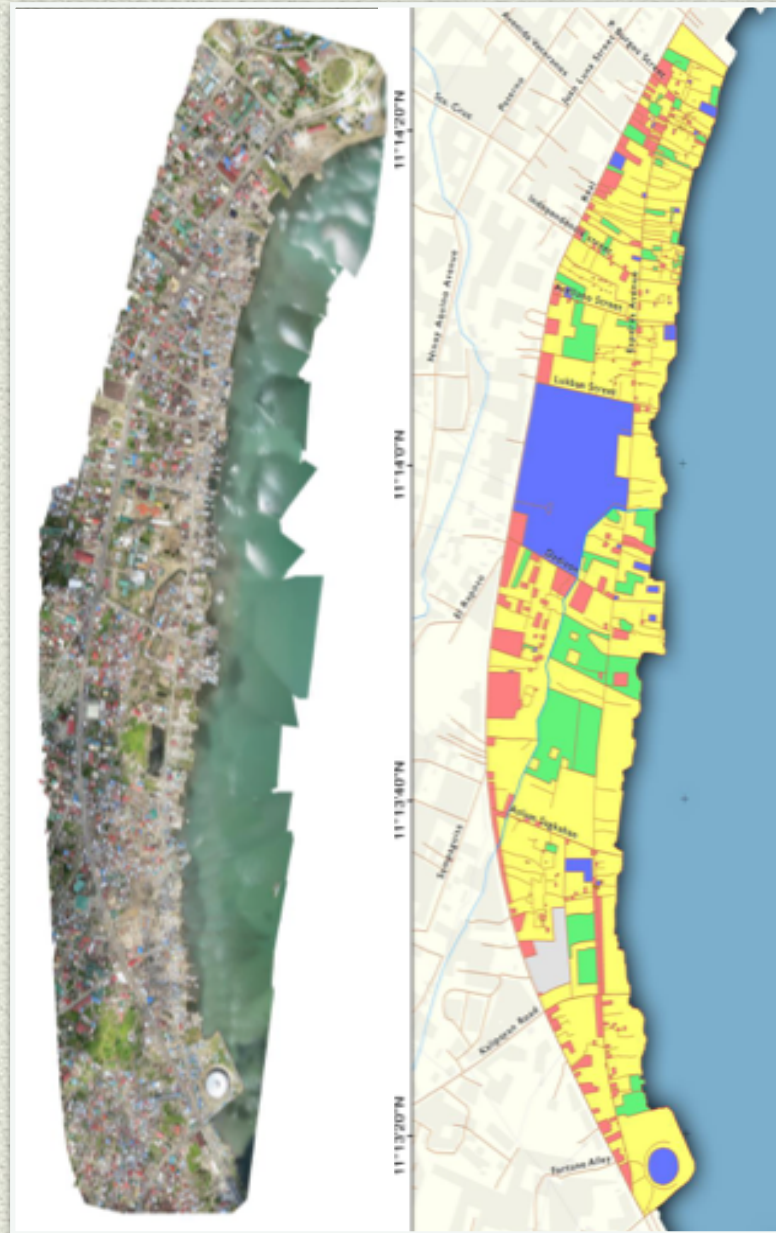
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Going Forward

- ◆ Toyota (Information Systems for Disasters), Philrice, WWF, Thailand (joint projects in Agriculture)
- ◆ Cooperative systems
- ◆ Advanced payloads
- ◆ Advanced image processing, analysis, data delivery (IBM and ASTI)
- ◆ Build and expand the Consortium

