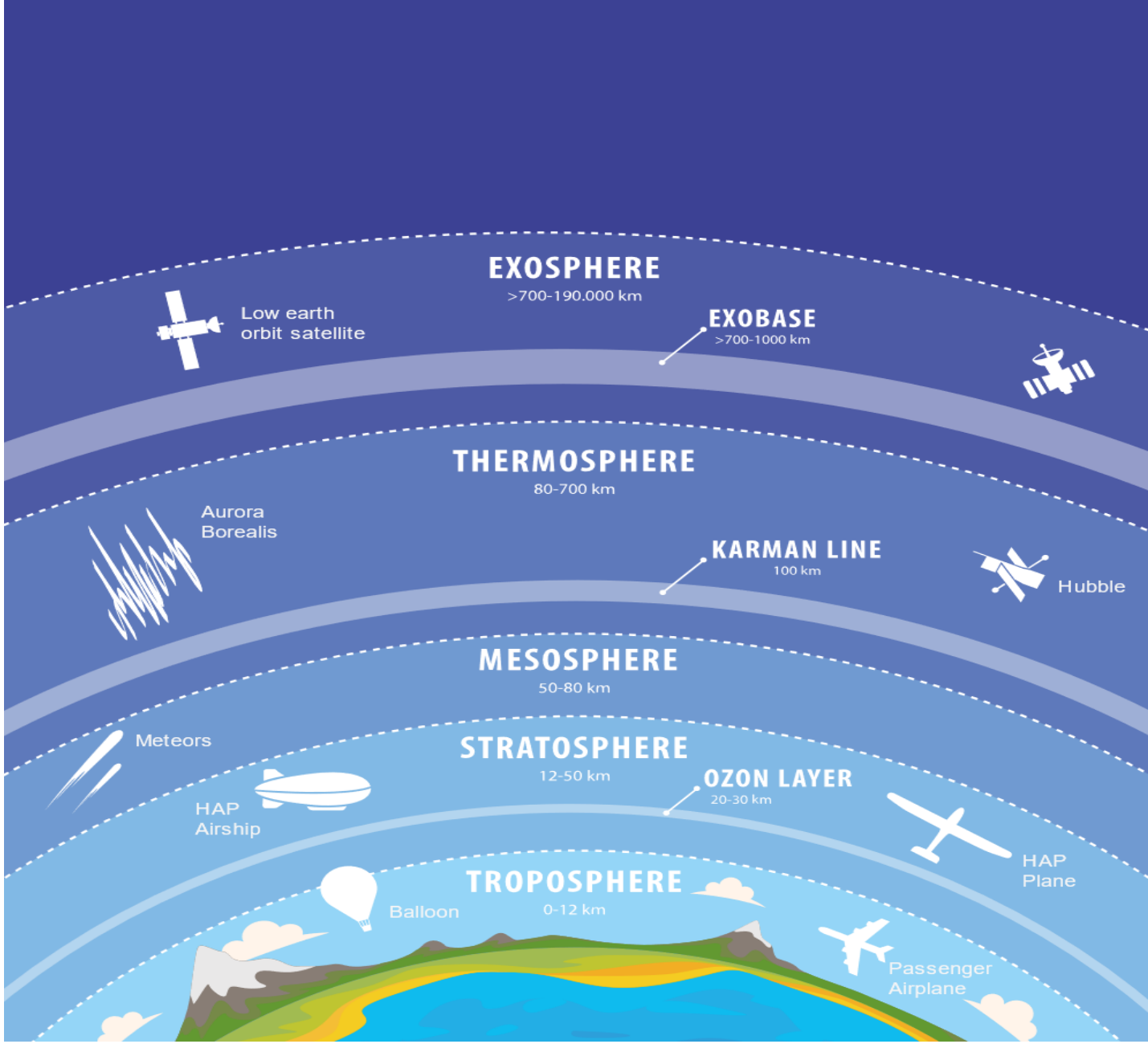
The Astigan High Altitude Pseudo-Satellite (HAPS) platform

Mark Greaves, Paul Cruddace

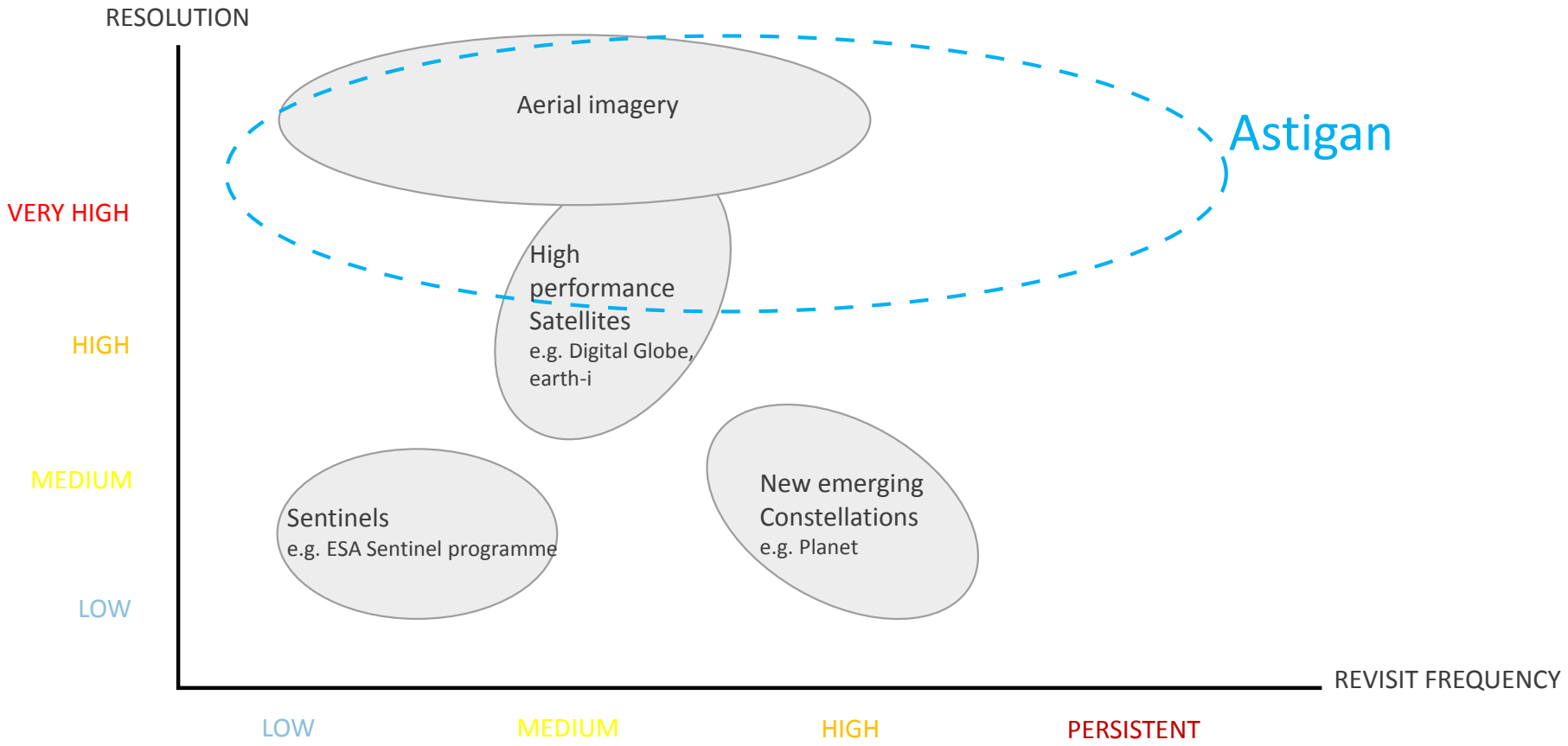
Ordnance Survey

What is a HAPS?

- High Altitude Pseudo-Satellites, or HAPS, are platforms that float or fly at high altitude
- There are generally categorised into balloon, airship or fixed wing
- There are many projects in development
- HAPS operate at an altitude of approximately 20km and can transect or remain over a fixed point on Earth from weeks to months
- HAPS offer advantages over, and are complementary to satellites

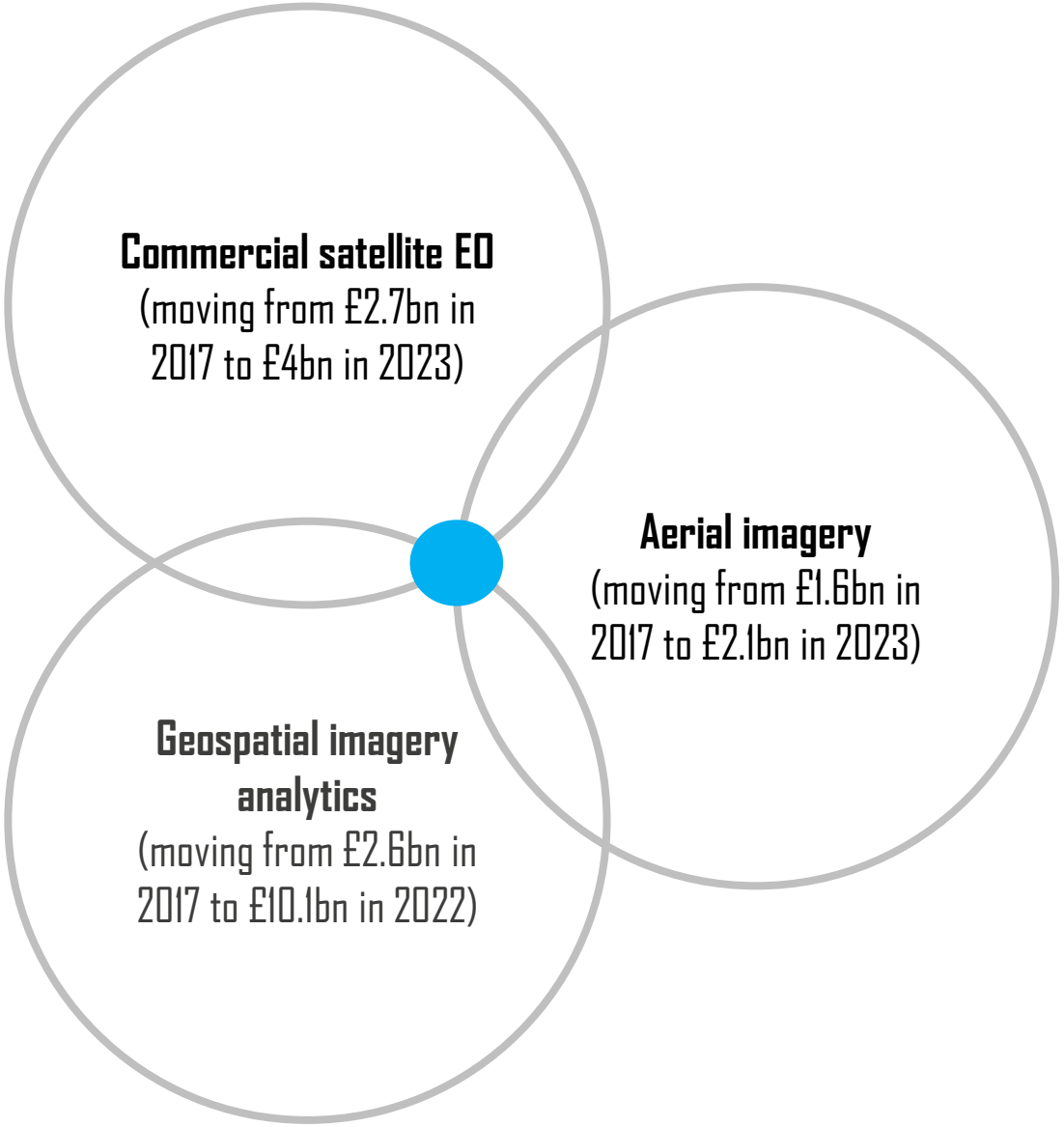


Where Astigan fits



Astigan market placement

- Astigan is at the intersection of three exploding markets
- The OS offer is based around geospatial analytics services to NMAs
- Very interested to talk to anyone about this technology



Astigan development

- The Astigan platform has been designed and constructed by UK company Astigan – a joint venture between a team of aerospace innovators and Great Britain's Ordnance Survey (OS).
- It is a fixed wing HAPS which will fly at 20km for 90 days at a time. It is solar powered and the final version will have a wingspan of 38m.
- A wide array of emerging technology will be used in conjunction with Astigan to improve how we deliver the next generation of efficient geospatial products and services to meet our customers' needs, for example automatic change detection, deep learning and machine vision.

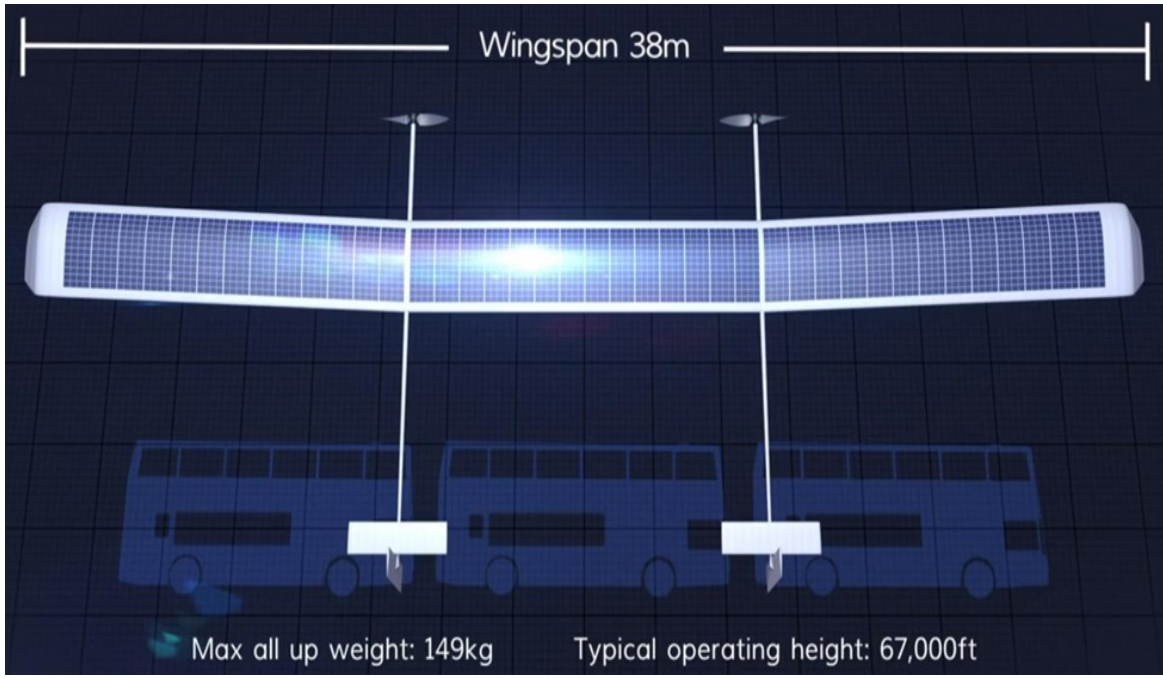
Example applications

Scenario	Detail
Land monitoring, development and the built environment	• Survey, mapping and Land Administration • Agriculture/ Rural payments & animal and plant health • Forestry/Domestic forestry resource monitoring and protection • Built environment/Planning and biodiversity
Marine monitoring	• Survey, mapping and Land Administration • Agriculture/ Rural payments & animal and plant health • Forestry/Domestic forestry resource monitoring and protection • Built environment/Planning and biodiversity
Atmospheric monitoring	• Meteorology/Weather forecasting • Atmosphere/Air quality monitoring and Greenhouse gas emissions monitoring
Security & emergency management	• Flood management/Flood planning, defence, and response • Emergency Services • Humanitarian Operations and Health
Space	• GNSS augmentation • Satellite payload research and testing

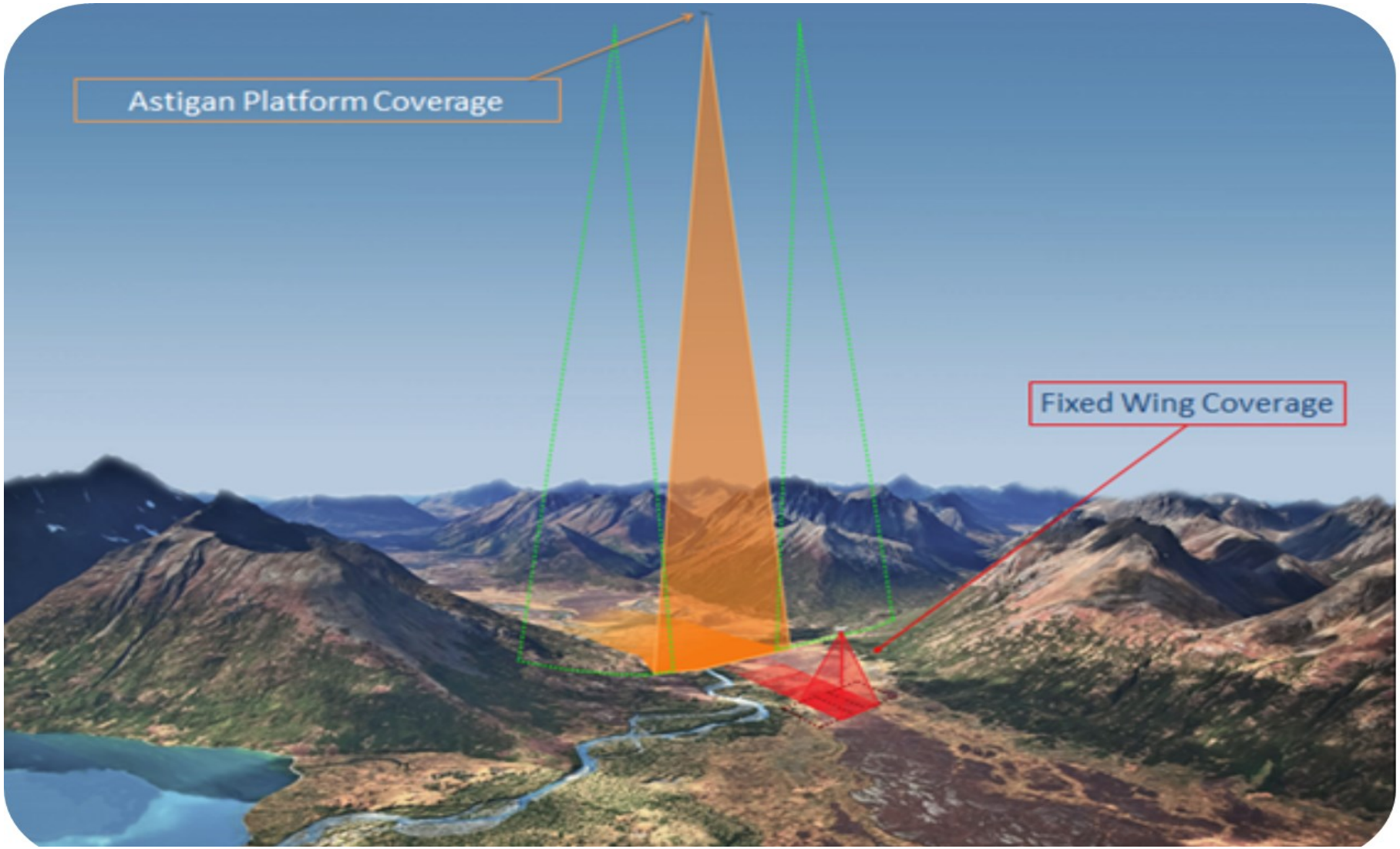
Sample payloads

We are currently looking at where the maximum demand is and matching that to sensor developments. Potential payloads include:

- Optical
- Hyperspectral
- Atmospheric monitoring
- Lidar
- Thermal



Coverage comparison



Astigan in numbers

90 days

flying time

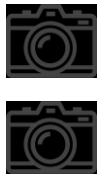
(many successful full scale test flights to date)

45tb

of imagery collected per mission

5

patents granted



2

15cm cameras built and ready to fly

4

full-scale operational platforms built

£bn

market opportunity

#1

fully civilian funded project

GB

a truly British enterprise;
6 universities
15+ companies

Thank you

Mark Greaves

Lead consultant – Geodesy, Ordnance Survey

www.os.co.uk

Mark.greaves@os.uk