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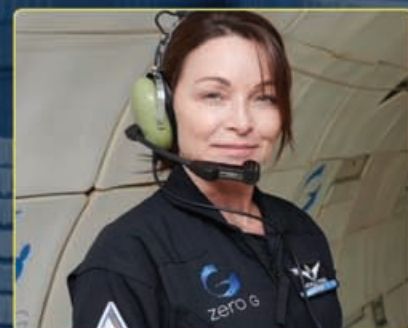
Recruiting in today's
competitive
environment



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A work in progress

More than 2400 years ago, Plato wrote, "Our need will be the real creator." His words ring true today. Although the commercialization of space is in the early stages, we've seen massive progress in 2022. Axiom Space has completed design reviews of its commercial space station with NASA, and project partner Thales Alenia Space is now fabricating flight hardware. Axiom anticipates the launch of the first section, Hub 1, in late 2024.

Nanoracks, recently in the news for enabling the disposal of 172 pounds of trash from the ISS using a specially designed waste container mounted within the company's Bishop Airlock, also has plans to own and operate a private space station. Voyager Space, the majority shareholder in Nanoracks, will provide capital and Lockheed Martin will serve as the manufacturer and technology integrator for Starlab. The continuously crewed commercial platform is expected to be fully operational by 2027.

There is no doubt about it—humans will be orbiting the earth, humans will be landing on the moon, and humans may well colonize Mars. To do so, they will also need to figure out how to manage space traffic, remove and dodge space debris, build systems in space, create ways to communicate and store data in space, and repair and refuel spacecraft, including satellites.

NASA is the driving force for On-orbit Servicing, Assembly, and Manufacturing (OSAM). NASA's OSAM-1 mission is aimed at robotically refueling Landsat 7 (which was not originally designed to be refueled, repaired, or modified). Maxar is building the OSAM-1 spacecraft as well as three robotic arms. Two of these will be used for refueling while the third will demonstrate in-space assembly of large-scale segmented antenna reflectors and manufacturing of a composite beam while on-orbit (SPIDER).

Northrop Grumman, which has previously collaborated with NASA on satellite servicing activities including the provision of technical assistance for the Mission Extension Vehicle (MEV), recently licensed three OSAM technologies from NASA, including the robotic arm gripper tool and the client berthing system (CBS). Northrop Grumman's MEV has docked with satellites to provide manoeuvring and pointing control for up to 15 years. The company plans to launch its

Mission Robotic Vehicles (MRVs) in 2024. These will provide on-orbit augmentation, inspection, and repair capabilities as well as installation of Mission Extension Pods (MEPs). In 2025 and beyond, Northrop Grumman plans to offer Mission Refueling Pods (MRPs) and GEO active debris removal.

In the July issue of Satellite Evolution Global, Laurence Russell interviews Michelle Peters, Director of Research and Education at Zero-G Corporation which provides zero-gravity simulation experiences to astronauts-in-training, academics, and thrill-seekers. He also checks in with Shagun Sachdeva, Founder of Kosmic Apple, who has much to say about empowering NewSpace startups.

Bert Sadtler, Founder of Boxwood Strategies, unravels the complexities of recruiting in today's competitive satellite and space sector, and Christopher Alfenito, Principal Consultant at A.I.M. shares his thoughts on why we should invest in New Space. Finally, Abhinandan Arya, Senior Applied Scientist & Applied Science Manager of SAR satellite data and analytic solution provider, Synspec, explains how the company's Land Displacement Monitoring (LDM) service helps to mitigate the risks of mining.



Crispin Littlehales, Global
Contributing Editor ●●●



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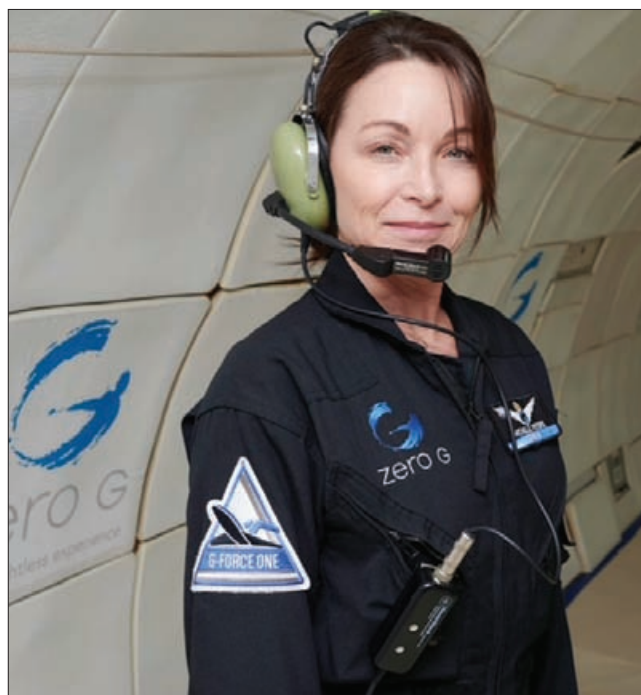
Why invest in NewSpace and why now?

How satellites can help to mitigate the risks of mining



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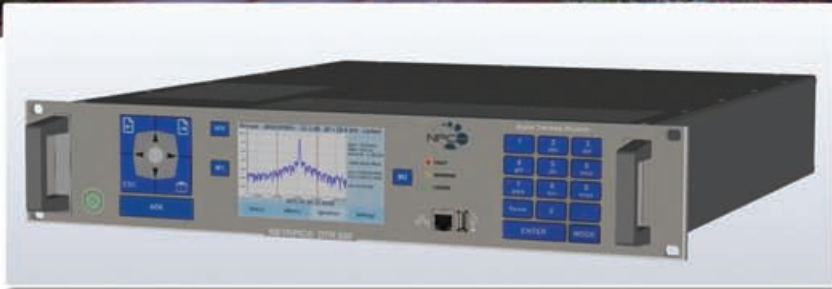
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Satellite communication fundamental to aviation decarbonization

AVIATION: The aviation industry is exploring a number of longer-term solutions to meet its commitment for net zero emissions by 2050, including a transition from fossil fuels. However, a new whitepaper by Inmarsat and award-winning aviation journalist Elan Head highlights that the number of practical, immediately viable options is limited to only two: either simply reduce flying or optimize the efficiency of flight operations.

The 2050 decarbonization target was outlined by the International Air Transport Association (IATA) last year and reinforced during its recent 2022 Annual General Meeting in Qatar, where governments were asked to support a move from commitment to action. However, aviation has long been recognized as a challenging sector to decarbonize due to the lack of suitable alternatives for fossil fuel in the market. Sustainable Aviation Fuels (SAF), hydrogen and batteries all hold promise for achieving deeper emission reductions in the long-term but will not be available at the required scale in the near- or medium-term.

IATA predicts that 1.8 gigatons of carbon will need to be mitigated given the aviation industry's projected scale in 2050, which requires trillions of dollars in investments across the value chain. Inmarsat's latest report, 'Plotting the route to a greener future', explores the important role that connectivity can play in boosting the efficiency of individual flight operations and the wider air traffic system as a whole. The findings confirm that airlines can leverage satellite communications to maximize fuel-saving opportunities and cut emissions almost immediately, while laying the groundwork for future decarbonization.

Niels Steenstrup, Deputy President of Inmarsat Aviation, said: "The aviation industry has long been focused

on sustainability and its commitment to achieve net zero emissions by 2050 should be applauded. There is also a clear understanding that action cannot be limited to the long-term, as advancements in sustainable fuel technologies and avionics will take time to evolve. Therefore, it is vital that the industry explores measures that are readily available today, such as utilizing the power of satellite connectivity to optimize flight operations.

"As a key partner of the aviation industry, Inmarsat is pioneering a range of new innovations that support decarbonization, including our Iris programme to modernize air traffic management, leading to a range of fuel, CO₂ and congestion-saving benefits. This is a prime example of how we can use technology at our disposal today to make a better tomorrow."

The research paper argues that utilizing satellite communication technology for operational and infrastructure gains may seem like small measures, but the need for airlines and the wider industry to commit to such initiatives is integral to meeting the 2050 net zero emissions target. Not only is satellite connectivity vital for the long-term success of an industry under pressure to reduce its CO₂ output, but it can also be implemented in a much faster timeframe than advancements in airframe and engine technologies.

Inmarsat's Iris programme delivers high-bandwidth, cost-effective satellite-based data link communications across Europe. This ground-breaking air traffic management programme, with the European Space Agency (ESA), is a key component of modernizing and digitalizing the aviation industry. Powered by SB-S, Inmarsat's award-winning broadband platform for the cockpit, Iris uses secure IP connectivity to relieve pressure on congested VHF radio links, which are near capacity.

This supports the Single European Skies ATM Research (SESAR) masterplan for next-generation air traffic management and creates a number of power benefits for airlines and Air Navigation Service Providers (ANSPs) across Europe, such as minimizing flight delays, saving fuel and reducing the environment impact of air travel.

Wider findings of the report include demonstrating that air traffic management modernization has the potential to influence roughly 10 percent of European aviation emissions, and how the provision of winds uplink to all flights could result in annual global fuel savings of around 850 million litres – and two million tonnes in CO₂ emissions. In addition, the whitepaper explores how creative future innovations such as contrail avoidance and formation flying could also be key to driving aviation's decarbonization. ●

TT Electronics partners with Honeywell Aerospace

AMERICAS: TT Electronics, a global provider of engineered technologies for performance-critical applications, has announced the company's Kansas City facility has been awarded a Letter of Authority from long-term partner Honeywell Aerospace to proceed with the design of a new power supply for next-generation inertial navigation units.

Honeywell Aerospace products and services are found



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on virtually every commercial, defense and space aircraft in the world and include aircraft propulsion, cockpit systems, satellite communications, and auxiliary power systems. Honeywell Aerospace is a subsidiary of Honeywell International Inc.

This latest development reinforces the strategic partnership between TT Electronics and Honeywell with both companies working in collaboration on numerous projects spanning 20 years. Throughout this time, TT has delivered a variety of advanced solutions to fulfil Honeywell's requirements for its aerospace and defense customers worldwide.

"With a strong focus on innovation and customer satisfaction, TT has made significant investments in engineering capability, supported by state-of-the-art equipment and vertically integrated manufacturing facilities," said Matt Sweaney, Vice President and General Manager, TT Electronics. "This award reinforces our long-standing partnership with Honeywell and also demonstrates TT's strategy in action as we continue to grow our position in the aerospace and defense industry."

Since the mid-1990s, Honeywell has produced and delivered more than 60,000 embedded GPS inertial navigation systems (EGI). Designed to provide maximum flexibility, Honeywell's EGIs meet the most challenging military requirements, along with civil interoperability capabilities. Its products have a strong performance record for the most challenging navigation, pointing, stabilization, and flight control applications. ●

neXat appoints new President – Alexander Oudendijk to lead the 'network of Satellite networks'

EUROPE: Former SES ASTRA CCO Alexander Oudendijk will join neXat, the world's first satellite capacity aggregation platform, as its new president as the company builds on the momentum of its rebranding and offers internet services through its 'Network of satellite networks'.

Oudendijk brings more than 30 years' experience in the satellite industry, including more than eight years as Chief Commercial Officer at

SES ASTRA. Prior to that Oudendijk was Managing Director at Hughes Network Systems Europe.

"neXat is a unique, exciting and forward-thinking company that is carving out its space in the satellite industry", said Oudendijk. "I'm very excited to be closely working with this team of talented and dedicated professionals at such an innovative time for the company. By offering its disruptive model and making the industry take notice, neXat has the potential to change the satellite landscape."

Oudendijk will help neXat realize its mission of creating a 'Network of satellite networks', based on its capacity aggregation model. He'll also help to broaden the commercial impact of the company worldwide.



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Alexander Oudendijk, Thierry Eltges and Serge Van Herck ●●●

Oudendijk will replace Serge Van Herck who has served as president of the board for three years.

"We are incredibly pleased to announce the joining of Alexander and can't wait to integrate his ideas, experience and expertise into the business", said neXat CEO Thierry Eltges. "As one titan of the satellite industry joins, we say thank you and good luck to another with the departure of Serge. Serge has been instrumental to the significant progress and developments that the neXat brand has achieved and experienced over the past few years."

Since joining neXat in August 2019, Serge helped steer the company from its primary identity as an IP connectivity provider to a disruptive, booking.com-style capacity aggregator helming the 'Network of satellite networks'.

"My time as President of the Board at neXat has been a real privilege for me, and I'm proud to have contributed to some significant changes and progressive milestones as the company solidified its position in the market," said Van Herck. "I wish the company all the best as it continues to develop in its trademark innovative manner and give my best wishes to Alexander as he steps into the role."

neXat is a capacity aggregation platform that acts as an intermediary between teleport and hub operators and the marketplace. It offers its partners access to a network of resellers across five continents and operates as a Platform as a Service (PaaS) that offers a full suite of value-added services. ●

Lockheed Martin shares latest progress on UK Pathfinder Project

UK: Lockheed Martin UK has been all systems go since Shetland Islands Council approved SaxaVord's application to build the spaceport that will allow the company to

deliver the UK's first ever vertical space launch. Work has started in Shetland with the land currently being excavated as the team starts to prepare the land for where the launch pads and integration buildings will reside.

Alongside activity in Shetland, partner ABL Space Systems is preparing for their first test launch out of Alaska. The maiden voyage of the RS1 rocket, scheduled for August, will mark an important milestone for ABL in demonstrating its capability. An ABL RS1 rocket will be shipped to Shetland for the UK Pathfinder Launch.

Another critical element of the UK Pathfinder Launch is the development of the Orbital Manoeuvring Vehicle (OMV) by Moog, a free-flying vehicle that will be used to deploy up to six 6u CubeSats into Low Earth Orbit (LEO). With production taking place in Reading, Moog has been able to utilize leading UK suppliers for key components and subsystems, enabling growth of their space capabilities within the UK.

The Moog SL-OMV is currently in production, with Moog conducting a series of tests on sub-systems including the flight harness, software and propulsion. The team will also look to conduct sub-system checks to verify manufacturing and then start integrating those systems into the main body of the spacecraft, including the propulsion system.

Following this, environmental testing will begin, where the conditions endured during launch and in space will be replicated to verify the integrity of the spacecraft by conducting vibration, thermal vacuum and electromagnetic compatibility testing.

After environmental testing, radio frequency compatibility and end-to-end testing (from ground to space) will be undertaken at the Lockheed Martin Systems Integration Laboratory (SIL) in Harwell after which the OMV will be transported to SaxaVord's base in Shetland.

Nik Smith, UK and Europe regional director for Lockheed Martin, said: "We are proud to be working with our partners to reach these key milestones. We are making great progress towards the UK's first vertical, orbital satellite launch.

"This is an exciting time for the team as we see all the different elements coming together, and we're delighted to be supporting the UK Space Agency to achieve their goal of creating a world-leading commercial launch market and stimulating the UK space supply chain."

Matt Smith, Moog Reading General Manager, commented: "We are excited to be a key part of the UK Pathfinder launch. The production of Moog's SL-OMV is a great example of collaboration between the UK Space Agency and UK engineering expertise. The Moog Reading facilities that were built especially for the SL-OMV will allow for future growth in space technology and jobs in the UK."

Matthew Archer, Director of Commercial Spaceflight for the UK Space Agency, said: "The Countdown to launch is on, and it's great to see the work taking place at SaxaVord spaceport and the progress being made by Lockheed Martin and its partners."

The development of the SaxaVord spaceport is a key step forward in helping the UK to unlock growth in the space sector while also demonstrating alignment to the country's growth, security, and prosperity plans, including

investment in local skills and economies. The SaxaVord launch facility is set to create circa 140 jobs in Unst and inject at least £4.9m into the Shetland Island economy each year. It will also provide a further 70 jobs throughout Shetland, adding a further £2.9m in gross value to the economy. ●

Terran Orbital completes next step in space-to-ground optical link on NASA's Pathfinder satellite

AMERICAS: Terran Orbital Corporation has announced the first signal acquisition of the Terabyte Infrared Delivery (TBIRD) Lasercom Optical Link on NASA's Pathfinder Technology Demonstrator 3 (PTD-3) satellite. Acquisition of the Lasercom Optical Link means that the spacecraft and the optical ground terminal have successfully exchanged laser communication signals — bringing PTD-3 one step closer to full payload commissioning.

The PTD-3 mission is one in a series of NASA small satellite technology demonstration missions. The mission series, managed by NASA's Small Spacecraft Technology program within the agency's Space Technology Mission Directorate, demonstrates novel CubeSat technologies in Low-Earth Orbit (LEO). The TBIRD system is funded by NASA's Space Communications and Navigation program and was built by the Massachusetts Institute of Technology Lincoln Laboratory (MITLL) in Lexington.

Following Terran Orbital's completion of the commissioning process for the PTD-3 spacecraft, the TBIRD payload will demonstrate an astonishing 200-Gbps space-to-ground optical link. With a transmission rate of multiple orders of magnitude faster than current state-of-the-art satellite communications, this NASA and MITLL technology would enable spacecraft to downlink several terabytes of data to the ground in a single ground station pass.

This breakthrough has the potential to revolutionize the space-based earth observation and synthetic aperture radar industries, among others, by offering a space-demonstrated solution to the data throughput bottlenecks that have historically limited their capabilities.

Terran Orbital designed, built, and tested the Pathfinder Technology Demonstrator bus accommodating the payload, as well as the payload's unique interface board in addition to performing thermal and structural analyses on the spacecraft. Terran Orbital also developed custom guidance, navigation, and control (GNC) algorithms to accommodate this mission's tight pointing requirements, as well as a novel on-orbit lasercom boresight scanning algorithm. Terran Orbital assembled, integrated, and tested the spacecraft prior to its launch aboard SpaceX Transporter-5.

Now Terran Orbital is leading PTD-3's mission operations, commissioning, Launch and Early Orbit Phase (LEOP), and on-orbit activities for the spacecraft. NASA and MITLL lead the overall coordination and on-orbit operations for the TBIRD payload. ●



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● ● Bert Sadtler, Founder and President of Boxwood Strategies

Satellite Evolution Global

Q&A

A deliberately different approach to hiring solutions ● ●

It's no secret that companies in the satellite and space industry are in constant need of talent. But finding the right person to fit the bill requires much more than simply matching a resume to a job description. We spoke with Bert Sadtler, Founder and President of Boxwood Strategies, and asked him to unravel the complexities of recruiting in today's competitive environment.

Crispin Littlehales, Global Contributing Editor, Satellite Evolution Group

Question: What prompted you to form Boxwood Strategies and how is your hiring process different from other recruiters?

Bert Sadtler: After more than two decades as a revenue producer for a Fortune 1000 company, things ended and I was in transition, looking for the next role. One global recruiting firm offered to teach me the business and I was intrigued. However, after working with them for a couple of years, I got a deeper perspective of just how slippery the business was, and I left. I then worked for a smaller firm, but that too ended unpleasantly and left me thinking that the whole approach to recruiting was broken. It was then that I decided to form Boxwood Strategies (named after the one piece of greenery that the white-tailed deer in our garden did not eat) and embark on a different approach to go about recruiting.

With the headhunting model, the headhunter is only paid when they get their candidate hired. This contingency model includes the commission fee based on a percentage of how much the person being hired will be paid. I'm compensated as a consultant and have an exclusive agreement to manage the hiring process, thus shifting the financial goal from ramming a resume of an expensive hire down the throat of the



But the only reason those people will leave a good role is if they believe that what the next employer has to offer puts them in a better position. Photo courtesy CodedeathH33/Shutterstock ● ● ●

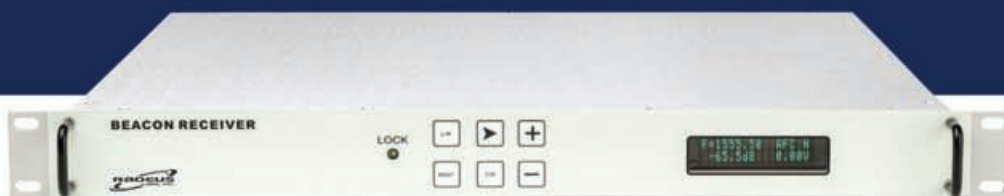


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employer, to finding the best fit. That consultative approach enables me to concentrate on working with the owner or the CEO to define the job criteria, weed out the candidates who aren't going to deliver on those criteria, and spend time on the ones who are. I'm paid one-third of the fee upfront, one-third in the middle, and I receive the final payment when the candidate is hired. In this approach, both the employer and I are committed to a successful outcome.

Question: How do you determine if a candidate has not only the expertise but also the right temperament to fit into a specific company's culture?

Bert Sadtler: The person who is hired meets both the established minimum technical requirements and the maximum cultural ones. The process starts with my asking the hiring manager, or the "department of yes," about the problem they are trying to solve. What are the hard measurable requirements that the person needs to have? For example, do they need to be an American citizen? Do they need to have a certain number of years of specific demonstrated experience in a specific field? Do they need to have a specific credential? The more senior roles in an organization have a much more robust set of requirements and the more junior roles have requirements that are a bit more relaxed.

That leads to defining a detailed position description of the requirements and the compensation range. I then turn that into a document called the candidate self-assessment form. Identified candidates answer the specific

questions about the role related to their experience measured against the requirements.

I can determine if a candidate has the minimum technical requirements early in the process. Once that's accomplished, I put together a candidate first impression packet which includes a cover letter about the candidate along with his or her answers to our technical questions in their own words. Finally, the candidate's resume is presented to the hiring manager with my recommendation, and we all have a conversation. That is the moment when we transition from validating the technical accomplishments to developing a sense of personality and cultural fit. The Boxwood process does not embrace panel interviews which are often overwhelming. Rather, we encourage conversation with the hiring manager and other members of the company all for the purpose of letting the candidate get a sense of what company culture is like. This also fosters a more relaxing experience for the candidate which helps the hiring manager really see what the candidate is like.

To me, there is nothing more complicated than human beings, so you can't always get this right but having collaborative discussions, assessment summarization, and learning what the candidates view as their top priorities during the first six months all help to crystallize the relationship. When the fit is right, the candidate feels excitement, even joy. It's like a flower blooming. Finally, we guide the candidate through developing their first six-month plan of action that is finalized with the support of the hiring manager and the new hire. There is a discussion

along with an offer letter so that the new hire clearly understands what they are committing to and then we are on the path to success knowing that we've done as much as we humanly can to foster a good technical and cultural fit.

Question: Is there a big difference between finding the right talent for the space/satellite sector and other industries?

Bert Sadtler: Boxwood doesn't specialize solely in the space/satellite sector; rather, we specialize in developing relationships with business owners and business leaders. In one regard, all businesses run in a similar way, regardless of their focus. They must have leadership, sales, operations, and finance. To get more specific is a matter of defining the problem from an employer's perspective and then developing the path to solving it.

There are space and satellite sector organizations that need a finance person who doesn't require knowledge of space or satellite, but they need to know about money. Then, too, there are deep needs in those sectors that are technically very specific. So, yes, there can be a big difference between the space/satellite sector and anything else, but it all goes back to the problem that needs to be solved. That is what drives us in a certain direction.

Question: Where are most job seekers coming from—universities, grad schools, other companies and is there a difference between someone who has just finished their education and someone who has been working in the industry forever?

Bert Sadtler: You're asking a supply-side question and my model is 100 percent on the demand side. I work solely with the employer who says, "I have a problem." It's all situational. A client might tell me that they need a fresh young mind. In that case, I'm going to chase young people. Of course, someone who has just exited college doesn't have a work history. What then? I have these young folks record a 1 to 2-minute video introducing themselves and answering a question or two that has been supplied. That way a hiring manager can get a sense of who they are and their ability to communicate without understanding their work history (which they don't have).

In my opinion, these are among the riskiest hires to make. Often young people don't have everything figured out. They think they want to do one thing and end up changing their mind. So, I say to my clients who want to hire young and less expensive people, "That's a big risk."

Question: If a company comes to you and tells you they want to raid another company's talent base, what do you do?

Bert Sadtler: I have had companies say that they want to target one company or another, but there is no such thing as poaching or raiding. I can't go into an organization and take someone out at gunpoint. Individuals must be willing.

Bad leaders let good people go. Good leaders keep them.

What it comes down to is the hiring process. A successful process starts with a "what" rather than a "who." Look at the problem that needs solving and the requirements that need fulfilling. Once the employer is clear about what they are really seeking, then I search for the candidate who might be someone with whom I'm already familiar. I might also reach out to a company or a series of companies that have the kind of talent the client is looking for and interest a potential candidate in a targeted conversation.

But the only reason those people will leave a good role is if they believe that what the next employer has to offer puts them in a better position. Perhaps their boss is a jerk, or their company is communicating some uncertainty—mergers, acquisitions, loss of a big contract. Such events drive people out of companies quickly because those events do not produce positive internal communications. Employees wonder, "what is going to happen to me next?"



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Question: In the many years you've been in this business, what has surprised you the most?

Bert Sadtler: I'm surprised that recruiting is still the same broken model where, for the most part, human beings are regarded as a commodity. It's vitally important to remember that human beings are a member of the business unit unlike any other. What makes us uniquely complex is that we have emotions. If you don't address the human side of recruiting, you're missing the point.

Some publicly traded companies are using robots to do their screening of potential new hires. How awful and inhuman is that? Yet it is an increasingly popular trend because there is a belief that artificial intelligence and other software formulas can hear an inflection in a candidate's voice that enables the making of some sort of conclusion. This approach, which may or may not be valid, fails to recognize that the very person they are trying to attract feels utterly devalued.

Then too there is the common practice of contacting a bunch of headhunters to go after the same prospective hire. They then spend all their time claiming the candidates for their own so that they get the credit and the payment. Zero time is spent on really trying to understand the organization's need, not to mention that the candidate is treated like a piece of meat. Then, if the headhunter realizes

that a candidate isn't going to get the job, he or she will abruptly "ghost" the candidate.

Question: What advice do you have for job seekers and what advice do you have for employers?

Bert Sadtler: I would say that every job seeker I've ever talked to is getting advice. The question I suggest they ask is, "would you mind telling me the last time you were directly involved in hiring?" That question weeds out anyone who is not qualified. My second piece of advice is to ask questions during conversations regarding a new position. A candidate needs to demonstrate his or her insight and curiosity. What's more, the candidate has the most to lose if a role doesn't work out, so it's important to seek out an understanding of what the job entails.

My first comment to employers is to concentrate on the "what." Figure out the problem you need to solve and then define the profile of who can solve it. I would also advise employers to figure out the compensation range and don't ask the candidate how much money they want to be paid. One final suggestion, do your homework before contacting the recruiting community. Not all recruiters have the same model. What I do is work with an employer to define the "what" that eventually leads to the "who". I am not in the job-finding business. ●



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Why invest in NewSpace and why now? ●●

In 2021, investors poured US\$15.4 billion into the NewSpace market. Another US\$7 billion was invested in Q1 of 2022. Citi Group recently predicted the global space economy will top US\$1 trillion by 2040. Why such a huge push—just for short-term ROI? Although that's what most investment groups concentrate on, I assure you the NewSpace players now being funded are aiming much higher.

Christopher Alfenito, Principal Consultant at A.I.M.

Potent new satellite applications, historically accessible solely to governments, are now commercially available products. With the help of Earth observation satellites, we can now monitor the entire planet 24/7-365 days a year, at levels of precision never seen previously. We can measure ocean wave heights in millimetres and detect hazardous gas emissions in ppm. We can track aircraft, ships, deforestation, illegal fishing, mining activities, crop, and irrigation trends as well as a host of other things that impact our lives in some way. Satellite imagery provides more actionable insight about our environment than ever imagined in our 200,000 years on this orb.

EVERYDAY TOOLS

NewSpace has facilitated the development and implementation of many new sensor technologies as well. Hyperspectral imaging and remote element detection are just a couple of examples. Open Source Intel (OSINT) is significantly more available. When severe weather hits close to my home (I live on an island that is visited by hurricanes repeatedly), I run a weather radar app fueled by real-time NOAA Satellite radar data sets and personally

monitor the path, severity, and duration. It wasn't so very long ago that I depended on the radio or the local TV station to obtain a fraction of that data.

Remember maps? They were the only way to figure out where we were going before GPS/GNSS/PNT was available to everyone with a cell phone. Just think how much that technological innovation impacts humans. It was first developed for military use, then it went commercial and now it has become so widespread that it is difficult to imagine navigation once involved a compass, a sextant, and the stars above. There will be, in the not-too-distant future similar systems that will enable navigation to our nearby celestial neighbours.

There are many applications for the use of commercial space and new ones are being developed on an almost daily basis as this industry continues to build momentum. They are designed to enhance life on this planet and at some point, others. Think for a moment about how the telegraph and telephone, or the airplane, altered our lives and how quickly that happened. I sat with my grandfather as we watched Apollo 11 land on the moon. Decades earlier, as a stable boy, he had held President Taft's horse at the Wright Brothers Flier demonstration for the US Government. And there we were, watching a live TV broadcast from the moon!



Christopher Alfenito, Principal Consultant at A.I.M. ●●●

SMART CITIES AND UNLIMITED DATA

Cities need to become more efficient economically and logistically. This requires the ability to monitor and control critical infrastructures such as stop lights and traffic flow patterns, as well as energy and water usage. Rather than simply having stop lights on timers, what if one was able to control the lights to better match the traffic flow based on real-time data? Or "green light" emergency vehicles from their origin to their destination? This will require the collection, generation, transportation, and analysis of large amounts of data in near real-time.

I am certain that the total amount of data that I have used thus far in my life (I've been playing with computers since 1974) will be appallingly small compared to anyone

born in this century. The demand for data access, transfer, and storage will continue to expand at an ever-increasing rate. Current infrastructure systems can't handle it and have no chance of scaling to meet the demand with the current technology. Several NewSpace companies have data demand squarely in their sights and are working to resolve those issues. Some forward-thinking groups are looking toward providing cell phone service from high throughput LEO satellite constellations; moving data centers off-planet; using free space optical communications to increase data throughput; and combining GEO, MEO, and LEO satellite networks to address this demand.

The human population will continue to need additional natural resources. NewSpace startups are looking toward the Moon, Mars, and other near-Earth orbit objects for large quantities of valuable raw materials. A recent report stated that there are more rare-Earth minerals in the nearby solar system neighbourhood than on the Earth itself. One of the Saturnian moons, Titan, contains lakes of liquid hydrocarbons and there are near-Earth asteroids that are composed of precious metals.

WHY INVEST NOW?

With more than 30 years of experience working in the SatCom/MilSatcom/ISR world, I have always been impressed by the people whose determination and focus on a clearly defined mission goal is their overwhelming Key Performance Indicator (KPI). That KPI, to provide a realizable solution to a real problem, is supported by a sound economic business model.

I'm invigorated by what I've seen in so many NewSpace start-ups. These companies are reducing the costs to build, launch, and operate spacecraft. They are increasing

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performance levels while slashing time-to-market. In contrast, governments rarely produce efficient market makers because they are not driven by the same KPIs.

Will they all win and survive? Undoubtedly not, because free-market economics is a brutal unforgiving judge. Those companies that aim for the right solution set, continue to innovate, and maintain focus will be best positioned not only to survive but to prosper and grow. Others will continue to be absorbed into more successful organizations, either in part or in whole. Some will simply fade away.

Demand is not only increasing along the demand curve, but it is shifting upwards as well. Supply must shift

accordingly. There's no long-term vacuum in economics.

So why invest your time, your money, and your efforts in the New Space marketplace? Because we are already in this new age and to keep it all going, we will need more raw materials and more efficient ways to convert them into useful goods and services. If history is any indicator, the discovery, and usage of new sources of natural resources will be a huge factor in driving economic growth. NewSpace has economic expansion on a solar system scale firmly in its sights. The opportunities brought about by the commercialization of space will be the driving force for the development of industries and economies in the decades to come. ●

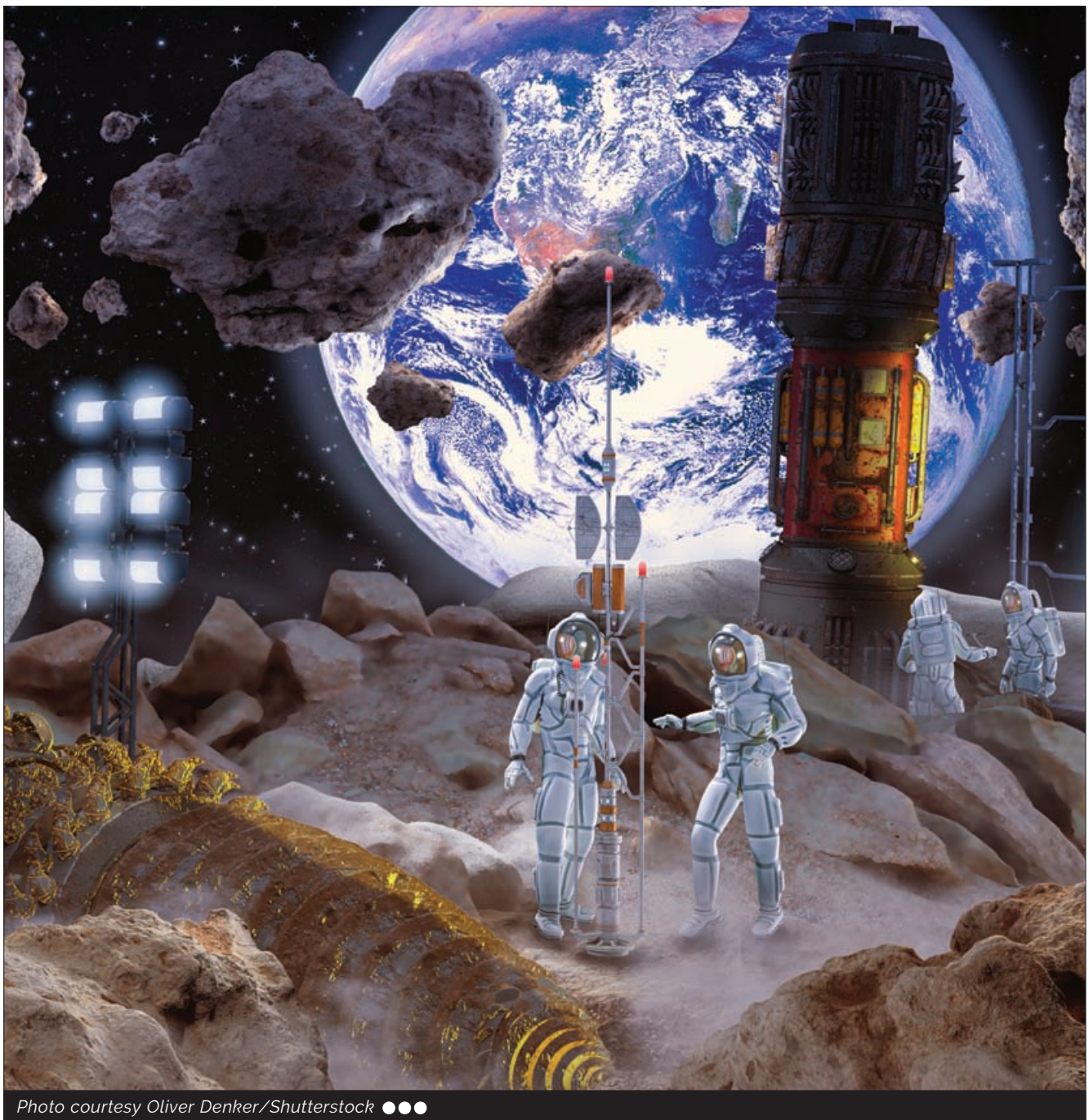
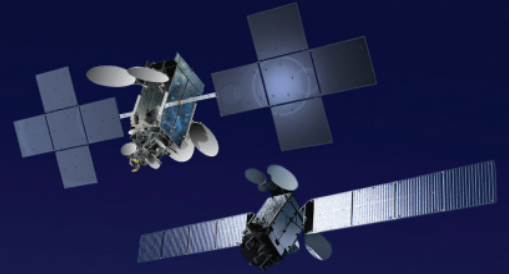


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How satellites can help to mitigate the risks of mining ●●

Ground movements and deformation pose major risks to the safety, stability, and efficiency of mining operations. Conventional monitoring techniques using total station equipment have been around for a long time, but they are known to have high incremental costs and can only be conducted in a limited number of locations. Interferometric Synthetic Aperture Radar (InSAR) techniques have proven to be a cost-effective and accurate solution that makes it possible to monitor ground movements with high precision and frequency, making mining safer for everyone.

Abhinandan Arya, Senior Applied Scientist & Applied Science Manager, Synspective

With satellite interferometry, ground displacements over large areas can be extracted from radar images. The intensity of the reflection from the radar wave of the Earth's surface can accurately capture object detection and classification; the amplitude of the reflected radar wave signal can measure occurring changes and high sensitivity to small displacements on Earth.

Synspective launched its first Land Displacement Monitoring (LDM) Land Displacement Monitoring Service in 2020. It enables cost-effective ground movement monitoring with millimetre detail through SAR image analysis. Customers can track historical changes, find patterns, and have an advanced understanding of the situation using the Synspective cloud-based data platform. With the addition of deep learning algorithms, information is automatically updated to enable customers to derive meaningful insights and make decisions quickly.

By harnessing the power of satellite imagery, mining companies can leverage SAR satellite data for efficient operations and resource planning and management. Radar satellites can acquire imagery data and terrain information in any weather, which means you can use a combination of near real-time monitoring and state-of-the-art machine learning to develop smart alert mechanisms. One area where SAR is proving especially effective is in the detection of potential problems with tailings store facilities (TSFs).



Abhinandan Arya, Senior Applied Scientist & Applied Science Manager, Synspective ●●●

THE TROUBLE WITH TAILINGS

Mining is an inherently dangerous undertaking. However, according to a report published in World Mine Tailings Failures.org, there is a particularly concerning trend of increasing frequency and severity of failures relating to TSFs.

According to the Bowker & Chambers Report, *The Risk Public Liability & Economics of Tailings Facility Failures*, when examined more closely the 100 years of TSF failures show an emerging and pronounced trend. Since 1960 there has been a higher incidence of "serious" and "very serious" failures. In addition, the consequence of loss is becoming increasingly greater.

Currently, the tailing dams and other mining facilities are being monitored using a combination of methods, including use of survey monuments, inclinometers, piezometers, and ground-based radar. However, there are multiple incidences on record where none of these methods managed to show significant deformations or any other precursors to failure. SAR can help by monitoring for and detecting small changes in the tailing dam to provide advance warning of potential deformations, helping to prevent an incident before it happens.

Satellite SAR-based alert systems can be easily integrated into heterogeneous supervising systems. By using a combination of InSAR, Machine Learning (ML), and cloud technologies to enable quick decision-making and to support automated processes, anomalous deformations can be detected, and action taken before disasters strike. Satellite imagery also can help repair sites after disasters have struck by providing information on where new risk areas have been created.

BEYOND DISASTER MITIGATION

Images taken from space can do more than just predict or help repair sites after disasters have struck. The data they provide can help a broad range of stakeholders. For example, high-resolution SAR satellite images can detect changes in stockpiles as small as 3m, which provides vital supply and demand information. Stockpile monitoring allows users to keep track of how much commodity (e.g.,



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Optical and SAR can detect changes in stockpiles. Source: Terra-SARX. 2018/08/04. Resolution: 3m ●●●

iron ore and coal) is stored and shipped with optimal accuracy and latency. Combine this with a ML model to quantify any changes and mine operators can be automatically updated with information that lets them make crucial trading decisions quickly.

Satellite monitoring can also keep track of production levels by providing accurate calculations of the size of pits which helps to maintain an index of mining production. The resolution of the imagery provided is so good that the use of heavy equipment on-site can be monitored from space. This is especially important at a time when increasingly larger equipment is being used in mining operations.

The use of SAR-based monitoring and management systems also plays a vital role in the development and maintenance of ESG credentials. Being able to demonstrate that you have robust Tailing Dam Monitoring

and Mining Pit Collapse Prevention measures in place can give confidence to investors as well as staff. Beyond that, a case could be made to suggest that by having those measures in place a company is contributing to the achievement of the Decent Work and Economic Growth UN Sustainable Development goal. Indeed, accurate stockpile monitoring can improve the balance between supply and demand and more efficient production methods, which can contribute toward Responsible Innovation and Production, the twelfth of the UN's goals.

LOOKING TO THE SKY FOR ANSWERS ON THE GROUND

While great strides have been made to improve mining safety in recent years, operators have never had the ability to access the levels of detailed information about the movement of the ground. The standard of imagery now able to be provided by satellites in Low Earth Orbit (LEO) enables detailed examination of the structural integrity of pits and of the land around them.

However, the financial and environmental gains may prove to be the most valuable to mining operators. Operational efficiency can be improved by monitoring the movement of vehicles and the size of pit operations from space and with detailed inventories of stockpiles being made possible, processes can be streamlined, and decision-making speeded up.

The opportunities for satellite data to drive improvement in mining sectors are wide-ranging and help to ensure that all the stakeholders of the mining process are in a secure environment. Whether it is minimizing damage from pit collapses by detecting deformation of structures in advance, predicting rainwater drainage patterns, or providing a dust-free view of the site, synthetic aperture radar (SAR) satellites are an effective deformation measurement and monitoring tool for the mining industry. ●



Tailing dam failure. Photo courtesy Synspecive ●●●

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● ● Shagun Sachdeva, Founder of Kosmic Apple

Satellite Evolution Global

Q&A

The power of NewSpace startups ● ●

With tech trailblazers like Bezos, Musk, and Branson fueling space economics, the investment community has fast developed a fascination for NewSpace startups. With powerful ideas and a great potential for growth on the horizon, Shagun Sachdeva, Founder of Kosmic Apple believes we're likely to see more big moves from the sector, but there are still lessons to be learned.

Laurence Russell, Associate Editor, Satellite Evolution Group

Question: Could you introduce us to Kosmic Apple and some of their recent successes?

Shagun Sachdeva: Kosmic Apple is a platform for introducing space startups to investors, deriving revenue from advisement fees. We saw a knowledge gap between new, innovative ideas and the people trying to find the right opportunities in the maelstrom of NewSpace businesses.

When both sides can get together, they can start to learn one another's languages. Startups can get better at pitching their ideas in a way that makes sense to financiers, and people looking to put their money where the future is can learn about where critical growth areas are forming. We've been quite successful at that in the sense that all our startups have had at least one qualitative meeting with a prominent investor, which has put them on their path to scale their success.

We're currently working with an investor base that is worth a total of



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US\$8 billion AUM, and a portfolio of 20 startups, which is increasing on an average of two new companies a month. Our priority hasn't been to gain big numbers but rather to nurture the best relationships. Working slowly and steadily, we're putting our time and effort into our clients and collaborators to grant them the best possible expectation of success. Our startup and investor list will get longer as we look to create our own fund to support innovative businesses natively.

Question: Do you find that there can be a disconnect between the hands-on side of the space industry around the technology itself, and the business world that funds it?

Shagun Sachdeva: I have experience from both STEM and business sides. I have an engineering background in aerospace as well as a Master's in Business Administration (MBA) specializing in the aerospace industry. I used that to great effect during my time with NSR consulting. Seeing this world both from an investment perspective and in terms of the actual technology behind it is crucial to understanding this economy.

There's definitely a gap in the conversation between these two teams. At its worst, you see startup founders who have no idea how to talk to investors, and stakeholders who don't properly understand the technologies they're looking to finance. Kosmic Apple has learned a lot from being immersed in both camps to help streamline innovation. We work with startups to highlight their appeal to investors and bottom-line potential while remaining unbiased. Some of these groups we're helping along aren't even investment-ready yet, which gives us a great opportunity to prepare them for that environment long before they get there.

Unlike other accelerators, we don't have a screening process. We're comfortable working with anyone with a great idea. It's up to the investors what makes sense and what doesn't. We're here to connect great ideas with the people who can profit from bringing them to market.

Question: Sometimes technology can accelerate too quickly, bringing untested and lower quality goods into the market in a race to undercut reliable alternatives. In a time of unsustainable debris propagation, how do we sidestep these issues?

Shagun Sachdeva: I'm not pleased with the way these things have been dealt with in the past. There need to be global standards, which just isn't happening. It's very similar to the challenge we face with climate change. This isn't a localized problem. Space is not one nationalized zone, it's a global environment that cannot be governed by disparate states. Cooperation is absolutely necessary, and the sooner we can organize it in that way, the better.

When it comes to manufacturing, you can quickly see how complicated the responsibility

becomes. Is the manufacturer responsible for the debris because they built the parts, or is the launcher to blame because they put it in space? Does the company that owned the vessel have to clean up after themselves, or does that company's country of origin take the blame?

We need realistic laws about these sorts of things set in stone so that we can start routinely addressing the problem. That said, I don't see that happening anytime soon, to be perfectly honest.

Question: In the past, people have suggested these topics are the responsibility of the United Nations, although, given their bureaucratic nature, they may not be fast enough. Is self-regulation from within the industry a more feasible alternative?

Shagun Sachdeva: That's certainly a popular thought. Again, I'm not sure it's realistic though. I would love to put everyone into the same room and get them on the same page about these issues, but there are simply too many



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disparate priorities between space-capable nations with strong tensions between them. Some states will always do exactly as they'd like, treating space like a shooting range instead of a delicate cosmic environment, simply because there's nothing out there to stop them.

Even if a standard of strict regulations were agreed upon worldwide tomorrow, you'd have no guarantee of compliance simply because the problem children out there can't be told "no". Conversations are great, but if the world really wants people to play fair in this market, it needs to work out how to discipline the bad actors.

We are currently starting to see investors distance themselves from certain brands solely for their unsustainable practices, and certain business groups creating tangible incentives to ease companies towards better environmental, social, and corporate governance (ESG) criteria, but there's only so much that can be done in a market this susceptible to disruption.

Another way forward could come from insurers. If we were to start seeing higher insurance pricing from companies that have been making things difficult, you could see a more sustainable culture start to be carved out.

Question: From Kosmic Apple's perspective, what do we need to start seeing more of within the NewSpace market?

Shagun Sachdeva: I think we're too quick to reject companies and subsequently screen them out of this growing economy. Lots of accelerators, incubators, and platforms need to give more chances to startups. There has been an evergreen debate in economics over the

chicken and egg paradigm of what comes first for startups, funding, or product success? They can't succeed without funding, but they can't get funded without succeeding. It's a vicious dichotomy that doesn't necessarily foster innovation.

With seed and pre-seed funding, you can see some terrific results. I've wanted to see more of that in the industry for years now, and with Kosmic Apple, I'm able to make it happen. There is a lot of money in the space industry, with a lot more on the way, and that capital can go a long way to supporting good ideas and clever practices.

Question: How do you think we should go about solving education problems in the space industry regarding debris and to a greater extent, the gaps between science and finance in the space industry?

Shagun Sachdeva: Governments have been taking debris seriously here and there, which is being bolstered by commercial companies such as Astroscale and D-orbit. That legitimacy is aiding the momentum of education on the topic.

In my time at NSR while trying to understand the debris problem and the business case around it, I recognized that a lot of people in this industry don't consider it a problem, with a loose expectation that it'll be resolved down the line, by somebody else. Since then, I've seen those attitudes change as the business model has firmed up and conferences have mainlined it as a relevant topic. Huge accidents in recent memory have also caused big leaps forward in understanding, but we can't rely on such crises to move the needle for us.

In terms of the greater NewSpace economy, the bottom line still rules the decision-making power in business, but I've also seen good ideas and strong areas of growth passed up on because innovators can't find the line of reasoning that the financial world recognizes. With startups like that in early stages, their limitations in capital mean they have difficulties re-coordinating, so a run of early rejections can spell the end of a promising concept. Sometimes funds are needed to frame a strong business case and attract a reliable team that can act upon it. In other words, it can take a push to get some ideas to the starting line, where they can make a terrific impression as an enterprising startup that's easy to get behind.

Question: What are your predictions for the space industry over the next five years?

Shagun Sachdeva: I definitely think we're going to see investment increase as venture capital money from outside of the space industry begins flowing into it. From my experience and my work with Kosmic Apple, we've seen this from a mile off, as the world starts to better recognize the explosive growth capability of startups, especially in developing countries.

India and Israel have proven to be very fertile hubs for that kind of exponentially scaling growth in recent times. Investors are starting to recognize this and are looking more carefully at places with powerful ideas, great conditions for small business growth, and the potential for pioneering market change.



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● ● Michelle Peters, Director of Research and Education, Zero-G Corporation

Satellite Evolution Global

Q&A

Equalizing access to microgravity experiences ● ●

As we approach what many experts believe to be a space tourism boom, parabolic microgravity providers are seeing a new wave of interest. Thrill-seekers, astronauts-in-training, and academics are seizing upon zero-gravity simulation experiences in anticipation of the NewSpace era maturing. Zero-G Corporation is one such provider and their business is rapidly expanding. Michelle Peters, Director of Research and Education at the company shares the business' position in the growing space ecosystem.

Laurence Russell, Associate Editor, Satellite Evolution Group

Question: Zero-G Corporation offers a zero-gravity parabolic flight experience for \$8,200. Could you walk us through that service?

Michelle Peters: This is our standard service which we offer to individuals as well as government, universities, and NASA associates for anything from entertainment to equipment testing, to specialty training exercises. We take off just like a commercial carrier, then get up around 10,000 feet. Our mission airspace is set aside by the ATC (air traffic control). Everyone is set up with cameras, thanks to our handy videographer, and our zero gravity coaches help everyone through the experience. We work with 12-14 passengers at once, with two FAA-certified flight attendants to oversee safety and communicate with the cockpit.

We've seen some people come through who are set to be involved in the upcoming Orbital Reef Project, as well as other missions to the Moon and Mars. Our portfolio is quite varied, and we see all sorts of people coming through.



The Zero-G plane. Photo courtesy Zero-G ● ● ●

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Question: Colloquially, some describe zero gravity as being trapped in the moment you realize your chair is tipping over. In your own words, could you describe the experience to us?

Michelle Peters: I didn't experience the sensation that way. I've heard the same thing about roller coasters, with people saying it's just like the moment at the top of the coaster, right before you drop. I find it completely different. Being an adventurous person, I am well versed with skydiving, scuba, and thrill-seeking of all forms. I can say confidently that zero-G is really like nothing you've ever felt. It's complete freedom in air. You're floating without the pressure or buoyancy of water, but it doesn't feel like falling, or like your chair is tipping over.

We also offer specialty flights that aim to simulate Lunar and Martian gravity to acclimatize people to those kinds of environments. Those are 1/6 and 1/3 of Earth's gravity, respectively.

Question: The company is also open to customers looking to accommodate research experiments and training exercises. What are some examples of such cases? Do you see a lot of them?

Michelle Peters: We're seeing researchers looking into what life on Mars would be like, in concert with our plans to establish outposts there and beyond. We've also seen the University of Central Florida do an extensive course of research looking into how regolith behaves under certain conditions.

We're in the process of developing a more advanced course of astronaut training right now with the support of former NASA astronauts and scientists. That service will

be in the interest of instructing future space travellers, be they scientific or commercial, as more and more people gain access to space.

Question: Some have suggested a large zero-gravity manufacturing industry will emerge in the coming decades, which will be able to create new materials, compounds, crystal formations, and electronics that would be impossible to develop at Earth's 1G gravity. Do you anticipate that opportunity, or is that market too far away to plan for?

Michelle Peters: We don't think it's too far away at all. Orbital Reef is just one example of how these concepts are being explored in very practical terms right now. The International Space Station already has its own 3D printer which creates simple goods on-site, and that's nothing new. These kinds of gravity experiments in manufacturing are just a part of some of the research experiments we've been offering.

We know that materials form different kinds of bonds with one another during reactions when they're held in gravity levels other than 1G. In both higher and lower levels of gravity, we've seen the historic rules of chemistry and metallurgy be questioned. Scientists are scrambling to get to the bottom of how experiments they've taken for granted for decades may behave differently outside of Earth's gravity, and we're here to support their efforts. Once we know what we can do in these cosmic gravity levels, we can establish much more practical cases for our colonization of space and the inner planets.

Question: The G-FORCE ONE, your premiere plane for



A party of Zero-G flight participants. Photo courtesy Zero-G ●●●



One of Zero-G's 'Weightless Weddings'. Photo courtesy Zero-G ●●●

delivering parabolic flights, has been customized to make the zero-gravity experience as enjoyable and safe as possible. Could you detail how the plane has been overhauled?

Michelle Peters: The majority of modifications here involve the hydraulic system, because you don't want cavitation during flight – cavitation is when the static pressure of a liquid falls beneath that liquid's vapour pressure causing implosion which can damage machinery. Our system has been designed such that it accommodates flights in full accordance with FAA regulations. We've considered a part 121 commercial airline in the United States, which requires an extensive set of safety and security measures relating to the aircraft, personnel, and their qualifications. G-FORCE ONE also has special cockpit modifications which mean that, unlike other parabolic providers, all our parabolas are hand-flown without autopilot. It takes a lot of skill to hit the exact gravity that we need in the cabin, and our pilots are highly trained and can manage it repeatedly.

Question: Space tourism strikes a poor chord with some people, who see it as the epitome of the wealthy playing with unsustainable toys at a time when the Earth is wracked with problems. Will the G-FORCE ONE use a green rocket fuel such as Ecosene, to offset any of its emissions, or otherwise give back to change the sour narrative associated with space tourism?

Michelle Peters: That's a tricky question. Certainly, Zero-G Corporation wants to do everything that it can to preserve the Earth and all its vital resources, but we believe it's also critical to continue multi-gravity research experiments to ensure we stay ahead scientifically and stay open to the kinds of innovations that may help us create a more sustainable planet.

Of course, the commercial end of space tourism does strike this sort of chord, but in our case, it is in support of some very important science. We want to see space become accessible to everyone at affordable price points. We're even reaching

#ZeroGravity #NewSpace #NASA

out to certain groups who may not usually be able to afford it, to work toward providing truly equal access to space.

Question: How will the Zero-G Corporation meet the demand of the unfurling space tourism industry that is fast gaining momentum?

Michelle Peters: Momentum is the right word. In the last year or so, Zero-G Corporation almost doubled its staff, not counting its part-time and contracting experts. Like any airline looking to the future, we're thinking about how we can expand our fleet and perhaps branch out into international operations to expand access even further afield to bring multi-gravity experiences to more people and research groups. The zero-gravity experience is a unique once, maybe twice-in-a-lifetime experience. We're excited to see people from all around the world and from all walks of life come with us on a journey to enjoy that experience and see what it's like to go to space. ●



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Mark Dankberg to resume Chairman and CEO roles

Mark Dankberg, Viasat's Co-founder and Executive Chairman, has resumed the roles of Chairman and CEO, while current President and CEO Rick Baldridge will assume a newly created Vice Chairman position. Baldridge will focus on the remaining steps to closing the Inmarsat acquisition, and the organizational integration planning and execution strategy to position the combined companies to achieve the financial and operational objectives underpinning the transaction – including cost, capital, and revenue synergies already identified. The organization change follows Viasat's recent overwhelming shareholder approval for the acquisition of Inmarsat. Baldridge will also continue to lead Viasat's evaluations of strategic initiatives and certain ongoing organizational initiatives.

Baldridge's new role also reflects the results of internal organizational planning and evolution over the past two years designed to scale Viasat internal operational responsibilities. Since co-founding Viasat in 1986, Dankberg has led Viasat's growth, technology strategy and commercial operations over many years, and served as chairman and CEO from inception through 2020. Now, Dankberg will be supported in overseeing Viasat's day-to-day operations by Kevin Harkenrider, a long time Viasat executive with experience in a broad range of operating roles who was promoted to Chief Operating Officer in 2021.

Commenting on behalf of Viasat's Board of Directors, Lead Independent Director Sean Pak stated, "Today's moves allow us to optimize the contributions of Viasat's foundational leaders in Mark and Rick, and reflect the Company's commitment to a thoroughly planned and executed integration with Inmarsat that will position us to achieve the financial and operational results enabled by



Mark Dankberg to resume Chairman and CEO roles. Photo courtesy Business Wire ●●●

the transaction. Through their close and selfless partnership Mark and Rick have created and led an exceptional management team that is delivering outstanding growth in the satellite industry.

"A combination of technology and strategy leadership in a rapidly growing and dynamic market, plus integration of the best aspects of Viasat's and Inmarsat's executive, operational, and go-to-market skills will be required to achieve our objectives. Beyond Mark and Rick, we are confident in the broad management bench strength at the Company as we capitalize on our compelling combination of spectrum, licenses, space and ground assets, our existing talent, and the new talent brought by the Inmarsat transaction and distribution to build a global communications leader." ●

Brett Silcox joins Astroscale US as Director of Government Relations

Astroscale US has appointed Brett Silcox as Director of Government Relations. Based in Washington D.C., Silcox will lead the development and execution of the company's government relations strategy, engage with Congress and the White House, oversee efforts to inform and shape in-space/on-orbit servicing policy and will be a general resource for US space policy and government matters.

"The on-orbit servicing ecosystem, fueled by a desire to make space more sustainable, is rapidly evolving," said Charity Weeden, Vice President of Global Space Policy and Government Relations. "To stay globally competitive, US space policy must be just as adaptive and innovative as the technology, and that's why I am thrilled to welcome Brett as our Director of Government Relations. He is no stranger to bold ideas and translating them into action. And, it's time to be bold — to go from talk to action in changing the way we leverage our orbits for a sustainable future that enables, not hinders, United States' space exploration and utilization."

Silcox joins Astroscale US with more than a dozen years of experience in government relations in both the US Government and the aerospace and defense sector. He previously led BWX Technologies' development and execution of Congressional and Administration activities in support of advanced nuclear space applications and future technologies. He served in various roles at NASA including in the Office of Legislative and Intergovernmental Affairs and helped shape the creation of the Space Technology Mission Directorate. Silcox earned a Master of Public Administration and a Bachelor of Arts in criminal justice from Kent State University. He is currently a member of the board of directors for the American Astronautical Society and the Future Space Leaders Foundation. ●

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Yahsat appoints Sulaiman Al Ali as Chief Commercial Officer

Al Yah Satellite Communications Company PJSC ("Yahsat") has announced the appointment of Sulaiman Al Ali as the Chief Commercial Officer (CCO) of Yahsat and is effective from the first of this month.

Sulaiman Al Ali will assume the role following the departure of Farhad Khan who served as CCO of Yahsat for the past six years. Khan has been a key proponent of the expansion of the Group's YahClick business in existing and new markets.

Al Ali has been with the Yahsat Group since 2014, initially serving as a Director within the Yahsat Government Solutions area, prior to assuming the role of Deputy Chief Executive Officer of Thuraya in 2019 and subsequently its Chief Executive Officer (CEO) in 2021. As CEO of Thuraya, Al Ali has been instrumental in driving operational excellence and delivering new and innovative solutions to customers in a post-pandemic environment, as well as establishing a platform for strong future growth.

Al Ali's appointment aligns with Yahsat's commitment to maximizing the combined strength of its wide bench of technologies, services and capabilities to deliver greater value and innovation to its customers across the globe.

Commenting on the announcement, Ali Al Hashemi, Group CEO of Yahsat said: "I am delighted to announce the appointment of Sulaiman Al Ali as Chief Commercial Officer of Yahsat. Sulaiman's new position and expanded portfolio is reflective of his outstanding contributions across the Group and will enable us to expand and advance



Yahsat Chief Commercial Officer, Mr. Sulaiman Al Ali ●●●

our customer solutions by effectively leveraging the distinct and complementary qualities offered by our fixed and mobility business and technology platforms. On behalf of myself and the leadership team, I take this opportunity to thank Farhad for his unstinting service and delivery to Yahsat and YahClick and wish him every success as he embarks upon his future endeavours."

Sulaiman Al Ali, CCO of Yahsat, added: "I am deeply honoured to have been appointed as the Chief Commercial Officer for Yahsat. I am committed to combining the collective strengths of our business to amplify the value we can deliver to our customers and partners. Yahsat is ideally placed to address the complex issues facing our customers by offering them a highly-equipped one-stop shop where they are able to fulfil their various satellite communications needs. We look forward to harnessing the innovative spirit that runs across Yahsat's commercial business to provide an unparalleled level of service to our customers." ●

Nanoracks hires SVP of Finance and COO

Nanoracks has announced the following executive appointments. Stuart White has joined as the new SVP of Finance, and Ty Baumbaugh is the new COO.

Stuart White is a financial leader with extensive experience in the aerospace, defense, energy, and technology industries has joined the Nanoracks team as the new SVP of Finance. Stuart joins Nanoracks from Ball Aerospace where he served as Senior Controller for the \$2 billion aerospace company and oversaw much of the organization's modernization efforts. Prior to his role at Ball, Stuart spent five years as a business unit CFO for KBR and two years as VP of Finance for L-3 Communications.

Stuart has led numerous business transformation initiatives including acquisition integration, system modernization and restructuring. Having worked in both Commercial and Government Contracting enterprises, he has developed expertise driving sustained profitable growth as well as securing new business opportunities.

"I am really looking forward to this opportunity with Nanoracks to continue working in an industry I am passionate about for a company that is breaking barriers and transforming the future of space," said White. "It is clear that the Nanoracks team is both uniquely talented and high achieving and I can't wait to jump in and contribute."

As Stuart transitions into his new role, former Voyager EVP of Operations, Ty Baumbaugh, will move into his new position as COO of Nanoracks. Ty joins Nanoracks from Voyager Space, where he served as Executive Vice President of Portfolio Operations and Integration. In that role, Ty built the portfolio operations group and led the development of many of the shared processes and systems that Voyager's companies currently use. Ty became deeply ingrained in Nanoracks' business in this role. At Voyager, Ty also took an active role on several company boards of directors and regularly worked with companies to strengthen their businesses. ●



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