

Unspecialized UAS for mapping

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Contents

- **Unspecialized UAS for mapping – WHAT IS IT?**
- **Prerequisites for use**
- **“Word of mouth”**
- **Overview of aerial survey materials**
- **Conclusions**



Unspecialized UAS for mapping

WHAT IS IT?



UAS available from an ordinary store

**Cheap vehicles
(50-500\$)**



DJI vehicles



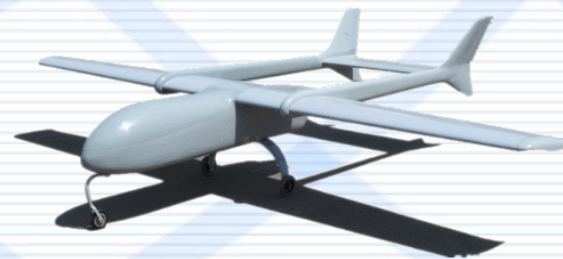
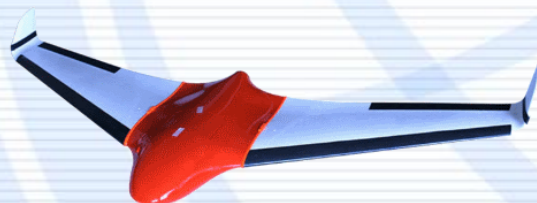
Spark

Mavic

Phantom

Inspire

Unequipped vehicles



Prerequisites for use



Why people buy unspecialized UAS?

Economical, cheapest way



Simple design, easy to use



Fame, people advise



“Word of mouth”



Most popular questions

- **Sensor is the most important than flight time**
- **Using GNSS is not a panacea, but it significantly improves the work**
- **Image quality and accuracy can not be predicted**
- **There is no result guarantee from resellers (or manufacturers)**
- **Official UAS usage permission**



Overview of aerial survey materials (samples from DJI)



DJI Mavic Pro

Points measurement

The screenshot displays a software interface for point cloud measurement. It features a main toolbar at the top and a grid of 10 image windows, each showing a different perspective of a yellow tractor. Each window includes a label and 3D coordinates. The window with label DJI_0544 is highlighted with a blue border.

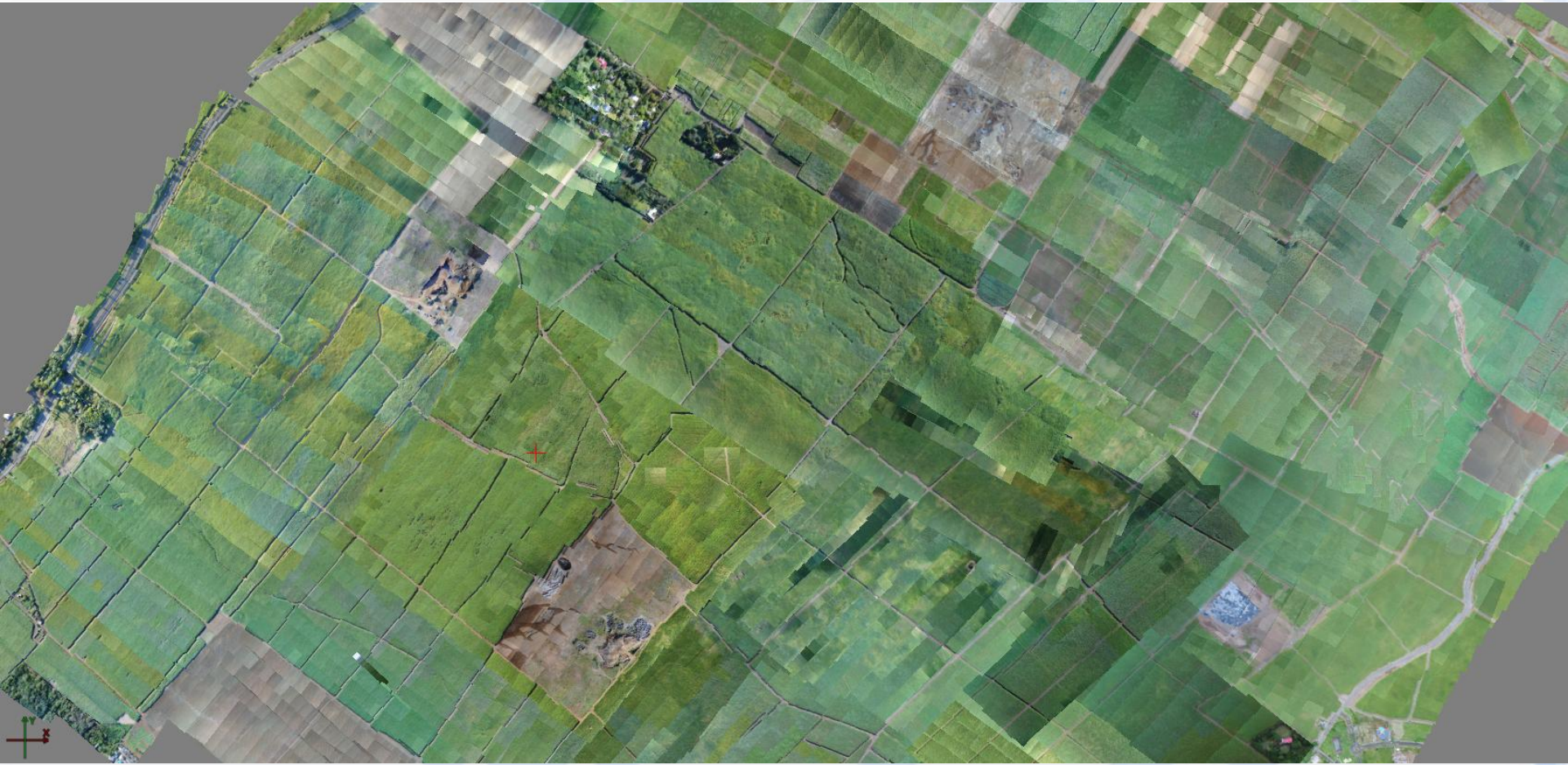
Label	Coordinates (x, y, z)
DJI_0302	2:3 (958.0555, 2501.6771) - (1.6983 mm, 1.5951 mm)
DJI_0303	2:3 (730.5732, 1764.7957) - (0.5245 mm, 1.9596 mm)
DJI_0498	2:3 (1210.4556, 546.3082) - (-1.4238 mm, 1.2002 mm)
DJI_0497	2:3 (1349.0167, 1183.3296) - (-0.4032 mm, 0.9821 mm)
DJI_0496	2:3 (1622.0064, 1564.1372) - (-0.2098 mm, 0.5469 mm)
DJI_0495	2:3 (3003.6272, 1049.1813) - (-0.6120 mm, -1.6525 mm)
DJI_0544	2:3 (1197.6077, 1173.7133) - (-0.4189 mm, 1.2226 mm)
DJI_0543	2:3 (1472.2337, 2014.2415) - (-0.9295 mm, 0.7839 mm)
DJI_0542	2:3 (1600.3379, 2655.2021) - (-1.9466 mm, 0.5773 mm)



DJI Phantom 2 + GoPro (Fish Eye)



DJI Phantom 3 pro, 4 pro



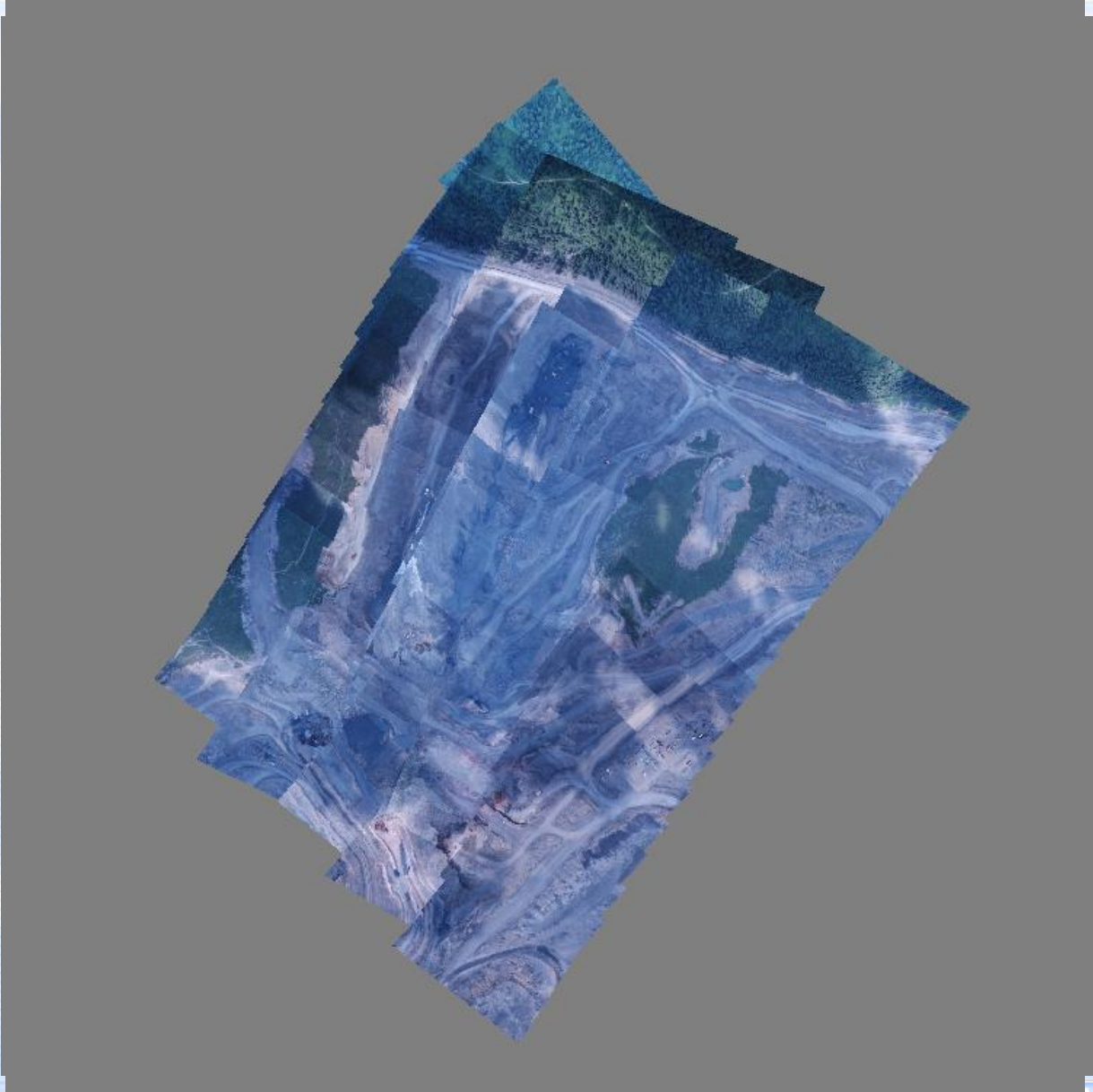
DJI Inspire 1 + x3



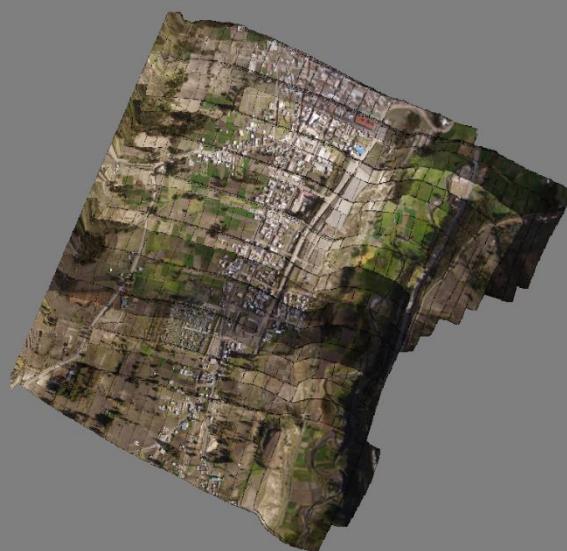
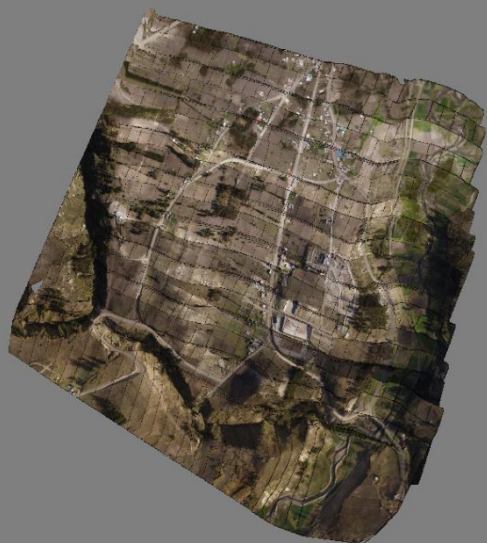
DJI Inspire 1 + x5s



DJI Inspire 2 + x5s



DJI Matrice 100 + x3



DJI Matrice 100 + x3



Potentially adapted model

**DJI Matrice 600
pro
+ Sony RX1 + OEM
GNSS**



**Any
GNSS**

Profitability ???

Unspecialized UAS

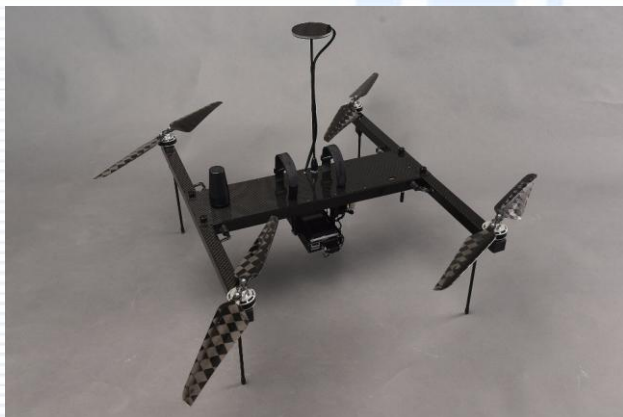
~ 6000 \$

Camera

~1300 + 1300 \$

GNSS

~ ??? \$



Specialized UAS

Camera

GNSS

~ 6000 \$ for kit

Conclusions

- **Unspecialized UAS can be used for mapping, but low image quality requires more field work**
- **Image quality and geometry can be unpredictable**
- **The autopilot is not able to follow the flight task precisely**
- **Using unspecialized UAS we do not have a guarantee of the result and the support of resellers or the manufacturer**



Many thanks

- **Youth Scientific Innovation Center "Impulse" of the Moscow State University of Geodesy and Cartography (MIIGAiK), Russia**
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- **Geomod, Russia**
- **Fotometr, Russia**
- **Geokoncept, Ecuador**
- **Mati Tee, Estonia**
- **Ilya Mamonov, Russia**



Thank you for attention

