



**BRINGING
SPACE**

**DOWN TO
EARTH**

SPACE IS AWESOME

It's an exciting time in the industry, with fast innovation cycles and a rapidly expanding range of space applications. As a result we're seeing an unprecedented number of companies eager to tap into this lucrative space-based data-driven market.

Our experience in volume manufacture of space systems, coupled with our proven ability to deliver quality innovation applying the latest technologies, has resulted in a range of highly capable, flight proven spacecraft that are able to support this increasing range of new and challenging space applications.

This year alone at AAC Clyde Space, we have won game-changing mission contracts and deployed multiple innovative satellites. We are extremely proud of our 100% mission success rate, fast positioning our company as a market leader, setting the performance benchmark for small satellite mission and service provision globally.

—CEO, Luis Gomes



OUR VISION

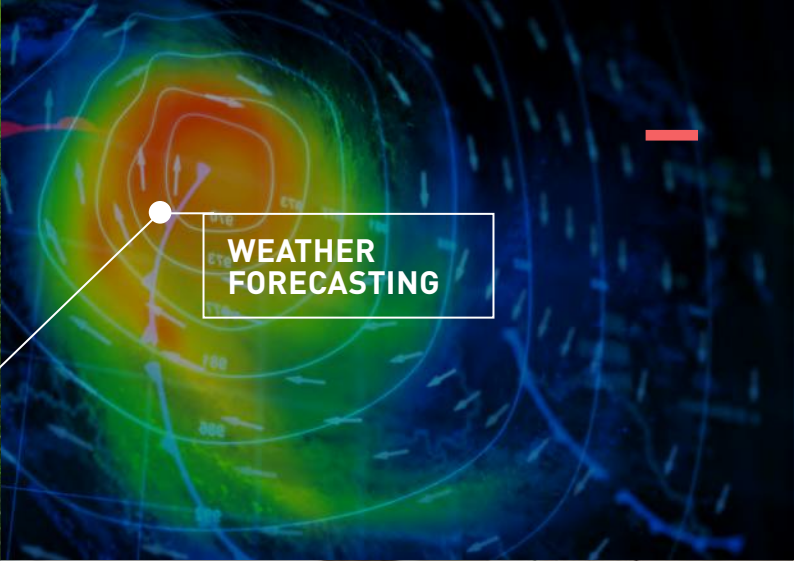
TO DELIVER HIGH-QUALITY, TIMELY DATA
FROM SPACE FOR A BETTER LIFE ON EARTH.

**SPACE:
A CRITICAL
PERSPECTIVE
TO SOLVE
PRESSING GLOBAL
CHALLENGES**





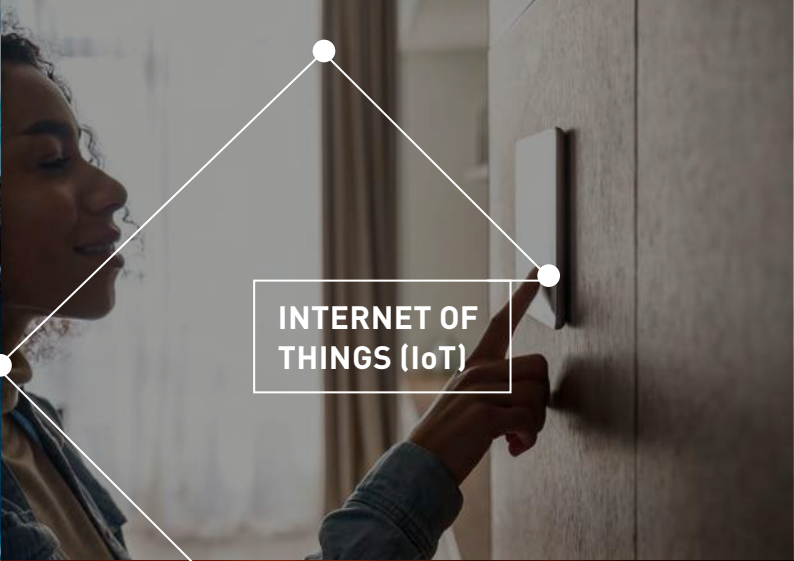
**PRECISION
FARMING**



**WEATHER
FORECASTING**



**COASTAL
POLLUTION
MITIGATION**



**INTERNET OF
THINGS (IoT)**



**ACCESS TO
HEALTHCARE**



**WILDFIRE
DETECTION**



**MARINE
EFFICIENCY**



**AIR
POLLUTION
CONTROL**

AT A GLANCE

>15

years' operational experience

>120

employees across UK, Sweden,
Netherlands and the US

29

satellites designed, manufactured
and launched to date

**OF OVER 1,000 NANOSATELLITES
LAUNCHED UP TO END 2020, AAC
CLYDE SPACE IS REPRESENTED
ON 30-40%.**

WHAT WE DO

At AAC Clyde Space, we are changing the economics of space data. We specialise in small satellite technologies and services that enable a growing number of commercial, government and educational organisations to access high-quality, timely data from space. This data has a vast range of applications, from weather forecasting to precision farming to environmental monitoring, and is essential to improving our quality of life on Earth.

Some of our clients include Orbcomm, NSLComm, OHB Sweden, Intuitive Machines, Orbital Micro Systems, the United States Airforce Academy, UK Space Agency, European Space Agency and NASA.

The global small satellite market is expanding rapidly, driven by technological advances, falling costs and an insatiable demand for data. AAC Clyde Space is backed by 15 years' operational experience. With in-house expertise that spans from subsystems through to advanced sensors and data delivery, our combined workforce brings its expertise to bear across three core areas.

OUR SUBSIDIARIES



AAC Clyde Space
Sweden



AAC Clyde Space
Scotland



Hyperion Technologies
Netherlands



SpaceQuest
USA



Omnisys
Sweden*

The Group's main operations are located in Sweden, the United Kingdom, the Netherlands and the USA, with partner networks in Japan and South Korea. Shares of the Group's Swedish parent company, AAC Clyde Space AB, are traded on Nasdaq First North Premier Growth Market in Stockholm and on the OTCQX Market in the US.

* As of April 30, 2021

BUSINESS MODEL

UNRIVALLED ACCESS TO SPACE

SPACE-DATA-AS-A-SERVICE

SPACE MISSIONS

SPACE PRODUCTS AND COMPONENTS



DESIGN

Our highly skilled team combines expertise from the aerospace, defence and commercial industries to deliver market-leading solutions and services. From design to delivery, we draw on decades of on-orbit heritage acquired over multiple successful missions. Our off-the-shelf products are designed to meet the needs of most clients, but they have built-in flexibility, which enables us to address bespoke requirements and customization at speed. Our design-for-manufacture ethos extends beyond subsystems to our platforms, which are designed with efficient, scalable AIT (assembly, integration and testing) in mind. Our techniques enable rapid iterations in the design of highly capable satellite platforms, enabling quick turnaround for agile timelines.



BUILD

AAC Clyde Space has five production facilities: Delft (Netherlands), Fairfax (Virginia, US), Glasgow (UK), Gothenburg and Uppsala (Sweden). Satellites and their subsystems are assembled in a combined lab space of almost 4,000m² by specially trained flight technicians and Assembly Integration and Test (AIT) engineers. Our extensive range of best-in-class manufacturing, testing and assembly equipment coupled with streamlined production techniques enable us to fulfil high volume requirements quickly while maintaining high standards of quality.



TEST

Our in-house automated test facilities and experienced team of test engineers rigorously verify product performance, supported by our strict quality management system. All hardware testing is performed in ESD-controlled laboratories or cleanrooms, where we can recreate the harsh conditions of launch and space environments. Our facilities include a large area solar simulator, Helmholtz cage, multiple thermal cycle chambers, large thermal vacuum chambers, and a vibration testing rig capable of achieving NASA GEVS (General Environmental Verification Standard) levels.



LAUNCH

We offer a suite of satellite mission services, including launch, insurance, licensing and ground services. Every mission is carefully analysed, from the technical aspects, to schedule and cost, fully utilising our world leading partnerships and supply chain. When combined with our high-volume production capability and market leading regulatory management, we offer our clients unrivalled access to space.

STRENGTHS WE RELY ON

PEOPLE AND EXPERTISE

ON-ORBIT HERITAGE

GLOBAL FOOTPRINT

CUSTOMER
RELATIONSHIPS

VERTICAL INTEGRATION

MANAGED GROWTH

OPERATE

Through our own ground station network and agreements with multiple ground network operators, we are able to facilitate command and control of space assets globally, regardless of their orbits or communications frequency. With the acquisition of SpaceQuest, our ground station network now spans Sweden, the UK and US (Alaska, Hawaii and Virginia).

DELIVER DATA

In addition to delivering data from space on a mission-by-mission basis, we also own and operate a constellation of satellites, which enables us to offer a pure data service to clients. This is where we take care of everything, from spacecraft design to satellite operations, providing clients only with the high-quality, timely data they need. This service model is a key avenue of growth for AAC Clyde Space and, through projects such as xSPANCION, we are developing new technologies that will revolutionize our offering in this area: for example, intersatellite link capability, to optimise data capture, and a new cloud-based, application-focused customer interface.

CREATING LONG-TERM VALUE FOR...

SHAREHOLDERS

Aiming for long-term improvement in earnings per share.

CLIENTS

Enabling a growing range of businesses to access data from space, flexibly, affordably and reliably. Our order backlog has increased 133% since 2018.

PEOPLE

Creating challenging roles and development opportunities to attract and retain talent. We are committed to improving gender equality in the space industry and strive for equality across the Group.

COMMUNITIES

Fostering an understanding of our business and commitment through local community and STEM initiatives.

ENVIRONMENT

Ensuring that space technology works to the benefit of the Earth and space environment.

SUPPLIERS AND PARTNERS

Generating growth and development opportunities for the businesses that support and work with us.

LIVING BY OUR VALUES



Excellence

We believe that excellence happens by making the right choices over and over again



Innovation

We are continuously moving forward, anticipating market needs and pioneering new ideas



Team

We treat each other fairly and with respect. We want everyone to be part of the team



Client focus

We recognise that a client's perception is their reality – and that strong relationships with our clients are vital to our business



Integrity

We act openly and with honesty. We stand behind our promises

SPACE-DATA-AS-A-SERVICE



SEK
3,068k

Revenue 2020 (vs 2019):
kSEK 3,068 (2,940)

DATA DELIVERY

CUSTOMER PORTAL

PROTECTED DATA

Space Data as a Service (SDaaS) will be AAC Clyde Space's top growth engine over the coming years, helping us to reach target revenues of SEK 500M by 2024.

Through this service, AAC Clyde Space builds, owns and operates the satellites, delivering to clients only the data or communications they need, leaving them free to focus on enhancing their core business.

We are currently working with leading organisations, such as Orbcomm, to provide Space Data as a Service to various industries but, over time, we plan to deliver proprietary data services that can serve multiple clients.

In 2020, we made significant progress in accelerating the growth potential of SDaaS, chiefly through our acquisition of SpaceQuest, which provides immediate clients and profitable revenues in this area, and by securing the xSPANCION contract to design and develop an innovative constellation, which will anchor the development of SDaaS to our clients.

Another important step is the grant from the Swedish Transport Administration to develop the next generation of maritime communications. Together with Saab and ORBCOMM, we are developing the first satellite of a future constellation that will provide a space-based VDES (Very High Frequency Data Exchange System) for two-way communication between satellite and ground. The added space capability will increase VDES' range from the shoreline to anywhere in the ocean, converting what is currently a predominantly coastal system into a global maritime system. The satellite (a 3U CubeSat) is planned to launch in mid-2022 and will be the first satellite assembled at AAC Clyde Space's new integration facility in Uppsala. It will carry a VDES payload from Saab, and the data it captures will be integrated by ORBCOMM in its distribution centre. Once it has demonstrated its capabilities, the satellite is expected to be followed by a larger constellation that will revolutionize global maritime communications.

"THIS IS A SIGNIFICANT MILESTONE FOR OUR COMPANY, WITH AN IMPORTANT NEW SATELLITE CONTRACT AND A COLLABORATION WITH TWO IMPRESSIVE PLAYERS IN THE FIELD. THIS ALSO MARKS THE FIRST SATELLITE TO BE BUILT AT OUR NEW SATELLITE ASSEMBLY FACILITY IN SWEDEN. WE ARE VERY EXCITED TO BE PART OF A TEAM DELIVERING A NEW CAPABILITY TO SEAFARERS WORLDWIDE, IMPROVING SAFETY AND EFFICIENCY FOR MARITIME USERS."

Rolf Hallencreutz, Chairman, AAC Clyde Space



SPACEQUEST: A “WIN-WIN” ACQUISITION

In Q4 2020 we acquired SpaceQuest, a satellite technology developer based in the US, the world’s largest and most dynamic market for small satellites.

SpaceQuest’s already operates its own satellite constellation and ground station network to deliver a highly successful satellite data service. Through our global reach, this offering will now be marketed to a global audience in need of mission critical data from space, allowing us to rapidly grow our SDaaS business line.

Importantly, the SEK 73.5M acquisition also extends our manufacturing operations to the US (US-manufactured platforms are a requirement for US government licences) and brings valuable longstanding business relations with US clients, including government organizations. SpaceQuest has an extensive client base, including the Canadian Space Agency, NASA, US Navy, US Air Force, corporates such as LeoStella, Orbcomm, Iceye, Northrop Grumman, and universities.

Our highly complementary product lines offer great potential for a joint market approach spanning satellite components, platforms, missions and operations, and the supply of data services from space. Furthermore, SpaceQuest’s profitable, established revenue streams should accelerate the attainment of positive EBITDA for the Group.

XSPANCION: ANCHORING SPACE-DATA-AS-A-SERVICE

In November, AAC Clyde Space announced xSPANCION, a project to develop a 10-CubeSat communications and earth-observation constellation. The project, potentially valued at 19.7 MEUR (ca SEK 202 M) across the first two phases, is being co-funded by public and private partners, including the UK Space Agency via the European Space Agency (ESA). Outside the project, we intend to enter into customer service agreements for data delivery from the constellation.

xSPANCION is transformational: it lays the groundwork for us to provide space data and services quickly and at low cost to organisations who are eager to harness the power of satellites to tackle on-earth problems – from climate change to maritime communications – without investing in space-based architecture or expertise themselves.

As part of the three-year project, we will collaborate with partners to optimise the process for satellite design, manufacturing, licensing and launch co-ordination at scale, as well as to develop new technologies for the future constellation, including in the areas of propulsion, intersatellite communications, safe and secure transmission of data and client interface.

“WE ARE TRANSFORMING AAC INTO A TRUE LEADER IN THE SMALL SATELLITE FIELD. WITH SPACEQUEST WE GAIN A COMMERCIALY ATTRACTIVE SPACE DATA AS A SERVICE BUSINESS AND A STRONG Foothold IN THE U.S, THE LARGEST AND MOST DYNAMIC SPACE MARKET.”

Rolf Hallencreutz, Chairman, AAC Clyde Space

“XSPANCION WILL REVOLUTIONIZE OUR SPACE-DATA-AS-A-SERVICE OFFERING. IT WILL ALLOW US TO SIGNIFICANTLY REDUCE THE COST OF EVERY MESSAGE COLLECTED, EVERY IMAGE CAPTURED, SUPPORTING THOSE BUSINESS CASES THAT TO DATE HAVE NOT BEEN ABLE TO JUSTIFY THE CAPITAL EXPENDITURE TO HAVE HUNDREDS OF SENSORS IN ORBIT. FUNDAMENTALLY, OUR CLIENTS WILL NO LONGER HAVE TO WORRY ABOUT HOW TO ACCESS SPACE; THEY CAN FOCUS ON HOW TO ENHANCE THEIR CORE BUSINESS.”

Luis Gomes, CEO, AAC Clyde Space

SPACE MISSIONS



SEK 54,694k

Revenue 2020 (vs 2019):
kSEK 54,694 (20,403)

SEK 75,588k

Order backlog 2020 (vs
2019): kSEK 75,588 (71,822)

LAUNCH SERVICES

BROKERAGE

LICENSING

INSURANCE

INTEGRATION

We operate in the premium segment of the 1-50kg satellite market, manufacturing fully assembled satellite platforms for direct sale or as a comprehensive mission package, including: mission design, manufacturing and integration of components, launch and ground services.

AAC Clyde Space's standardized satellite platform range, EPIC spacecraft, is designed with satellite constellation users in mind. These platforms are CubeSats and come in a range of standard sizes. For sizes bigger than 16U we can build customised structures using the same components. EPIC spacecraft can be used in a wide range of applications and can be supplied to the client either for integration with their payload, or as a fully integrated platform.

GROUND SERVICES

FREQUENCY FILING

DAILY TMTC

PLANNING

DELIVERING SATELLITES FOR CONSTELLATIONS

Increasingly, operators are choosing to use constellations of small satellites to deliver their services. In the last year, we are delighted to see two programmes advance from demonstration to commercialization, proof of the advantages that small satellites offer commercial applications.

NSLCOMM: CLOSING THE DIGITAL DIVIDE

NSLComm is using nanosatellites to deliver fast, reliable and affordable communications even in the most remote places on Earth. AAC Clyde Space delivered the first of these satellites (a 6U CubeSat, NSLSat-1) to NSLComm in 2019. It carries a 60-centimetre dish antenna and has reached most of its mission goals, communicating at all frequencies.

NSLComm has since appointed us as "preferred supplier" in its planned commercial constellation and tasked us to deliver the first satellite of this constellation, NSLSat-2, for launch in Q3 2021. AAC Clyde Space will provide a full end-to-end mission package for NSLSat-2: manufacture, launch, commission, operation of the satellite and delivery of a ground segment software solution.

EPIC SPACECRAFT

EPIC-1U

EPIC-3U

EPIC-6U

EPIC-12U

"NSLCOMM IS SPEARHEADING HIGH THROUGHPUT COMMUNICATION FROM NANOSATELLITES. WE ARE DELIGHTED TO PARTNER WITH THEM IN THIS PROJECT, TAKING NANOSATELLITE-BASED SERVICES EVEN FURTHER"

Luis Gomes, CEO, AAC Clyde Space

ORBITAL MICRO SYSTEMS: IMPROVING WEATHER FORECASTING

In Q2 2020, AAC Clyde Space won an SEK 8M order for a 6U CubeSat from Orbital Micro Systems (OMS), to be launched as part of the UK Space Launch Programme. The satellite will be used in OMS's commercial GEMS (Global Environmental Monitoring Satellite) program to deliver accurate and timely weather information to businesses worldwide to improve operational efficiencies and minimize damage caused by extreme weather. It is scheduled for delivery in May 2021.

The order follows the in-orbit success of IOD-1 GEMS, a 3U CubeSat manufactured by AAC Clyde Space and carrying a payload from OMS, in a demonstration mission financed by the UK Satellite Applications Catapult. OMS's decision to use a 6U satellite, on which it will place a dedicated payload, transitions GEMS to a commercial project, and marks an important step forward in the company's plan to deploy a full constellation of small satellites as part of the program.

“THROUGH GEMS, AAC CLYDE SPACE FURTHER EXTENDS ITS INVOLVEMENT IN SPACE MISSIONS AIMED AT ENHANCING THE UNDERSTANDING OF OUR ENVIRONMENT. MISSIONS OF THIS KIND HELP US ALL IN THE QUEST FOR A SAFER AND MORE SUSTAINABLE LIFE ON EARTH.”

Luis Gomes, CEO, AAC Clyde Space



SPACE PRODUCTS & COMPONENTS



SEK 43,690k

Revenue 2020 (vs 2019):
kSEK 43,690 (45,918)

CUBESAT TECHNOLOGY

POWER

ORBITAL DYNAMICS

COMMS

STRUCTURES

COMMAND &
DATA HANDLING

Good technology is the bedrock of our business. We manufacture standardized, miniaturized, advanced subsystems and components for cube and small satellites (up to 500kg), for use in our own platforms and missions and for direct sale.

We have supplied thousands of subsystems for a range of successful space missions. Our off-the-shelf subsystem range, Satellite Bits, includes power, avionics and on-board data handling solutions, which can be customised to meet the demands of specific missions. We also supply communication systems – including laser communication terminals – and some advanced payloads.

In 2020, our subsystems have been used successfully in several demanding applications, proving the quality of our products and earning the trust of our clients. We are currently working on two exciting projects which will further strengthen our credentials in this area.

INTUITIVE MACHINES: LUNAR MISSION

AAC Clyde Space is supplying the power systems, battery solutions and engineering services for the Nova-C lunar lander mission, led by Intuitive Machines.

Nova-C is the first lander of NASA's Commercial Lunar Payload Services (CLPS) initiative, which is focused on the study and exploration of the moon using commercial landers, developed and operated by private companies. It is scheduled for a robotic landing on the moon in the fourth quarter of 2021 as part of a new era of lunar exploration.

Power systems are the cornerstone of any mission and for this one Intuitive Machines will be using the Starbuck Mini, our most powerful and cost-efficient power system for advanced space missions. It has a strong flight heritage, excellent performance, and, thanks to its modular design, it is easy to scale and integrate on different types of mission, from lunar exploratory and deep space scientific missions to commercial constellation applications.

Nova-C will carry up to five NASA-provided and other commercial payloads. It will land on a dark region on the Moon, called Oceanus Procellarum, and transmit scientific data back to Earth during 13.5 days of activity on the moon.

SEK 36,169k

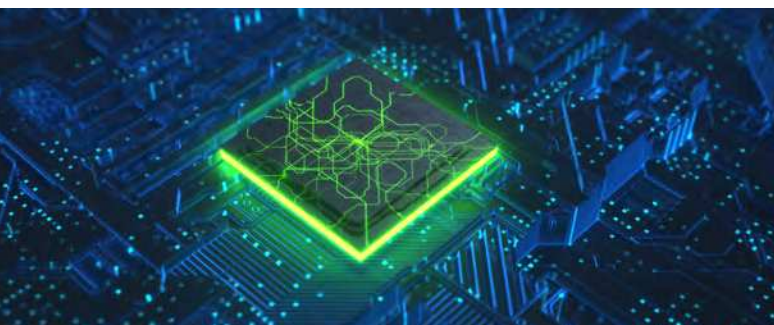
Order backlog 2020 (vs
2019): kSEK 36,169 (42,115)

SMALLSAT TECH

POWER

ORBITAL DYNAMICS

COMMAND &
DATA HANDLING



“WE ARE VERY EXCITED TO BE PART OF THIS NEW ERA IN LUNAR EXPLORATION, SUPPORTING THE ULTIMATE CHALLENGE OF LANDING A SPACECRAFT ON THE MOON. IT IS GREAT TO SEE HOW FAR THE NEW SPACE INDUSTRY HAS DEVELOPED IN RECENT YEARS – INTUITIVE MACHINES WILL BE USING OUR FLIGHT-PROVEN STANDARDIZED STARBUCK SYSTEM TO POWER THEIR SPACECRAFT.”

Luis Gomes, CEO, AAC Clyde Space

BRITISH SPACE FORGE: IN-SPACE PRODUCTION

AAC Clyde Space has been commissioned by British Space Forge to design a satellite platform that will leverage the space environment for production in-orbit. The satellite is intended to stay in-orbit for six months and then descend to Earth for the product to be delivered to customers.

We will develop a satellite design based on our standard platforms, adjusting for re-entry into the atmosphere and landing on Earth. Normally, small satellites burn as they enter the atmosphere, minimizing space debris, but Space Forge are developing technologies to enable the return of satellites from space to Earth for recovery, refurbishment and eventual re-launch.

The order is for the first phase (approximately SEK 1.3M) of a potential larger project.

“IN-SPACE PRODUCTION IS THE SINGLE BIGGEST OPPORTUNITY TO USE SPACE TO CREATE BENEFITS BACK ON EARTH. OUR TECHNOLOGY ENABLES AT-SCALE IN-SPACE PRODUCTION AND RETURN. WE’RE EXCITED TO PARTNER WITH AAC CLYDE SPACE ON OUR PLATFORM DEVELOPMENT, THEY BRING THE PERFECT MIX OF INNOVATIVE ENGINEERING AND SATELLITE HERITAGE”

Joshua Western, CEO, Space Forge

HYPERION: CONTROLLING OUR SUPPLY AND BOOSTING OUR TECHNOLOGICAL CAPABILITIES

The Hyperion acquisition extends our product line, bringing in-house equipment widely used in our satellites. It also adds new technologies in propulsion and optical communications to our IP and adds a development team to our in-house R&D capability.

Increased production volumes and shared services are expected to create savings that will feed into increased price competitiveness. Furthermore, bringing together our business development and distribution channels will increase our global distribution network, improving our ability to sell globally.

Hyperion Technologies is based in Delft, Netherlands, close to one of Europe’s top aerospace universities, strengthening the Group’s presence within the European Union and providing a source of high calibre engineers and scientists.

SOLUTIONS

POWER SOLUTIONS

- PHOTON fixed and deployable solar panels
- OPTIMUS batteries
- STARBUCK electrical power systems

ORBITAL DYNAMICS

- Hyperion propulsion module
- Hyperion Integrated ADCS
- Hyperion Star Tracker
- Hyperion Sun Sensor
- SpaceQuest Horizon sensor
- Reaction wheels

COMMAND & DATA HANDLING

- KRYTEN series: a powerful computer, popular for CubeSat missions
- SIRIUS series: on-board computers and data storage subsystems, ideal for advanced missions

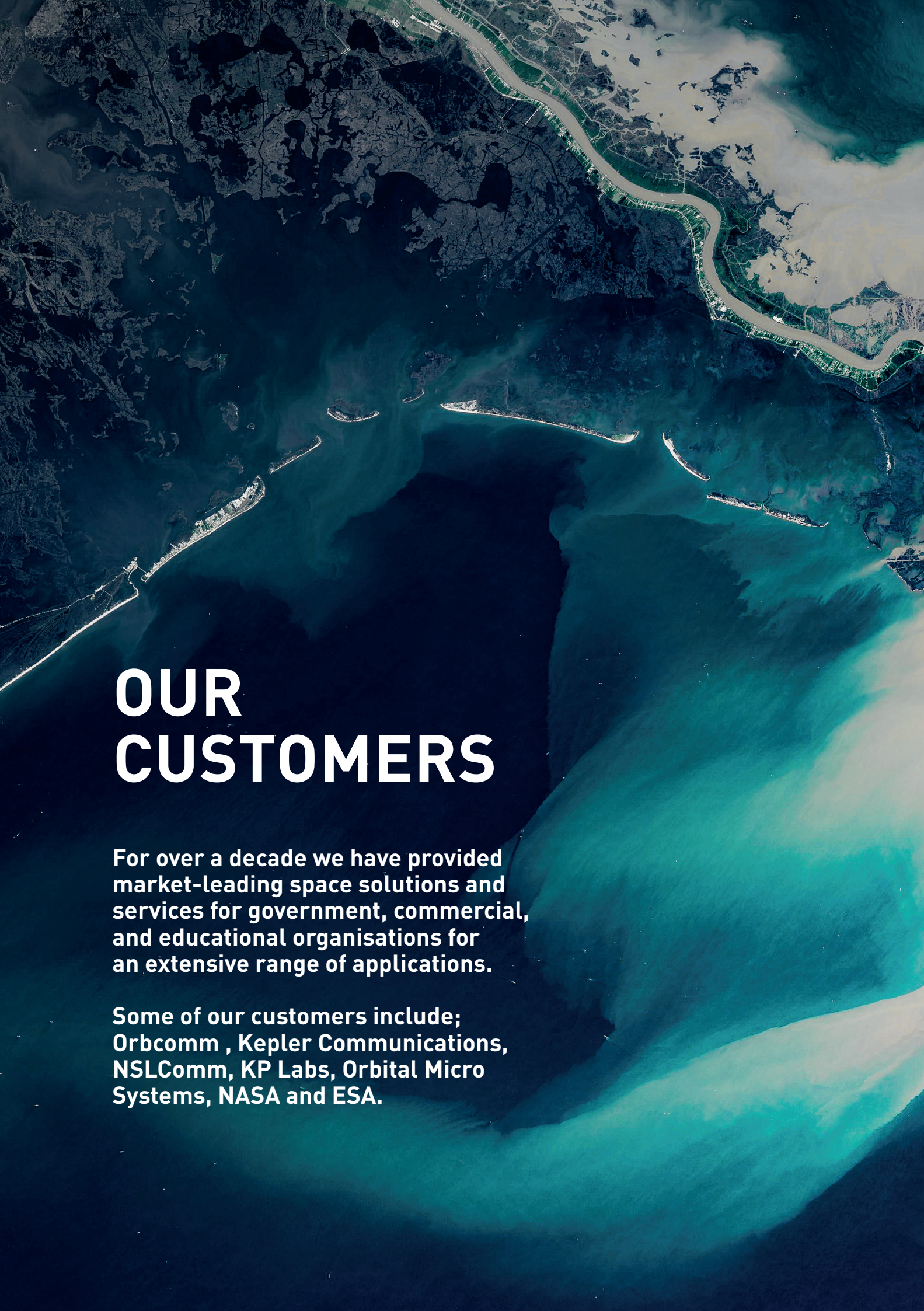
COMMUNICATIONS

- Hyperion CubeCAT lasercomm module
- Hyperion gigabit detector
- PULSAR-DATA series: compact transmitter solutions designed for advanced missions
- PULSAR-TMTC series: compact telemetry and command radio solutions
- SpaceQuest AIS receiver
- SpaceQuest & Hyperion satellite GNSS receivers

STRUCTURES

- ZAPHOD structure range

Hyperion has already captured its first order as part of the AAC Clyde Space group: a SEK 1.5M contract to carry out an in-orbit verification of CubeCAT, its space-based laser communication terminal. Laser communications are seen as a major potential enhancement to small satellite capabilities in the future, greatly increasing data transmission speeds for small satellites compared to current radio communications, which are restricted by limited bandwidth, high power demand and lengthy licensing processes.

An aerial photograph of a coastal region, likely in the Caribbean or South America, showing a large body of water, a winding river, and several small islands. The water is a deep blue-green color, and the land is a mix of dark green and brown. The overall tone is dark and moody.

OUR CUSTOMERS

For over a decade we have provided market-leading space solutions and services for government, commercial, and educational organisations for an extensive range of applications.

Some of our customers include; Orbcomm , Kepler Communications, NSLComm, KP Labs, Orbital Micro Systems, NASA and ESA.



CASE STUDY **ORBITAL MICRO SYSTEMS**

FROM MICROWAVES

More accurate weather and Earth observation data for businesses – anytime, anywhere

The world needs more accurate weather forecasting. Extreme weather events – from excessive rainfall to coastal flooding and wildfires – were responsible for much devastation across our planet in 2020.

All too often, the response is reactionary because businesses and governments lack the information needed to prepare. The result is unnecessary lives lost, business disruption and major insurance costs. The United Nations estimates the direct economic losses from weather disasters between 1998–2017 at almost USD 3 trillion.

AAC Clyde Space is working with Orbital Micro Systems (OMS), amongst others, to deliver accurate and timely weather information to businesses worldwide and enable faster, informed decision-making in the face of weather-driven emergencies.

We are delivering satellites for OMS's Global Environmental Monitoring System (GEMS). The GEMS constellation improves the precision and clarity of weather forecasts across the globe by capturing passive microwave soundings to record temperature, humidity and precipitation at multiple altitudes, regardless of cloud cover.

We have already delivered one 3U CubeSat (IOD-1 GEMS), which has been in-orbit and delivering data since July 2019. We are now delivering a 6U CubeSat in 2022, as well as launch and commissioning support.

At full deployment, GEMS will deliver near real-time data for any point on earth. This will enable governments and businesses worldwide – from insurance to aerospace, maritime, energy and agriculture – to improve their understanding of our environment, create operational efficiencies and minimize disruption and damage caused by extreme weather.



TO WEATHER FORECASTING

"OMS IS OVER-THE-MOON WITH THE PERFORMANCE OF THE IOD-1 GEMS PLATFORM. THEY HAVE DELIVERED ON ALL POINTS: POWER, OPERATIONAL READINESS, COMMAND AND CONTROL, AND DATA DELIVERY."

WILLIAM HOSACK, CEO ORBITAL MICRO SYSTEMS, INC.

CASE STUDY **EUTELSAT**

FROM CONSTELLATIONS



Transmitting business-critical information from tens of millions of objects, all over the world

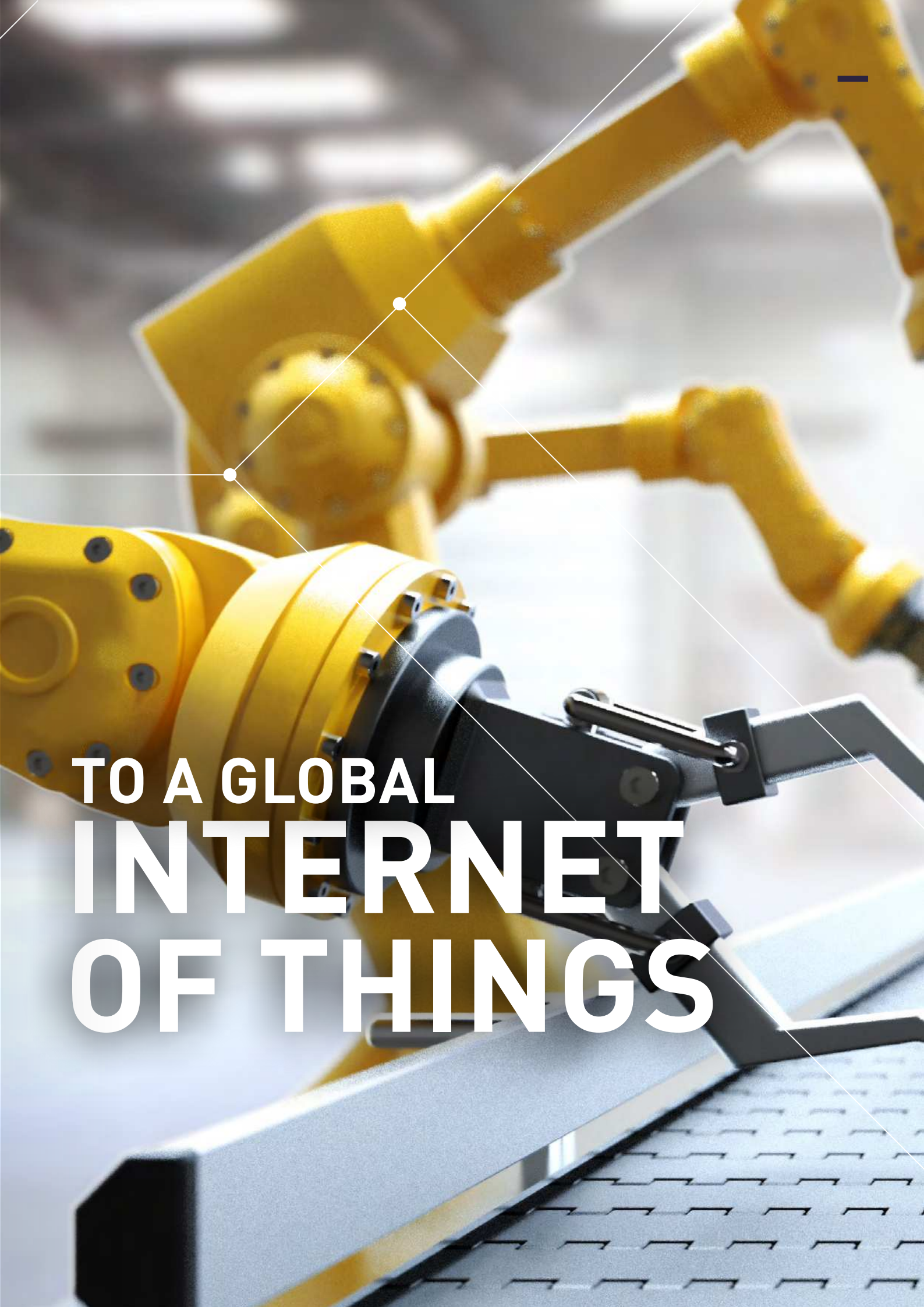
As the world gets 'smarter', we're demanding better coverage, speed and reliability from our networks. Satellite constellations have a critical role to play here in supporting terrestrial networks.

For example, investment costs associated with laying optical fibre render many areas of the planet economically unviable for terrestrial networks – they are either too remote or conditions too inhospitable. In fact, terrestrial cellular networks only cover 25% of the Earth's surface.

Lower-Earth orbit (LEO) satellite constellations, on the other hand, can cover the entire planet, from pole to pole. This is critical to delivering the global connectivity required to enable new societal and industrial paradigms, including the Internet of Things (IoT). IoT has countless applications, from precision farming to industrial robotics, smart homes, driverless cars,...

AAC Clyde Space is supporting global satellite operator Eutelsat to construct its own LEO constellation, ELO (Eutelsat LEO for Objects), to deliver global IoT coverage, enabling objects to transmit data, irrespective of their location.

As part of Eutelsat's ELO project, we are delivering two small satellites for launch in 2021, which will enter commercial service as soon as they are delivered into orbit. These satellites will also host the first propulsion systems onboard AAC Clyde Space satellites, enabling in-orbit manoeuvres.



TO A GLOBAL
**INTERNET
OF THINGS**

CASE STUDY **ORBCOMM & SAAB**

FROM VHF DATA



Developing the next generation of maritime communications

Over 80% of all trade between countries is carried by ships , and maritime traffic is increasing: according to a study by the American Geophysical Union, traffic on the world's oceans increased by 300% in the two decades to 2014.

As our oceans become more congested, we need better tracking systems and emissions management. Space is helping to provide the answer.

AAC Clyde Space is working with ORBCOMM, a leading provider of industrial IoT solutions, and aerospace and defence company, Saab, to deliver improved safety and efficiency to seafarers worldwide. We are developing the first satellite of a future constellation to provide a VDES (Very High Frequency Data Exchange System) for two-way communication between satellite and ground.

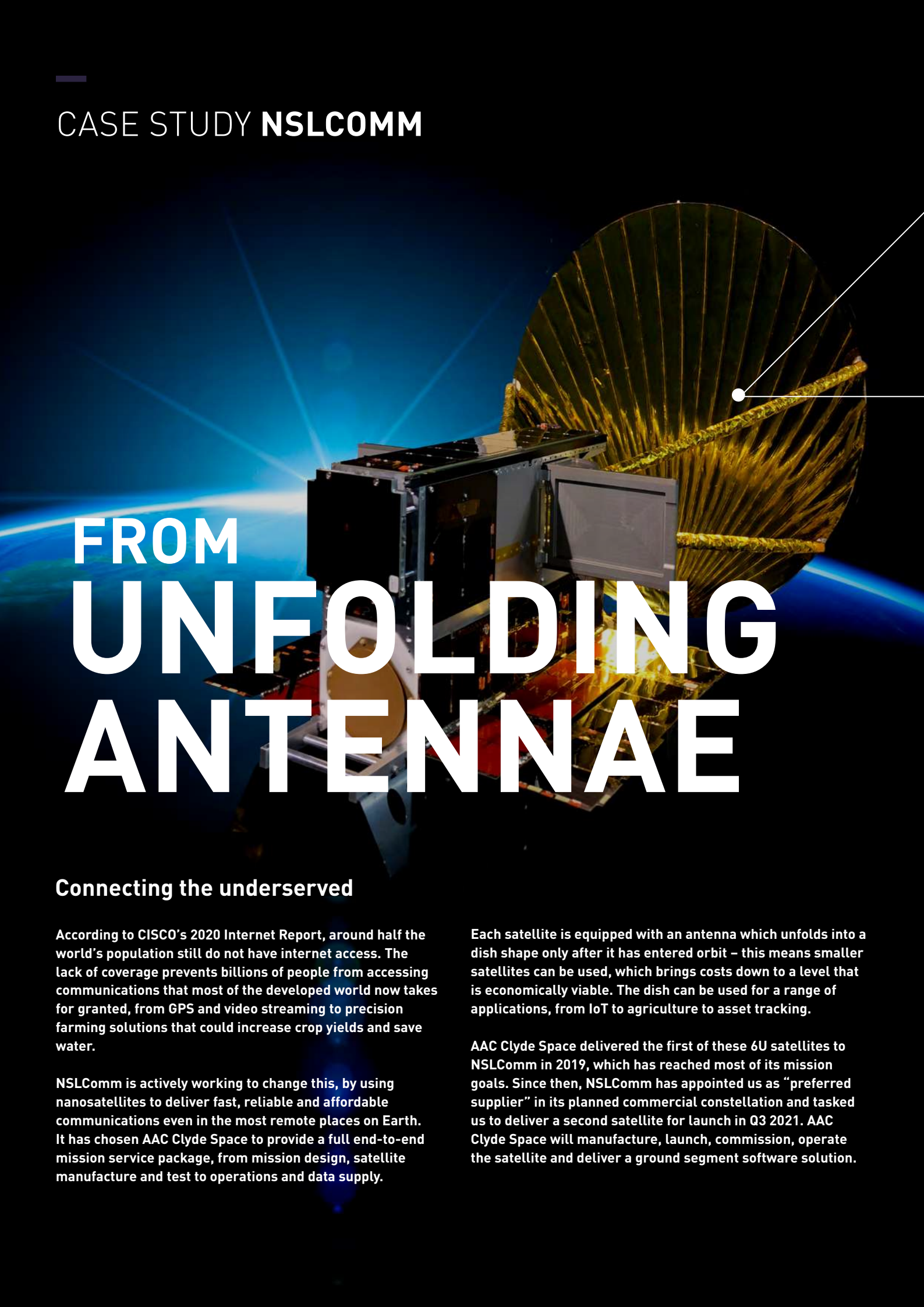
This added space capability will increase VDES' range from the shoreline to anywhere in the ocean, turning what is a largely coastal system into a global maritime system. With up to 32 times more bandwidth than the widely used Automatic Identification System (AIS) communication, VDES can also be integrated with e-navigation systems, enabling savings in fuel and emissions of up to 25%, improving navigation, and increasing safety.

The first satellite of the constellation is expected to be launched in 2022. After demonstrating its VDES capabilities, it will be used to deliver AIS data to ORBCOMM, supporting applications including search and rescue, environmental monitoring and maritime intelligence.



TO
**SAFER,
HEALTHIER**
OCEANS

CASE STUDY **NSLCOMM**



FROM UNFOLDING ANTENNAE

Connecting the underserved

According to CISCO's 2020 Internet Report, around half the world's population still do not have internet access. The lack of coverage prevents billions of people from accessing communications that most of the developed world now takes for granted, from GPS and video streaming to precision farming solutions that could increase crop yields and save water.

NSLComm is actively working to change this, by using nanosatellites to deliver fast, reliable and affordable communications even in the most remote places on Earth. It has chosen AAC Clyde Space to provide a full end-to-end mission service package, from mission design, satellite manufacture and test to operations and data supply.

Each satellite is equipped with an antenna which unfolds into a dish shape only after it has entered orbit – this means smaller satellites can be used, which brings costs down to a level that is economically viable. The dish can be used for a range of applications, from IoT to agriculture to asset tracking.

AAC Clyde Space delivered the first of these 6U satellites to NSLComm in 2019, which has reached most of its mission goals. Since then, NSLComm has appointed us as “preferred supplier” in its planned commercial constellation and tasked us to deliver a second satellite for launch in Q3 2021. AAC Clyde Space will manufacture, launch, commission, operate the satellite and deliver a ground segment software solution.



TO BROADBAND, ANYWHERE

"OUR COLLABORATION HAS PROVEN TO BE THE PERFECT BLEND OF NEW SPACE SOLUTION PROVIDERS AND INNOVATIVE PAYLOAD DEPLOYERS, AND WE LOOK FORWARD TO A LONG AND PRODUCTIVE PARTNERSHIP WITH AAC CLYDE SPACE."

RAZ ITZHAKI TAMIR, CEO, NSLCOMM