DESTINATION STARTUP

Blue Cubed LLC

One-Sentence Summary of What You Do: Blue Cubed LLC builds optical and radio frequency communication terminals for the growing small satellite market.

Affiliated Institution: University of Colorado Boulder

Have you formed a company yet? Yes

Funding/Financing: Grant Funding, Direct/Indirect University Support

Please describe your company and the problem you are trying to solve: Small satellites are rapidly growing in popularity as the barriers to entry to the space market are being reduced. Companies with small satellite business models are appearing almost daily with concepts that use small satellites to provide a wide range of services including earth imaging, radio frequency monitoring, methane monitoring, ship and aircraft tracking to name a few. All of these system require a way to get increasing growing volumes of data from the satellite to the user. This can include links from one satellite to another or from the satellite directly to the ground. The standard approach is to use radio frequency transmitters which operate in a limited number of approved frequency bands. To address this need, Blue Cubed LLC is proposing a hybrid RF and optical architecture for small satellite communication systems, which would provide the best of both worlds; a high rate optical downlink when the weather is good and a lower rate but guaranteed RF downlink when the optical link won't close. The optical system can also be used to support optical crosslinks between satellites. Blue Cubed LLC has licensed an X-band transmitter from the University of Colorado Boulder and is a commercial product currently being offered for sale. In parallel Blue Cubed in developing a high rate space-to-space optical transmitter/receiver system. The optical elements of the system have been developed and testing while the electrical components are currently in development. Blue Cubed has submitted a patent for its highly manufacturable and self-aligning Cobalt optical bench.

What is/was your go-to-market strategy? Customers for our technology are satellite developers and operators particularly those who are collecting large amounts of data that needs to be transferred to the ground for post-processing such as earth imaging, hyperspectral imaging, synthetic aperture radar imaging and space situational awareness satellite constellations. Essentially any satellite business collecting significant amounts of data which need to be transferred to the ground for processing would benefit from our technology.

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The Satellite Industry Association (SIA) estimated the 2018 global satellite market at $277B and had shown consistent year over year growth of $2.9B. While the industry is relatively mature the emergence of new technologies such as launch rideshare, small satellites and optical communications are major disruptors which are poised for significant growth. The global optical satellite communications market is expected to reach $2.9B by 2026 growing at a CAGR of 31.1%.

The Blue Cubed value proposition stems from the fact that our core optical and RF systems are the lowest size, weight and power available. Additionally, in the design of our systems we considered manufacturability and reliability as driving requirements. Our unique and patented single aperture, self-aligning optical bench avoids many of the painful calibration and alignment steps required on traditional optical communication system. Additionally, a commercially available hybrid RF/optical transmitter does not current exist and we would be the first to bring this novel technology to the small satellite market, giving us a first to market advantage.

How will/do you generate revenue? Blue Cubed will generate revenue by selling optical terminals to companies such as Lockheed Martin, Blue Canyon Technologies, Tyvak, Millennium Space and York Space who are building small satellites for both the growing commercial small satellite industry and a range of Department of Defense users. With an emerging vision for a proliferated LEO environment with thousands of small satellites all needing enhanced communications, Blue Cubed is well positioned to take advantage of this opportunity.

At a production rate to 50 units per year and a target price of $200K each, the resulting $10M in annual revenue is only 0.3% of the total global optical satellite communications market, clearly demonstrating the opportunity to scale. With recent aerospace hardware companies showing a multiple of 5x revenue on exit, this single product could result in a $50M valuation for Blue Cubed.

How will this showcase benefit your company or technology? Blue Cubed was funded in 2018 and has grown organically through success in business competitions, small research grants and investment of founder time and resources. With the recent success of a SBIR phase II grant, Blue Cube's investment needs have moved beyond initial angel and seed funding. With a target for a MVP in the next 9 to 12 months Blue Cubed is looking to build relationships with potential series A and strategic investors. We are also looking to grow our leadership team with potential business and technical advisors.

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Who are the members of your team, and why is this the right team to get the job done?
Blue Cubed has a devoted technical team with a combined 80+ years of satellite industry experience and a proven track record.

- Dr. Scott Palo is the Chief Executive Officer (CEO) and is the Schelke Endowed Professor at CU Boulder. An early pioneer in small sats, he has led development, construction and on-orbit operation of numerous missions during his 21-year tenure and has been a consultant for Blue Canyon Technologies since 2009.
- Dr. Jon Twichell is the Chief Scientist and led the EO materials and devices group at MIT/LL and oversaw development of many novel detector technologies crucial for optical communications. He has been involved in numerous flight programs and held an active TS-SCI clearance until 6/1/21 when he ended his consulting agreement with Lincoln Laboratories.
- Dr. Ryan Kingsbury is the Chief Technical Officer (CTO) and spent over 4 years at Planet Labs at the forefront of “agile aerospace.” He played a key role in building the world’s largest constellation of cubesats (~300 sats over 4 years), including the first >1 Gbps CubeSat downlink. He holds a PhD in AeroAstro from MIT and started his career in MILSATCOM (AEHF, TSAT) at MIT/LL.
- Mr. Adam Bellusci is the Chief Legal Officer (CLO) and received his B.S. in Computer Science from Boston University as well as a J.D. and Master’s From Vermont Law School. He has extensive technical and business experience in start-up environments. He has a proven ability to build and lead creative, motivated, and highly productive teams.