

SkyRider HAPS for Earth Observation applications from Stratosphere

„SKYRIDER MISSION IS TO CREATE ADDITIONAL DATA SETS FROM STRATOSPHERE FOR EARTH OBSERVATION APPLICATIONS“



Utilizing payload development for Cubesats:

- Optical imagers
- Infrared imagers
- Radars
- Lidars
- Other instruments for remotely Earth sensing

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ESA SUPPORTED DEVELOPMENT



- **2018 Galileo Masters - CZECH REPUBLIC REGIONAL WINNER**
- **2019 ESA BIC Prague - ESA BUSINESS INCUBATION CENTRE PRAGUE ALUMINI**
- **2022 ITT1 - PROJECT ARRANGEMENT FOR A FRAMEWORK PROJECT IMPLEMENTING**

ESAS SUPPORT OF SPACE-RELATED ACTIVITIES IN THE CZECH REPUBLIC



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Lighter Than Air HAPS (High Altitude Pseudo-satellite)
operation altitude approximately **20 km**
mission duration **6 months**
payloads **12 kg** with power consumption **5 kW**
station keeping capability in winds up to **15 m/s**



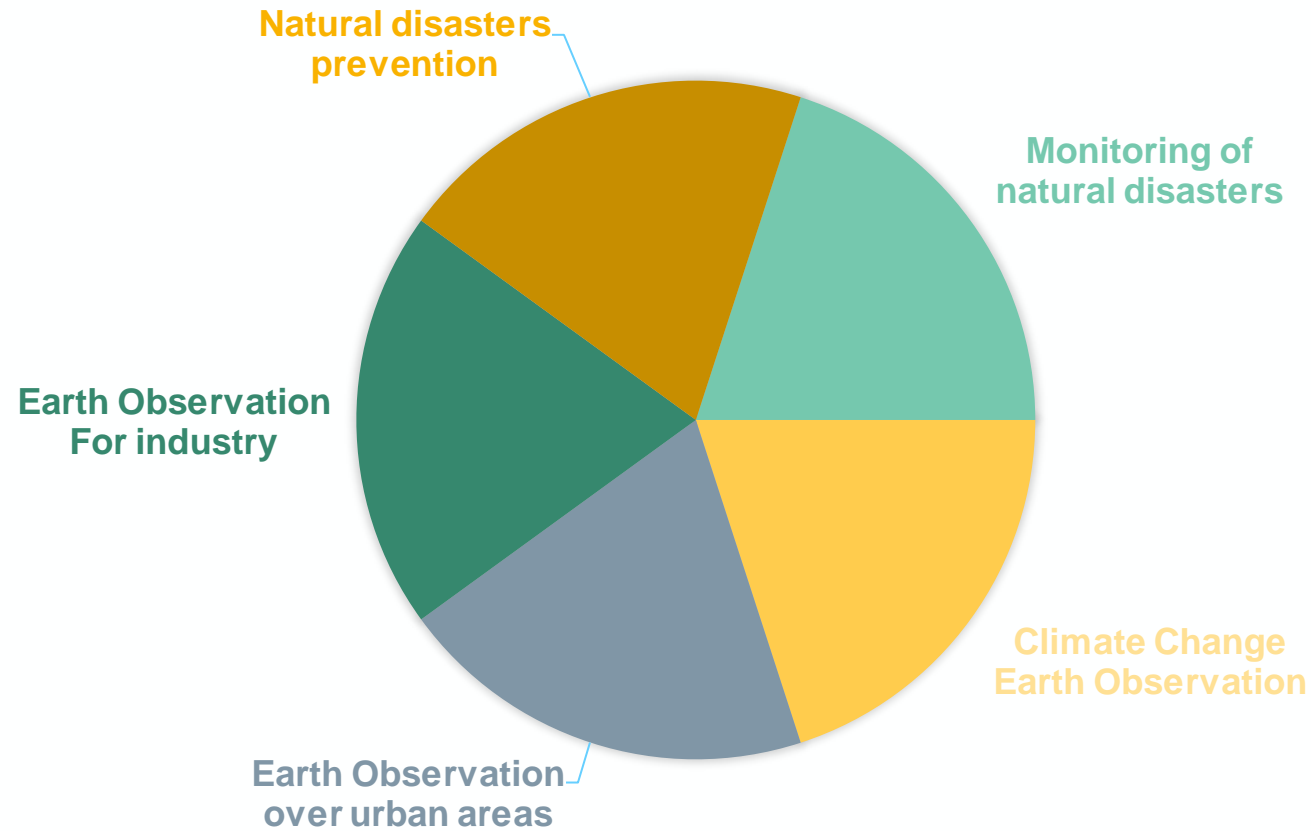
SkyRider

Main HAPS Advantages:

- complementary to satellites
- altitudes above air traffic
- operation above weather
- high level of autonomy
- fast payload accommodation
- zero CO2 Emission operation
- reusable

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EARTH OBSERVATION APPLICATIONS FROM STRATOSPHERE:



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Natural disasters prevention

Prevention of losses to environment, property, infrastructure and human lives

Fire detection

Meteorology

Duration: long-term operations (months)

Station-keeping: not required

Platform movement: circling above desired location(s)

Swarm operations: possible

Data transmission: live



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Monitoring of natural disasters

Fires, floods, hurricanes, tornados, ...
Prediction of disaster evolution
Situational awareness and monitoring

Duration: short-term operations (days)
Station-keeping: required
Platform movement: limited
Swarm operations: possible
Data transmission: live



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Earth Observation on climate change

Climate change:

Polar caps
De-forestration
Animal migration
Water

Remote sensing:

Air pollution
Atmospheric measurements

Duration: long-term operations (months)
Station-keeping: not required
Platform movement: circling above desired location
Swarm operations: not required
Data transmission: daily

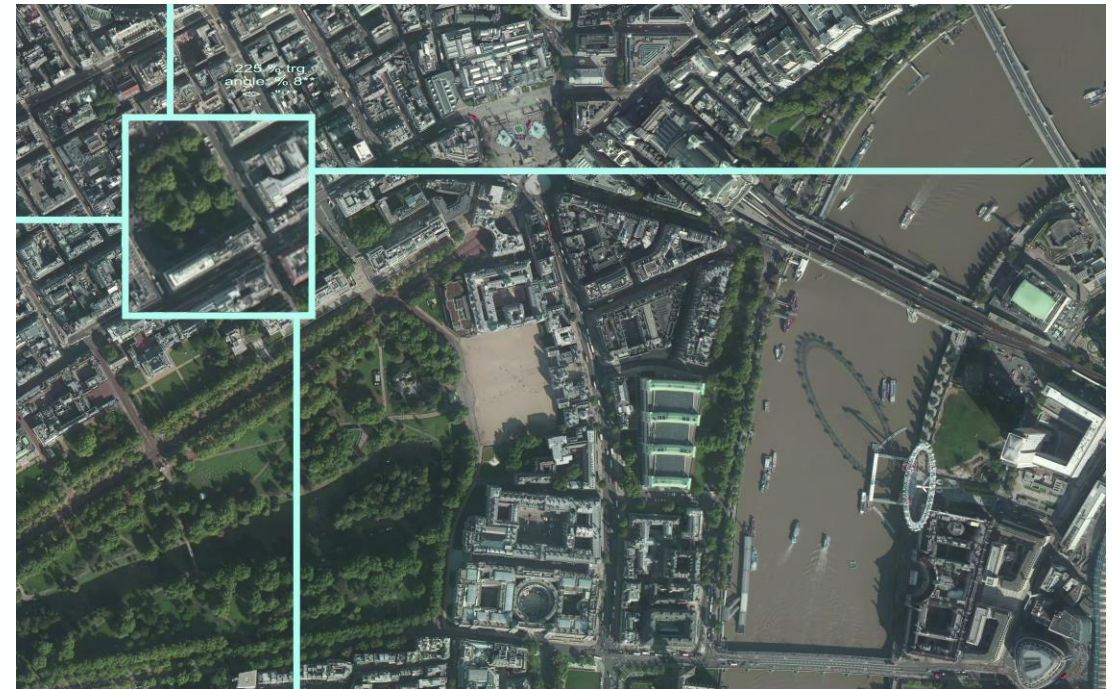


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Earth Observation over urban areas

Traffic management
Parking
Situational awareness
Heat monitoring
CO2 measurements
Security

Duration: short or long-term operations
Station-keeping: required
Platform movement: limited
Swarm operations: possible
Data transmission: live



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Earth Observation for industry

Plant monitoring
Pipeline monitoring
Heat monitoring
CO2 measurements
Security

Duration: short or long-term operations
Station-keeping: required
Platform movement: limited
Swarm operations: possible
Data transmission: live



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Ultimate future: MARS Atmosphere exploration

