

WCCA
2023 Fall Conference
Drone Regulations &
Zoning Applications

October 26, 2023

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Drone Capabilities

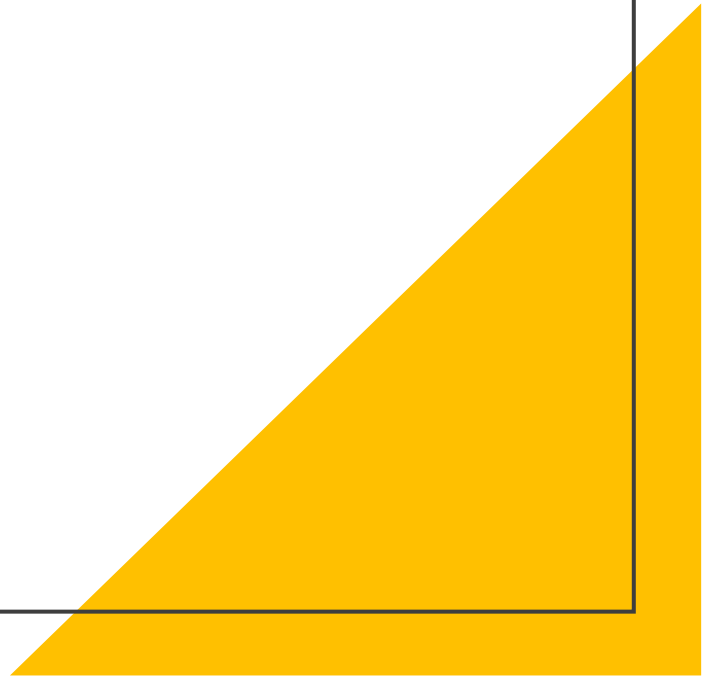
Camera systems

Multispectral technology

Thermal technology

3D Mapping

Post Analysis



Drones and Camera Systems



Phantom 4 & RTK

1-inch CMOS
Effective pixels: 20M

Drones and Camera Systems



DJI Mavic 3M & RTK

M: 1/2.8-inch CMOS, effective pixels: 5 MP

RGB: 4/3 CMOS

Effective Pixels: 20 MP

DJI Mavic 3T

640x512 resolution sensor

84° FOV F2.8 LENS, 1/2 -
INCH 48 MP QUAD BAYER
SENSOR

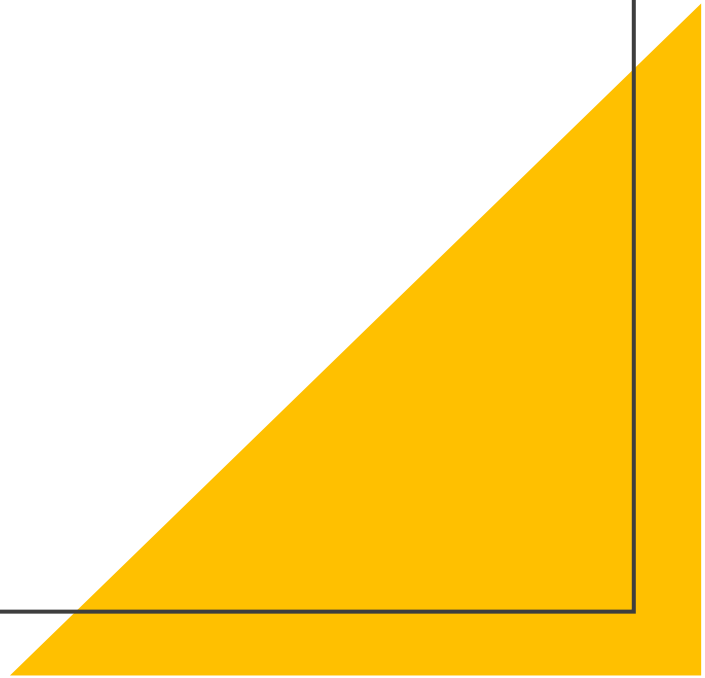


Mapping Applications

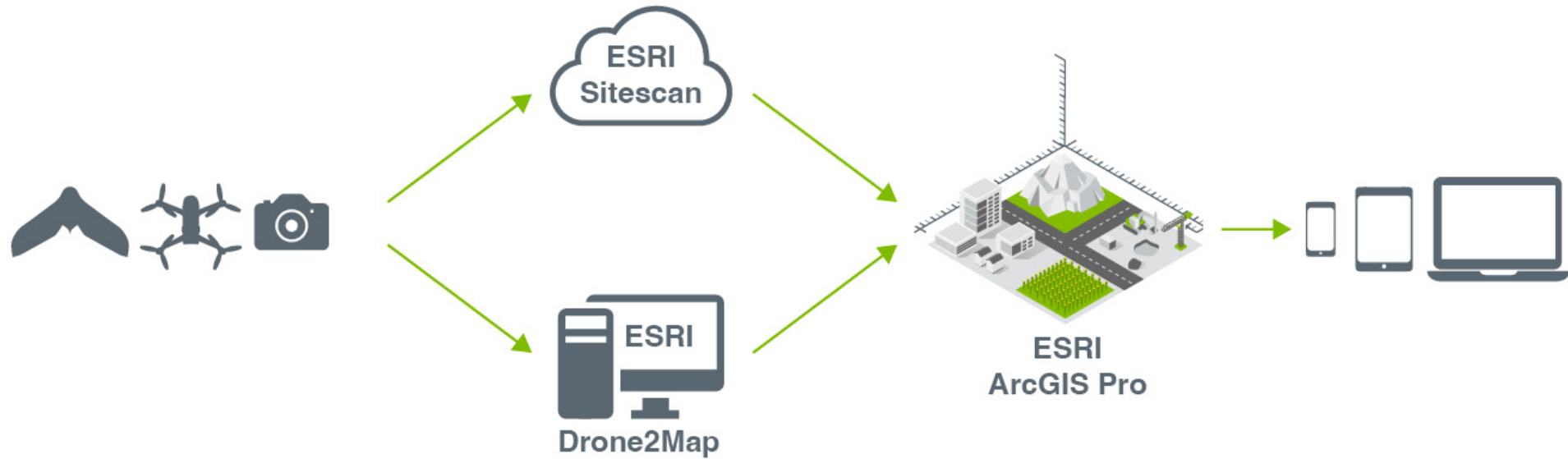
Drone Deploy

Pix4D Capture, Pix4D Matic, Pix4D Survey

ESRI: Drone2Map



Drone Mapping Workflow



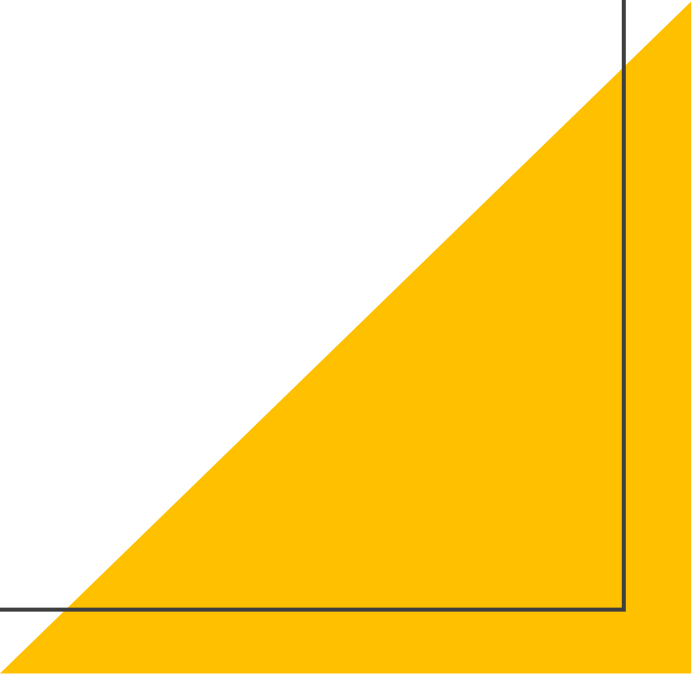
 **CAPTURE**

 **PROCESS**

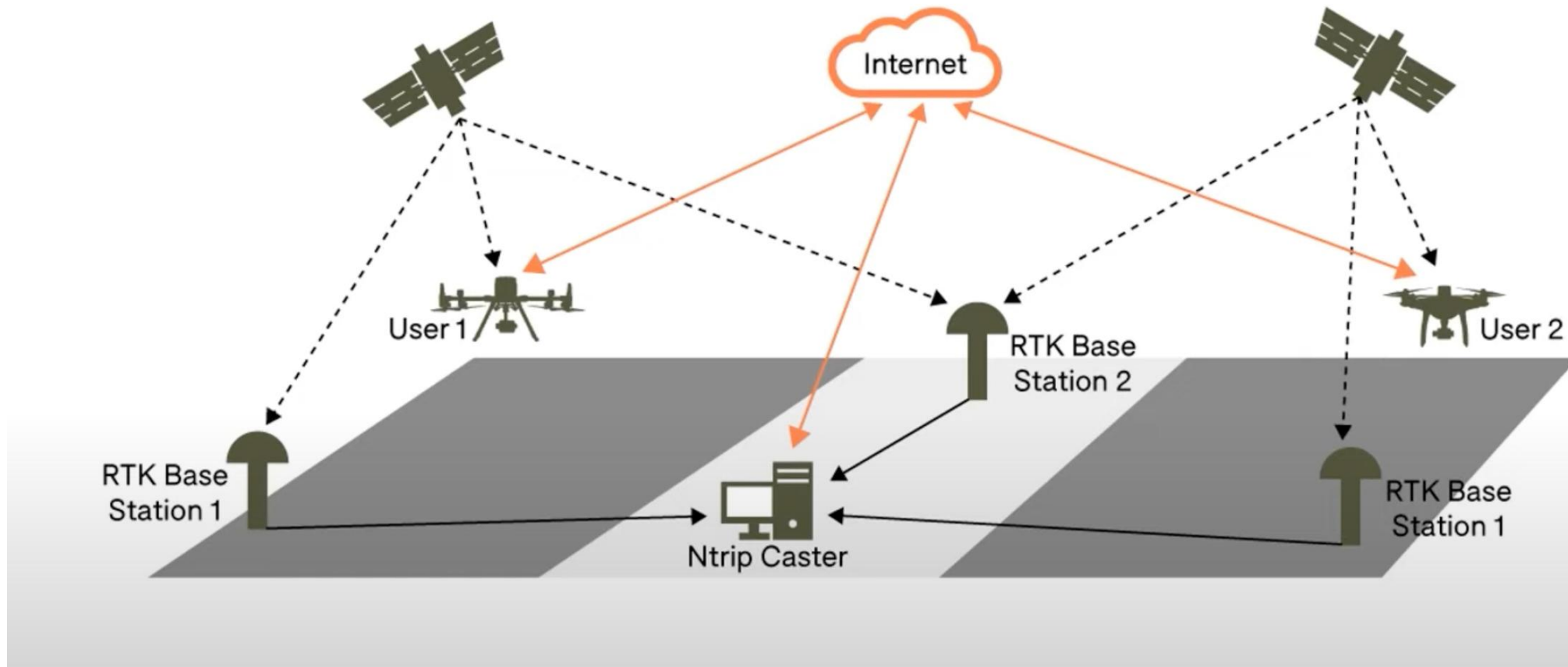
 **ANALYZE**

 **SHARE**

Drone Mapping: Ground Control Points



Drone Mapping Accuracy



Pix4D Capture

 SETTINGS



LOG OUT 

Plan new mission



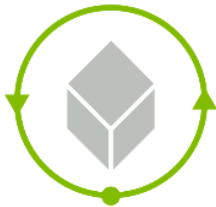
POLYGON
For 2D maps



GRID
For 2D maps



DOUBLE GRID
For 3D models



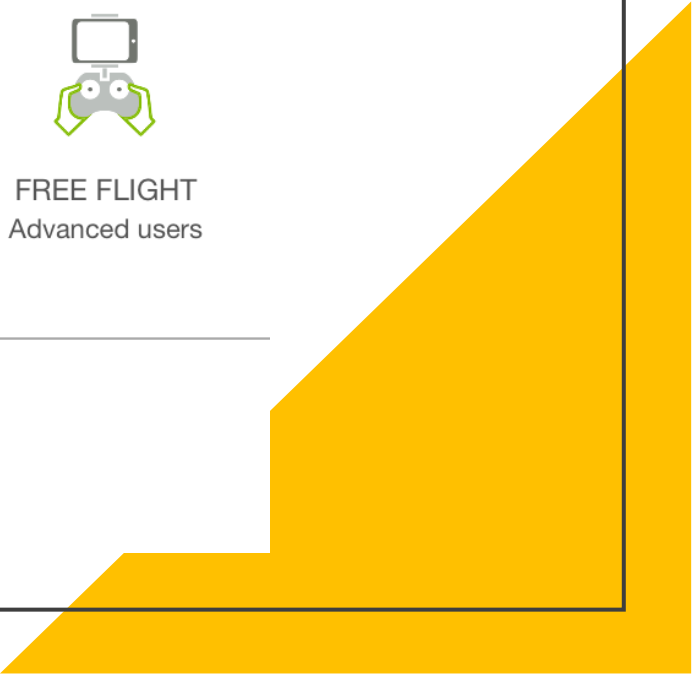
CIRCULAR
For single 3D model



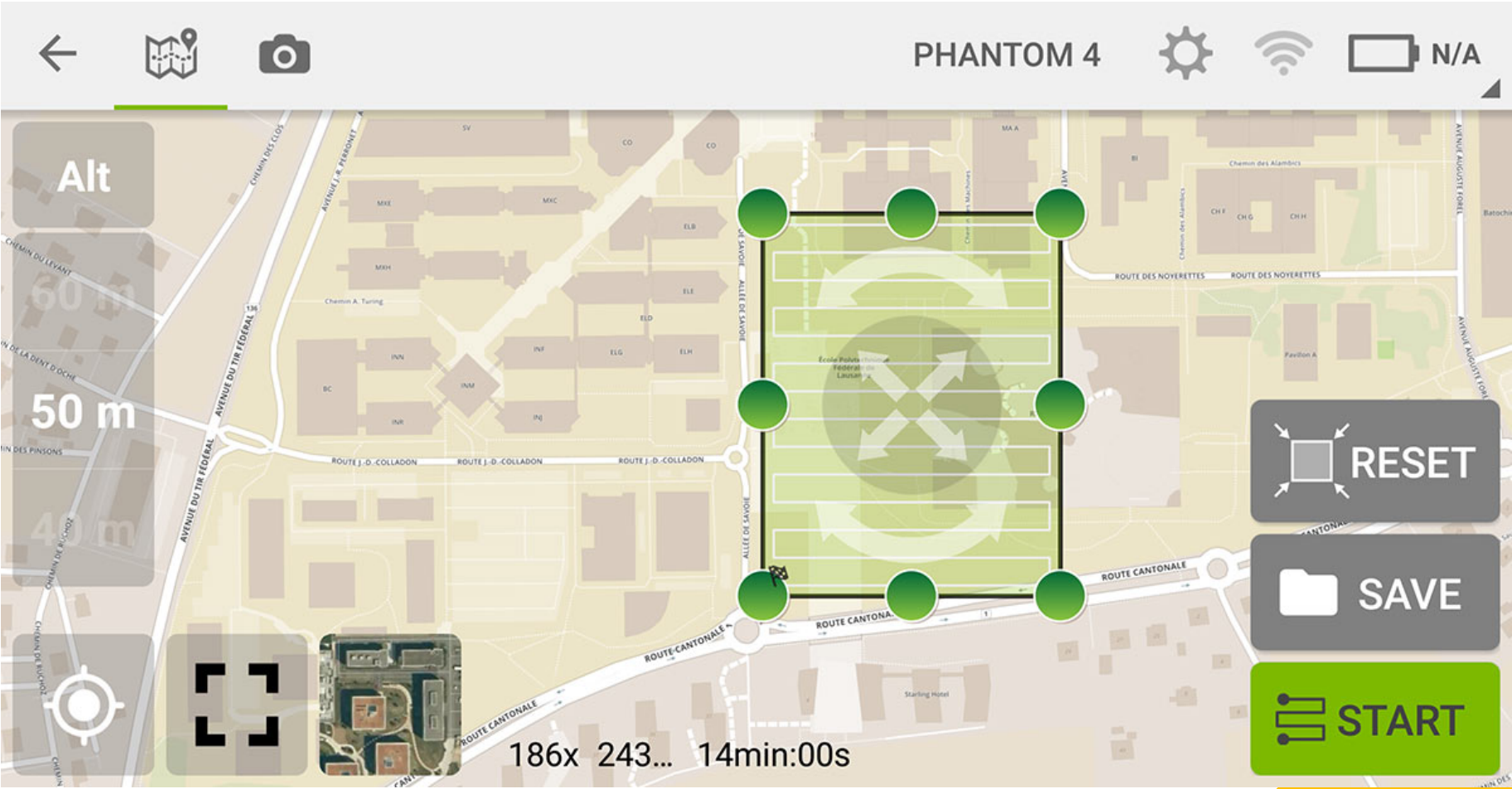
FREE FLIGHT
Advanced users

PROJECT LIST

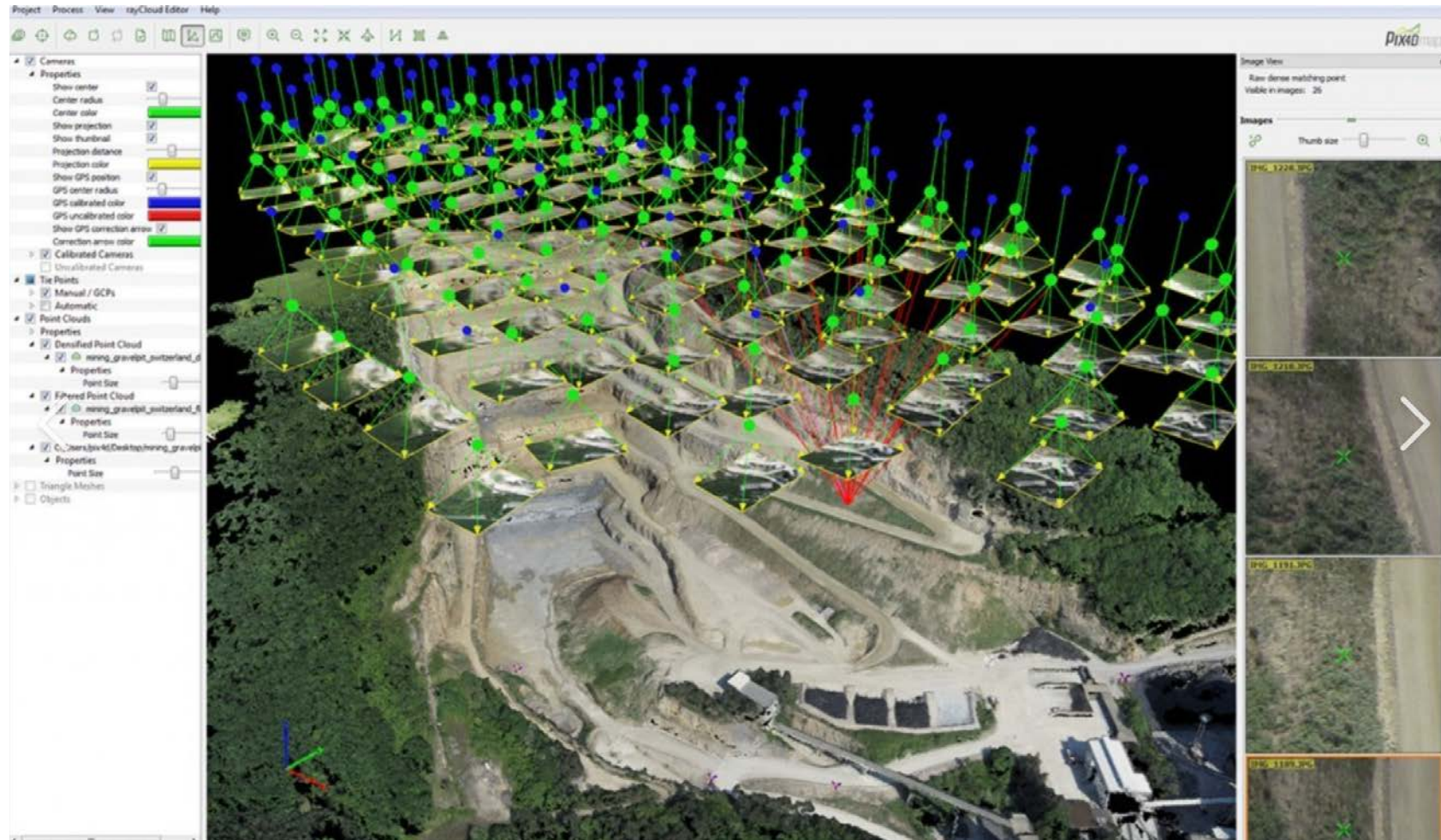
TUTORIAL/HELP



Pix4D Capture



3D RGB Drone Mapping: Area and Volumetrics



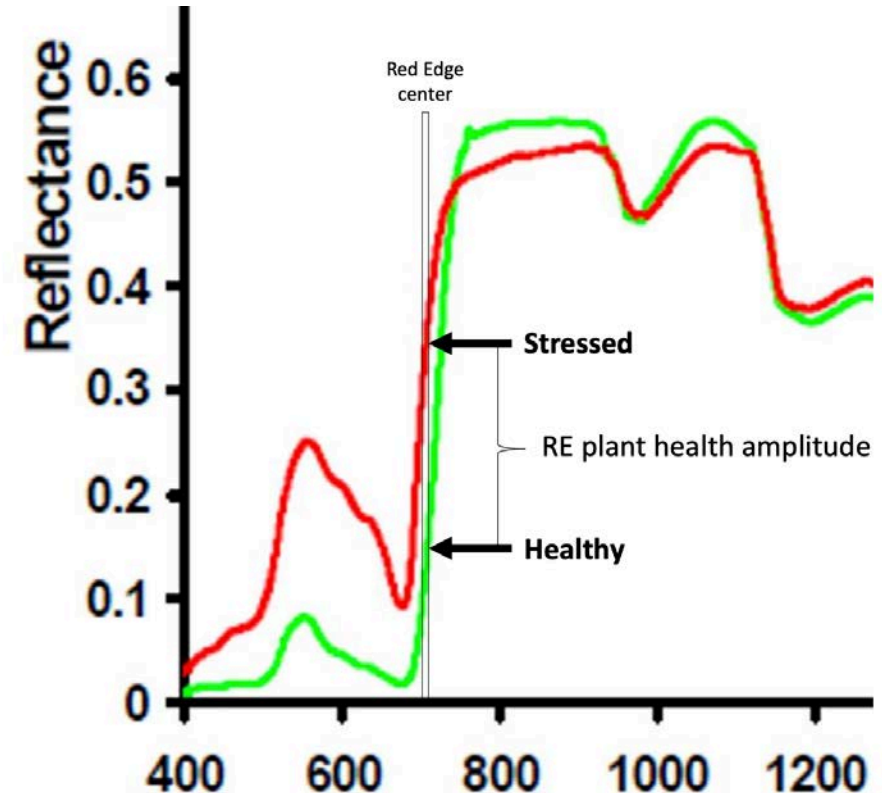
Multispectral Drone – Electromagnetic Spectrum

Green, Red, Red Edge and Near Infrared

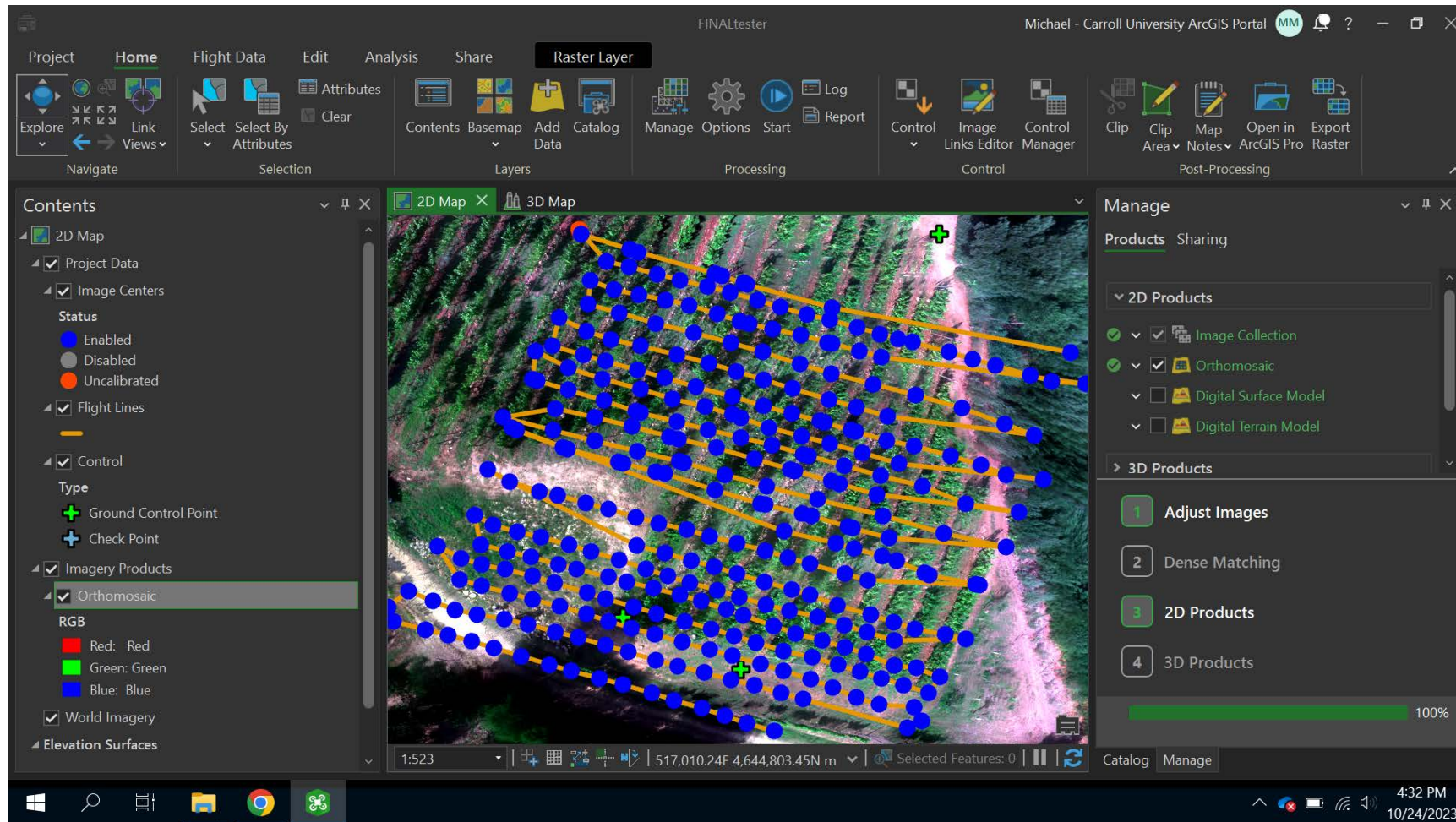
Red Edge – spans 670-760 nanometers.
Between visible red and near infrared bands

Red Edge – region on the spectrum where
reflectance of green vegetation changes rapidly

Stressed vegetation has stronger reflectance
than healthy plants



ESRI – Drone2Map



ESRI – ArcGIS Pro

The screenshot displays the ArcGIS Pro interface with the following components:

- Top Ribbon:** Project, Map, Insert, Analysis, View, Edit, Imagery, Share. The 'Imagery' ribbon is active, showing tools like Point, Distance, Area, Results, Process, Indices, Pixel Editor, Image Information, Create Hosted Imagery, and Video Search.
- Contents Panel:** Shows the map's drawing order. The 'Preview_UnsupervisedAssignClasses' layer is selected, with a legend for 'Class_name' showing values 0 (dark purple), 1 (blue), and 2 (green).
- Map View:** A 2D map showing a supervised classification result. The map is color-coded according to the legend, with three green crosshair markers indicating specific points of interest.
- Symbology Panel:** Shows the 'Symbology - Preview_Unsup...' panel. The 'Primary symbology' is set to 'Unique Values'. The 'Field 1' is 'Class_name' and the 'Color scheme' is a sequential color ramp. The 'Values' tab is active, showing a table of values and labels.

Color	Value	Label
Dark Purple	0	0
Blue	1	1
Green	2	2

At the bottom of the interface, the Windows taskbar is visible, showing the system clock at 4:38 PM on 10/24/2023.

ESRI – ArcGIS Pro

The screenshot displays the ArcGIS Pro interface with the **Mensuration** tool active. The tool's results are shown in the **Mensuration Results** pane, indicating a measured area of 4128.5346 Square Meters and a perimeter of 256.8584 Meters. The map view shows a 2D map with a blue boundary around the measured area. The **Contents** pane on the left shows the **Preview_UnsupervisedAssignClasses** layer selected, with two classes: **0** (purple) and **1** (blue). The **Symbology** pane on the right shows the **Primary symbology** set to **Unique Values** with a color scheme of **Class_name**.

Mensuration Results

Preview_UnsupervisedAssignClasses

Type	Name
Area	Area 1

Area : 4128.5346 Square Meters

Description

Property	Value
Sensor Name	Unknown
Sensor Model	Unknown
Time of measurement	10/24/2023 4:42:27 PM
Area	4128.5346 Square Meters

Symbology - Preview_Unsup...

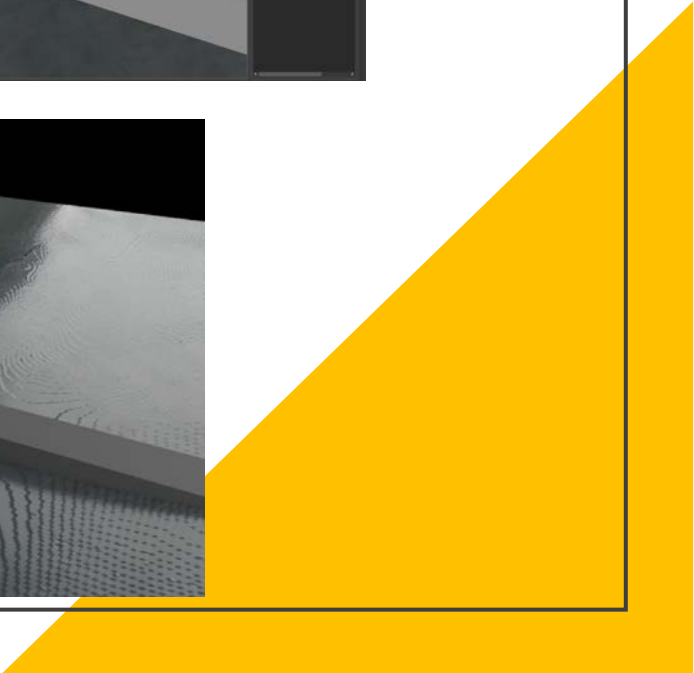
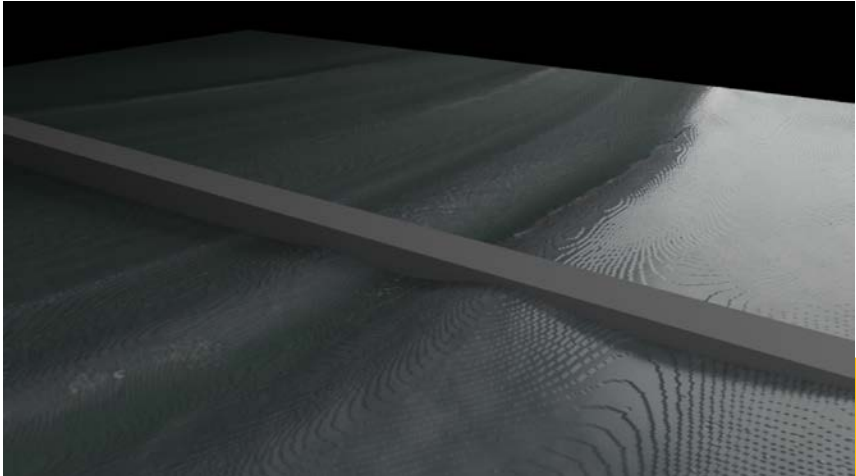
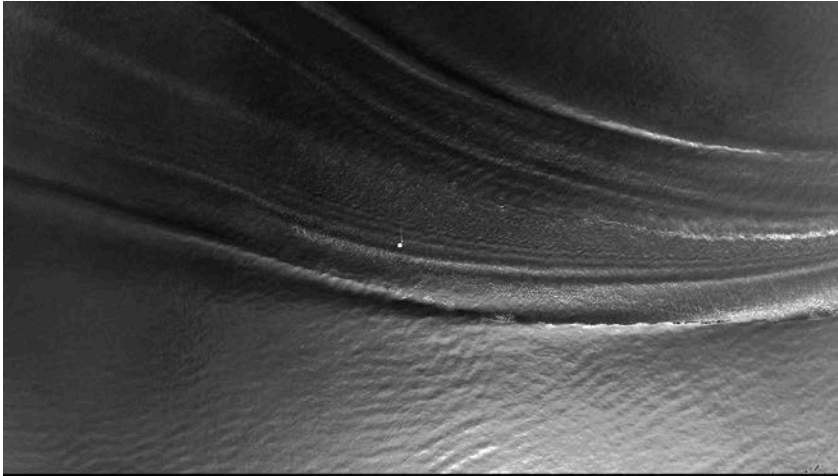
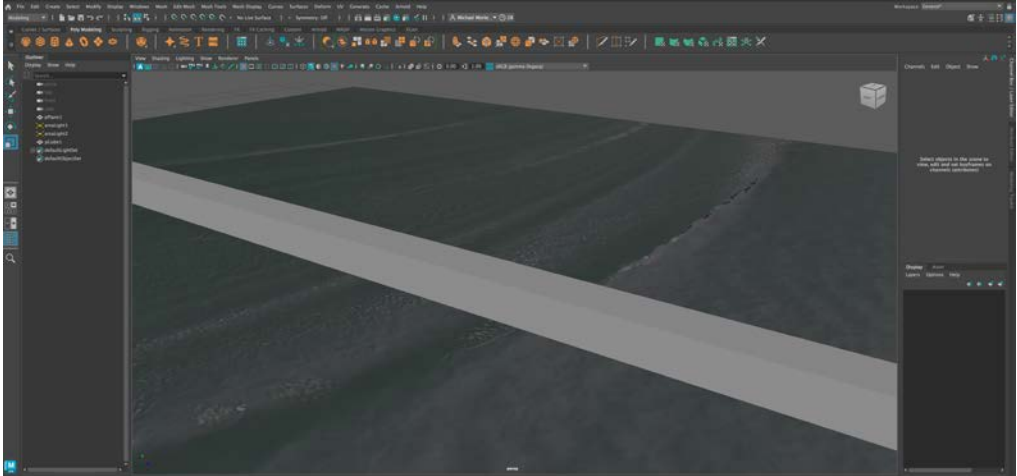
Primary symbology: Unique Values

Field 1: Class_name

Color scheme: [Color gradient]

Color	Value	Label
[Purple]	0	0
[Blue]	1	1
[Green]	2	2

Displacement Mapping



Drone Videography and Analysis

Aerial Visualization Boat Wave Propagation



Thank You

