



Best Practices : Drone Imagery Acquisition & GeoAi Applications

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01 | Drone Imagery Acquisition



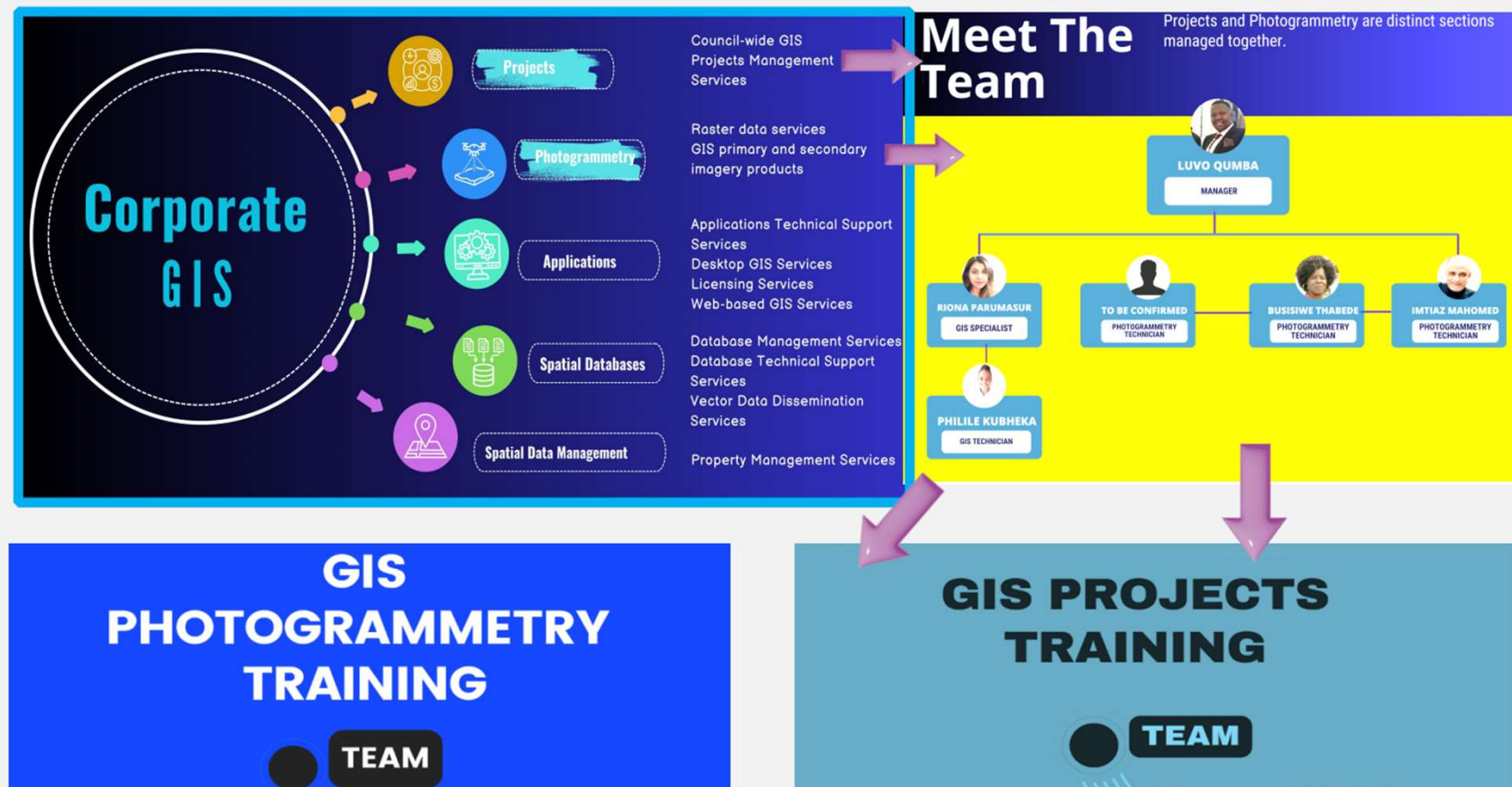
Who are we? Context

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ETHEKWINI GEOSPATIAL PROJECTS

GIS PROJECTS AND PHOTOGRAMMETRY

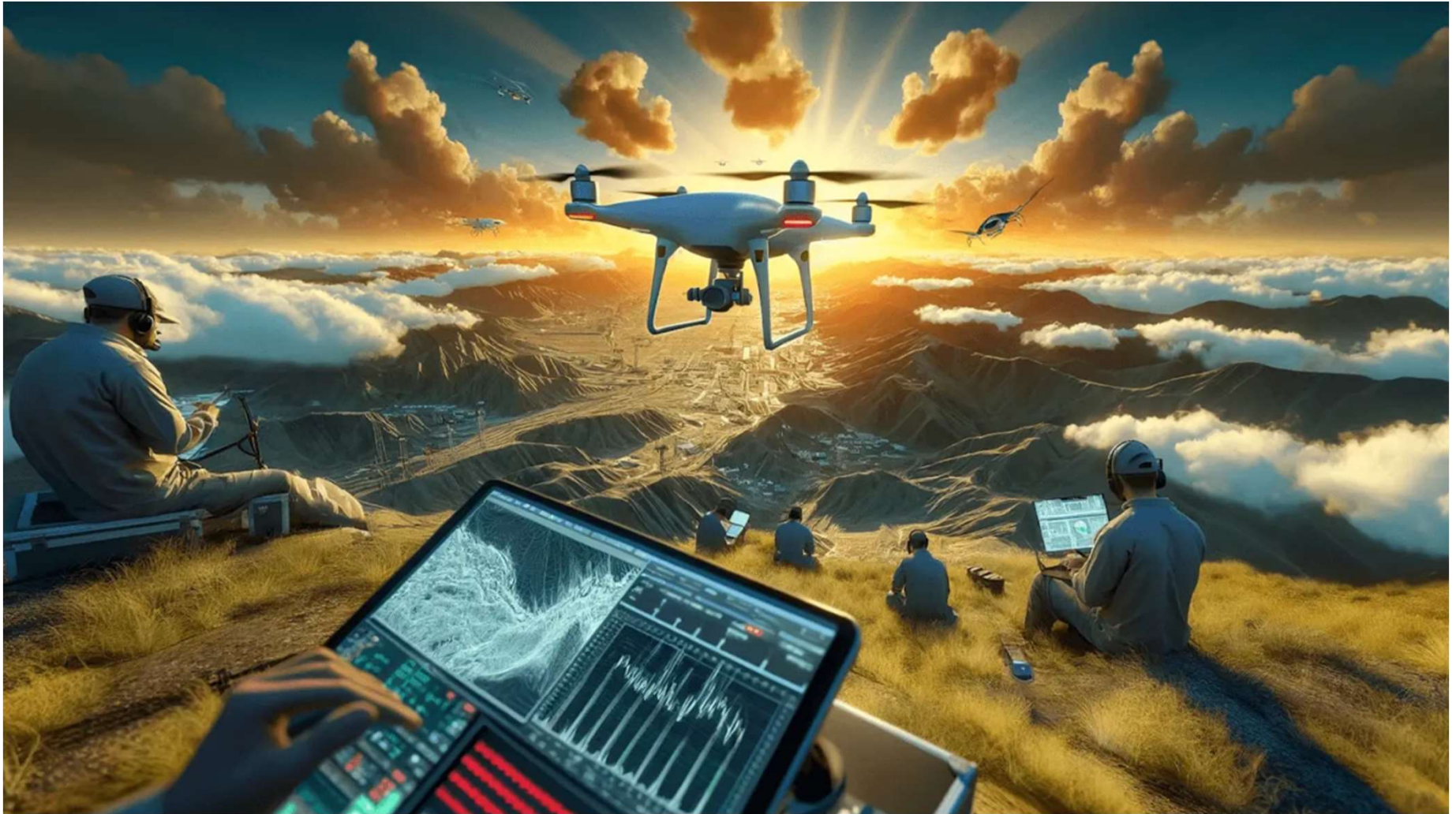


BY 2030 ETHEKWINI WILL BE AFRICA'S MOST LIVEABLE CITY



It gets busy in the skies & ground

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BY 2030 ETHEKWINI WILL BE AFRICA'S MOST LIVEABLE CITY

- Rapid advancements in drones and GeoAI are transforming geospatial data collection and analysis.
- Municipalities can now collect high-resolution, current, and cost-effective data.

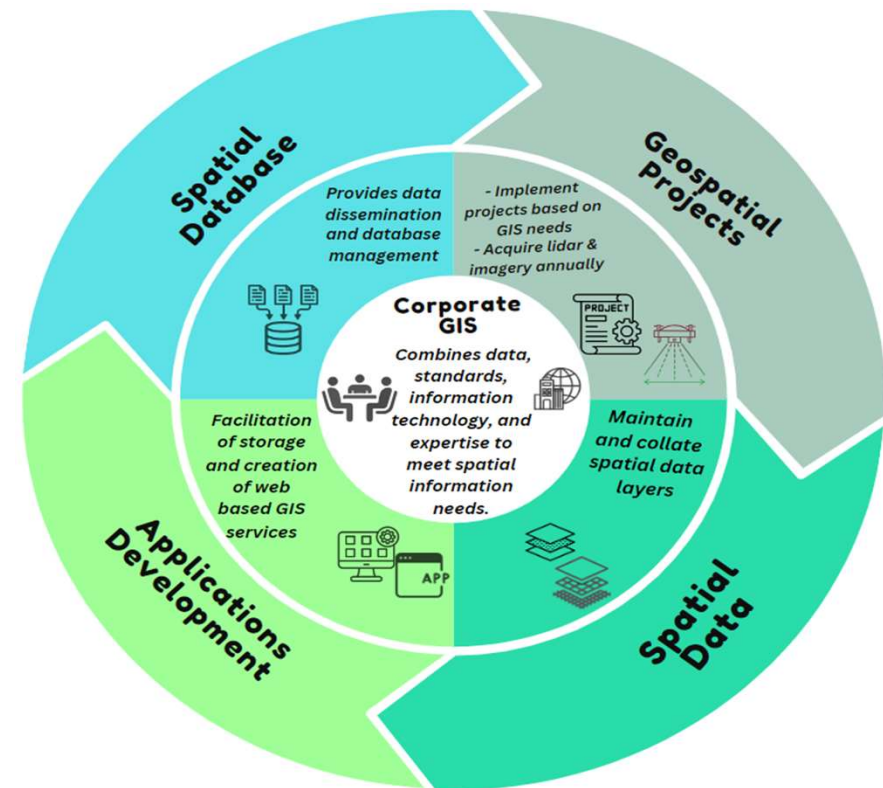
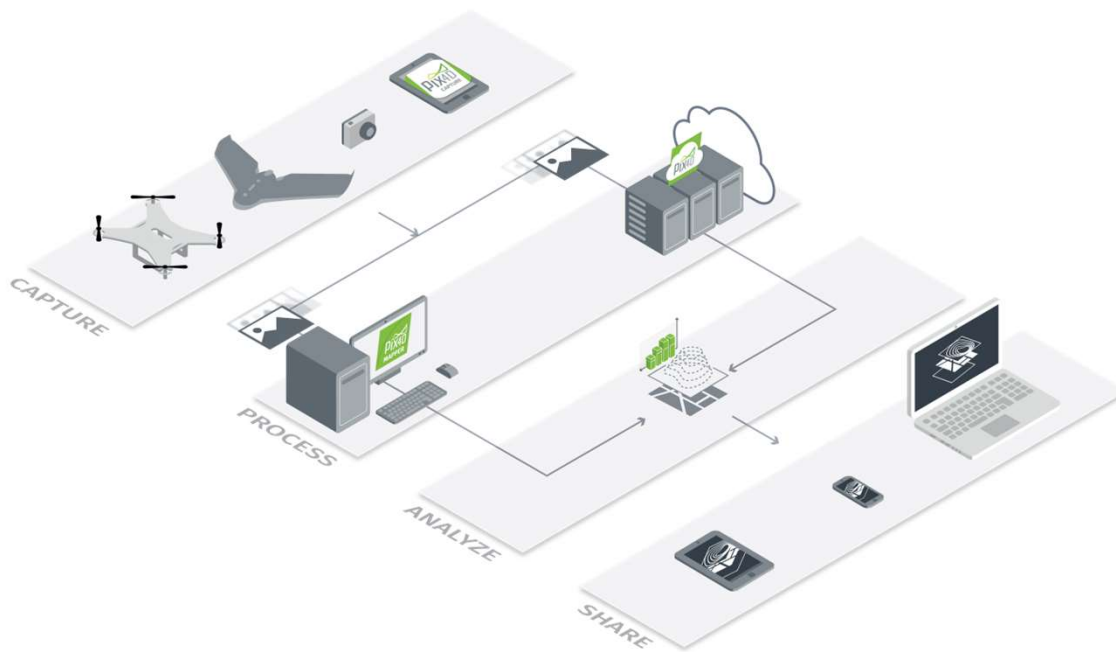


Figure 19. Processing Framework

The Importance of a Municipal Drone Strategy

- **Align with Municipal Goals:** Support planning, infrastructure audits, disaster management, and service delivery. *As-and-when readiness*

- **Legal Compliance:** Ensure SACAA licensing, airspace permission, radio compliance and insurance. *Coordination*

- **Data Management:** Establish data storage, access, and integration protocols with GIS systems.

- **Example:** Our drone strategy supports departments such as Engineering, Housing, and Disaster Management.

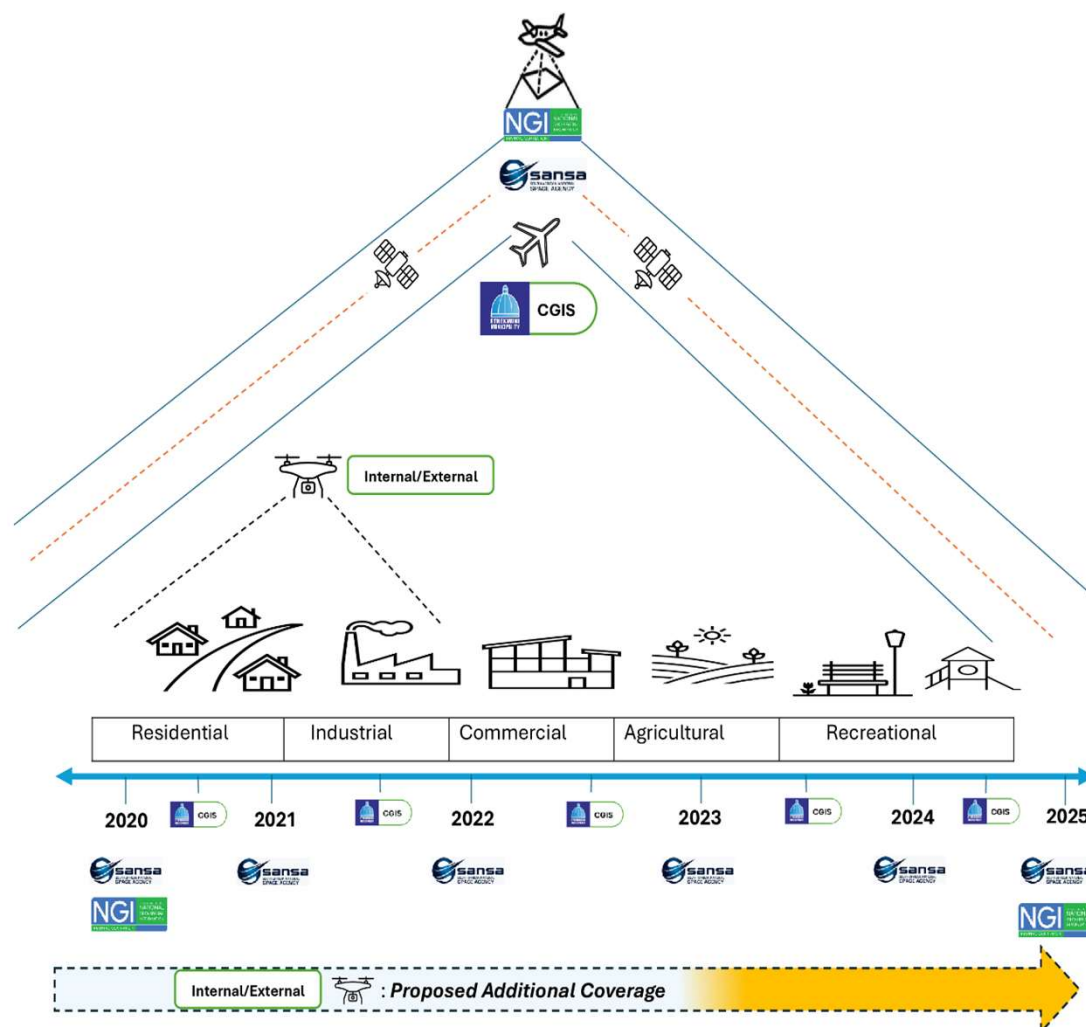


Figure 16. Current and proposed aerial coverage of eThekweni Municipality

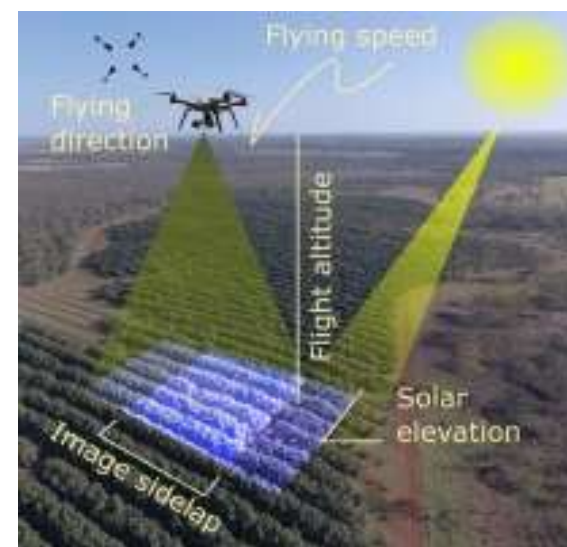
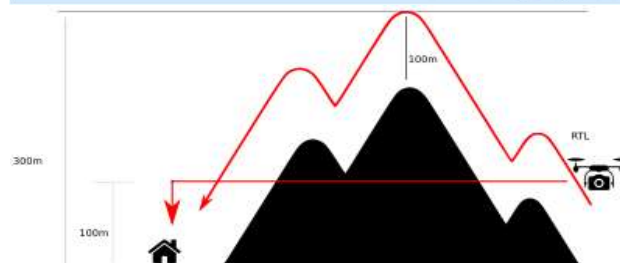
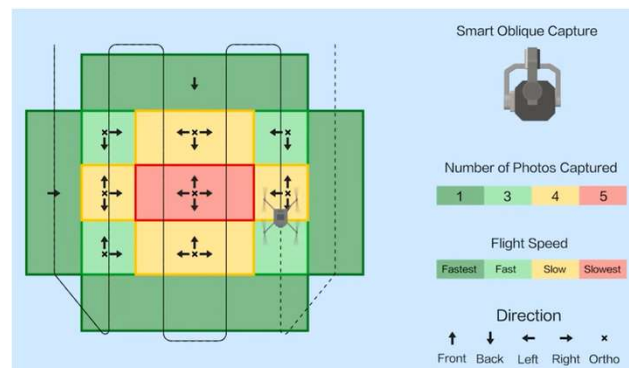
Flight Planning Best Practices

- **Plan for Purpose but keep organization in mind:** Tailor flight height, overlap, and pattern to the organizational bigger objective (*e.g. rather do Ortho and Oblique instead of just Oblique alone*).

- **Consider Terrain:** Use terrain-following features where available.

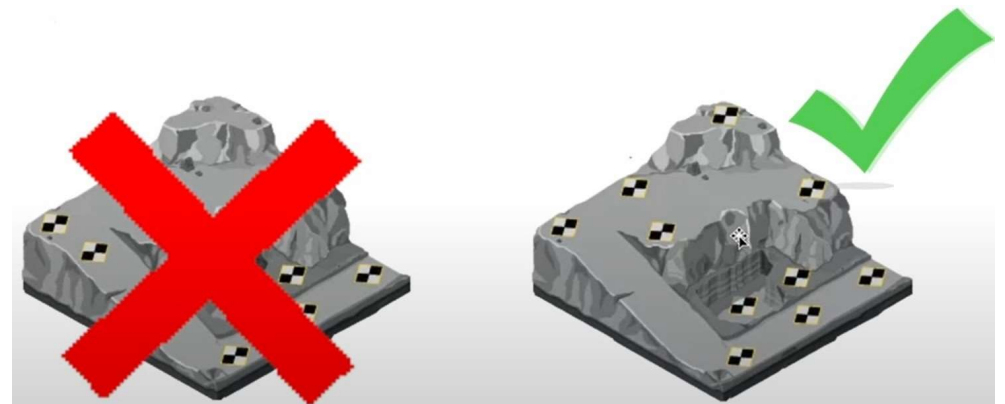
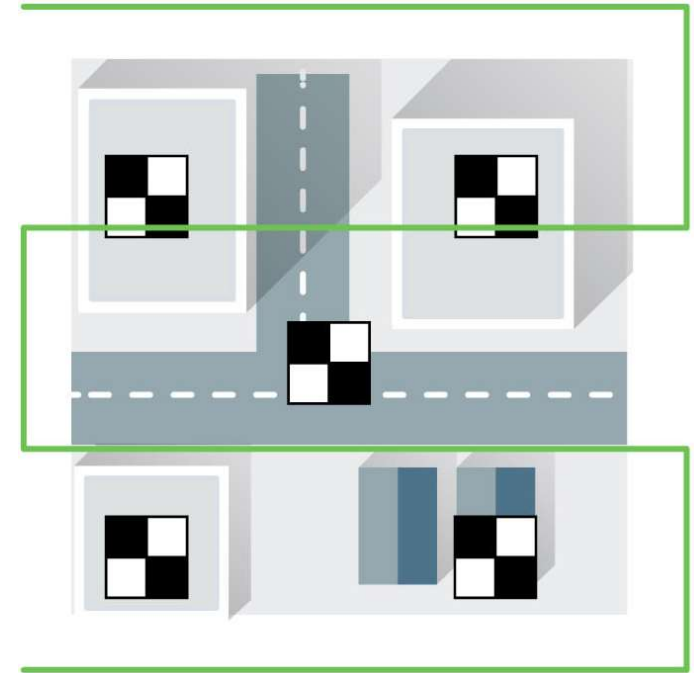
- **Environmental Conditions:** Avoid windy or overcast days to reduce errors and noise. *Dictate the Flying times to 11am to 2pm for good quality*

- **Archive Flight planning info:** Keep AOI's & Flight paths from previous projects for future use and to ensure GeoAi Photo Centre Compatibility



The Importance of Ground Control Points (GCPs)

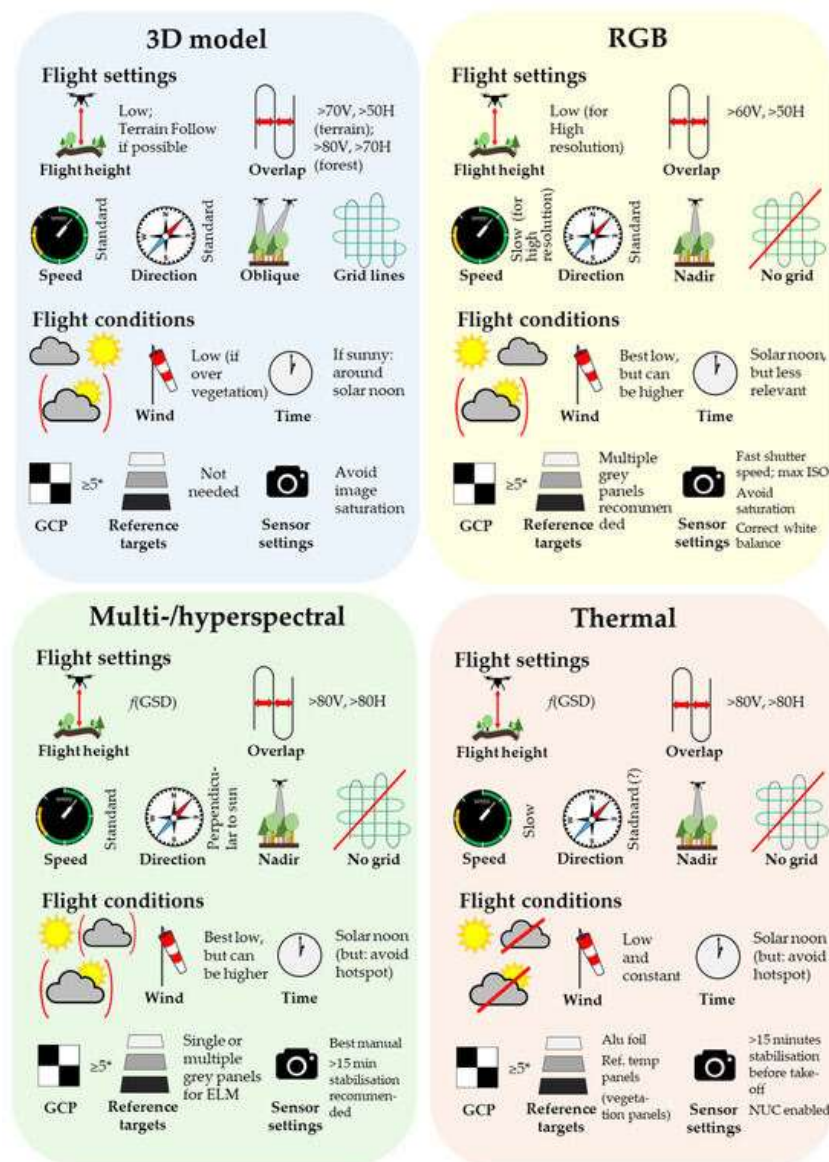
- GCPs are essential for ensuring positional accuracy in drone imagery.
- Use of GCPs aligns drone data with existing GIS and cadastral systems. *Share GCPs with Trig Beacons and Town Survey Marks*
- Cost-saving tip:** Reuse existing GCPs from prior aerial surveys where possible.
- Our use case:** Our municipality reduced survey costs by about 7% using existing control data from aerial imagery projects and Land Survey Department.



Choosing the Right Sensor to Spec the Job

- **RGB Cameras:** For general mapping and visualization.
- **Multispectral Sensors:** For agriculture, vegetation, and environmental monitoring.
- **Thermal Sensors:** For heat loss detection, firefighting, and search-and-rescue.
- **LiDAR:** For dense vegetation, corridors, and topographic surveys.

Always match the sensor to the project scope, budget, and accuracy needs.



THANK YOU

