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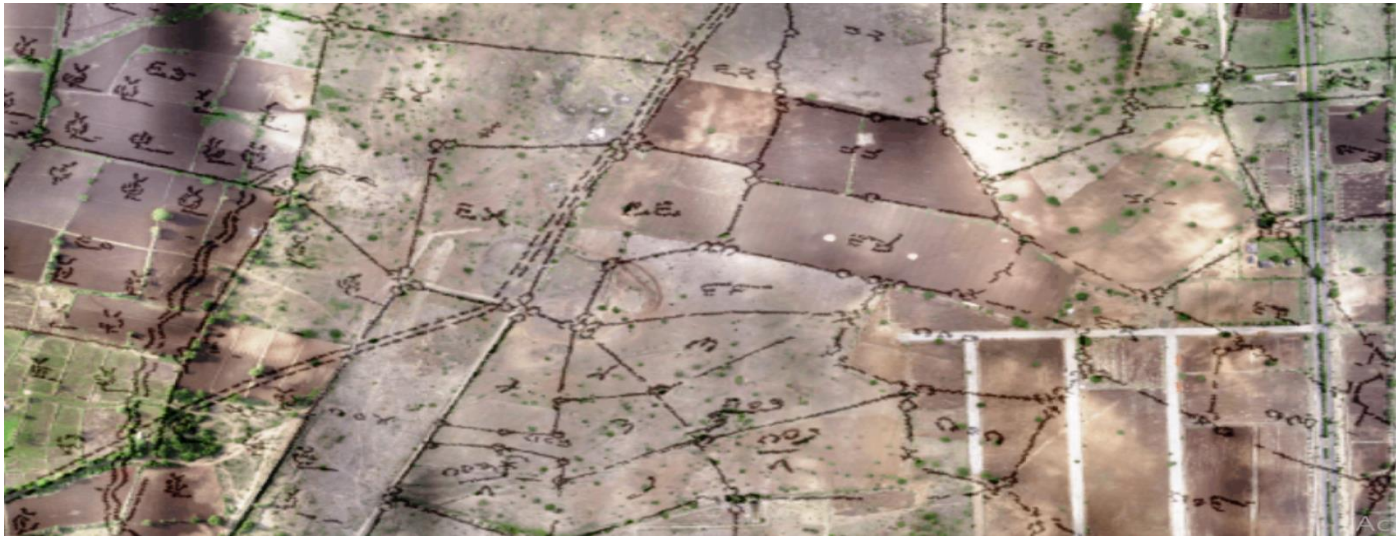
A BOEING HorizonX Company

A Case Study an Aerial Survey for property demarcation



Project Background

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Survey boundary maps in India were hand drawn and generated in the pre independence era. Since then, there have been updates and changes to such maps done haphazardly by various agencies at different levels and at different points of time. With such updates being done over the past 100 years, a situation has emerged where there are lots of discrepancies between such maps and the actual property and survey boundaries on the ground. This has led to too many litigations and problems for citizens.

This issue is not just prevalent in India. Various governments across the world are now undertaking this task to solve this problems once for all.

Project Objectives

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- Reconciliation of age old survey maps of 4 villages with high accurate drone generated maps.
- Generation of property boundary maps as a new layer.
- Providing the most recent and accurate maps upto 5cm/pixel of the area to stakeholders.
- Geo-referencing assets and boundaries so that there is no question of dispute anytime in future.

Process

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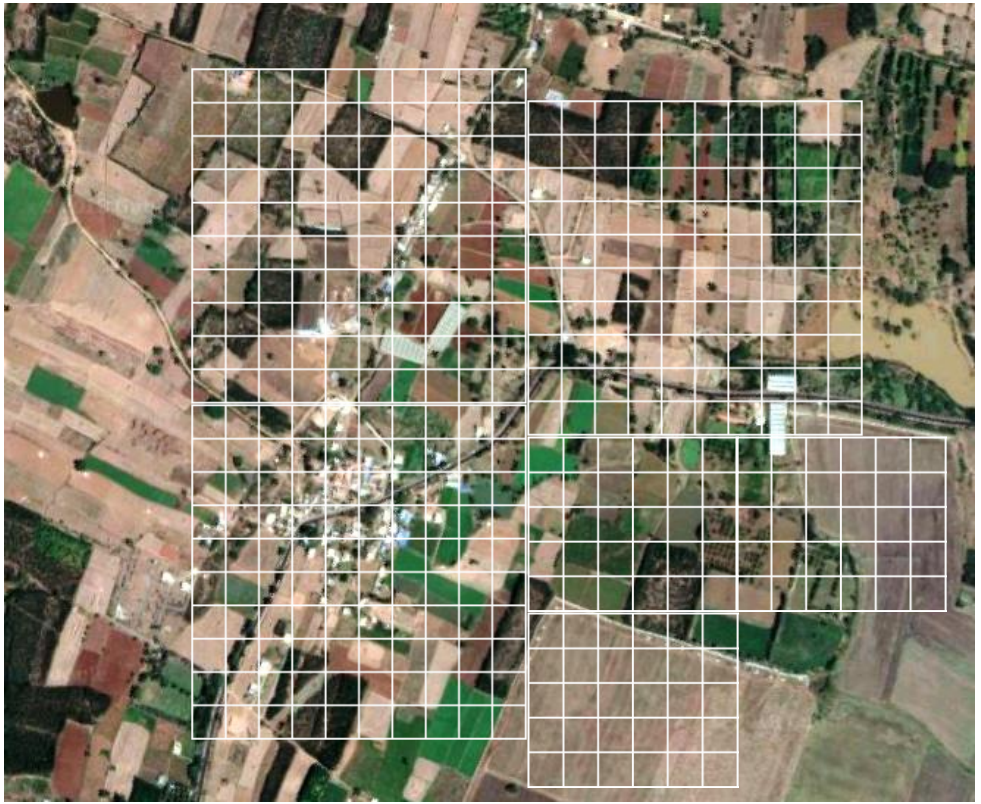
Flight planning

The entire area was subdivided into multiple zones and flight plans were created for each zone.



Process

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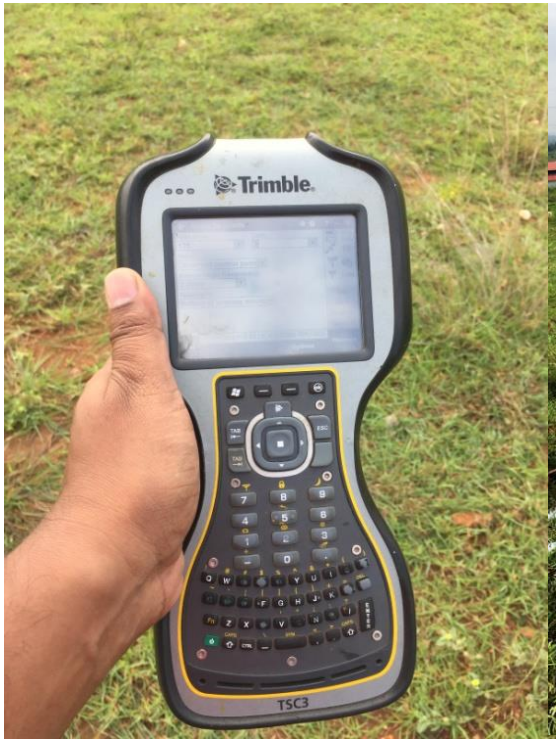
Data capture process

A total of 12 ground control points were marked and established
using the Trimble R8 in RTK mode.



Process

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Data capture process

After obtaining the required permissions from aviation and local authorities, the 2 drones were flown simultaneously and autonomously across the areas of interest.

Two drone pilots flew the drones and completed the data capture process in 3 days.

Data Processing

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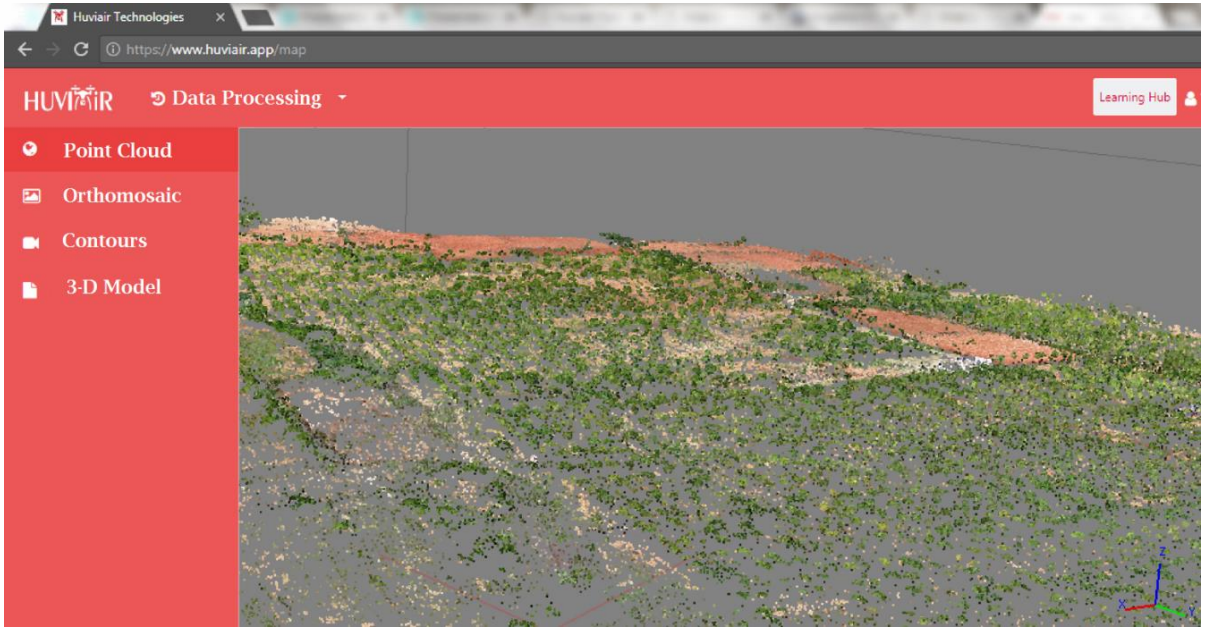
Data processing:

The HUVIAiR app was used for processing all the data collected with drones.



Outcomes

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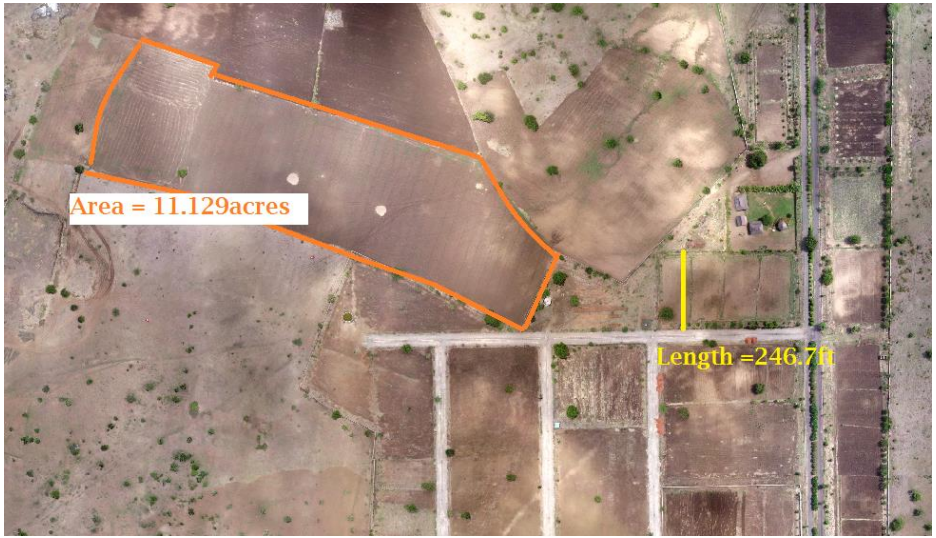
1. Orthomosaic Image:

Various images of the site were stitched together to form one single 2D top view ultra high resolution and accurate image of the site.

As the orthomosaic provides accuracy of 5cm/ pixel, extremely accurate measurement of lengths and areas of property was done.



Outcomes

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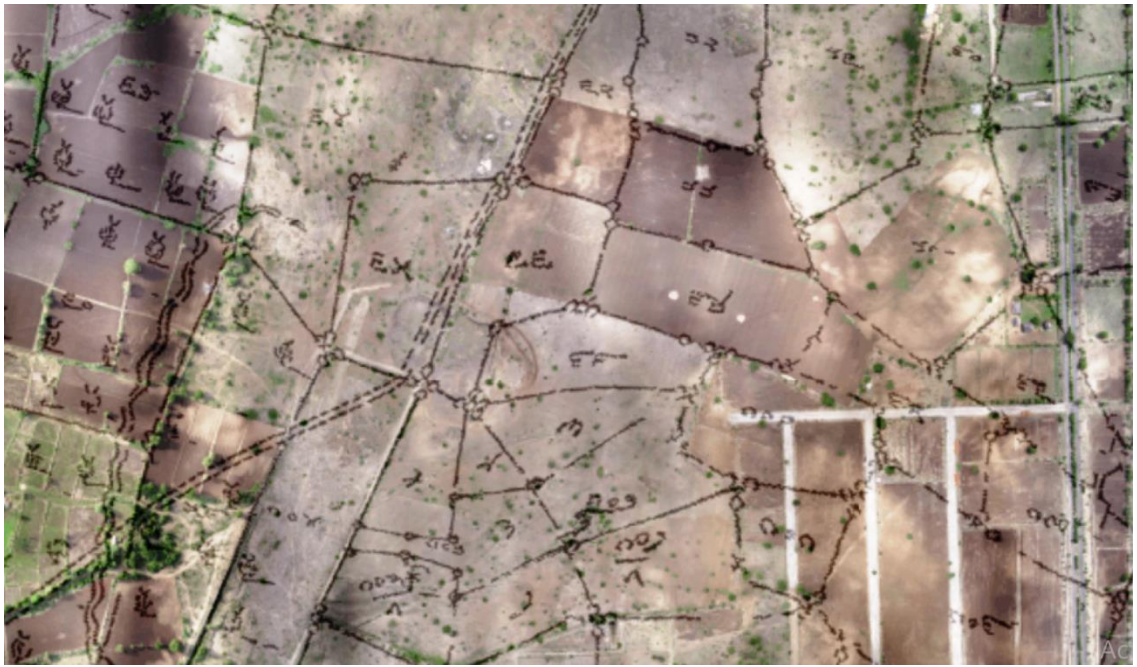
Further, the pre-existing property layout drawings were geo-referenced and overlayed over the high accurate drone generated orthomosaics.

This helps in reconciliation of existing age old survey maps printed on paper with the most recent geo-referenced drone generated digital maps.

With this data, assets and boundaries can be geo-tagged so that there is no scope for error/dispute anytime in future.



Outcomes

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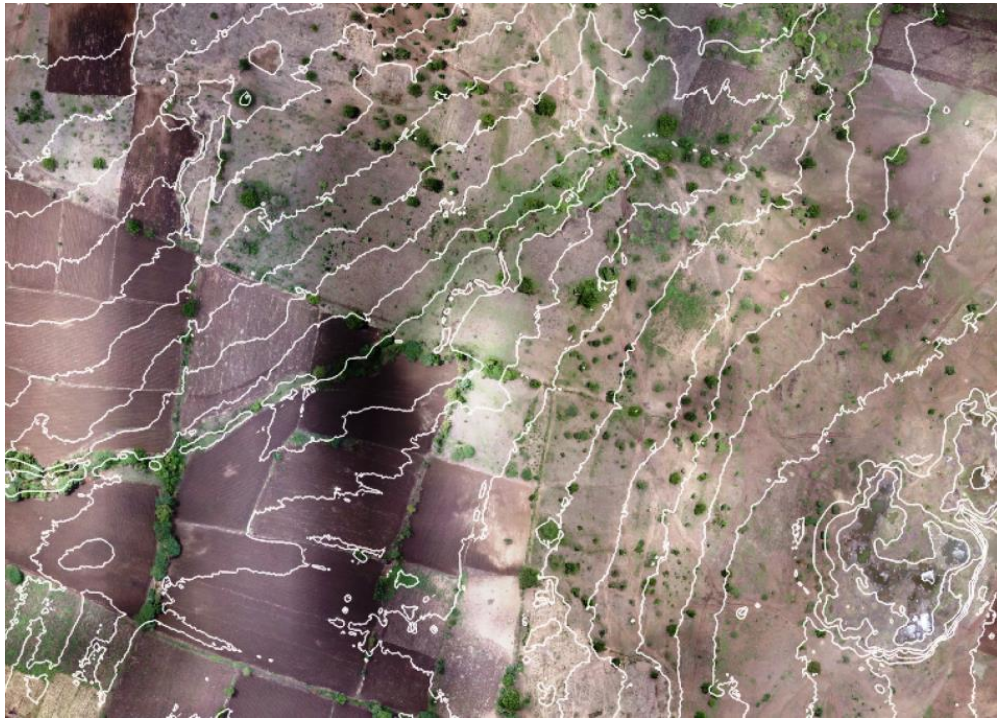
3. Contour Map:

Contour map of the surface were generated with the required intervals.

Further, the contour map were overlaid on top of
the orthomosaic to get an idea of the contours running through the actual image of the site.



Outcomes

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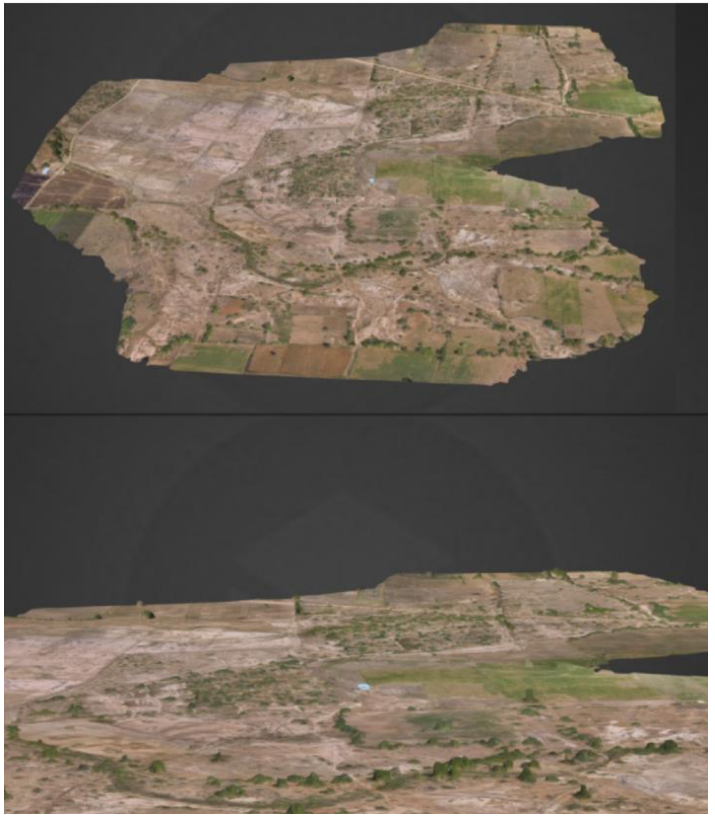
3-D Model -
A 3D model of the site was generated.

This model was used to fly/orbit through the site to visualize the details in 3D and to plan the work at hand.

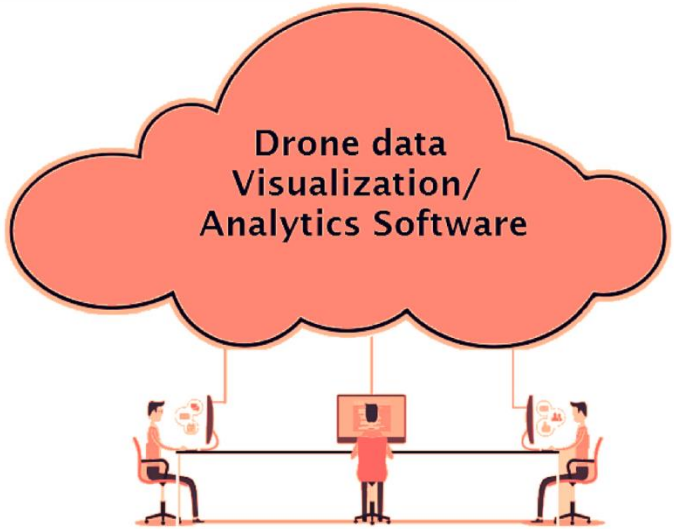
Example –
http://huviair.com/3dmodel.html



Software

All the outputs were deployed in the HUVIAiR app – a browser based cloud software for all drone data visualization and analytics.

This enabled all the stakeholders to visualize, analyze and manage the outputs generated from any device and from any location.



Impact

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The HUVIAiR app was used to geo-reference and measure each property.
With this data, accurate GIS based maps were generated and corrections to existing survey boundaries were done.

This led to the following -

- Accurate survey and property boundary maps were created in 1/5th the time compared to traditional ground survey methods.
- Based on accurate area measurement, property tax for each property was determined, thereby increasing the transparency of taxation process and revenue for the government
- All maps created were used for quick dispute resolution as these maps were visual, accurate and hence indisputable.

About HUVIAiR

HUVIAiR Technologies is a Drone Data Solutions Company.

The HUVIAiR solution delivers drone data based insights for construction, infrastructure, smart cities, renewable energy and natural resource management sectors.

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