Integration of UAV data and DRM/development
UNOOSA Conference
Beijing, CHINA
What platform for data collection?

- Field survey
- UAV survey
- Manned aircraft survey
- Satellite

Platforms are complementary
<table>
<thead>
<tr>
<th></th>
<th>Satellite</th>
<th>Manned aircraft</th>
<th>UAV</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area covered in a day</td>
<td>10,000km²</td>
<td>750km²</td>
<td>25km²</td>
<td>1km²</td>
</tr>
<tr>
<td>Detail level</td>
<td>&gt;30cm/pixel</td>
<td>&gt;15cm/pixel</td>
<td>&lt;10cm/pixel</td>
<td>NA</td>
</tr>
<tr>
<td>Cost 10km²</td>
<td>$$$</td>
<td>$$$$</td>
<td>$</td>
<td>$$$$</td>
</tr>
<tr>
<td>Cost 1 million km²</td>
<td>$</td>
<td>$$$</td>
<td>$$$$$$</td>
<td>$$$$$$$$$$$</td>
</tr>
<tr>
<td>Time to capture</td>
<td>24h - 1week</td>
<td>3 days</td>
<td>24h</td>
<td>5 month</td>
</tr>
<tr>
<td>Ease of deployment</td>
<td>medium</td>
<td>medium</td>
<td>easy</td>
<td>easy</td>
</tr>
<tr>
<td>Blocked by clouds</td>
<td>yes</td>
<td>Depends on altitude</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Regulatory burden</td>
<td>low</td>
<td>medium-high</td>
<td>high</td>
<td>low</td>
</tr>
</tbody>
</table>
RPAS considered

• Mini and micro UAVs

• What criteria to use when selecting the drones?
  • Mission constraints
  • Local capacity and system complexity
  • Reliability, maintenance and training cost
  • Presence of existing business using a specific platform

➢ The day of an emergency only a reliable platform will get you the data
Type of use in DRM/development

- Baseline mapping
  - Crop productivity
  - Critical infrastructures
  - Risk zones
- Post-disaster assessment
  - Change detection
  - Infrastructure inventory
  - Food security

Credit: Yale University, Cielmap
Credit: MICS, Cielmap
Typhoon scenario

- ~200 km²
- 5km range
- 4km² per day per zone
- 9.3cm/pixel @ 1000ft

- 22 Multirotors
- 44GB of data
The use of UAVs, a logistical challenge

- Clearance and approvals
- Mission planning
  - Best location, flight height
- Operator Skills and platform reliability
  - Are operators ready for a disaster?
  - Is the equipment maintained?
- Data management
  - Processing hardware
  - Hosting platform
  - Data transmission
• What governmental group should use UAV for pre/post disaster survey?
  • Land and Survey
  • Fire Department
  • Military
  • Disaster Management Unit

➢ Complexity of UAV matters in the decision
  • Training and fleet maintenance
➢ Contracting a business more cost effective
UAV will be better integrated if one of the three pillars is in place

I. Airspace integration
   • How to get better UAV integration
   • Forecast changes in policy plans?

II. Capacity
   • Start small and build a culture of accountability and rewards

III. Data management
   • Fast transmission of data
• Use a reliable and proven platform
• Training and funding
• Agreement with CAA and procedures for disaster situations
• Data processing and data transmission capabilities that match the amount of data generated during a typical event