

SPACE SYSTEMS SYMPOSIUM (D1)
Innovative and Visionary Space Systems Concepts (1)

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STRATOBUS: GEO-STATIONARY STRATOSPHERIC MULTI-MISSION PLATFORM INTEGRATED
AND COMPLEMENTING SPACE SYSTEMS**Abstract**

The development of Stratobus, lead by Thales Alenia Space, following 3 years of extensive RD, is now on-going, to provide a new system capabilities, at the frontier of space, based on a geostationary stratospheric platform with an extremely high endurance. First, the paper highlights how key innovations enable such system, by providing sufficient solar electrical power generation to power propellers in order to compensate high altitude winds, night and day. Among these innovations, the combination of thin film solar arrays with a concentration system provides a power to mass ratio much better than past concepts, leading to the system feasibility. Second, the Stratobus mission capabilities are described. With the horizon at 500 km, stationary at an altitude about 20km and offering at least 250 kg of payload with several kW of power generation, Stratobus offers a wide range of applications:

- Telecommunication relay for phone, connected objects, data-collect, internet access in low infrastructures areas.
- Radar Observation (Air or Surface Traffic, imaging ...),
- Optical observations (such as fire detection and monitoring, air quality, cartography, internet Earth map ...).

Stratobus unique features (high altitude at the edge of atmosphere, well above air traffic and geostationary, at low cost) lead to an attractive positioning between UAV (limited in payload or autonomy) and satellites. Stratobus enables for instance: permanent observation, very low latency communication relay, real time operations. Finally, the Stratobus system architecture from deployment to retrieval and maintenance will be developed with a focus on the mission architecture, system interfaces and integration with satellites systems.