Innovating emergency response through FL-600 Higher Airspace

• United Nations Sustainable Development Goals (SDGs)
• The 39th Session of the ICAO Assembly
• The Second Global Air Navigation Industry Symposium (Montreal, December 2017)
• AN-Conf/13 Operations in Higher Airspace (Montreal, October 2018)

Operations above 60.000 ft

• Commercial Operations above FL600
• States Aviation Administration description of National Airspace
• Satellite-Based-Navigation
Why is FL600 significant?

- Limitations:
  - Technological
  - Physiological
  - Physical and
  - Administrative

Airspace Classification
High Altitude Pseudo Satellite

Satellites
Long endurance
Global coverage
High capital cost

HAPS are complementary to both satellites and fuel-powered aircraft providing affordable, persistent, local and flexible satellite-like services.
HAPS are:
- Enduring like a satellite – many weeks (months)
- Focused yet flexible like an aircraft – re-deployable
- Cost effective

“Classic” UAV
Short endurance
Local footprint
High operational cost

Zephyr is a lightweight, solar-electric powered, very long endurance remotely piloted air vehicle.

Zephyr persists in the stratosphere above weather and above conventional air traffic for many weeks.

High Altitude Platform Station Lighter than Air

Innovative HAPS LTA*
A Unique solution for regional permanence

SATELLITE
- Long endurance
- Global coverage
- High CAFD

UAV
- Short endurance
- Capabilities of projection
- High performance payloads
- High OPEK

STRATOBUS™
- Long endurance
- Multi-mission (Telecom, Observation, Environment, Navigation)
- High performance payloads
- Low OPEK

*(low from 60,000 ft above Pogge, tolerance from 5000 ft above water)
The Stratollite

Satellite:
- Long Duration + Global Access + High Initial Cost, Low Operating Costs + Expensive Persistence

High Altitude Aircraft:
- Short Duration Persistence + Local Access, Lower Altitude + Payload Recoverable + Reusable and modifiable + High fuel & Maintenance Costs

Stratollites
- Long Duration Persistence
- Global Access
- Low Operating Costs
- Swift Payload Recovery, Reuse and Modification

Loon

1500+ Balloon Flights and counting
27+ Million KM flown since 2013 project launch
700,000 Flight Hours successfully flown

=> Balloon duration record +198 days
THANK YOU!

Nabil Naoumi - ICAO
Air Navigation Commissioner