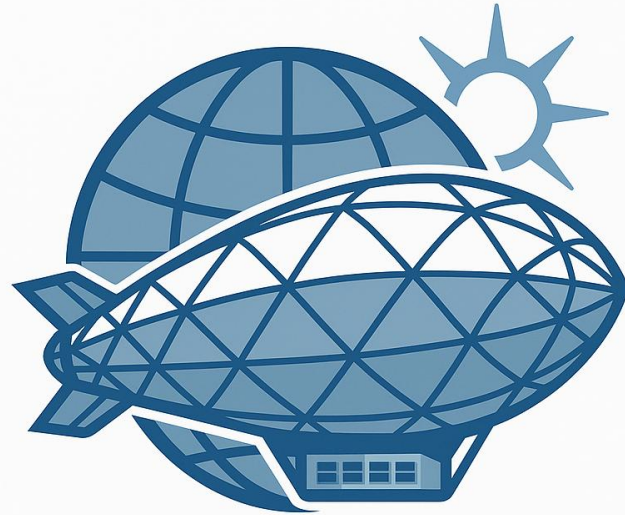


Vauxminster
Aeronautics



VAUXAERO

Persistent Atmospheric Infrastructure
Enabled by Vacuum Buoyancy

The Challenge

- Existing HAPS platforms remain constrained by lifting gas logistics, endurance, operating cost and scalability.



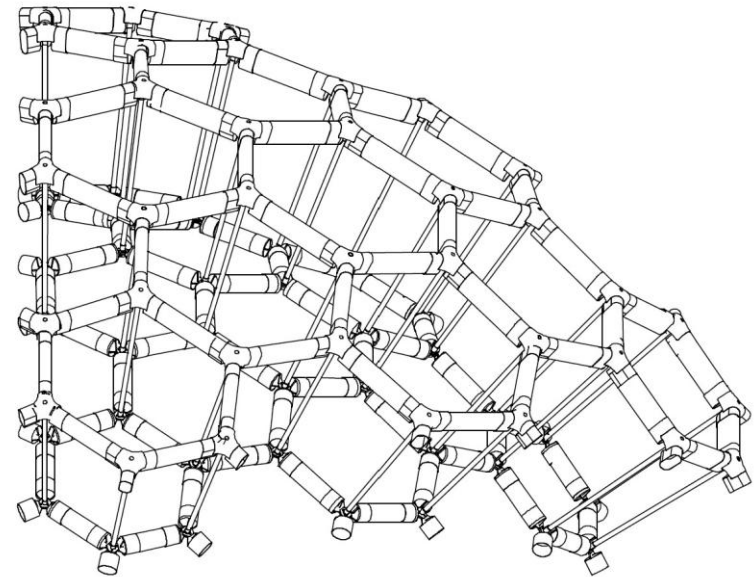
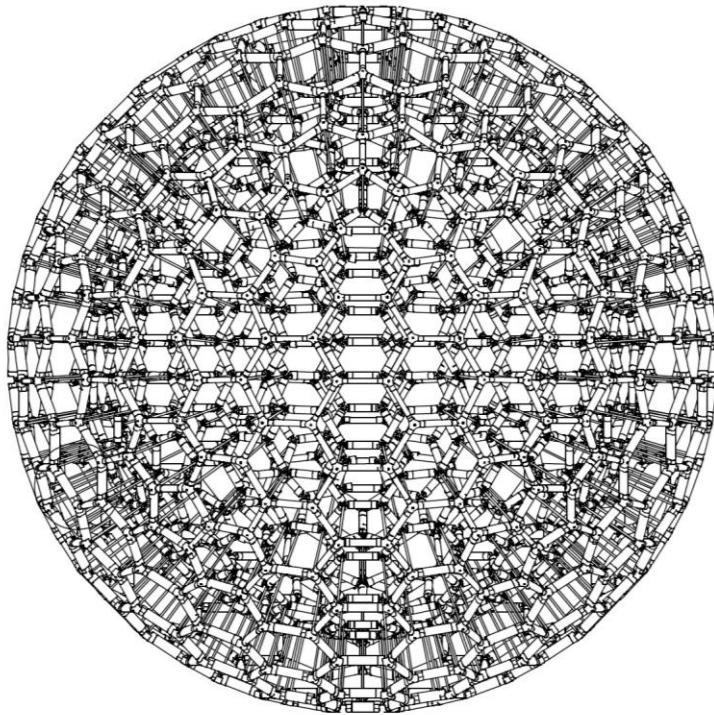
Our Solution

- A patented vacuum-buoyancy platform that replaces helium or hydrogen with a lightweight structural vacuum, enabling a new class of persistent solar-electric scalable atmospheric platforms.

Why It Is Different

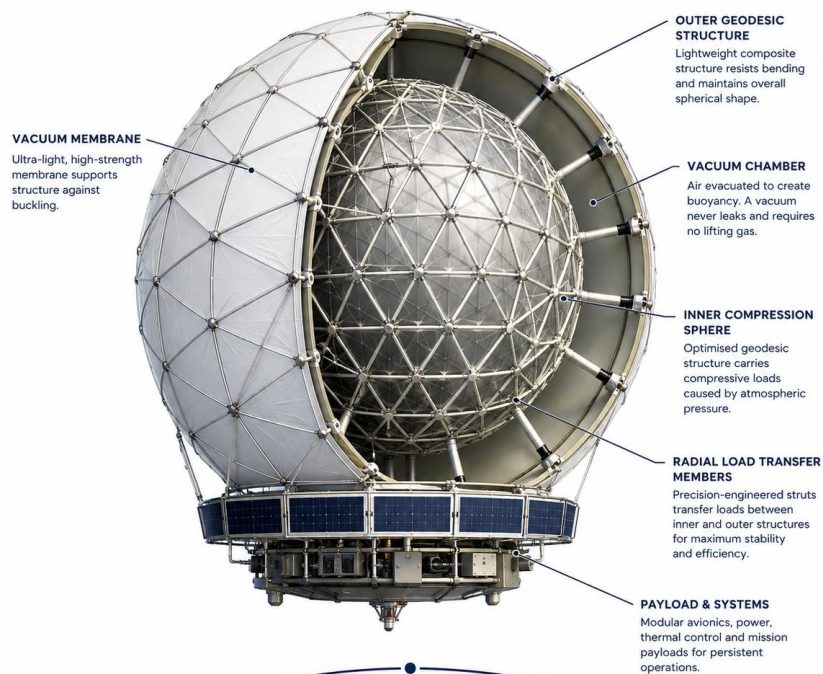
- No lifting gas
- Zero emissions
 - Solar-electric operation
- Long endurance
- Low operating cost
- Scalable platform
- Passive buoyancy
- No gas leakage
- Reduced lifecycle cost
- Recoverable

Technology Overview



Patented nested geodesic vacuum structure validated through Cranfield-led analysis.

Applications



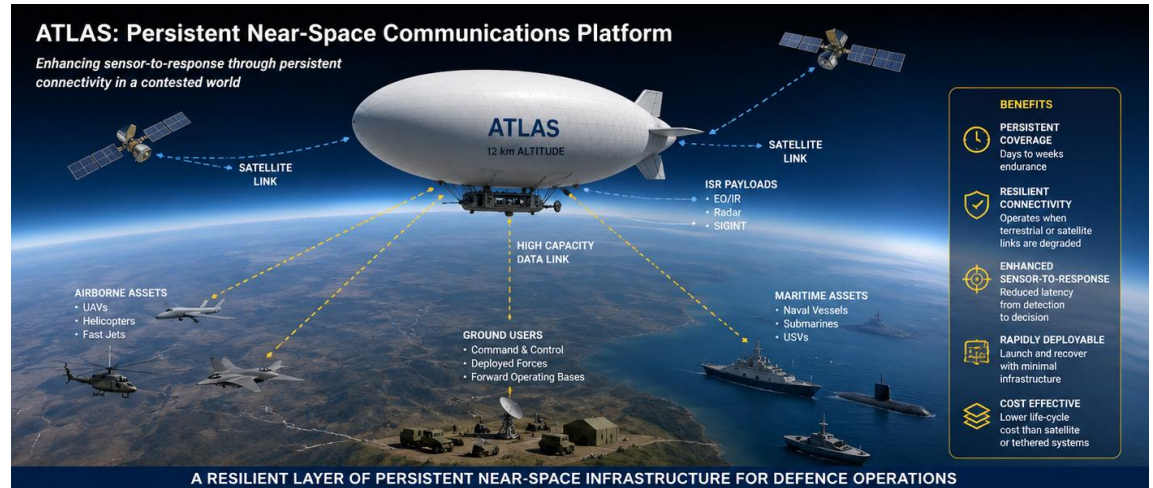
ATLAS
THE WORLD'S FIRST PRACTICAL VACUUM BUOYANCY AIRCRAFT
PERSISTENT. SUSTAINABLE. TRANSFORMATIVE.



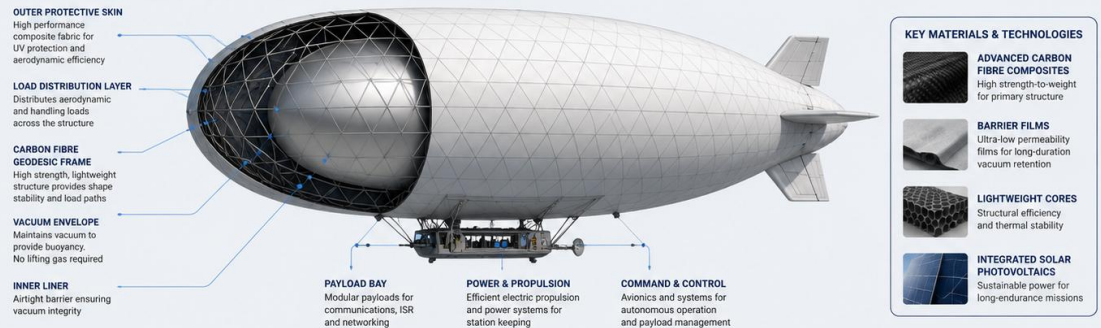
- High-altitude platform
- Low-altitude heavy-lift aircraft

Creating a new layer
of infrastructure
between aircraft and
satellites.

Vision



ATLAS Vacuum-Buoyancy Structural Architecture



INNOVATIVE VACUUM-BUOYANCY DESIGN DELIVERING ENDURANCE, PAYLOAD CAPACITY AND SUSTAINABILITY

Creating a new generation of heavy-lift, low-altitude aircraft for cargo and passengers.

Vision

Low-Altitude Heavy-Lift Capability

A new generation of clean, quiet and scalable heavy-lift aircraft for cargo and passengers.



HIGH PAYLOAD

Carries oversized or heavy loads with excellent lift-to-weight.



CLEAN & QUIET

Solar-electric propulsion with zero lifting gas.



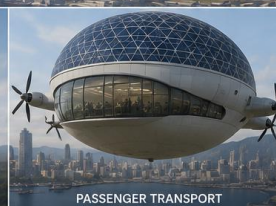
VERSATILE

Rapid reconfiguration for cargo, passengers or specialist missions.



ACCESSIBLE

Operates from short, unprepared or remote sites.



KEY CHARACTERISTICS

	PAYLOAD CAPACITY	Multi-ton class
	OPERATING ALTITUDE	50 m – 1,000 m
	CRUISE SPEED	40 – 80 km/h
	RANGE	1,000+ km
	PROPULSION	Solar-electric
	CREW	2 – 4

Solar resource

12m Diameter	30m Diameter
Total Balloon Area = 452m ²	Total Balloon Area = 2,827m ²
Solar Area = 113m ²	Solar Area = 707m ²
Peak = 23kW	Peak = 141kW
N Europe average = 226kWh/d	N Europe average = 1,414kWh/d
N Europe summer = 452 kWh/d	N Europe summer = 2,827kWh/d
N Europe winter = 45kWh/d	N Europe winter = 283kWh/d

Enough for:

- Propulsion
- Communications
- Payload
- Batteries

Comparison with Existing HAPS

	Helium	Solar UAV	Vacuum
Consumable lift gas	Yes	No	No
Persistent buoyancy	Yes	No	Yes
Solar powered	Optional	Yes	Yes
Leakage losses	Yes	N/A	None
Long endurance	Medium	Good	Excellent potential

Roadmap to Flight Demonstration



12-15m diameter balloon



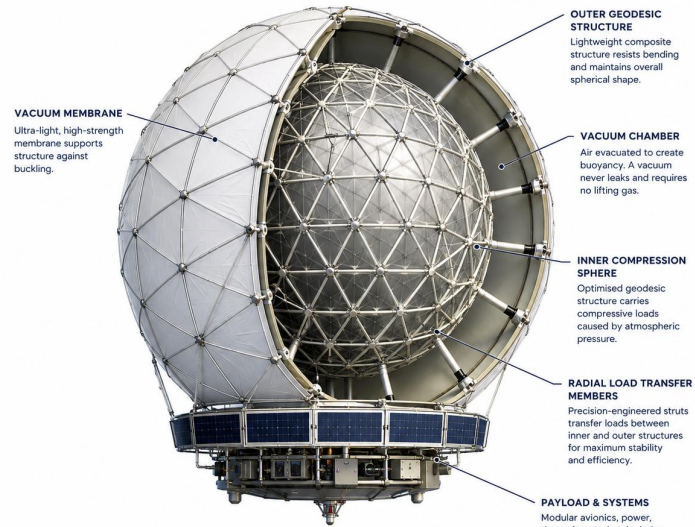
Initially tethered flights



Development of the solar propulsion



Powered flights and endurance testing.



ATLAS
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PERSISTENT. SUSTAINABLE. TRANSFORMATIVE.



Development Status

- Patent protected
- Structural modelling completed
- Independent structural analysis completed with Cranfield University.
- Material and subsystem testing designed
- Prototype architecture defined.
- Flight testing planned.
- CAA Innovation Services Specialist

Applications

HAPS

Telecoms

Defence

Environmental services

Near space testing

Commercial freight

Leisure travel

Team & Partners

- Vauxminster Aeronautics Ltd
- Cranfield University
- University of York CHAPA
- Fraunhofer
- One Epsilon Ltd



What We Seek

UK–Singapore Collaboration Opportunity

Seeking Singapore partners to jointly develop and demonstrate vacuum-buoyancy aerospace technology

- **Advanced Structures & Manufacturing**

- Lightweight composite structures
- Precision manufacturing & joining
- Advanced materials and barrier films
- Prototype manufacture & testing

- **Systems & Payloads**

- 5G/6G & NTN communications
- RF, sensing & surveillance payloads
- Autonomous flight & station keeping
- Solar-electric power systems

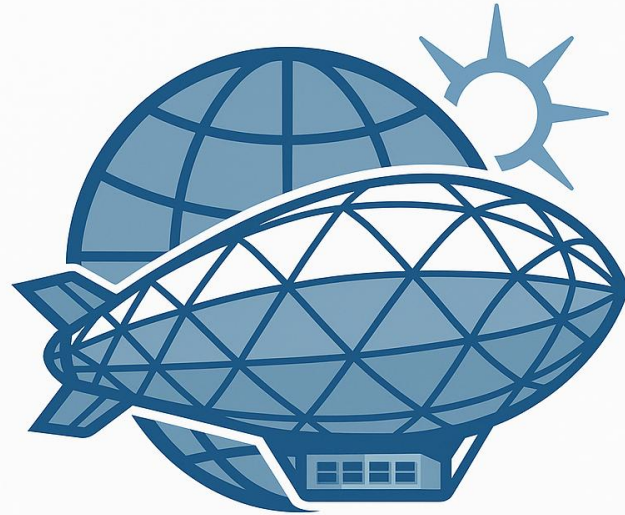
- **Testing & Demonstration**

- Structural & vacuum testing
- Systems integration
- Flight demonstrators
- Certification & regulatory development

Our goal: build a UK–Singapore partnership to develop, manufacture and experimentally validate critical technologies for a future vacuum-buoyancy flight demonstrator.

Vacuum Buoyancy
Atmospheric Platforms

Vauxminster
Aeronautics



VAUXAERO

How can we work together?