



## A NEW MOMENTUM FOR THE STRATOSPHERE

HIGH-ALTITUDE PLATFORM SYSTEMS + ARTIFICIAL INTELLIGENCE

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### **Delivering on the promise, HAPS for connectivity have arrived**

High Altitude Platform Systems (HAPS) have finally arrived. After more than two decades of research and development, they have now shown they can deliver on their core capabilities. HAPS have proven that they can remain airborne for long periods of time, provide connectivity and are highly versatile. This flexibility not only allows them to enhance existing network infrastructure, but also to support a large variety of use cases. The types of use cases are already multiple, from greenfield coverage to white spot reduction, from connectivity for drones to enabling private networks. HAPS could serve to create connectivity for operations in regions struck by natural disasters and can also be used to monitor pollution. The amount of use cases will increase as adjacent technology sectors such as AI and the Internet of Things (IoT) advance.

### **HAPS for connectivity and commercial services are gaining momentum**

The momentum is not only carried by the advancement of the HAPS technology itself, with technology readiness levels now between 7-9 for 65 percent of the platforms under development. The broader sector has gained traction between 2021 and 2022 with new connectivity partners and new business models coming to the fore. In terms of funding, commercial and venture capital investments now play a bigger role, this is adding momentum to a sector that was initially funded by governments and industry. Among the new business models are connectivity, remote observation and geospatial services.

### **HAPS positively impacted by the technological convergence**

Most importantly, the momentum is reinforced by the convergence of HAPS innovation with technological advances in other areas, including AI, communication and engineering. The net results are lower costs for new customers and a larger total addressable market for HAPS due to the convergence with revolutionary developments including 6G, the IoT and Earth Observation use cases. The amount of data needed for future applications, from holographic video calls to digital twins, is simply too much for current communication networks, exponential growth in connectivity infrastructure will be required to supply data demand, of which HAPS will be a necessary element. In these exponentially growing adjacent markets, the specific capabilities of HAPS, especially when enhanced by AI, offer competitive advantages to carve out substantial market shares.

### **HAPS to bridge the Digital Divide**

The HAPS market outlook is also driven by the goal of bridging the Digital Divide. A goal shared by international organizations as part of the sustainability agenda as well as telecommunication service providers. HAPS are uniquely suited to offer connectivity in difficult to reach environments or large, sparsely populated territories. HAPS deployed for connectivity could even offer developing countries an opportunity to leapfrog over the construction of expensive ground telecommunication infrastructure, proceeding directly to a more advanced Non-Terrestrial-Network architecture.

## WHY THIS REPORT SERIES

### Navigate a high-risk, high-return opportunity

High-Altitude Platforms Stations (HAPS) are an emerging sector in the global uncrewed aerial systems (UAS) market. The sector has decades of research and development investment by leading global corporations such as SoftBank, Airbus, BAE Systems, AeroVironment and Google, and is now on the cusp of opening a new market frontier.

Bridging the gap between satellites, lower flying aircraft and ground infrastructure, HAPS offer enormous potential for both commercial and military applications in remote sensing, targeting and connectivity. Powered by artificial intelligence, HAPS can provide persistent surveillance and connectivity over large areas.

HAPS manufacturers, operators and investors seek to tap into the multi-trillion dollar telecommunications market and multi-billion dollar remote sensing market. But high returns come with big risks. The technology is still in development, regulation is needed and the business model is largely untested.

The report series of A NEW MOMENTUM FOR THE STRATOSPHERE enables you to understand this complex sector, identify investment and growth opportunities, evaluate products and companies, and mitigate risks.

## WHAT THE REPORT OFFERS

### A detailed industrial intelligence guide to the frontier technology of HAPS

A NEW MOMENTUM FOR THE STRATOSPHERE provides a comprehensive roadmap with actionable insights to understand the complexity of this sector. Drawing on large amounts of quantitative and qualitative data, we present key metrics, benchmarks, trends and forecasts. We analyse the commercial and military potential of four types of HAPS platforms:

- Solar Wings: solar-powered fixed wing platforms.
- Hydrogen Platforms: hydrogen-powered fixed wing platforms.
- Airships: high-altitude lighter-than-air platforms.
- Balloon: high-altitude balloons.

This report series is essential reading for HAPS companies and stakeholders as well as potential market entrants, investors, consulting firms and others with interest in the HAPS sector.

How does your company fit into the HAPS sector? Where should investments be made? What are the leading HAPS platforms? How can companies unlock the potential of AI? What HAPS capabilities could become defense requirements?

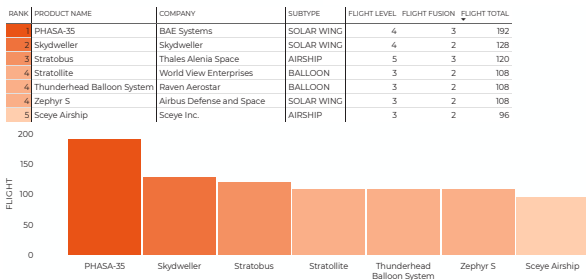


## 02. REVIEW + BENCHMARKING

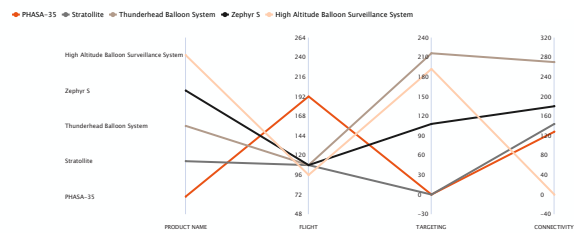
Developments in AI are making current defense strategies obsolete. Recognising the revolutionary influence of AI in the defense and commercial sectors, this report benchmarks the performance of the 33 leading HAPS platforms and payloads according to three primary AI Capabilities: Flight Automation, Connectivity and Automatic Target Recognition (Targeting).

- Flight Automation benchmark
- Connectivity benchmark
- Targeting benchmark
- Current state of the art in AI for HAPS
- Potential of AI in the HAPS sector
- Complete leaderboard of HAPS

### TOP 5 BY FLIGHT AUTOMATION



### COMPARING AI + AUTONOMY OF 5 HAPS SYSTEMS



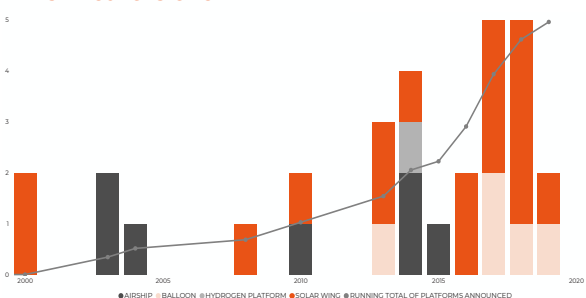
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## 03. TRENDS + FORECASTS

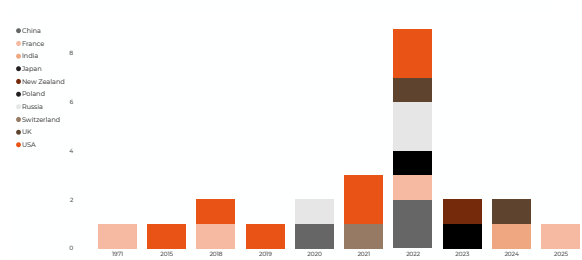
This report synthesises all data of our reports to identify trends and formulate predictive insights.

- Macro and micro-level trends
- Critical factors for success
- Likely market leaders
- Future HAPS applications
- 15 metatrends
- 26 commercial trends and forecasts
- 27 military trends and forecasts
- 11 AI and technology trends and forecasts

### HAPS PROJECTS GROWTH



### COUNTRY DEVELOPMENT: YEAR INTO PRODUCTION



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