


VENTURE CATALYST SPACE

A person wearing safety glasses and gloves is working on a small electronic device on a workbench. The person is using tweezers to handle a component. The workbench has various tools and components, including a soldering iron and a small circuit board. The background is a solid green color.

2021 COHORT



INNOVATION &
COLLABORATION
CENTRE

[ICC.UNISA.EDU.AU/SPACE](https://icc.unisa.edu.au/space)

SUPPORTING FOUNDERS TO START AND LEAD SPACE VENTURES

VENTURE CATALYST SPACE

In 2018, the University of South Australia's Innovation & Collaboration Centre launched the first of its kind acceleration and incubation program for the Australian space industry. The tailored program is designed to equip founders with the skills and knowledge to successfully build a scalable, sustainable company.

Venture Catalyst Space consists of an accelerator and incubator running simultaneously to facilitate your journey through the program and help grow your startup. The accelerator brings you specially tailored resources to level up your space venture, while the incubator provides you with the benefits of being part of the Innovation & Collaboration Centre and access to its partners.

VENTURE CATALYST SPACE 2021 COHORT

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Our partners



ACCELERATION FEATURES

- Workshops**
A series of capability workshops designed for founders
- Mentoring**
One-on-one mentoring sessions
- Funding**
\$10,000 equity-free funding

INCUBATION FEATURES

- University resources**
Access to workspace, lab space, research and business development support
- Industry experts**
Access to a pool of industry experts
- ICC Community**
Group activities, support and networking events

BACKGROUND

114ai was formed in India by a team who have over 30 years' experience researching, developing, testing and deploying solutions for the military. As users of their competitor's products, they have come with the lived experience of the failures of those products and have developed a method to solve one of the most fundamental challenges in the adoption of big data.

BENEFITS

- Catalogues multiple sources of data, regardless of type and format
- Enables the operator/analyst to set up custom search queries across multiple databases
- Allows non-technical users to manage their data without the need for external help
- Facilitates multiple languages and technology stacks, freeing the user from the shackles of technology or vendor lock-in.

DEVELOPING A DATA FUSION PLATFORM FOR SPACE DOMAIN AWARENESS

TECHNOLOGY

One of the fundamental challenges in the space sector is the irregularity of data formats and the multiple areas the data is sourced from. Most companies working in the 'space domain awareness' sector are focussed on building applications, leaving a gap in the development & innovation of the data-sourcing pipeline that these applications are built with. Moreover, any analysis of this data requires the integration of multiple sources, or, 'fusion' to be effective.

114ai's platform 'SpaceWise' provides interoperability of data of different types, creating an environment that enables semantic fusion of data. The platform also allows non-technical users to integrate, test and operate new algorithms built on these data sets. SpaceWise enables analysts to fuse, query, search and visualise data efficiently, so that they can act on it faster.

POTENTIAL MARKETS

Space domain awareness, Internet of Things, industry 4.0, intelligence, healthcare, energy, etc.

PARTNERING OPPORTUNITIES

114ai are looking for partners who can help take their products to customers.

TEAM

Vinayak Dalmia

Chief Executive Officer

Vrinda Kapoor

Chief Operating Officer



BACKGROUND

Astroport Space Technologies Inc. is a U.S. corporation, headquartered in San Antonio, TX. The company was founded with a vision to design, deploy, and operate interplanetary landing ports to facilitate safe, reliable, and efficient spaceflights to the Moon, Mars and beyond.

Astroport was founded in 2020 by Sam Ximenes, a space architect with more than 30 years experience in the aerospace industry supporting major NASA, Department of Defense, and other commercial and international space programs. Astroport currently operates as a technology venture arm of Exploration Architecture Corporation (XArc), a space architecture consulting design and engineering firm (established in 2007).

BENEFITS

- Using in-situ derived materials on the Moon reduces the dependency on Earth-sourced building material
- Improved processes for extraction of mineral resources from the lunar surface
- Robotics automation for remote operations
- Establishes space civil engineering processes for lunar construction.

SPACE CONSTRUCTION AND MATERIALS MAUFACTURING COMPANY TURNING MOON DUST INTO DURABLE FEEDSTOCK FOR AUTONOMOUS 3D CONSTRUCTION PRINTING OF LUNAR SURFACE INFRASTRUCTURE.

TECHNOLOGY

Astroport's technology addresses two challenges of in-space construction: (a) converting indigenous source material (regolith) into durable construction feedstock and (b) robotic emplacement and assembly of the same into surface structures such as landing pads, roads, and habitats.

Astroport's Lunar Regolith Melting and Lunar Regolith Binding stabilization and solidification technologies are used for manufacturing feedstock for lunar construction, as well as advanced engineering applications, such as in-space component fabrication. Their robotic construction platform is a unique furnace-printer for single step regolith melting, forming, and precise autonomous placement of in-situ 3D printed bricks. Other development products derived from the lunar furnace process include basalt fiber pulling for geotextiles, rods and tubes, and extraction of volatiles/minerals for metals and gases. Astroport's regolith binding process produces filament and pellets for 3D extrusion printers for habitat construction or for detailed additive manufacturing.

POTENTIAL MARKETS

Space is a nascent and rapidly developing economy projected to exceed \$1 trillion in the next 20 years. Astroport's primary target segment is critical infrastructure for planetary surfaces, with a focus on technology and equipment development, construction, and, eventually, operations of landing/space ports for camp resupply missions. Size of this market and volume of operations will be determined by the commercial demand for space transportation from mining, tourism, manufacturing, and other industries. Additional addressable market includes regolith processing and regolith-based materials manufacturing for in-space components fabrication, in-situ extraction of metal minerals or volatiles (oxygen).

Astroport's technology has the potential to be utilized for low cost and rapid construction on earth (by licensing IP and operational know-how; material processing; assembly automation; remote operations). In-situ resource utilization of locally sourced material could have potential terrestrial applications, for low cost housing for low income indigenous housing and/or next-gen, ecological advanced construction applications.

PARTNERING OPPORTUNITIES

Astroport is seeking Australian venture partners with expertise in mining and excavation automation technologies, and minerals processing.

TEAM

Sam Ximenes
Chief Executive Officer / Space Architect

Natasha Heidenrich
Marketing

Louise Cantwell, J.D.
Government Policy

Ron Wells
Product Development

Don Hooper, PhD
Product Development

Dallas Bienhoff
Product Development

Mike Berringer
Product Development

Sara Ahmed, PhD
Product Development

Alan Whittington, PhD
Product Development



BACKGROUND

Digantara is an Indian startup formed in 2018 by computer science engineering student Anirudh Sharma and friends Rahul Rawat and Tanveer Ahmed. What started as a small student club to build a nano satellite, led the team to participating in an ISRO-led conference and soon after was commissioned to fabricate a satellite component for a Latin American space company which turned the team into a commercial company in 2018.

After a conference in Germany on space situational awareness, the team learned about the extent of garbage circling the earth and decided to tackle the problem. This is when Digantara shifted its focus to research and development to devise a solution and applied for a patent in April 2019.

BENEFITS

- Safeguarding multimillion-dollar space assets from space debris
- Reliable data on space weather
- Ease of operation by end-to-end satellite mission life operation services
- Reduction in operation cost by up to 70%.

A SPACE SURVEILLANCE COMPANY

TECHNOLOGY

Digantara is developing India's first space-based surveillance platform to track space objects to help satellites companies, launch companies, space insurers, space defence forces and regulators to know the accurate situation about and around their multi-million-dollar-valued space assets protecting them from being destroyed in in-orbit collisions through our own constellation of high (one centimetre) resolution space object tracking nanosatellites.

The data collected by Digantara's Constellation forms the highest resolution global data source on Space Situational Awareness. This is used to create a visualization of the space situational awareness thus, providing an end to end mission operation support and multiple downstream.

The platform will enable the satellite launch providers and satellite operators to subscribe for the Space Surveillance Data & Mission Operation Services. The data is channelized to insurance companies and regulators to enable space insurance services and data driven policy decision making, respectively. The data is provided to space administration agencies to monitor regulation compliance. The data is provided to space military as it is a critical enabler for defensive and offensive counterspace. Furthermore, the data is also a requisite for future space missions like debris mitigation, space manufacturing and human spaceflight.

POTENTIAL MARKETS

- Commercial space: mission planning & operation services
- Insurance: risk analysis data for space insurance
- Regulators: policy & decision making
- Defence & government: space military powers, space administration agencies.

PARTNERING OPPORTUNITIES

The solution developed by Digantara is a great product/market fit for both, the commercial and the government verticals of the space industry.

Digantara looks forward to working closely with the Australian Government in the Space Situational Awareness (SSA) sector while also enabling Australia to extend its capabilities in the SSA domain. It aims to assist the commercial sector by providing reliable SSA services to safeguard their multimillion dollars space assets.

Furthermore, it would be a great opportunity to collaborate and work closely in the SSA capabilities development domain with research organisations and institutions across Australia.

TEAM

Anirudh N Sharma
Co-founder / Chief Executive Officer

Rahul Rawat
Co-founder / Chief Operating Officer

Tanveer Ahmed
Co-founder & Chief Technology Officer

Dr. Satyanarayana Malladi
Chief Scientific Officer

Shreyas J Survana
Design Engineer

Thamim Ansari
Design Engineer

Sushmita Chauhan
Analyst



BACKGROUND

Firefly Biotech was founded by Dr Giles Kirby in 2020 in response to the insufficient market supply of appropriate tools that allow research biologists access to space environments for their research. Having worked with a small university team to investigate the effects of microgravity on wound healing and cancer models, founder Giles was surprised at the limited off-the-shelf hardware options and high barrier-to-entry.

With an initial vision to develop benchtop apparatus for microgravity research, Firefly Biotech develops refined algorithms to drive dual axis clinostats, fluid handling manifolds and in-line analysis tools able to detect subtle biological changes. Firefly Biotech will leverage this market opportunity to supply researchers with the tools they need to effectively explore microgravity on the ground and in space.

BENEFITS

- Simple, off-the-shelf solutions
- Developed by biologists for biologists
- Supporting local Australian innovation.

SUPPORTING **BIOLOGY** RESEARCH IN **MICROGRAVITY**

TECHNOLOGY

Firefly Biotech are developing a suite of tools focused on getting biology research into space environments. From validated microgravity simulators and fluid handling manifolds to miniaturised in-line biomarker analysis tools. Their systems are fully integrated and simple to use allowing biologists to focus on the biology.

POTENTIAL MARKETS

This product is relevant to anyone conducting research where gravity has an impact. Industry, academic and government research facilities exploring the effect of microgravity on biological function. Impact in pathological models, high throughput screening and manned space exploration

Their initial market is academic institutions whilst they refine their toolsets and processes.

PARTNERING OPPORTUNITIES

Firefly Biotech is seeking research biologists willing to utilise new tools during their alpha testing phase.

TEAM

Dr. Giles Kirby
Founder / Chief Scientist



BACKGROUND

Hex20 was founded in 2019 by a group of friends who realised they had a common interest in space as well as the skills and capabilities to address the need for scalable, fit-for-purpose platforms for LEO satellites. The direct experience designing and building these platforms has given the team a clear vision on the challenges as well as pathways to address them; and the technical expertise giving them the ability to execute the strategy.

BENEFITS

- One stop shop for LEO/MEO/cislunar platform
- Mission design consulting
- Ground station and communication management
- Data and analytics platform.

FULL STREAM TECHNOLOGY SOLUTION FOR LOW EARTH ORBIT (LEO) SATELLITE APPLICATIONS

TECHNOLOGY

Hex20 is a technology company aiming to provide products, systems and services to small satellite systems. They intend to specialize in the research, design and development of cutting-edge scalable subsystems for small satellites and provide launch services, mission operations and provide data services to clients.

Historically these platforms are large, expensive, and not agile. Hex20 intend to apply artificial intelligence and machine learning based solutions to these subsystems to improve performance and make space missions more accessible.

With the proposed establishment of a lunar gateway, there is ample scope for more smallsat based constellations/swarm missions to the cislunar space and beyond. Hex20's goal is to deliver solutions to the LEO and cislunar market with a strong focus on making these qualified hardware platforms more intelligent, cost effective, reliable and easily accessible to industry as well as academia.

POTENTIAL MARKETS

A global market with initial focus on Asia Pacific.

PARTNERING OPPORTUNITIES

Currently the team are looking at various partnerships with:

- Universities and research organizations to advance their platform's Technology Readiness Level while enabling them to achieve their research goals
- SMEs on various proposals for funding from state, national and international sources, while helping to build the sovereign capability in Australia.

TEAM

Lloyd Jacob Lopez
Chief Executive Officer

Amal Chandran
Co-Founder / Technical Advisor

Ashwin Chandran
Co-Founder / Chief of Research & Development



BACKGROUND

Locus Rose formed out of a collaborative effort to compete in the 2020 ActInSpace Hackathon. During this 24-hour competition, the team formed, strategized and presented their novel concept to secure the runner-up prize.

BENEFITS

- Decreased physical footprint when not in use
- Improved signal quality during use
- Simple single-action mechanism to achieve shape-locking design
- Simplified production of otherwise complex processes using additive manufacturing.

TECHNOLOGY

Current market options for folding antennas have two common problems, being that folding satellites are difficult to manufacture and do not conform to the optimal geometry required for telecommunications. Locus Rose's additive manufacturing-based production method and unique deployment mechanism solves these problems.

COMPACT AND PORTABLE PARABOLIC ANTENNAE FOR THE SPACE INDUSTRY

POTENTIAL MARKETS

- Support networks for rural public services (teaching, emergency relief, medical support etc.)
- Outdoor/exploration markets (compact, reliable, and high-fidelity comms devices).

PARTNERING OPPORTUNITIES

Locus Rose are an early stage startup. The team want to gain guidance and support for navigating the Australian space technology industry while bringing their disruptive design and use of advanced additive manufacturing methods to fruition. The startup will require assistance with the establishment of manufacturing/distribution channels and business structure scalability. To develop their ideas further, the team seek individuals experienced in:

- Space industry-specific development
- Material science
- Signal/frequency analysis.

While Locus Rose presents foundational knowledge in IT, engineering and management, a worthwhile telecommunications product will result only from meaningful collaboration with experts in the field.

TEAM

Ryan Daley

Technical Lead

Tessa Ewens

Co-founder/IT Specialist

Adam Wickham

Co-founder/IT Specialist

Harshitha Rajashekara

Project Manager

BACKGROUND

Moonlode is an Australian startup built from founders with expertise in international and local space projects across the private and government sectors.

BENEFITS

- New products and systems to enable survival of the extremely cold lunar night
- Expertise in spacecraft thermal design, analysis, construction and testing
- Enabling governments and private companies to explore and utilise resources on the Moon.

TECHNOLOGY

Moonlode's key product is an integrated thermal control subsystem for spacecraft, maintaining the temperature of critical components within certain specified bounds during extended periods of extreme cold. The system incorporates new methods for generating a trickle of heat within the system enclosure as well as methods to reject excessive heat during periods of solar illumination and/or high electrical energy dissipation.

POTENTIAL MARKETS

The primary markets are space exploration and in the future space resources extraction and utilisation.

PARTNERING OPPORTUNITIES

Moonlode seeks companies and government agencies that are planning lunar missions for science, exploration, or resource extraction/utilisation.

THERMAL ENGINEERING SOLUTIONS FOR DEEP SPACE





BACKGROUND

Satsearch was founded by a group of friends at a 2015 hackathon in Bremen. The company is headquartered in the Netherlands with a fully remote team all over the world. Satsearch have deep expertise in space systems engineering and internet marketplaces and are supporting the space industry by making it easier to buy and sell space products and services. In 2018, satsearch was selected by the European Space Agency for their incubation program and graduated with a clear path towards sustainability.

BENEFITS

- Helping eningeers conduct trade studies, cost analysis, and receive all the information needed to make space missions seamless and successful
- Helping suppliers showcase their products and services to customers in the space industry.

THE GLOBAL MARKETPLACE FOR SPACE

TECHNOLOGY

Satsearch makes technical and procurement relevant information seamlessly available through an open, global, online marketplace that enables engineers to initiate and track procurement through a dedicated Request for Information (RFI)/Request for Quotation (RFQ)/Request for Proposal (RFP) system.

Satsearch is focussed on developing technology that establishes a true marketplace in the space industry, enabling buyers to rapidly narrow down products and services that meet their requirements and subsequently initiate transactions by filing RFIs, RFQs, and RFPs. To enable this, the team are developing advanced approaches to modelling the underlying supply chain information within their platform. By leveraging expertise in Model Based Systems Engineering (MBSE), they are building data models enabling engineers to interact with products and services without having to spend hours manually searching through lengthy PDF datasheets and interface documents.

The entire procurement process from identification of suppliers to making a purchase can set back space missions by at least three to four months. Satsearch is helping to solve this problem by automating this process, saving both time and money.

POTENTIAL MARKETS

Satsearch currently works with more than 3000 suppliers and has customers from over 20 countries. They believe that there are 100,000 suppliers relevant for the space industry and intend to bring them on the marketplace.

PARTNERING OPPORTUNITIES

Satsearch is creating a data integration ecosystem around the database that will help engineers discover products/services through tools that they will use in designing and executing space missions. For example, NASA Small Satellite Information Search engine now leverages the satsearch database to provide results to engineers <https://s3vi.ndc.nasa.gov/>

There are partnership opportunities for any software-based product/service providers to leverage the supply chain/component data based on satsearch. This includes concurrent design, simulation, procurement, tools etc.

TEAM

Kartik Kumar
Chief Executive Officer

Dr Alberto Vaccarella
Chief Technology Officer

Dr. Narayan Prasad Nagendra
Chief Operating Officer

Hywel Curtis
Head of Marketing

Beatrice Vivaldi
Design Lead



BACKGROUND

SPACELIS was formed in 2020 by Founder and CEO Guler Kocak aiming to design solar cells that can be used in future space missions such as Artemis and Lunar Ascent as these plastic solar cells will be fabricated to be highly stable in harsh environments having ultra-light weight architecture, radiation and heat resistance, and printability.

Organic photovoltaic (OPV) solar cells are the future energy resource due to their versatile state-of-the-art production methods, eco-friendliness and low fabrication cost. They can be used in a number of industries including renewable energy and space.

BENEFITS

- Ultra-light weight solar cells for space applications
- Low-cost clean energy resources
- Flexible and wearable solar cell technologies
- Small- and large-scale applications.

SOLAR ENERGY SOLUTIONS FOR SPACE MANUFACTURING

TECHNOLOGY

Solar energy harvesting for space and in space are still in the very early stages for future Moon and Mars missions. Solar energy development and storage will be the most crucial technology to be developed for new operations and spacecrafts.

SPACELIS solar cells will be the world's first ultra lightweight and radiation stable plastic solar cells that can operate and be produced in space for future Moon and Mars missions, for the space tourism industry and innovations, and they can be modified easily to operate in other harsh environments on Earth, as well.

The global future technology development for space exploration and innovations will also be inspired by the space nano-solar cells, and many entrepreneurs will fund the ideas for the best future clean energy resources for space and Earth.

POTENTIAL MARKETS

Space manufacturing, renewable energy, naval and defence Industries.

PARTNERING OPPORTUNITIES

SPACELIS aims to sell the space solar cells to space agencies globally and contribute to current and future space missions. Companies with space manufacturing and renewable energy technologies will be teamed up for the installation of light-weight solar cells into spacesuits and spacecrafts. Research institutions are to be partnered with during every step of the design, fabrication and testing of the solar devices.

TEAM

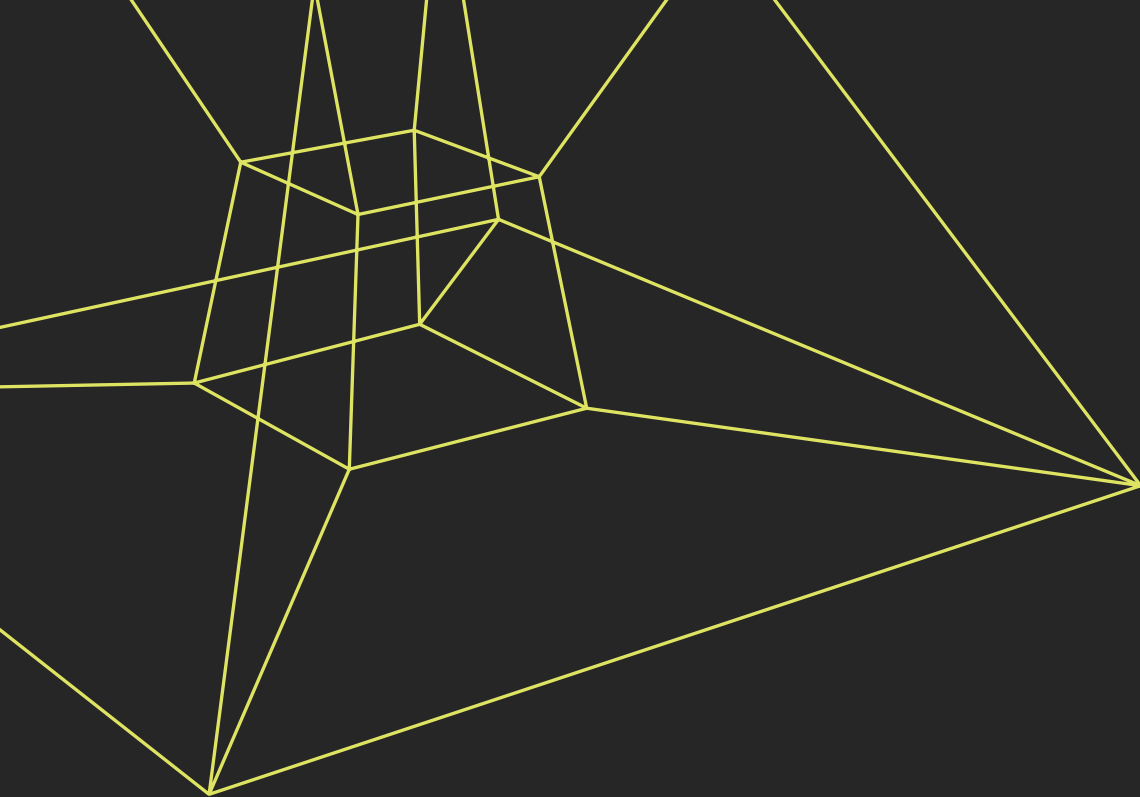
Guler Kocak

Founder / Chief Executive Officer

Ismail Topcam

Web Developer / Software Engineer





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