

# TOP NEWSPACE STARTUPS TO WATCH

2016 Edition | A Euroconsult Executive Report

An assessment of the current standing & challenges of 20 startups within the space/satellite value chain.

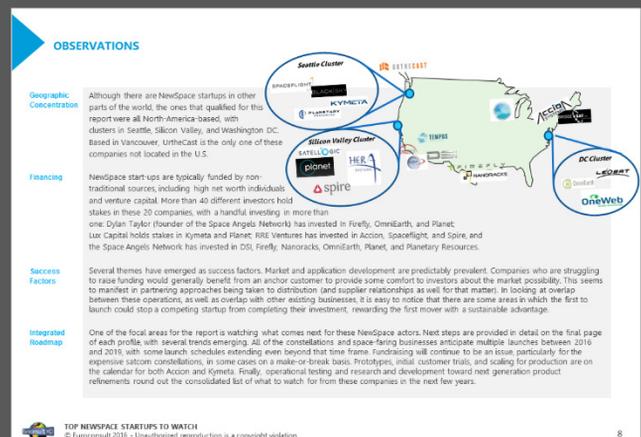
- ✓ **20 in-depth profiles, over 90 pages**
- ✓ **Detailed view of potential business opportunities**
- ✓ **Price starting at € 4,000**

**Top NewSpace Startups to Watch** assesses twenty startups via business-based criteria in robust individual profiles in order to track their current standing, challenges, and future potential within the rapidly-evolving space/satellite value chain.

The trajectory of these startups' impact can be described as either incremental (e.g., adding launch capacity to a supply-constrained market), disruptive (e.g., shifting the fundamental economic model for their own segment), or enabling (e.g., shifting a fundamental economic model for an upstream or downstream market). Contemplation of exit strategies and impacts provide frameworks for tracking these startups over time.

Functional areas attracting a great deal of startup interest include Earth observation, satellite communications (satcom), and space transportation (i.e., launch) and exploration. Some balance between these three areas allows for inclusion as well of two companies distributing equipment whose new technology may enable different economic models.

Several themes have emerged as success factors. Market and application development are predictably prevalent. Companies who are struggling to raise funding would generally benefit from an anchor customer to provide some comfort to investors about the market possibility; this seems to manifest in partnering approaches being taken to distribution (and supplier relationships as well for that matter). In looking at overlap between these operations, as well as overlap with other existing businesses, it is noticeable that there are some areas in which the first to launch could stop a competing startup from completing their investment, rewarding the first mover with a sustainable advantage.



**OBSERVATIONS**

**Geographic Concentration** Although there are NewSpace startups in other parts of the world, the ones that qualified for this report were all North-America-based, with clusters in Seattle, Silicon Valley, and Washington DC. Based in Vancouver, OneWeb is the only one of these companies not located in the U.S.

**Financing** NewSpace startups are typically funded by non-traditional sources, including high net worth individuals and venture capital. More than 40 different investors hold stakes in these 20 companies, with a handful investing in more than one. Cylan Taylor (founder of the Space Angels Network) has invested in Firefly, OmniEarth, and Planet. Luc Capital holds stakes in Kymeta and Planet. RISE Ventures has invested in Accion, Spaceflight, and Spire, and the Space Angels Network has invested in DSI, Firefly, Nanoracks, OmniEarth, Planet, and Planetary Resources.

**Success Factors** Several themes have emerged as success factors. Market and application development are predictably prevalent. Companies who are struggling to raise funding would generally benefit from an anchor customer to provide some comfort to investors about the market possibility. This seems to manifest in partnering approaches being taken to distribution (and supplier relationships as well for that matter). In looking at overlap between these operations, as well as overlap with other existing businesses, it is easy to notice that there are some areas in which the first to launch could stop a competing startup from completing their investment, rewarding the first mover with a sustainable advantage.

**Integrated Roadmap** One of the focal areas for the report is watching what comes next for these NewSpace actors. Next steps are provided in detail on the final page of each profile with several trends emerging. All of the constellations and space-facing businesses anticipate multiple launches between 2016 and 2019, with some launch schedules extending even beyond that time frame. Fundraising will continue to be an issue, particularly for the expensive satcom constellations, in some cases on a make-or-buy basis. Prototypes, initial customer trials, and scaling for production are on the calendar for both Accion and Kymeta. Finally, operational testing and research and development toward next generation product refinements round out the consolidated list of what to watch for from these companies in the next few years.

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# ABOUT NEWSPACE STARTUPS

**Top NewSpace Startups to Watch** is an assessment of the current standing and challenges of 20 startups within the space/satellite value chain. Each company is presented in a highly detailed profile, including its business model, funding history, key partners, competitive environment, target markets, and success factors in need of achievement; areas covered in the report include satcom constellations, space exploration & service, Earth observation, and equipment startups.

While not an overt selection criteria, startups were evaluated with an eye toward balancing representation in the sample by sub-segment. Functional areas that are attracting a great deal of startup interest include Earth observation, satellite communications (satcom) constellations, and space transportation (i.e., launch) and exploration. Some balance between these three areas allows for inclusion as well of two companies distributing equipment whose new technology may enable different economic models.

**BRIDGESAT – SNAPSHOT**

**VALUE PROPOSITION**

Bridgesat's long term value proposition is to provide data transmission as a service more efficiently and quickly than is currently provided. Bridgesat proposes to leverage the favorable economics of optical networking to transmit data in larger chunks, at higher speed and lower cost. The optical transmission system is also intended to provide relative security, as data will be downloaded directly to customer networks, eliminating the need for ground transport. Key markets for this technology are UAVs and the earth observation industry, whose satellites produce and store a tremendous and growing quantity of data – a current generation 15-megapixel color imager operating at 10Hz can generate more than 10 Gbps of raw data. That data would then be transmitted to earth for processing.

Bridgesat's customers may be end users themselves, or service providers to other commercial or government users. As demand grows, Bridgesat intends to launch its own constellation, to receive data in orbit, transmit it via optical inter-satellite links, and deliver it to the customer receiver from the nearest connection point. The plan is to provide increasingly efficient data services to customers whose needs may not be satisfactorily met with current technology and grow their demand over time until Bridgesat can provide near-instant (perhaps video) service via its own constellation.

**BUSINESS MODEL**

Bridgesat has a two-phase business model to achieve its long-term goals. During the first phase, they will establish a ground station network and a customer base, equipped with transmitters to deploy on smallsat/ubatsats to be launched. The transmitter and ground station architecture will allow the customers to begin using the optical link/inlink in advance of Bridgesat's own constellation, which will be launched in the second phase. By time the constellation makes accelerated service available, Bridgesat is betting demand for speed and response will have grown enough to pick up the new capacity they will be bringing online.

Two elements of the operational model are worth noting. First, the focus on optical, rather than IR capacity may allow Bridgesat to dodge the cumbersome regulatory processes that could slow its competitors. Second, distribution channels for the transmitters have not been announced. Watch for indications of whether transmitters will be a resale/profit line or if they will be subsidized to enable demand. Pricing for the first phase is planned on a per-bit basis, applied only to data that has been successfully transmitted.

**BRIDGE SAT, INC.**  
A Euroconsult Company

**KEY INFORMATION**

<b>Headquarters</b>	Boston, Massachusetts
<b>Founded</b>	2011 by Allied Minds
<b>Investors</b>	Bridgesat is a wholly owned subsidiary of Allied Minds, a U.S.-based full-time devoted to space and technology development and commercialization company.
<b>Heritage</b>	NASA technology, commercialized by Aerospace Corp
<b>Key Partners</b>	<ul style="list-style-type: none"> <li>The Aerospace Corporation</li> <li>NASA</li> <li>Orizon Laboratory</li> <li>York Space Systems</li> <li>MIT</li> <li>Space Electronics</li> </ul>
<b>Management team</b>	<ul style="list-style-type: none"> <li>David Hitting (CEO, Founder)</li> <li>Joseph Cappagna (CFO, Operations)</li> <li>Robert Perazich (system development &amp; integration)</li> <li>John Senfner (Project Manager, Bridgesat)</li> </ul>

**FUNDING HISTORY**

Funding today comes from its parent company, Allied Minds, which has raised over \$300 million in equity, operates like a specialized venture capital firm, investing in early-stage technologies developed at leading U.S. universities and federal research institutions, and attempting to bring them to market. Bridgesat's co-general manager, John Senfner, is also the Vice-President of Allied Minds.

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## APPROACH:

One of the greatest challenges in producing a report aiming to profile a limited number of companies is selecting which companies to include. For this report, selection was based primarily on three pragmatic criteria. First, they had to have been founded no earlier than 2009. Second, as this report is titled "Top NewSpace Startups to Watch," the companies had to demonstrate reasonable probability of generating noteworthy events in the next 18-36 months. The space industry and investor community may, of necessity, take a long view of investment frontiers, so there may be companies of interest who will not have seminal events by 2019. Those have been excluded from the sample of this current report, but could be re-evaluated for future editions. The final criterion for inclusion was the transparency of the company, in particular sufficient information available to be able to recognize where the company fit within the space and satellite value chain.

## SOURCES:

In consideration of the need for startup companies to manage public discussion as well as the desire for Euroconsult to retain its independence, no interviews or outreach to subject companies was undertaken specifically for this report. Euroconsult has differing levels of prior knowledge of the companies profiled. Sources for information on the companies themselves came from company websites, public interviews with executive team members, industry news publications, and where available, specialized public coverage. Information used for assessment of competition and markets comes from Euroconsult's knowledge base and proprietary databases. For investment data, we relied on public filings with the United States Securities and Exchange Commission (SEC) and information aggregator CrunchBase.

# COMPANIES PROFILED

## Key to funding:

Raised > \$100M

Raised \$50-100 M

Raised <\$50 M

		HIGHLIGHTS	TARGET MARKETS
SATCOM CONSTELLATIONS	<b>BridgeSat</b>	Rapid downlink of large datasets efficiently	Earth observation and UAV data
	<b>Cloud Constellation</b>	In-orbit data processing, storage, and downlink	Large enterprise, storage providers
	<b>LeoSat</b>	High speed, secure, enterprise grade data transmission	Top enterprise users, e.g., banks
	<b>OneWeb</b>	Affordable, low latency, ubiquitous connectivity	Underserved areas, mobility markets
	<b>Outernet</b>	Datacast of curated content to underserved markets	Remote locations, first responders
SPACE EXPLORATION AND SERVICES	<b>Deep Space Industries (DSI)</b>	Water-based thrusters, optical navigation, asteroid mining	Space exploration missions
	<b>Firefly</b>	Light vehicles to provide dedicated multi-satellite launch	Smallsat/cubesat launchers
	<b>Nanoracks</b>	Facilitate ISS-based commercial scientific experiments	Commercial community
	<b>Planetary Resources</b>	Earth observation data while gearing up for asteroid mining	Earth observation, and space explorers
	<b>Spaceflight</b>	Launch brokerage and hosting service	Smallsats, cubesats, nanosats
EARTH OBSERVATION	<b>Blacksky Global</b>	High temporal coverage, high revisit rate images	LBS (Location-based services), defense
	<b>Hera Systems</b>	High frequency change detection at high resolution	Defense, finance / business intel
	<b>OmniEarth</b>	Change-detection products and analytics at low resolution	Natural resources, energy
	<b>Planet</b>	Low-cost, moderate resolution daily imaging of entire earth	Natural resources, LBS, infrastructure
	<b>Satellogic</b>	"Platform as a service" high res images and video	Natural resources, oil & gas
	<b>Spire</b>	Commercial weather data; 100K daily GPS-RO readings	Government, enterprise, maritime
	<b>Tempus Global</b>	Severe weather data based on readings from six sensors	Government, commercial
	<b>UrtheCast</b>	SAR and optical multispectral imaging	Maritime, defense, infrastructure
EQUIPMENT	<b>Accion Systems</b>	Electronic propulsion systems targeted toward smallsats	Smallsat operators (govmt and private)
	<b>Kymeta</b>	Flat-panel, electronically steered antennas	Mobility (aero, maritime, auto)

# PROFILE CONTENTS

## PAGE 1: OUTLOOK

Section	Description
Value Proposition	How does the company's product help its customers?
Business Model	What is the overall operating strategy and approach to market?
Key Information	Facts at a glance
Funding History	How much has been funded, who has invested, what stages of financing have been completed?

## PAGE 2: INNOVATIONS

Section	Description
Concept	How does the company deliver its product – what underlying technologies are used and what is new or innovative about the approach?
Product	Visual depiction of what is being produced
Innovative Features	At the highest level, what innovations are brought to the table in terms of product development, technology, and/or distribution methods?

## PAGE 3: ENVIRONMENT

Section	Description
Key Partners	What is the company's approach to partnering strategies? What are the core areas in which the company needs partners? With whom has it established partnering relationships to date?
Competitive Environment	Who else is selling similar products? What substitute products or technologies exist or are being developed?
Target Markets	How is the target market defined? Who are they?

## PAGE 4: NEXT

Section	Description
Success Factors	What needs to happen for this company to be successful? What can they control and what is beyond their control? This may include market, technology or application development, regulatory, cost, or other factors that affect the company's ability to reach its goals.
Road Map	What major events of an operational, financial, or technological nature are planned or expected within the next 3 years?

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