

Airbus Zephyr High Altitude Pseudo-Satellite (HAPS) UAS for Remote Sensing Applications

19th International Diffuse Reflectance Conference
Chambersburg, PA

DEFENSE AND SPACE

2 Aug 2018

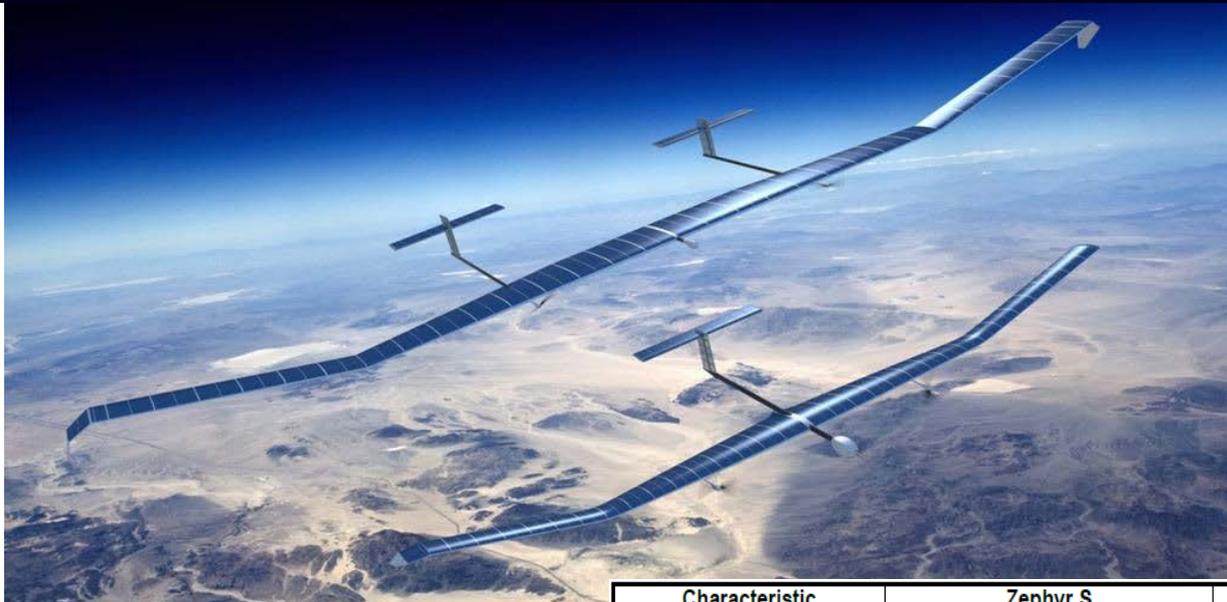
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AIRBUS



Zephyr Characteristics

The Zephyr High Altitude Pseudo Satellite program has been running for over ten years. Accomplishments to date: 11 flight campaigns, 1000 hours flight time, three World Records

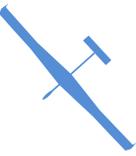


Characteristic	Zephyr S	Zephyr T
Wingspan (m / ft)	25 / 82	33 / 108
Gross mass (kg / lbs)	Less than 75kg / 165	140 / 300
Fuel type	solar-electric / rechargeable batteries	solar-electric / rechargeable batteries
Duration without refueling (days)	>100 days	>100 days
Range (nm per day)	Greater than ~1,000	Greater than 1,250
True air speed at operating altitude (kts)	45-80	55-95
Status	In production	In development

Military and Commercial Use Cases Demonstrated

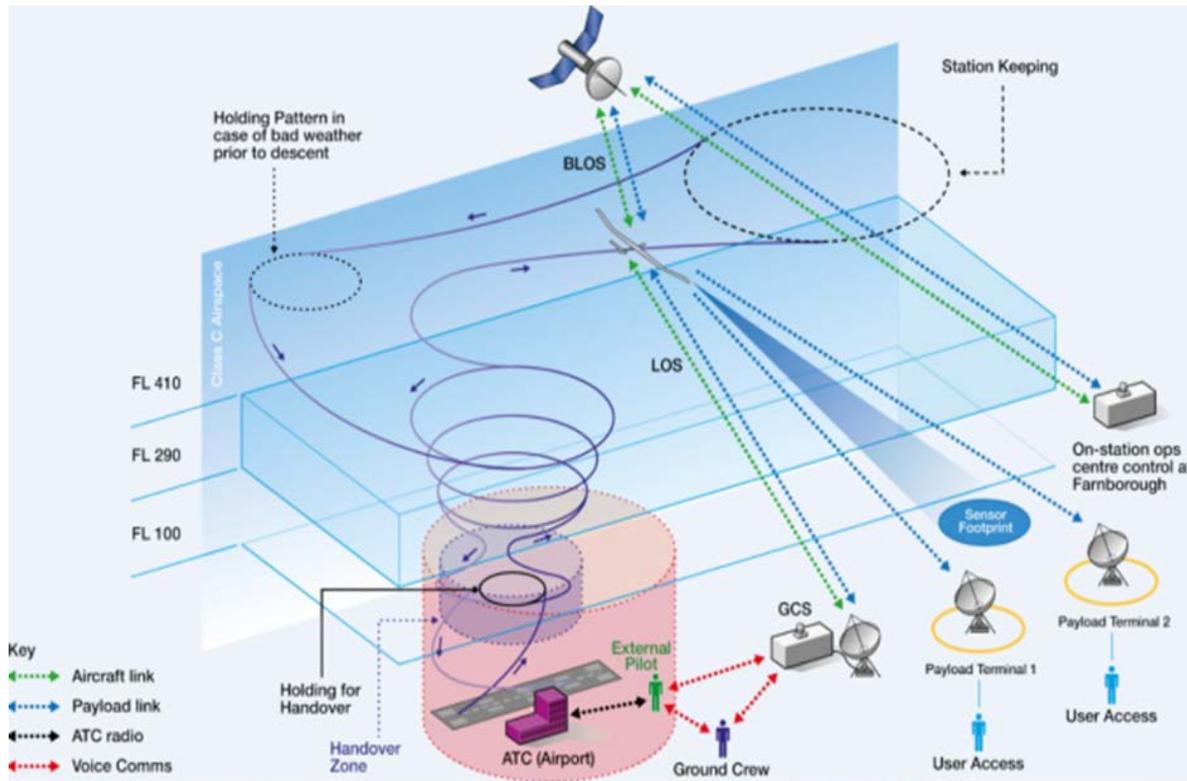
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Command and Control

Zephyr launches/recovers and ascends to/descends from the stratosphere under Line Of Sight (LOS) control from the launch site; switches to Beyond Line Of Sight (BLOS) control for transit to/from and ops in target area.



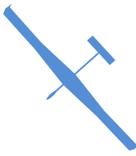
BLOS Operations Center



Ground Control Station (GCS)

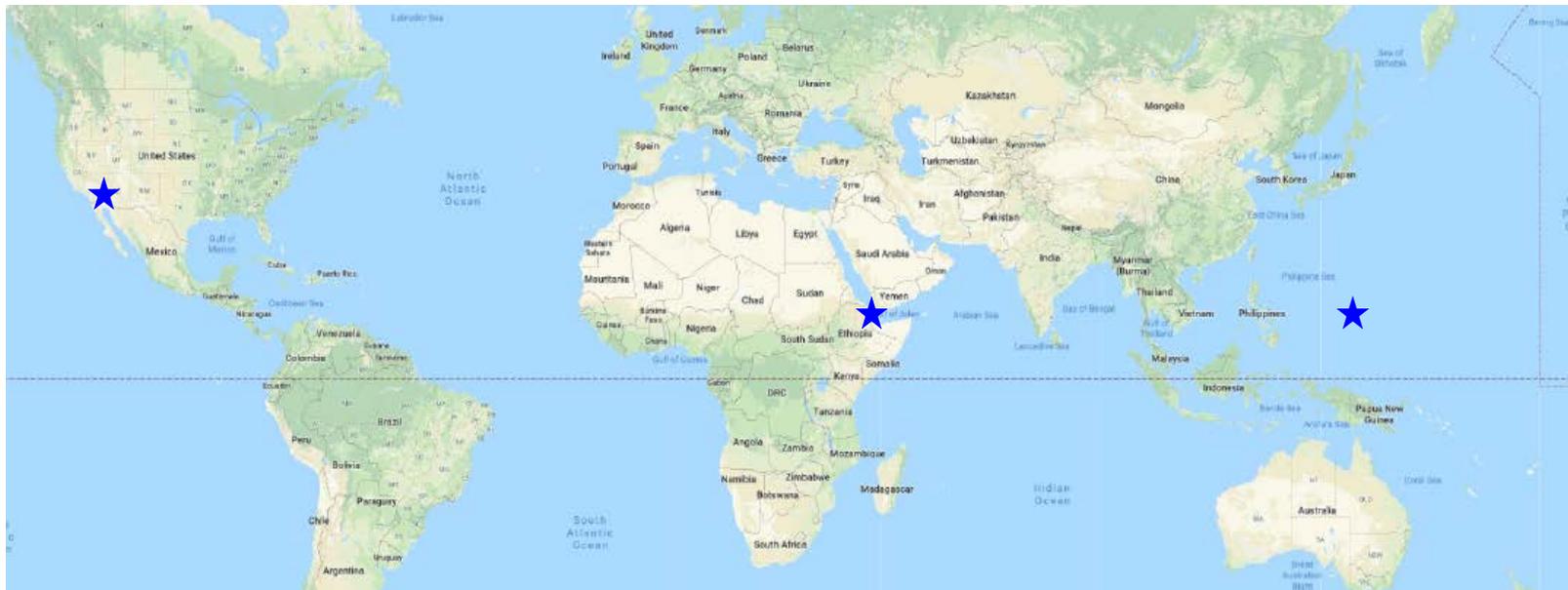
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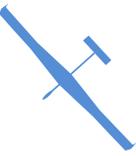


Global Operations

- Launch and recovery (L&R) from set of strategic sites selected for their benign year round weather
- Aircraft transits through stratosphere (above traffic and weather) to the area of interest at 1,000 NM/day pace
- 100 day flight duration = global reach and theater maneuver with minimal forward footprint in secure locations



Locations depicted here are notional and meant only to illustrate the concepts proposed in this briefing



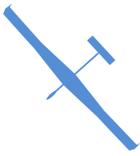
Zephyr Value

Persistence and Coverage Area

Inner ring – 1 day transition Outer ring – 2 day transition

100 day flight duration + 1,000 NM/day transit → 96 day persistent operations at 2 day ring





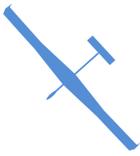
Zephyr Payloads

Zephyr can support a variety of sensor payloads including:

- Surveillance
 - High resolution EO
 - SW / MW / LWIR
 - LiDAR
 - Hyperspectral
 - SAR
- Communications
 - LTE
 - Handset to Handset relay – 150 NM range using standard issue handsets with no modification
 - EM survey instrumentation



Customer Provided Payload: 6-12 months for integration / flight ready subject to payload TRL



Transition to Production and Operations

Production Version Zephyr-S Initial Flight Test

- Jun – Aug 2018, Yuma Proving Grounds
- **First Flight Underway!!!**
 - **Takeoff: 0831 Eastern 11 July 2018**
 - **Flight Duration To Date: 22 days+1 hr (529 flt hrs)**

Kelleher Production Facility (UK) Operational

Operational Concept Demonstrations

- 4Q 2018, Australia L&R Site
- Several payloads / customers

US Activities

- Actively pursuing business
- Establish US operations
- Airspace Authorizations

Continual Product Improvement Zephyr T Development



Kelleher Production Facility



Ready for Service

Thank You



Tracey Goetz
Director, Zephyr UAS Programs
Airbus Defense and Space
tracey.goetz@airbusna.com
P: 703-466-5851
C: 202-340-5667

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