In the Press

Nov 2020
How $56 Million In Funding Will Help One Mobile Antenna Connect With Thousands Of Satellites

Can you imagine the ancient Romans inspiring a potential revolution in space communications?

In the fourth century, the Romans created a cup that shows red light when lit from behind, and green when lit in front. The Lycurgus Cup showed artists and innovators how to play with and bend light, using glass embedded with tiny flecks of gold. And that was 1,600 years ago, when the best long-distance communication available was through networks of fast horses and nimble riders.

Nearly two millennia later, Isotropic Systems is building a satellite antenna to do the same thing as the cup: bend radio waves, through the scientific field of transformational optics. Using minute alterations in its positioning, the hope is to make an antenna that can communicate with just about any satellite in any Earth orbit. That ranges from the behemoth GPS satellites far away to the ever-growing network of satellites close to Earth built by SpaceX and OneWeb and Telesat, among others.

In five to 10 years, this means that a single device could connect with satellites just about anywhere. It could be just as helpful for fast Internet in a Congo community, or getting information for soldiers deployed in remote Middle Eastern deserts. The system is still more than a year from readiness, but with $56 million USD in backing to date, Isotropic now has a lucrative contract in hand to test it with the U.S. military.

Read more →
New high-speed Army satellites accelerate attacks on enemy tanks

When an Air Force fighter jet or bomber closes in on a high-value target area, poised for attack, or an Army ground unit moves to contact with an enemy, success or failure of a given high-risk mission can often hang in the balance of what can be described in two words – satellite networking.

A sufficiently hardened, multi-directional signal can ensure that pilots quickly receive target coordinates, navigational details, or sensitive threat information of great relevance to the mission. Should target accuracy be compromised, signal fidelity jammed, or flight path compromised by threats from unanticipated directions, mission objectives can of course be destroyed and lives are put at risk.

Given this, high-throughput, multi-frequency, multi-directional antennas, coupled with secure “meshed” networking between satellites, are considered crucial to war planners looking to favor success in missions by increasing the strength and speed of space connectivity.

Read more →

The Isotropic antenna will deliver high throughput, at low latency over a MEO constellation with simultaneous resilient GEO capacity. This is a game changer for the U.S. Army.
In a conversation with MilsatMagazine, Scott Sprague, CCO for Isotropic Systems, explains that high-throughput ground infrastructure is required to unleash new multi-orbit connectivity across a broad range of markets — especially mission critical defense initiatives.

Isotropic Systems’ transformative terminals are in milestone trials with the U.S. Army and U.S. Navy, aimed at delivering new LEO, GEO and MEO satellite-delivered connectivity to the battlespace. New high-powered satellites and constellations in GEO, LEO, and MEO orbits are on the verge of commercial launches over the next two years. New-age capacity in space, however, is only half of the equation to solve connectivity challenges that defense and government agencies have struggled with for years across battlefields around the world.

There’s been a lot of focus on new high-powered satellite constellations bringing a new era of connectivity to critical markets such as the military and defense. But the government can’t tap that new age capacity without a new age antenna, correct?

That’s absolutely right and exactly why Isotropic Systems is so dedicated to redefining the antenna market. Engineers with U.S. government and defense agencies have shared with our team how they’ve tried for years to crack the code to develop new antenna technologies capable of unlocking the full potential of new high throughput satellite capacity coming online in the 2022 timeframe. And they are thrilled that Isotropic Systems has cracked the code. In fact, we’re in the latter phases of developing what has recently been called the Holy Grail of terminals.

Our multi-beam antenna uses patented optical beamforming lens technologies that allow the government and armed forces to arbitrage capacity from commercial and military satellite capacity over a single antenna to deliver data at the tactical edge like never before.

Read more →
Scott Sprague of Isotropic Systems discusses a new generation of satellite antennas

In March of this year, SES and Isotropic Systems announced that they were entering into a new phase of their collaborative partnership to develop, "scalable, cost-effective multi-beam customer edge terminal antennas capable of unlocking access to the groundbreaking O3b mPOWER system across government and defense, telco and cellular backhaul, aerospace, maritime, and offshore markets."

The military has long hungered for a satellite terminal capable of conforming to small footprints – such as vehicles for mounted land operations, ships at sea and aircraft – capable of connecting users to multiple satellites in multiple orbits. And that’s exactly what the partnership between Isotropic Systems and SES is intended to deliver.

While many companies in the space and satellite industry treat every iteration and new development in their product catalog as a revolutionary step forward for the industry, as a whole, the collaboration between SES and Isotropic truly has the potential to deliver new, disruptive capabilities to end-users – especially for military users.

Read more →

Our high-performance multi-beam terminals feature optical lens modules that are conformal to the fuselage of a plane, the deck of a ship, even a soldier’s backpack.
Navy ships improve attack with new multi-beam satellite antenna

Targeting enemy ships, bouncing war data off of drones, detecting incoming ballistic missiles, seeing approaching small boat attacks from over the horizon, intercepting anti-ship missiles and ... perhaps most of all ... networking surface, air and undersea assets in real-time -- are all crucial elements of the U.S. Navy’s emerging Distributed Maritime Operations (DMO) tactical attack strategy.

Offensive attack maneuver, fortified by advanced sensors and dispersed across vast swaths of ocean, is one of the tenets informing the Navy’s DMO thinking. Surface ships will by design increasingly operate in a disaggregated fashion, armed with long-range weapons and sensors; it is part of a multi-year Navy pivot toward broadly increasing lethality and attack technology throughout the surface fleet, by arming ships for high-end massive warfare on the open sea with a new generation of advanced weapons.

The sea service plans to benefit from a recently awarded Defense Innovation Unit evaluation and development contract with Isotropic Systems for new patented beam-forming antenna technologies and circuits. The goal, according to Isotropic CEO John Finney, is to “fuse multi-band, multi-orbit commercial and military capacity to deliver intelligence data at the tactical edge over a single platform.”

Read more →
With the coming of LEOs and MEOs and the burgeoning demand for broadband on commercial aircraft, satellite antenna developers are racing to develop a suitable phased array antenna.

Despite multiple efforts and millions of dollars invested in development, success has remained elusive, and significant obstacles remain in place. Typically, flat panel phased arrays use large numbers of beam forming ICs, a requirement dictating an extensive array of electronics that consumes vast amounts of power, generates excessive heat, and is expensive to manufacture.

Isotropic Systems, a London-based start-up, has designed, prototyped and tested a uniquely innovative antenna that breaks through these barriers. Using lenses that concentrate the RF signal, the antenna design significantly reduces the number of electronic components, resulting in a terminal that uses considerably less power, achieves true time delay, duplex operation, and can be produced at a relatively low cost.

To find out more about this unique product and its potential in aero markets, we met with Brian Billman, Isotropic System’s V.P. of Product Management for Aero.

SMW: I understand that the Isotropic antenna has been in development for around three years. Is your first antenna Ku or Ka-Band, and how far have you come in the development?

What is the initial target market, and when will the antennas be commercially available?

Brian Billman: Our optical beam forming antenna is a new technology. So, in the beginning, we didn’t have all the answers and have been learning along the way. Throughout the development process, we have been pushing the envelope in terms of the features we can offer.

Read more →
With small satellite constellations becoming increasingly commonplace, the terrestrial antennas used to track these ‘fast-moving’ NGSO satellites are coming under increasing scrutiny. Innovative new designs far removed from traditional parabolic antennas and VSATs are coming to fruition.

We’re halfway through 2020, the year of the small satellite constellation. With new small satellites being launched in abundance despite the ongoing coronavirus pandemic, a massive influx of new capacity will soon be upon us. Whether bridging the digital divide with low-latency high-speed Internets services or enabling massive Internet of Things (IoT) networks across the globe, antenna technology is well and truly in the forefront of peoples’ minds.

While a good number of ground segment companies have already exampled the use of traditional parabolic antennas and VSATs, which have been proven to track ‘fast-moving’ satellites in medium Earth orbit (MEO) and low Earth orbit (LEO) entirely satisfactorily, several innovative companies are looking beyond existing technologies to produce a more agile, streamlined antenna product capable of performing the same function with additional size, weight and (in some cases) power (SWaP) advantages, among others.

Read more →
Isotropic pivots to serve a handful of key markets including government and defense

Isotropic Systems won a U.S. Defense Department contract that the satellite terminal developer would love to announce. Unfortunately, the startup is prohibited from identifying the specific agency, dollar value or work to be completed, John Finney, Isotropic Systems founder and CEO, told SpaceNews.

Still, the new contract reveals how Isotropic, a firm once focused on the consumer broadband market, has pivoted toward developing terminals for government and defense customers, established satellite constellation operators, telecommunications, enterprises and maritime applications, while licensing technology for aircraft terminals.

Isotropic changed its priorities to reflect market realities. For the moment, the firm does not see a market for the consumer broadband terminals it developed, Finney said.

Read more →
Isotropic Systems has received an antenna evaluation and development contract with the Defense Innovation Unit (DIU), an organization within the U.S. Department of Defense. The contract will test the ability of Isotropic’s patented multi-beam antennas for high-powered bandwidth aboard next-gen Naval vessels at sea. The collaboration contract is focused on the delivery of a low-profile, high performance, affordable and customizable antenna to support multiple links over multiple bands of satellite capacity, including S-, C-, Ka-, Ku-, X-, and Q-band connectivity.

In a Monday announcement, Isotropic said that DIU will prototype and analyze the performance of its resilient optical beamforming terminals during an extensive series of environmental and interference chamber tests throughout this year. Teams will measure the impact of harsh elements, such as intense winds, salt water, and electromagnetic interference (EMI). This collaborative review will begin in the lab and may lead to milestone evaluations aboard U.S. Navy ships.

Isotropic Systems Founder and CEO John Finney answered some questions for Via Satellite about the importance of this contract.

Read more →
Isotropic, SES to trial nextgen antenna for US military

SES Government Solutions (SES GS), a fully-owned affiliate of SES, and Isotropic Systems, a leading developer of transformational broadband terminal technologies, today announced a two-phased antenna evaluation contract with the U.S. Air Force Research Laboratory, working in close collaboration with the U.S. Army Research Engineering Team, for tests of Isotropic Systems’ multi-beam terminal over SES’s O3b Medium Earth Orbit (MEO) constellation to ultimately unleash next-gen connectivity across the battlefield.

It is the first customer contract between Isotropic Systems and SES Government Solutions and follows on from the significant developmental partnership currently ongoing between the two companies to produce scalable, cost-effective terminals capable of providing government, military, and commercial access to the existing O3b constellation and the groundbreaking O3b mPOWER system set to launch late next year. Read more →
UK Tech Cracking the Code for a New Age of Connectivity

Here at QinetiQ, we are laser focused on building disruptive business solutions. We work with both end users and partner companies to co-develop innovative solutions to complex problems.

Recently our team has been working with SME, Isotropic Systems to deliver breakthrough, world-class services in the wide-reaching markets served by satellite. Our wealth of materials science and device design and development capabilities have allowed us to deliver mission-led innovation to this important partnership.

Scott Mellor, COO at Isotropic Systems explains more about this partnership

Connectivity is fueling the global economy. We’ve all seen firsthand how it brings us face-to-face over Skype, Zoom, WebEx, and satellite-delivered teleconferencing throughout the COVID-19 outbreak. It has certainly kept businesses of all sizes running around the world.

This is certainly the case for us at Isotropic and our key partner QinetiQ. Reliable connectivity networks have enabled us to continue our collaboration throughout the pandemic, developing a whole new level of communications capabilities that can meet the ever-growing need for more and better connectivity.

Isotropic Systems and QinetiQ Collaborate on the Holy Grail of Antennas.

Read more →
SatTV talks to Isotropic Systems

Richard Hooper talks to Brian Billman, VP, Product Management at Isotropic Systems about the novel approach the company is taking to solving the terminal challenges that are out there today - using transformational optics.
As the journey of O3b mPOWER unfolds, a crucial part of the development lies in the cutting-edge technology that is making up the communications system. Learn more about the O3b mPOWER ground infrastructure as John Finney, Founder & CEO of Isotropic Systems, shares his take on the Customer Edge Terminal partnership with SES and the innovation it will bring to the market.

Learn more about our O3b mPOWER communications system
Connect with us

Isotropic Systems is developing the world’s first multi-service, high-bandwidth, low power, fully integrated range of high throughput terminals designed to support the satellite industry to ‘reach beyond’ traditional markets.